



DASNY

ANDREW M. CUOMO
Governor

ALFONSO L. CARNEY, JR.
Chair

GERRARD P. BUSHELL
President & CEO

Memorandum

TO: Jack D. Homkow, Director, Office of Environmental Affairs

FROM: Sara E. Stein, AICP, Environmental Manager 

DATE: April 9, 2018

RE: *State Environmental Quality Review (SEQRA) Determination* for the Columbia University 2018 Financing Project — Independent Colleges and Universities Program

DASNY (“Dormitory Authority State of New York”) has received a funding request from Columbia University (“Columbia” or the “University”) pursuant to DASNY’s Independent Colleges and Universities Program for its *2018 Financing Project* (the “Proposed Project”). Accordingly, the Proposed Project is subject to environmental review pursuant to the *State Environmental Quality Review Act (“SEQRA”)*. Based on a review of the attached *Single Approval Credit Summary and Staff Report* dated April 2, 2018, and supporting documentation completed by a representative of the University, it has been determined that for purposes of SEQRA, the Proposed Action would consist of DASNY’s authorization of the issuance of up to \$350,000,000 in one or more series of fixed- and/or variable-rate, tax-exempt and/or taxable Series 2018 bonds to be sold through one or more negotiated offerings and/or private placements at one or more times on behalf of the University.

The proceeds of DASNY’s bond issuance would be used to finance various University-wide construction and renovation projects located throughout the Columbia University system, including Columbia’s Manhattanville, Medical Center and Morningside campuses located in the borough of Manhattan, New York County, New York. The bond issuance would also be used to refund all or a portion of the DASNY Columbia University Insured Revenue Bonds, Series 2008A.

DASNY completed this environmental review in accordance with SEQRA, codified at Article 8 of the New York *Environmental Conservation Law (“ECL”)*, and its implementing regulations, promulgated at Part 617 of Title 6 of the *New York Codes, Rules and Regulations (“N.Y.C.R.R.”)*, which collectively contain the requirements for the *State Environmental Quality Review (“SEQR”)* process. Representatives of the University completed a series of Project Documents that detail each of the Proposed Project activities, along with a summary list of eligible projects that may be funded from DASNY Series 2018 bond proceeds (see attached).

Manhattanville Campus. The Proposed Project would include design development, construction and/or renovation of the following buildings or facilities on the Manhattanville Campus, located within

the area bounded by 125th/129th to 133rd Street from Broadway to 12th Avenue, to be used for academic and research purposes:

- Columbia Business School and Underground Foundations: Design, development and construction of all systems required to complete the approximately 492,000-gross-square-foot (“gsf”) Columbia Business School and underground foundations located between West 130th Street to West 131st Street from Broadway to 12th Avenue;
- Jerome L. Green Science Center for the Mind, Brain and Behavior: Design, development and construction all systems required to complete the approximately 445,000-gsf Jerome L. Greene Science Center building located at 3227 Broadway;
- Central Below Grade Facility: Design, development and construction of all systems required to complete a multilevel, interconnected underground Central Below Grade Facility within the area bounded by 125th/129th Street to West 131st Street from Broadway to 12th Avenue to provide additional space for academic and research support services including parking and materials distribution; and
- Studebaker Building: Renovation of approximately 35,000 gsf of space on the 600 level of the Studebaker Building located at 615 West 131st Street to complete the conversion of space formerly leased by the Alexander Doll Company into office space for University administrators.

It has been determined that these project components on the Manhattanville Campus were previously reviewed under *SEQRA* and have not changed from the previous *SEQR* process and, therefore, no further environmental review by DASNY is required.¹

The Proposed Project would also include the renovation of approximately 29,000 gsf of space on the 100 and 200 levels (approximately 17,000 gsf and 12,000 gsf, respectively) of the Studebaker Building to accommodate the relocation of the Columbia University Facilities and Operations (“CUFO”) staff and operations. The work to be funded with bond proceeds would consist of the construction of shop spaces on the 100 level that would support operations on the Manhattanville campus, and the 200 level would involve the fit out of locker and shower rooms, toilet facilities, a break room and a small training room.

