CAPITAL OUTLAY PLAN FOR 2008-2014

FIRST BIENNIUM -- 2008-2010

VIRGINIA TECH

As of June 4, 2007

		Estimated Cost in Thousands			Unit Costs			
		General Funds	Nongeneral Funds	Total	Assignable Square Feet	Cost Per ASF	Gross Square Feet	Cost Per GSF
UNIVERSITY DIVISION (208)								
1	Maintenance Reserve	$ 24,000	$ 8,000	$ 32,000	NA		NA	
2	Replace Deteriorated Section of Davidson Hall	31,400		31,400	33,300	943	51,000	616
3	Renovate Liberal Arts Building	7,550		7,550	9,950	759	16,000	472
4	Sciences Research and Academic Building	31,450	16,800	48,250	60,000	804	92,300	523
5	Cyber Arts and Creative Technologies Laboratory	19,200		19,200	36,000	533	55,400	347
6	Chiller Plant, Phase I	12,060	8,040	20,100	NA		NA	
7	Classroom Building	23,050		23,050	45,000	512	64,000	360
8	Veterinary Medicine Instruction Addition	10,725	1,400	12,125	21,000	577	32,300	375
9	Engineering Signature Building	45,250	35,000	80,250	104,000	772	160,000	502
10	Library High Density Storage-High Speed Access Facility	7,800		7,800	5,000	1,560	5,000	1,560
11	Renovate Lane Hall and Construct Addition	16,275		16,275	26,880	605	45,000	362
12	Academic and Student Affairs Building	8,450	33,800	42,250	63,800	662	91,100	464
13	Code Compliance: Fire Alarm Systems and Access	3,000		3,000	NA		NA	
14	Addition to VBI		29,575	29,575	33,000	896	50,000	592
15	Repair McComas Hall Exterior Wall Structure		1,500	1,500	NA		NA	
16	Basketball Practice Facility		20,000	20,000	47,600	420	59,500	336
17	Renovate East and West Ambler Johnston		65,000	65,000	163,200	398	283,300	229
18	Renovate Owens and West End Market Food Courts		5,000	5,000	12,600	397	14,000	357
	TOTAL	240,210	224,115	464,325				
COOPERATIVE EXTENSION/AGRICULTURAL EXPERIMENT STATION DIVISION (229)								
1	Human and Agricultural Biosciences Building I	54,275		54,275	60,000	905	93,000	584
	TOTAL	54,275		54,275				
	BIENNIUM TOTAL	$294,485	$224,115	$518,600				

NOTE:

Costs reflect midpoint of construction in 2011 at 5 percent annual inflation.

CAPITAL OUTLAY PLAN FOR 2008-2014

SECOND BIENNIUM -- 2010-2012

VIRGINIA TECH

As of June 4, 2007

		Estimated Cost in Thousands			Unit Costs			
		General Funds	Nongeneral Funds	Total	Assignable Square Feet	Cost Per ASF	Gross Square Feet	Cost Per GSF
UNIVERSITY DIVISION (208)								
1	Maintenance Reserve	$ 26,000	$ 8,000	$ 34,000	NA		NA	
2	Renovate Historic Section of Davidson Hall	16,425		16,425	23,800	690	36,538	450
3	Engineering/Computational Sciences Instructional Facility	21,970	11,830	33,800	39,600	854	61,000	554
4	Renovate Price Hall	34,154		34,154	33,000	1,035	56,000	610
5	Renovate Sandy Hall	6,700		6,700	7,800	859	12,400	540
6	Renovate Classroom Infrastructure, Phase II	4,800		4,800	16,000	300	16,000	300
7	Translational Medicine Laboratory	31,200	31,200	62,400	60,000	1,040	92,300	676
8	Life Sciences Research Laboratory II	30,175	30,175	60,350	60,000	1,006	92,300	654
9	Renovate Randolph Hall	55,763	18,587	74,350	116,500	638	166,400	447
10	Undergraduate Science Laboratory Building	41,150		41,150	52,000	791	74,300	554
11	Renovate Newman Library	53,550		53,550	150,000	357	234,000	229
12	Renovate Derring Hall for Architecture and Business	47,050		47,050	72,775	647	104,000	452
13	Chiller Plant, Phase II	12,000	8,000	20,000	NA		NA	
14	Renovate Robeson Hall	32,350		32,350	38,400	842	66,100	489
15	Wood Science Department Building	40,568	13,522	54,090	60,000	902	92,300	586
16	Replace CIMMID Laboratories	7,700	7,700	15,400	12,200	1,262	18,800	819
17	Repair Hahn Hall Exhaust Fan	2,700		2,700	NA		NA	
18	Code Compliance: Fire Alarm Systems and Access	3,000		3,000	NA		NA	
19	VTTI Building III -- Capital Lease		20,000	20,000	35,000	571	50,000	400
20	Additional Lodging Rooms at the Inn (55 rooms)		15,800	15,800	28,600	552	38,100	415
21	Technology Infrastructure		31,000	31,000	NA		NA	
22	Olympic Sports Locker Rooms and Training Facility		4,800	4,800	12,000	400	15,000	320
	TOTAL	467,255	200,614	667,869				
COOPERATIVE EXTENSION/AGRICULTURAL EXPERIMENT STATION DIVISION (229)								
1	Plant Growth Center Laboratory Building	59,900		59,900	60,000	998	93,000	644
2	Renovate Kentland Facilities	6,100		6,100	10,800	565	15,400	396
	TOTAL	66,000		66,000				
	BIENNIUM TOTAL	$533,255	$200,614	$733,869				

NOTE:

Costs reflect midpoint of construction in 2013 at 5 percent annual inflation.

CAPITAL OUTLAY PLAN FOR 2008-2014

THIRD BIENNIUM -- 2012-2014

VIRGINIA TECH

As of June 4, 2007

		Estimated Cost in Thousands			Unit Costs			
		General Funds	Nongeneral Funds	Total	Assignable Square Feet	Cost Per ASF	Gross Square Feet	Cost Per GSF
UNIVERSITY DIVISION (208)								
1	Maintenance Reserve	$ 28,000	$ 8,000	$ 36,000	NA		NA	
2	Renovate Patton Hall	28,350		28,350	35,380	801	52,800	537
3	Renovate Norris Hall	27,360		27,360	45,600	600	72,400	378
4	Renovate Holden Hall	20,400		20,400	28,600	713	42,100	485
5	Chiller Plant, Phase III	12,000	8,000	20,000	NA		NA	
6	Renovate Hutcheson/Smyth Halls	45,300		45,300	66,600	680	105,700	429
7	Renovate Thomas Hall for Academic Programs	14,800		14,800	20,800	712	32,000	463
8	Replace Femoyer Hall	18,315		18,315	20,250	904	35,500	516
9	Code Compliance: Fire Alarm Systems and Access	3,000		3,000	NA		NA	
10	Architecture Research Facility		14,770	14,770	30,000	492	40,000	369
11	Northwest Student Union Facility		44,120	44,120	57,700	765	82,400	535
12	Renovate Cadet Residence Halls (Brodie, Rasche, Monteith)		40,000	40,000	91,300	438	163,000	245
13	Oak Lane Commons Building		9,500	9,500	14,000	679	20,000	475
14	CNS Storage Facility		5,545	5,545	17,000	326	20,000	277
	TOTAL	197,525	129,935	327,460				
COOPERATIVE EXTENSION/AGRICULTURAL EXPERIMENT STATION DIVISION (229)								
	TOTAL	-	-	-				
	BIENNIUM TOTAL	$197,525	$129,935	$327,460				
	TOTAL OF 2008-2014 PLAN	$1,025,265	$554,664	$1,579,929				

NOTE:

Costs reflect midpoint of construction in 2015 at 5 percent annual inflation.

CAPITAL OUTLAY PLAN FOR 2008-2014

Original: April 17, 2007

Revised: June 14, 2007, Board of Visitors

At its March 2007 meeting, the Board of Visitors considered a recommendation that a list of potential projects for inclusion in the 2008-2014 Capital Outlay Plan be approved and that the University be authorized to develop and submit a final Plan to the state, in accordance with future guidance from the state and based on the projects in the approved list. The recommendation was approved and the University has proceeded accordingly.

On March 9, 2007, the state issued instructions for the preparation and submission of the 2008-2014 Capital Outlay Plan and budget requests. The deadline for submission of the Six Year Plan was April 18, 2007. The University prepared and submitted the necessary documents in accordance with the instructions.

The list of capital projects for the 2008-2014 plan is outlined by biennium and priority on Schedules 1, 2, and 3. The projects listed in the first biennium are considered for funding, and the out biennia projects are for planning purposes. The projects and their arrangement on the 2008-2014 plan are consistent with the programmatic needs established for the planning period and with the strategic plan of the University, and they position the University with options to respond to various funding abilities of the state in the future. A brief description of each capital project in the 2008-2014 plan follows.

The state is implementing a two phase submission process for capital budget requests. For the first phase, the state may authorize institutions to submit a full budget request for certain unfunded projects in the Governor's 2006-2012 Six-Year Capital Implementation Plan. On April 9, 2007, the state notified the University to submit budget requests for two projects for this phase: Replace Deteriorated Section of Davidson Hall and Construct Sciences Research and Academic Building. These budget requests are due to the state on June 8, 2007. For the second phase, the state will review the University's 2008-2014 Capital Outlay Plan submitted in April and on July 12, 2007 will authorize the University to submit a full budget request for a specified subset of projects in the first biennium. These budget requests are due to the state on August 17, 2007. The Governor is then scheduled to submit his 2008-2014 Capital Improvement Plan to the General Assembly on November 1, 2007.

The University's capital plan includes several 100 percent nongeneral fund projects. Under the restructuring authority and management agreements, the Board may authorize these projects when and as needed to achieve University objectives. The University will bring forward a resolution for each item on a project-by-project basis. These 100 percent nongeneral fund projects are included in the Plan as a result of a decision by the three Management Agreement Institutions to inform the Commonwealth about the projects, when possible, through the planning process.

In cases where a 100 percent nongeneral project includes debt as a component of a project's funding plan, the University may elect to pursue state approval to participate in a pooled bond program. The state pooled bond program is an efficient issuance instrument

and may have lower overall costs of capital compared to a university issuance, depending on issuance size. Thus, nongeneral fund debt requests may be presented to the state to establish an option for the University to use the more favorable cost of capital for its projects.

2008-10 Biennium

University Division

1. Maintenance Reserve

Since 1982, the Commonwealth has allocated General Fund support for preserving state-owned facilities. The Executive and Legislative Branches have mandated that maintenance reserve requests be the first priority in all capital outlay requests. Individual projects to repair and maintain plant, property, or equipment are identified in the umbrella project request. These projects include roof repair or replacement, elevator repair and maintenance, repairs to air-handling systems, heating systems, storm sewers, and water and sewer systems. In 1994, the University established a parallel Maintenance Reserve program for the auxiliary enterprise facilities funded with enterprise resources.

2. Replace Deteriorated Section of Davidson Hall

This project request has been on the University's plan since 1993, formerly titled Renovation/Addition of Davidson Hall. The project originally envisioned renovation of the entire facility; however, the cost of addressing the entire building as a single project was too large. Thus, the University has divided the project into two components that are more reasonable from the cost and construction management standpoint. This project reflects the first component - to raze and fully replace the unrecoverable center and north sections of the existing Davidson Hall facility. The proposed project will restore the level of space needed for the program and will enable students to be optimally trained to move into today's industrial, governmental, and academic laboratories that specialize in nanotechnology, chemical biology, computational chemistry, environmental chemistry, drug discovery, and macromolecular chemistry to serve the commercial and governmental needs of the Commonwealth.