The replacement, rehabilitation, or reconstruction of a structure or facility, in kind, on the same site, including upgrading buildings to meet building or fire codes is a Type II action as

¹ Certain projects included in this Columbia University 2018 Series Financing Project were previously reviewed under *SEQRA* as part of the Columbia University Series 2015 Financing Project (see DASNY’s *SEQR Determination* for the 2015 Financing Project and DASNY’s *Findings Statement* for the *Continuation of Phase I Components of the Manhattanville in West Harlem Rezoning and Academic Mixed-Use Development Project* dated March 9, 2015). These projects, as well as other project components included in this bond financing, were also reviewed as part of the *SEQR* documentation for the Columbia University 2016 and 2017 Bond Financings dated March 3, 2016, and January 10, 2017, respectively.

specifically designated by 6 *N.Y.C.R.R.* § 617.5(c)(2). Conducting concurrent environmental, engineering, economic, feasibility and other studies and preliminary planning and budgetary processes necessary to the formulation of a proposal for action is a Type II action as specifically designated by 6 *N.Y.C.R.R.* § 617.5(c)(21), and the purchase of furnishings and equipment is also a Type II action as specifically designated by 6 *N.Y.C.R.R.* § 617.5(c)(25). Type II “actions have been determined not to have significant impact on the environment or are otherwise precluded from environmental review under Environmental Conservation Law, article 8.”² Therefore, no further *SEQR* determination or procedure is required for any component of the Proposed Project identified as Type II.

Medical Center Campus. The Proposed Project would include the following renovation projects in buildings or facilities on the Medical Center Campus, located within the area bounded by 165th and 169th from Broadway to Riverside Drive and 169th and 173rd Street from Haven Avenue to Riverside Drive, to be used for academic and research purposes:

- Institute for Comparative Medicine Animal Facilities: Renovation of animal research and support spaces on the 18th and 19th floors of the William Black Medical Research and College of Physicians and Surgeons Building located at 630/650 West 168th Street;
- College of Dental Medicine, Vanderbilt Clinic: Renovation of approximately 16,000 gsf of space on the 5th floor of the Vanderbilt Clinic building located at 622 West 168th Street to develop a new state-of-the-art clinical care and simulation facility that will expand, modernize and enhance the College’s current programs; and
- College of Physicians & Surgeons, Hammer Health Sciences Building: Renovation of approximately 24,200 gsf of space on the 5th and 6th floors of the Hammer Health Sciences Building located at 701 West 168th Street to accommodate the permanent relocation of the Institute for Genomic Medicine.

It has been determined that these project components on the Medical Center Campus are Type II actions as specifically designated by 6 *N.Y.C.R.R.* § 617.5(c)(2), 6 *N.Y.C.R.R.* § 617.5(c)(21) and 6 *N.Y.C.R.R.* § 617.5(c)(25). As indicated above, no further *SEQR* determination or procedure is required for any component of the Proposed Project identified as Type II.

Morningside Heights Campus. The Proposed Project would include the following renovation projects in buildings or facilities on the Morningside Heights Campus, located within the area bounded by 114th Street and 120th Street from Morningside Drive to Riverside Drive, to be used for academic and research purposes:

- Fairchild Hall, 800 Level (1212 Amsterdam Avenue): Renovation of approximately 6,000 gsf of existing laboratory space in the Department of Biological Sciences for academic/research purposes;

² 6 *N.Y.C.R.R.* § 617.5(a).