3. Renovate Liberal Arts Building

This project has been on the University's plan since 1993, formerly titled Renovation of Performing Arts Building. The project was renamed to more accurately reflect the intended programmatic use of the facility after the renovation is complete. The requested project scope will fully renovate the 15,900 gross square foot building, including exterior envelope repairs, HVAC and ventilation systems replacement, plumbing system replacement and upgrade, electrical system replacement, hazardous material abatement, and provision of accessible circulation and exiting meeting life safety requirements. These renovations will renew the building and serve as quality academic space in the core of the liberal arts zone of campus.

4. Sciences Research and Academic Building

This project has been on the University's plan since 2005 and is included as a high priority to provide the College of Science expanded instruction and research space. This project is envisioned as a 93,300 gross square foot scientific laboratory facility to support interdisciplinary science focused on geosciences programs that are growing in enrollment and extramural research funding. The building will include a combination of undergraduate class laboratories, classrooms, research laboratories, and graduate student space.

5. Cyber Arts and Creative Technologies Laboratory

This is a new project on the University's plan and is included as a priority project in the first biennium to provide space for the School of Education's Science Technology Engineering and Mathematics PK-12 Outreach Initiative (VT-STEM). Virginia Tech's solution to establish the facilities necessary to support this initiative is to renovate an existing dining facility, Shultz Hall, which will be vacated when a replacement dining facility is completed. A renovated 55,400 gross square foot Shultz Hall will provide excellent teaching and learning facilities and will be reinforced by the adjacent new state-of-the-art Performance Hall and Visual Arts Gallery.

6. Chiller Plant, Phase I

This project has been on the University's plan since 2005 and is included in the first biennium as a high priority to shift to a high efficiency central plant cooling strategy on the southwest section of campus. The project request is to construct a central chiller plant building on the southwest area of campus with capacity to hold 12,000-tons of chilling service, install 2,000 tons of chiller output, and install distribution piping. The savings of a central plant compared to stand-alone chillers are significant. One study estimates a cost avoidance of about $40 million over the next 20 years for the southwest area of campus.

7. Classroom Building

This project has been on the University's plan since 2005 and is included in the first biennium as a high priority to increase the quantity of high quality general assignment classrooms to address the significant unmet demand for class registrations and to meet student expectations of state-of-the-art instruction space. This project includes construction of a 64,000 gross square foot building with 36 large-size classrooms on the north side of campus in the academic core of campus.

8. Veterinary Medicine Instruction Addition

This project has been on the University's plan since 1993, formerly titled Veterinary Medicine Addition. The project requests authorization to construct an addition of about 32,300 gross square feet of instructional space to provide adequate classrooms, to relieve overcrowding of the existing facility, and to accommodate planned hires. These issues must be addressed to meet the requirements of the American Veterinary Medical Associations' Council on Education, which is the accrediting body for the College of Veterinary Medicine.

9. Engineering Signature Building

This is a new project on the University's plan, and is included as a priority item in the first biennium to address severely deteriorated undergraduate academic space for the College

of Engineering. The proposed 160,000 gross square foot facility will be a combination of classrooms, class laboratories, and research laboratories to house a number of departments and programs in the college. This will be a state-of-the-art instruction facility focused on undergraduates with highly specialized laboratories that will support hands-on, problem solving oriented learning in the engineering disciplines.

10. Library High Density Storage – High Speed Access Facility

This project has been on the University's plan since 2001, formerly titled Newman Library Addition. The project request is to construct a 5,000 gross square foot addition to the east side of Newman Library between the existing loading dock and Squires Student Center. The addition will contain high-density, self-supporting, heavy-duty storage shelving and an automated, robotic retrieval system capable of handling up to one million volumes. The addition will increase the ability to efficiently store and quickly retrieve materials without delay and without additional staff or floor space. This project will also free up library floor space to restore needed student study areas that have been lost to accommodate the growth of critical on-site volume storage.

11. Renovate Lane Hall and Construct Addition

This project has been on the University's plan since 1993, formerly titled Renovation of Lane Hall. Lane Hall was constructed in 1888, includes about 26,500 gross square feet, and has been operated and maintained as a key university landmark. The requested project will fully renovate the building, including exterior envelope repairs, HVAC and ventilation systems replacement, plumbing system replacement and upgrades, electrical system replacement, hazardous material abatement, and provision of accessible circulation and exiting meeting life safety requirements. The project will also construct a 15,500 gross square foot addition that will house several new general assignment classroom spaces and instructional spaces supporting the University's Corps of Cadets and the three Reserve Officer Training programs (ROTC).

12. Academic and Student Affairs Building

This project has been on the University's plan since 2005 and is included in the first biennium as a high priority to provide instructional space, dining services, and student union services on the north side of campus. The proposed project is envisioned as a 91,200 gross square foot, five story building. The building plan includes two floors of instructional space, two floors of dining service space, and one floor of student union space. The two lower floors will be dining services, the third floor will be student union space, and the top two floors will be instructional space. This project is a precursor to the Cyber Arts and Creative Technologies Laboratory project; it will provide the necessary dining space to vacate and convert Shultz Hall to a new use.

13. Code Compliance: Fire Alarm Systems and Access

This project has been on the University's plan since 2001, formerly titled Health, Safety, and Accessibility. The University's health, safety, and accessibility initiative for the campus is an ongoing effort. The University has made important progress toward improving the campus in this regard with prior funding authorizations that supported critical safety and accessibility improvements. This project request is for authorization and funding to continue progress on needed campus improvements in several educational and general

facilities. The focus of this request is accessibility improvements, fire alarm systems, and updating needs assessment and planning that are beyond the scope of the Maintenance Reserve program.

14. Addition to VBI

This is a new project on the University's plan, and it is included in the second biennium in order to provide additional private and open office space for faculty, researchers, research associates, and support personnel for growing Virginia Bioinformatics Institute (VBI) departments. Additional conference, meeting, and assembly space of varying sizes, serving interdisciplinary science in the Virginia Bioinformatics Institute, are also required. This 50,000 gross square foot addition to the Bioinformatics II facility will facilitate expansion of the research programs under the Network Dynamics and Simulation Science Laboratory and Cyber Infrastructure Group. The existing facility is in short supply of meeting and assembly space, and the addition of faculty and researchers will amplify this shortfall.

15. Repair McComas Hall Exterior Wall Structure

This is a new item on the University's plan and is included in the first biennium as a priority to correct structural and moisture penetration problems of the exterior wall of McComas Hall, a 118,225 gross square foot building. The project includes removal and replacement of the exterior building envelope. McComas Hall was constructed in 1998 as a combined use recreational sports and student health services building. The building has experienced ongoing leaks for several years and problems with door and window operations. Structural evaluation and facilities condition studies completed in 2006 identified numerous problems with structural supports and connections of precast panels that support the exterior walls.

16. Basketball Practice Facility

This is a new project on the University's plan and is included in the first biennium to meet the expectations of players and coaches for practice facilities. The proposed 59,500 gross square foot new stand-alone Basketball Practice Facility will provide contemporary intercollegiate athletic facilities that will support student-athlete development and serve as a critical recruiting tool for Virginia Tech's Atlantic Coast Conference (ACC) men's and women's basketball. Planning work is in progress under a Board approved project.

17. Renovate East and West Ambler Johnston

This project has been on the University's plan since 2005, formerly titled Improve Residence and Dining Halls. The University's facility inventory includes a system of 44 residence halls. In order to ensure this substantial facilities asset remains up-to-date, the University has developed a long-range improvements strategy with the help of a consultant that minimizes service disruption and minimizes the financial impact to the students. The top priority item of the initiative is the upfit of Ambler Johnston Hall. This facility was built in 1969, includes 272,019 gross square feet, houses 1,288 students, and has a replacement cost estimated at $88,300,000. This building currently does not meet the needs of today's students. Further, the mechanical systems are beyond repair, and the building is not air conditioned. This project will modernize the entire building and address all deferred maintenance. The renovation program includes additional hall lounges, community meeting rooms, and study rooms; refurbishing and expanding bathroom facilities to reach a ratio of about 35 residents per shared bath; updating residential rooms, consolidating multiple

building entries to improve controlled access and centralized resident services; replacing the mechanical systems including the HVAC system with air conditioning, and upgrading electrical wiring, elevators, and lighting systems.

18. Renovate Owens and West End Market Food Courts

This is a new project on the University's plan and is included as a high priority in order to provide improved and expanded dining service at two of the University's most in demand dining venues: West End Market and Owens Hall. The West End Market opened in 1998 as an 8,100 gross square foot addition to the Cochrane Hall student residence. This project requests funding to renovate and expand the kitchen and food preparation areas, including staff support functions, such as restrooms and locker rooms. To accommodate additional seating demand, a building addition as an extension of the dining area is proposed, seating an additional 100 diners. Owens Hall is a 97,600 gross square foot dining facility constructed in 1939. It has undergone four interior renovations, the latest completed in 1991. Several dining stations require equipment and service upgrades to provide efficient service and delivery. This project requests funding to renovate dining area, food service, and dining venue stations to improve functionality and appearance.

Cooperative Extension/Agricultural Experiment Station Division

1. Human & Agricultural Biosciences Building I

This project has been on the University's plan since 2005 and is included in the first biennium as a high priority to provide the Agricultural Experiment Station in the College of Agriculture and Life Sciences expanded modern research space. The 93,000 gross square foot facility will be a combination of faculty offices, research offices and laboratories, and graduate student research space that will be used to house a number of research programs in the station. The proposed construction is a state-of-the-art laboratory facility to meet the modern demands of animal science research and discovery. New technologies, such as genetic engineering and information technology, are revolutionizing agriculture, the life sciences, and other natural resources, like forestry and wildlife. The laboratory facilities at Virginia Tech are not sufficient to meet the demands of this rapidly evolving area; thus, a new, modern laboratory is needed.

2010-2012 Biennium

University Division

1. Maintenance Reserve

Since 1982, the Commonwealth has allocated General Fund support for preserving state-owned facilities. The Executive and Legislative Branches have mandated that maintenance reserve requests be the first priority in all capital outlay requests. Individual projects to repair and maintain plant, property, or equipment are identified in the umbrella project request. These projects include roof repair or replacement, elevator repair and maintenance, repairs to air-handling systems, heating systems, storm sewers, and water

and sewer systems. In 1994, the University established a parallel Maintenance Reserve program for the auxiliary enterprise facilities funded with enterprise resources.

2. Renovate Historic Section of Davidson Hall

This project has been on the University's plan since 1993, formerly titled Renovation/Addition of Davidson Hall. This project reflects the second phase of improvements to Davidson Hall and will renovate and rehabilitate the historic front section of the building. This includes the replacement and upgrade of electrical, plumbing, and mechanical ventilation systems, air-conditioning (connection to the central plant), and disposal of hazardous materials. These renovations will also renew the historic façade by cleaning and tuck pointing the masonry exterior and replacing any damaged masonry or coping. In addition, the windows, doors, and weather stripping will be replaced in order to realize increased energy savings.