- Northwest Corner Building, 1100 Level (550 West 120th Street): Renovation of approximately 12,000 gsf of laboratory and support space in the Physics Department for research purposes;
- Pupin Hall, Levels 800 and 900 (538 West 120th Street): Conversion of approximately 7,500 gsf of academic space in the east side of the 800 and 900 levels into a new Physics Theory Center for use by faculty, postdoctoral researchers and graduate students;
- Chandler Hall, 700 level (3010 Broadway): Conversion of approximately 1,100 gsf of space into new and additional wet laboratory space for academic/research purposes.
- Watson Hall, 600 Level (612 West 115th Street): Renovation of approximately 3,000 gsf of academic space to accommodate the expansion of the Statistics Department by providing faculty offices and student workspaces; and
- Havemeyer Hall, 400 Level (3000 Broadway): Renovation of an existing, approximately 2,300 gsf, unused laboratory space in the Chemistry Department for academic/research purposes; and
- Shapiro Center for Engineering and Physical Space Research (“CEPSR”), 1000 Level (530 West 120th Street): Renovation of approximately 4,600 gsf of Columbia Nanofabrication Facility space (“Shared Facility Clean Room”) to expand and support current and emerging efforts in nanobiology and nanomedicine in the Fu Foundation School of Engineering and Applied Science, Arts and Sciences, and the School of Physicians and Surgeons; and
- CEPSR, 900 Level (530 West 120th Street): Renovation of approximately 2,000 gsf of existing lab and corridor space on the 900 level of the Shapiro CEPSR to accommodate a new physics lab to support research in quantum optics.

It has been determined that these project components on the Morningside Heights Campus are Type II actions as specifically designated by 6 *N.Y.C.R.R.* § 617.5(c)(2), 6 *N.Y.C.R.R.* § 617.5(c)(21) and 6 *N.Y.C.R.R.* § 617.5(c)(25). As indicated previously, no further *SEQR* determination or procedure is required for any component of the Proposed Project identified as Type II.

Institutional Real Estate and Refunding of Series 2008A Bonds. Additionally, the Proposed Project would involve upgrades to various existing Institutional Real Estate (“IRE”) apartment properties for University-related housing on the Upper West Side of Manhattan and the Bronx, New York, New York, located in the areas bounded by West 107th Street to West 108th Street from Columbus Avenue to Central Park West, West 108th Street to West 110th Street from Amsterdam Avenue to Riverside Drive, West 110th Street to West 122nd Street from Morningside Drive to Riverside Drive, and West 122nd Street to West 125th Street from Amsterdam Avenue to Riverside Drive, and at the following locations

or addresses: 52 West 85th Street, 200 West End Avenue, 258 Riverside Drive, 2700 Broadway, 455 Central Park West, the Morningside Gardens Complex from 122nd to 125th from Amsterdam to Broadway, and 3260 Henry Hudson Parkway.

It has been determined that these IRE project components are Type II actions as specifically designated by 6 *N.Y.C.R.R.* § 617.5(c)(1), 6 *N.Y.C.R.R.* § 617.5(c)(2), 6 *N.Y.C.R.R.* § 617.5(c)(21) and 6 *N.Y.C.R.R.* § 617.5(c)(25). The Proposed Project would also involve the refinancing of taxable commercial paper issued by the University (Columbia University Insured Revenue Bonds, Series 2008A). Refinancing existing debt is also a Type II action as specifically designated by 6 *N.Y.C.R.R.* § 617.5(c)(23). As indicated above, Type II “actions have been determined not to have significant impact on the environment or are otherwise precluded from environmental review under Environmental Conservation Law, article 8.”³ Therefore, no further *SEQR* determination or procedure is required for any component of the Proposed Project identified as Type II.

The Proposed Project was reviewed in conformance with the *New York State Historic Preservation Act of 1980* (“*SHPA*”), especially the implementing regulations of section 14.09 of the *Parks, Recreation and Historic Preservation Law* (“*PRHPL*”), as well as with the requirements of the Memorandum of Understanding (“*MOU*”), dated March 18, 1998, between DASNY and the New York State Office of Parks, Recreation and Historic Preservation (“*OPRHP*”). In compliance with Article III, Section 3.0 of the *MOU*, *OPRHP* will be notified of the Proposed Project being funded with bond proceeds. The Studebaker Building, which is located on Columbia’s Manhattanville Campus, is eligible for listing on the State and National Registers of Historic Places. The proposed work would involve the renovation of previously modified interior space. It is the opinion of DASNY that the Proposed Project would have no impact on historical or cultural resources in or eligible for inclusion in the National and/or State Registers of Historic Places.