3. Engineering/Computational Sciences Instructional Facility

This project has been on the University's plan since 2003, formerly titled Computational Sciences Instructional Facility, to address a shortage of modern academic space capable of supporting the advanced technologies employed in the growing fields of computer science and engineering. To meet the current demands for modern instructional space in computational science, the University temporarily leases 45,000 square feet of off-campus space in the research center. In order to provide permanent space for the program, the University is requesting this proposed 61,000 gross square foot building to meet the needs of the Department of Computer Science for modern classroom, laboratory, and academic office space. The proposed building will provide a highly advanced computing infrastructure with considerable flexibility in its instructional spaces and research laboratories.

4. Renovate Price Hall

Price Hall was constructed in 1904 and is one of the oldest buildings on the campus. It has not received major renovations, upgrades, or improvement projects since the original construction was completed. The building has become outdated and deterioration is progressing beyond the scope of normal operations and maintenance reserve repairs and replacements. The infrastructure, architectural finishes, mechanical, electrical, and plumbing systems have long outlived their useful lives and require replacement. The existing building is not air conditioned and does not have mechanical ventilation systems. The building is in need of significant upgrades to improve compliance with accessibility, building, and life safety codes and to improve overall building function. This project requests authorization to gut and renovate the building for offices, conference/seminar rooms, classrooms, and computer laboratories for departments of the School of Education.

5. Renovate Sandy Hall

Sandy Hall was constructed in 1924 and has not had any major improvements or renovations since the original construction. The building includes about 12,400 gross square feet, and the building's support systems and infrastructure are outdated and inefficient. Further, the building is not air-conditioned and does not have mechanical ventilation systems. Sandy Hall currently houses the Interior Design and Building

Construction programs, which are moving to new facilities. This will vacate Sandy Hall for renovation activities. This project is requested to renovate the building with minor structural improvements; upgrades to mechanical, electrical, fire protection and plumbing systems; improvements to accessibility and egress; installation of air-conditioning; refurbishment of architectural finishes; and building envelope repairs. These improvements will extend the useful life of the building for continued service for academic and academic support programs.

6. Renovate Classroom Infrastructure, Phase II

This project directly supports a key University initiative, the Instructional Development Initiative, by systematically improving general assignment classrooms. This Phase II project will follow the Phase I project scheduled for completion in fiscal year 2008. A substantial number of the 168 general assignment classrooms throughout the academic buildings do not have adequate infrastructure to support a technology-based educational program. This project plans improvements to 17 medium to large size general assignment classrooms. Improvements will include installation of a variety of computer-based learning/teaching stations and supporting upgrades to provide computer integrated class labs, presentation classrooms, and multimedia instructional spaces. In order to achieve these improvements in the learning environments, the classrooms need upgrades to various building systems, such as electrical, HVAC, and telecommunications distribution, as well as improved acoustical and security applications.

7. Translational Medicine Laboratory

The Translational Medicine Laboratory project requests an authorization for a 92,300 gross square foot scientific laboratory facility to fully support the expansion of the life sciences programs and to house the Center for Infectious Disease (CMMID). A key component of the University's strategic plan is to advance the University's research program through the development of expanded basic and applied research in the biological and life sciences. This facility is planned to specifically meet the needs of the University to engage in translational medicine research and clinical interventions. Increasingly, biomedical research and basic research in bacteriology, immunology, and oncology require access to animal tissue and clinical settings to investigate disease in animals and to test initial drug and procedural innovations.

8. Life Sciences Research Laboratory II

This project requests an authorization for a 92,300 gross square foot scientific laboratory facility to fully support the envisioned life sciences program. A key component of the University's strategic plan is to advance the University's research program through the development of expanded basic and applied research in the biological and life sciences. The University has made strides toward this goal with the implementation of the Bioinformatics program, its joint degree program in biomedical engineering and research with Wake Forest University, and recent restructuring efforts designed to reorganize existing University resources in microbiology, cell biology, macromolecular sciences, and genomics to more effectively accomplish its life sciences goals. The University is confronted with an aging inventory of science laboratory space, with much of it built in the 1970's, 1980's, and before, that is inadequate, even with significant renovation, to support the new protocols and instrumentation these micro- and nano-scale investigations require. This facility is needed to provide the sophisticated, state-of-the-art research laboratory

space that is required by the technologies utilized in these expanding research science fields.

9. Renovate Randolph Hall

The building was constructed in 1952, with an addition in 1959, and several non-capital, small-scale improvements over the years. The building includes about 166,000 gross square feet and houses several departments in the College of Engineering, including Aerospace and Ocean Engineering, Chemical Engineering, Engineering Education, and Mechanical Engineering. The building is outdated and does not support teaching and research in the 21st century in engineering disciplines. This project involves the renovation of the building envelope, interior infrastructure upgrades, improved handicapped accessibility, and mechanical system upgrades. The requested renovation provides for improved functional layouts and departmental adjacencies for units within the building and spaces for offices, classrooms, instructional/research laboratories, and associated support spaces.

10. Undergraduate Science Laboratory Building

This is a new project on the University's capital plan and is included in the second biennium as a priority to provide new instructional space serving undergraduate science programs. This project requests authorization to construct a new facility of 74,300 gross square feet for undergraduate science laboratories, laboratory support services, and office space for faculty in the departments of Biology and Human Nutrition and Foods. The existing laboratory facilities currently being used to deliver instruction in Derring, Engel, and Wallace Halls are old, with outdated infrastructure, and in space not in compliance with current building codes. Efforts to upgrade these facilities to accommodate the modern technology involved in teaching science courses are encountering major obstacles, including structural barriers and limitations, such as low floor-to-floor heights and bearing walls interfering with space reconfigurations. The only practical option is to construct a new science laboratory facility and reprogram Derring Hall for less intensive non-laboratory uses. The same situation is repeated in Engel Hall, built in 1961, and in Wallace Hall, constructed in 1968.

11. Renovate Newman Library

Newman Library was constructed in 1955, with an addition in 1980, and serves as the central materials storage for the entire university. With the anticipated construction of the Newman Library Addition high-density volume management system requested in the 2008-2010 biennium, existing stack space will become available for other academic program use. This project request is for the reorganization and modernization of the library. The goal is to provide a quality library environment with up-to-date interactive learning formats that serve the 21st century university campus. Improvements include main floor reorganizations to enhance general circulation space, additional student study spaces, and more efficient, consolidated staff work areas.

12. Renovate Derring Hall for Architecture and Business

Derring Hall was constructed in 1969, and the building has not had any major improvements or renovations since the original construction was completed. The building includes about 208,000 gross square feet and houses general assignment instructional laboratories and components of the biology, chemistry, geological sciences, and physics

programs. The building has become outdated and deterioration is progressing beyond the scope of normal operations and maintenance reserve repairs. This project requests authorization to renovate Derring Hall and address the need for upgraded HVAC systems, upgraded electrical systems, rehabilitated and improved plumbing systems, and overall renovations intended to meet accessibility and life safety codes, and to improve the programmatic function of the building. These building renovations will extend the useful life of the facility as an academic building.

13. Chiller Plant, Phase II

This approach will also allow for an on-going phasing out (decommissioning) of existing individual building chillers as initiated by the Phase I project included in the first biennium. This project has been on the University's plan since 2005 and is included in the second biennium as a high priority in order to "piggyback" the Chiller Plant, Phase I project included in the first biennium. This Phase II project is envisioned to meet cooling capacity requirements in the future as new construction expands in the south and west portions of campus where a "central" chilled water plant will be required to avoid inefficient operations and costly stand-alone chillers and cooling towers.

14. Renovate Robeson Hall

The building includes about 66,000 gross square feet and is a critical science building housing a major portion of the Physics department. Robeson Hall was constructed in 1960 and there have been no major improvements or renovations since original construction was completed. The building has become outdated and deterioration is progressing beyond the scope of normal operations and maintenance reserve repairs and replacements. This project requests authorization to renovate Robeson Hall and address the need for upgraded HVAC systems, air conditioning, upgraded electrical systems, rehabilitated and improved plumbing systems, and renovations to attain facility building and life safety code compliance. These building renovations will extend the useful life of the facility as a critical science building on the University's campus.

15. Wood Science Department Building

This is a new project on the University's capital plan and is included in the second biennium as a priority to provide new instructional space serving Wood Science and Forest Products instructional and research programs. This project requests authorization to construct a new facility of 92,300 gross square feet for science classrooms, laboratories, laboratory support services, and office space for faculty in the College of Natural Resources. There is not sufficient total space currently available within the College of Natural Resources to provide the volume and types of space needed. Based on estimates of personnel, teaching, and research needs for the Wood Science and Forest Products department, a classroom and research facility with 60,000 square feet of assignable space is needed. This estimate is based on the need for 74 offices, 12 research laboratories, 4 general purpose classrooms, 18 computational and teaching labs, 5 storage rooms, 3 conference rooms, and 1 flex space open office suite. The program estimates the need for housing 36 faculty, 80 graduate students, 30 post doctoral and research associates, and 10 support staff.

16. Replace CIMMID Laboratories

This is a new project on the University's capital plan and is included to replace antiquated life sciences research laboratories and support facilities currently located at the Center for Molecular Medicine and Infectious Disease (CMMID) complex. CMMID is engaged in a variety of research to understand the disease process and to design prevention strategies by using animal models of diseases that affect humans and domesticated animals. Research programs explore bacteriology, immunology, virology, parasitology, avian medicine, aquatic medicine and cellular biology.

17. Repair Hahn Hall Exhaust Fan

Hahn Hall was constructed in 1988 and is a 71,000 gross square foot chemistry instructional research facility. The equipment components of the high velocity exhaust system of the building are not performing as intended, and the original design is not achieving the planned results. These deficiencies are causing long-term, serious building use and maintenance problems. The exhaust fans are critical to maintaining safety in the laboratories and need to be replaced due to their poor performance and decreasing reliability.

18. Code Compliance: Fire Alarm Systems and Access

The University's health, safety, and accessibility initiative for the campus is an ongoing effort. The University has made important progress toward improving the campus in this regard with prior funding authorizations that supported critical safety and accessibility improvements. This project request is for authorization and funding to continue progress on needed campus improvements in several educational and general facilities. The focus of this request is accessibility improvements, fire alarm systems, and updating needs assessment and planning.

19. VTTI Building III – Capital Lease

This is a new project on the University's plan, and it is included in the second biennium in order to provide additional private and open office space for faculty, researchers, and support personnel for expansion of the Virginia Tech Transportation Institute (VTTI). Additional conference and meeting space of varying sizes are also required. A vehicle garage and laboratory will also be integrated into the facility, along with additional parking for approximately 200 vehicles. VTTI is engaged in applied research in exploring and solving transportation problems. This 50,000 gross square foot building will facilitate expansion of the interdisciplinary, multidisciplinary research center. The existing two buildings comprising the center have no additional space available, and an adjoining facility accommodating staff and program growth is essential.

20. Additional Lodging Rooms at the Inn (55 Rooms)

This is a new project on the University's capital plan and is included in the second biennium to provide additional visitor accommodations on campus. Lodging at the Inn at Virginia Tech has been in high demand since the opening of the Inn during July 2005. The Inn has 147 lodging rooms, primarily double rooms, and a few suites. Often the lodging rooms are fully booked, requiring patrons to go elsewhere for accommodations. This presents significant logistical challenges for larger conferences and sometimes results in loss of business. Initial design of the Inn and Conference Center planned the future expansion of a

wing of lodging rooms. This project will be the continuation of that planning. The Inn management projects an additional 55 guest rooms are needed to meet normal demand, particularly in support of the Conference Center programs and events.