Attachments

cc: Donna A. Rosen, Esq.
David P. Ostrander
SEQR File
OPRHP File

³ *Ibid.*

Credit Summary Update

Columbia University
New York, New York

April 2, 2018

Program: Independent Colleges & Universities

Purpose: New Money/Refunding

New Issue Details

One or more Series of fixed and/or variable rate, tax-exempt and/or taxable Series 2018 Bonds with maturities not to exceed 35 years in an amount not to exceed \$350,000,000 are to be sold at one or more times through a negotiated offering and/or a private placement.

- Lead Manager – Goldman Sachs & Co. LLC
- Co-Bond Counsel – Nixon Peabody LLP and Drohan Lee LLP
- Underwriter's Counsel – Katten Muchin Rosenman LLP

Purpose:

- Financing of numerous construction and renovation projects located throughout the Columbia University system (\$185.5 million).
- Refunding of all or a portion of the DASNY Series 2008A Bonds (\$204.6 million).

Security:

- General obligation of the University.

Current Ratings: Moody's: Aaa (Stable)
S&P: AAA (Stable)
Fitch: NR

Overview

Columbia University is a privately endowed, nonsectarian, nonprofit institution of higher education. Known originally as King's College, the University was founded under a charter granted in 1754 by King George II. Today, the University is one of the largest private institutions of higher education in the United States, with a full-time faculty of nearly 4,000 and a student body of 9,063 undergraduate students and 23,366 graduate students. Instruction and research are carried out in 16 component schools located at two primary sites in New York City and several additional sites outside the City. The University is formally affiliated with several neighboring institutions, including Barnard College, Teachers College and Union Theological Seminary.

The University offers degree and certificate programs through 16 faculties and schools, consisting of Columbia College, its original school, the School of General Studies (a liberal arts college for non-traditional students), and the 14 professional or specialized divisions whose programs supplement the liberal arts curricula. The University offers bachelor's degrees in 93 subject areas, master's degrees in 224 subject areas, doctoral degrees in 88 academic fields, and 72 certificate programs.

The University's professional and specialized divisions include the schools of Columbia University Medical Center (CUMC), the School of Law founded in 1858, the Fu Foundation School of Engineering and Applied Science founded in 1864, the Graduate School of Arts and Sciences

founded in 1820 and the Graduate School of Business founded in 1916. CUMC comprises the University's College of Physicians and Surgeons founded in 1767 (the second oldest medical school in the country and the first to grant an M.D. degree), the School of Nursing founded in 1892, Mailman School of Public Health founded in 1922 and the College of Dental Medicine founded in 1916.

The University is a member of numerous professional associations, including the Association of American Universities, and is accredited by the Middle States Commission on Higher Education. In addition, ten of its professional schools hold separate accreditation from their respective professional associations.

Description of the Series 2018 Bonds

- The Bonds are a special obligation of DASNY.
- The Loan Agreement is a general obligation of the University.
- The Bonds are payable from payments made under the Loan Agreement and all funds and accounts established under the Resolution.

Approvals

- PACB Approval – March 16, 2018
- TEFRA Hearing – March 27, 2018
- SEQR Filing – April 9, 2018*

*Anticipated date.

Recommendation

Staff recommends that the Board adopt the necessary documents for one or more series of bonds with maturities not to exceed 35 years in an aggregate amount not to exceed \$350,000,000.

Columbia University

INSTITUTION: Columbia University is a privately endowed, nonsectarian, nonprofit institution of higher education. Known originally as King's College, the University was founded under a charter granted in 1754 by King George II. Today, the University is one of the largest private institutions of higher education in the United States, with a full-time faculty of nearly 4,000 and a student body of 9,063 undergraduate students and 23,366 graduate students. Instruction and research are carried out in 16 component schools located at two primary sites in New York City and several additional sites outside the City. The University is formally affiliated with several neighboring institutions, including Barnard College, Teachers College and Union Theological Seminary.