21. Technology Infrastructure

This is a new project on the University's capital plan and is included to transform the University's technology environment to support current and future instruction, research, and outreach. The project will replace aging wires with updated traditional communications networks and systems, and will create a radically advanced high performance, flexible, cost effective collaboration and analysis infrastructure and tools that will be under the control of and subtly responsive to the needs of researchers, educators, students, and administrators. This comprehensive, underlying infrastructure will support this new information environment for Virginia Tech now and in the future. The project includes four key areas of improvement: access spaces, distribution, intelligent infrastructure, and pervasive access.

22. Olympic Sports Locker Rooms and Training Facility

This new project on the University's plan is included to provide Olympic sports teams with locker room, changing, and training facilities convenient to the outdoor sports facilities and venues, and Rector Field House. The proposed 15,000 gross square foot facility will comprise additions to Rector Field House, anticipated to be located along the long ends of the existing facility. On the north side, facing the intercollegiate soccer field, viewing stands will be placed above the locker room, changing, and training facilities, providing additional game seating. The program will include men's and women's locker rooms, changing and shower rooms, training rooms, a sports medicine room, and equipment/supply storage. The Olympic sports teams planning to use the facilities include baseball, softball, lacrosse, track and field, and soccer.

Cooperative Extension/Agricultural Experiment Station Division

1. Plant Growth Center Laboratory Building

This is a new project on the University's capital plan and is included in the second biennium to construct a 92,300 gross square foot plant growth center to replace the outdated and inadequate existing greenhouse complex. The instructional head-house was constructed in 1954 and the greenhouses added in 1973. The existing greenhouses and instructional head-house building lack space for growing transgenic plants and do not have functional growth chambers, severely limiting any ability to undertake plant growth research programs. A modern, technologically-advanced facility is needed to meet current and future program, research, and instructional needs. The Plant Growth Center Laboratory Building, in addition to greenhouse space, is planned to include a conservatory, greenhouse technology development laboratory, growth chamber, tissue culture laboratory, pesticide storage and mixing area, environmental control chambers, classrooms, an exhibition area, offices, and general storage. The greenhouse space will include BL1P – 4P space, incorporating state of the art temperature and environmental controls and containment for transgenic plant growth and development.

2. Renovate Kentland Facilities

This project has been on the University's plan since 1993, formerly titled Kentland Renovations/Addition. The original Kentland facility was constructed in 1818. This requested project includes a complete renovation of the existing facility to restore the building and to correct deterioration and deficiencies. The project also includes new construction of a general-purpose facility that would house classroom, conference, laboratory, and office space, along with an equipment repair facility for the repair, maintenance, and covered storage of farm equipment.

2012-2014 Biennium

University Division

1. Maintenance Reserve

Since 1982, the Commonwealth has allocated General Fund support for preserving state-owned facilities. The Executive and Legislative Branches have mandated that maintenance reserve requests be the first priority in all capital outlay requests. Individual projects to repair and maintain plant, property, or equipment are identified in the umbrella project request. These projects include roof repair or replacement, elevator repair and maintenance, repairs to air-handling systems, heating systems, storm sewers, and water and sewer systems. In 1994, the University established a parallel Maintenance Reserve program for the auxiliary enterprise facilities funded with enterprise resources.

2. Renovate Patton Hall

Patton Hall was constructed in 1926, and it has not had any major renovations or improvements since it went into service. The building totals about 53,000 gross square feet and houses the Civil Engineering program and the Science and Mechanics Engineering program. The building is outdated and does not support engineering discipline teaching and research in the 21st century. This project involves the renovation of the building envelope, interior upgrades, accessibility improvements, life safety upgrades and building systems replacement. This project is requested to renovate the building with upgrades to include mechanical systems, electrical systems, fire protection and plumbing systems, telecommunications systems, installation of air-conditioning, and refurbishment of architectural finishes. These improvements will extend the useful life of the building for continued service for academic, research, and academic support programs.

3. Renovate Norris Hall

Norris Hall was constructed in two phases: the west wing in 1960 and the east wing in 1962. There have been no major building improvements or renovations since the original construction was completed. The building is about 72,400 gross square feet and serves Engineering Science and Mechanics and a portion of Civil and Environmental Engineering. This project is requested to renovate the building with upgrades to include mechanical systems, electrical systems, fire protection and plumbing systems, telecommunication systems, accessibility, egress, installation of air-conditioning, refurbishment of architectural finishes, and building envelope repairs. These improvements will extend the useful life of the building for continued service for academic, research, and academic support programs.

4. Renovate Holden Hall

Holden Hall was constructed in 1940 and has not had any major renovations or building improvements since it went into service. The building totals about 42,100 gross square feet and houses the Mining and Minerals Engineering program and the Materials Science and Engineering program. The building is outdated and does not support engineering discipline teaching and research in the 21st century. This project involves major renovations to the building to improve classrooms, academic office space, and laboratories. The scope of the project is envisioned to include renovation of offices, laboratories, classrooms, and support spaces. This project is requested to renovate the building with upgrades to include mechanical systems, electrical systems, fire protection and plumbing systems, telecommunication systems, accessibility, egress, installation of air-conditioning, refurbishment of architectural finishes, and building envelope repairs. These improvements will extend the useful life of the building for continued service for academic, research and academic support programs.

5. Chiller Plant, Phase III

This is a new project on the University's capital plan and is included in the third biennium as a high priority in order to "piggyback" the Chiller Plant, Phase II project included in the second biennium. This Phase III project is envisioned to meet cooling capacity requirements in the future as new construction expands in the south and west portions of campus where a "central" chilled water plant will be required to avoid inefficient operations and costly stand-alone chillers and cooling towers. The University is proposing a proactive approach that will discontinue the trend of increasing O&M costs and purchase of stand-alone chillers and cooling towers within the scope of new capital project construction budgets.

6. Renovate Hutcheson/Smyth Halls

Hutcheson Hall was constructed in 1940 and Smyth Hall was constructed in 1939. These connected buildings are, in general, in structurally sound condition, and renovations are needed to continue to provide appropriate 21st century teaching and learning environments. The buildings have become outdated, and deterioration is progressing beyond the scope of normal operations and maintenance reserve repairs and replacements. The buildings are no longer able to provide a satisfactory environment for current academic instruction. This project is requested to renovate the facility with upgrades to include mechanical systems, electrical systems, fire protection and plumbing systems, telecommunications systems, accessibility, egress, installation of air-conditioning, refurbishment of architectural finishes, and building envelope repairs. These improvements will extend the useful life of the facility for continued service for academic, research, and academic support programs.

7. Renovate Thomas Hall for Academic Programs

Thomas Hall was constructed in 1949 with a renovation in 1970. The building totals about 38,000 gross square feet and currently serves as a residence hall. The building is significantly outdated and deteriorated, and since the residential system has shifted capacity to the south portion of campus, its location is no longer contiguous with the overall residential system. This project will renew a building that has exceeded its original useful

life and will provide a modern facility for departments in the College of Liberal Arts and Human Sciences. This project is requested to renovate the building with upgrades to include mechanical systems, electrical systems, fire protection and plumbing systems, telecommunications systems, accessibility, egress improvements, and improved functional layouts for offices, classrooms, and associated academic support spaces. These building renovations will extend the useful life of the facility as a critical academic building on the University's campus.

8. Replace Femoyer Hall

The building was constructed in 1949 as a dormitory, with no major building improvements or renovations since it was originally constructed. The building includes about 36,000 gross square feet that houses components of the engineering, sociology, ROTC, academic advising, and university studies programs. These programs will be moved to other projects on the capital plan to make way for this building to be razed. The building condition has exceeded the cost-benefits of renovation work and the University has determined that razing the facility and replacing it with a new 35,500 gross square foot building is the most effective use of this prime campus real estate.

9. Code Compliance: Fire Alarm Systems and Access

The University's health, safety, and accessibility initiative for the campus is an ongoing effort. The University has made important progress toward improving the campus in this regard with prior funding authorizations that supported critical safety and accessibility improvements. This project request is for authorization and funding to continue progress on needed campus improvements in several educational and general facilities. The focus of this request is accessibility improvements, fire alarm systems, and updating needs assessment and planning.

10. Architecture Research Facility

The proposed research facility is envisioned to centralize research of architectural, engineering, and environmental concerns facing K-12 educational facilities in the Commonwealth of Virginia. This research center will focus on the issues affecting design and construction of the existing aging schools in the nation, as well as future schools. It is estimated that the Commonwealth of Virginia will spend billions of dollars in the next two decades renovating and building new primary and secondary public school facilities. Many of the research operations for this facility need to be modeled in environments that closely replicate actual conditions. This facility will provide laboratory space and adjacent specialized testing and support equipment areas capable of accommodating mock-ups built to full scale. Shop areas will include metal, woodworking, and fiberglass capabilities.

11. Northwest Student Union Facility

This project has been on the University's plan since 2005 and is included in the third biennium to provide student union services to the northwest section of campus. The northwest corner of campus currently includes over 15 major academic and administrative buildings, and has been identified as a prime area for future campus development. The lone student services facility in the area is the G. Burke Johnston Student Center, which only includes one fast food franchise and one coffee bar. The proposed Northwest Student

Union Facility will provide much needed campus-wide student service support functions. The Squires Student Center houses most of the facilities supporting student organization, club, and government groups, including work spaces, meeting rooms, and support functions. Numerous student groups can not be accommodated in Squires due to a lack of space and are forced to do without accommodations. The Northwest Student Union Facility will greatly alleviate this overcrowding and will provide capacity to meet the expectations of current and prospective students.

12. Renovate Cadet Residence Halls (Brodie, Rasche, Monteith)

The Corp of Cadets reside in three residence halls; Rasche Hall and Brodie Hall house about 294 beds each and were constructed in 1894 and 1900, respectively; and Monteith Hall houses about 232 beds and was constructed in 1949. Few improvements have been undertaken since the original construction of each of these residence halls. Extensive accessibility improvements and provisions are required, including developing a means to negotiate differing floor heights between commons areas and hall wings, and upgrading bathrooms with widespread ADA deficiencies. Means of egress and fire protection systems require upgrades to meet current code requirements. Finishes are worn out and many furnishings require replacement. Social gathering, lounge, and study space is inadequate and cannot adequately serve the Cadet program and its organizational needs.

13. Oak Lane Commons Building

This commons is envisioned to create a common group facility providing shared dining, community development, and student services. The Oak Lane Community Special Purpose Housing currently includes living facilities for 18 groups with a resident capacity of 616. The individual 18 housing units have limited meeting spaces that are sized to accommodate the number of residents in each house, but there are no spaces to allow combined groups of residents to get together. This 20,000 gross square foot facility is envisioned to contain the following spaces/functions: food service, meeting/seminar, social, lounge, fitness, service and offices.

14. CNS Storage Facility

As part of the transformation of teaching and learning environments through the use of technology, a consistent, reliable, on-demand supply of communications technology infrastructure is critical to the key missions of Virginia Tech. The University currently leases storage space for communications network services materials and equipment to ensure adequate response times. This project requests authorization to construct a new warehouse facility that will replace the leased space. This space will be used to store, test, certify, and stage equipment that must be readily available for utilization on the campus. New warehouse space will continue the service readiness at an overall lower facility cost because the university will have ownership of the building.

Recommendation: That the proposed Capital Outlay Plan for 2008-2014 be ratified.