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The University is a member of numerous professional associations, including the Association of American Universities, and is accredited by the Middle States Commission on Higher Education. In addition, ten of its professional schools hold separate accreditation from their respective professional associations.

DASNY FINANCING HISTORY: The University has been a client of DASNY since 1963. Over the last 54 years, DASNY has issued 37 separate obligations on behalf of the University totaling over \$3.5 billion.

As of December 31, 2017, nearly \$1.5 billion in DASNY debt issued on behalf of Columbia University remained outstanding as shown in Table 1 below:

<u>Series</u>	<u>Defeasance or Maturity</u>	<u>Amount Issued (000's)</u>	<u>Amount Outstanding (000's)</u>
1963 through 1994	-	\$ 846,809	-
1997 CP	2015	55,780	-
1998	2006	79,225	-
2000A	2011	121,700	-
2002A	2012	34,245	-
2002B	2012	96,700	-
2002C	2027	23,300	23,300
2003A	2012	87,775	-
2003B	2028	30,000	30,000
2004A1	2007	22,765	-
2004A2	2014	51,935	-
2004B	2014	100,000	-
2004C	2017	50,000	-
2006A	2016	225,000	-
2006B	2016	156,890	-
2008A	2038	282,715	200,000
2009A	2039	117,000	117,000
2011A	2041	300,000	285,000
2012A	2022	137,935	137,935
2015A	2045	92,535	92,535
2015B	2024	47,780	37,930
2016A-1	2026	50,000	50,000
2016A-2	2046	130,000	130,000
2016B	2031	209,705	189,715
2017A	2047	150,000	150,000
2017B	2029	40,475	40,475
		<u>\$ 3,540,269</u>	<u>\$ 1,483,890</u>

The University has always met its obligations to DASNY on time and in full.

THE PROJECT: Proceeds from the proposed bond issue will be used to finance numerous construction and renovation projects located throughout the Columbia University system. The Project is anticipated to include the continued construction, demolitions, foundations and site preparations for the University's expansion to the Manhattanville Campus (see below). A major portion of the Project includes the work associated with the construction of Columbia's new Business School to be located on the Manhattanville Campus. The full Project List, included as Attachment I, also includes renovations at the Morningside Heights and Medical Center campuses.

Manhattanville Campus: Construction continues on the University's first expansion in over 75 years, an extensive capital project in West Harlem referred to as the "Manhattanville Campus". The Manhattanville Campus will be realized over the course of the next several decades in a former industrial area on the west side of Manhattan between 125th and 133rd Street, with 6.8 million square feet of new academic space expected to cost approximately \$6.3 billion.

Two facilities on the Manhattanville Campus have been completed; the Jerome L. Greene Science Center and the Lenfest Center for the Arts. The Jerome L. Greene Science Center, a 450,000 square foot neuroscience research facility, is the largest building ever constructed by Columbia and the biggest academic science building in New York City. In addition, a 56,000 square foot University Forum and Academic Conference Center is expected to open in 2018 and the new Columbia Business School is expected to open in 2021.

Columbia is working to develop the Manhattanville Campus in a way that is environmentally sustainable. In 2012, the U.S. Green Building Council awarded the Manhattanville Campus LEED Platinum certification under the LEED green building program rating system for Neighborhood Development. The Jerome L. Greene Science Center was partially financed with \$50 million of "green bonds" issued through DASNY, allowing bondholders to invest directly in projects that the University has identified as promoting environmental sustainability purposes.

The University has worked extensively with both New York State and local residents to incorporate the needs of the surrounding community into its expansion plans. As part of the Manhattanville campus development, Columbia reached agreements with the West Harlem Development Corporation and Empire State Development to invest more than \$150 million into the community and support an expansion of educational, cultural, healthcare and civic programs.

THE REFUNDING PLAN: Proceeds from the Series 2018 Bonds are also expected to be used to refund all or a portion of the DASNY Series 2008A Bonds. The Series 2008A Bonds have a current par amount outstanding of \$200,000,000 and reach final maturity on July 1, 2038. Principal on the 2018 refunding bonds will be paid annually on October 1st to match the new money bonds. As a result, it is anticipated that the final maturity of the refunded bonds will be extended by three months to October 1, 2038. The 2008A Bonds are callable at par on or after July 1, 2018.

Assuming current market conditions, a total net present value savings in the range of \$34.6 million, or 17.3% of the refunded bonds, is expected as shown in Attachment II.

FINANCING DETAILS: Project costs totaling approximately \$185.5 million are expected to be funded with bond proceeds. Approximately \$204.6 million in proceeds will be applied toward the refunding escrow deposits. Issuance costs are approximated in the range of \$1.6 million. Completing the plan of finance will require a bond issue of approximately \$325.8 million. To provide flexibility and to accommodate different couponing structures, staff is requesting bonding authorization in an amount not to exceed \$350.0 million to ensure sufficient proceeds to complete the financing. A table of the estimated sources and uses of funds is provided in Attachment III.

Security Provisions: Moody's Investors Service has assigned a rating of "Aaa" to all of the outstanding obligations of the University. Standard & Poor's has rated the University's obligations "AAA". Both rating agencies have assigned a Stable Outlook to the University. Accordingly, Columbia qualifies for an unsecured borrowing under DASNY's Financing Guidelines for Independent Institutions. As such, the Loan Agreement will be a general unsecured obligation of the University and no security interest in any revenues or assets of the University will be granted by the University to DASNY under the Loan Agreement.

Table 2 – Selected Enrollment Statistics

	<u>2013-14</u>	<u>2014-15</u>	<u>2015-16</u>	<u>2016-17</u>	<u>2017-18</u>
First-time Freshman Applications Received	33,531	32,967	36,250	36,292	37,389
First-time Freshman Applications Accepted	2,311	2,291	2,222	2,279	2,263
Undergraduate Acceptance Ratio	6.9%	6.9%	6.1%	6.3%	6.1%
First-time Freshman Applicants Enrolled	1,416	1,424	1,402	1,424	1,405
Undergraduate Matriculation Ratio	61.3%	62.2%	63.1%	62.5%	62.1%
Mean SAT Scores (Entering Freshmen)	1,490	1,490	1,490	1,490	1,500
Headcount Enrollment					
Full-Time	23,864	24,453	24,728	25,517	26,444
Part-Time	<u>5,386</u>	<u>5,417</u>	<u>5,576</u>	<u>5,800</u>	<u>5,985</u>
Total	29,250	29,870	30,304	31,317	32,429
Full-time Equivalent Enrollment					
Undergraduate	7,572	7,718	7,796	8,058	8,356
Graduate	<u>18,086</u>	<u>18,540</u>	<u>18,790</u>	<u>19,392</u>	<u>20,083</u>
Total	25,658	26,258	26,586	27,450	28,439

FEASIBILITY - ENROLLMENT ANALYSIS: Table 2 above presents selected enrollment statistics provided by Columbia University for the last five years. Columbia University attracts highly qualified students and is among the most selective universities in the country. Applications received have averaged 35,286 over the last five years. Of the 37,389 applicants for fall 2017, just 2,263 were accepted, indicating an acceptance rate of 6.1%. Of those applicants accepted, 1,405 chose to attend, resulting in a matriculation rate of 62.1%. Columbia has the financial resources to maintain a policy of accepting the most qualified students regardless of financial need. Institutionally funded financial aid has increased by over 25% over the last five years, from \$315.3 million in fiscal year 2013 to \$395.0 million in fiscal year 2017. Yet, the University's tuition discount rate remains manageable at just under 27%. Mean SAT scores for incoming freshman have averaged right around 1,492.

The University reported total headcount enrollment of 32,429 for fall 2017, an increase of 3,179 students from the fall of 2013. Similarly, FTE enrollment hit a five-year high of 28,439 as a result of consistent growth over the past decade. Undergraduate students currently represent approximately 29% of total FTE enrollment. Management expects to maintain the current size of the undergraduate program with future growth coming from graduate and professional students.

Market Analysis: Columbia College draws students from all 50 states of the nation and more than 75 countries. About one-third of Columbia College's students are from the tri-state region of New York, New Jersey and Connecticut. As Columbia's applicant pool has grown over the past five years, the enrolled population has become more geographically and demographically diverse.

The chart that follows illustrates the University's success in attracting and maintaining an increasing FTE enrollment for the past five years.

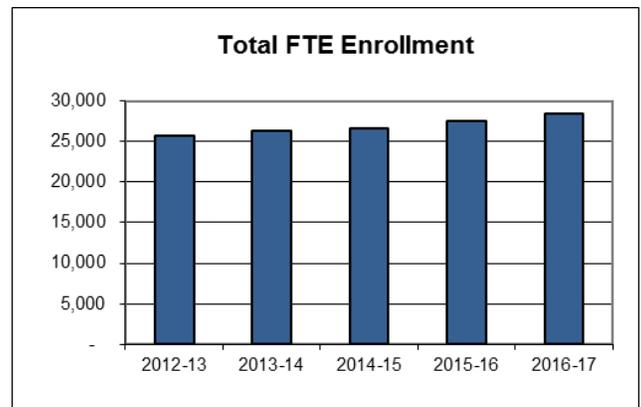


Table 3 – Selected Operating Statistics

<i>(dollars in thousands)</i>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
Total operating revenue	\$3,685,903	\$3,860,611	\$4,085,362	\$4,315,202	\$5,037,576
Total operating expense	<u>3,460,017</u>	<u>3,605,779</u>	<u>3,800,891</u>	<u>4,044,402</u>	<u>4,384,914</u>
Change in net assets from operations	225,886	254,832	284,471	270,800	652,662
Total non-operating revenue	<u>218,444</u>	<u>366,744</u>	<u>12,839</u>	<u>(331,558)</u>	<u>292,012</u>
Change in unrestricted net assets	444,330	621,576	297,310	(60,758)	944,674
Plus: Total depreciation/amortization	182,013	191,984	199,652	207,114	271,379
Plus: Total interest paid (expense)	<u>47,386</u>	<u>47,162</u>	<u>43,047</u>	<u>44,116</u>	<u>60,838</u>
Adjusted change in net assets	\$673,729	\$860,722	\$540,009	\$190,472	\$1,276,891
Cash provided by operating activities	\$433,498	\$392,714	\$692,864	\$637,231	\$717,183
Total annual debt service	\$134,084	\$140,773	\$166,492	\$154,073	\$153,706
Net Operating Ratio (DASNY 2016 Median: 1.1%)	6.1%	6.6%	7.0%	6.3%	13.0%
Net Income Ratio (DASNY 2016 Median: -4.0%)	13.2%	17.0%	8.2%	-1.1%	19.0%
Cash Income Ratio (DASNY 2016 Median: 2.8%)	11.8%	10.2%	17.0%	14.8%	14.2%
Capital Expense Ratio (DASNY 2016 Median: 4.2%)	4.0%	4.0%	4.5%	3.9%	3.7%
Debt Coverage Ratio (DASNY 2016 Median: 2.5:1)	3.3	3.4	3.1	3.4	6.1
Net Tuition Per FTE Student (DASNY 2016 Median: \$28,670)	\$32,978	\$34,584	\$35,847	\$37,749	\$39,543

FEASIBILITY - OPERATIONS ANALYSIS: Columbia has reported positive operating margins in each of the past five years, ranging from a low of \$225.9 million in fiscal year 2013 to a high of \$652.7 million in fiscal year 2017. Fiscal year 2017 operating results can be attributed to increases in investment returns utilized for operations, fundraising, and net assets released from restrictions. The University's Net Operating Margin averaged 7.8% over five years. The University has demonstrated strong growth in Net Tuition Per FTE Student, increasing from \$32,978 in fiscal year 2013 to \$39,543 in fiscal year 2017, an increase of nearly 20%.

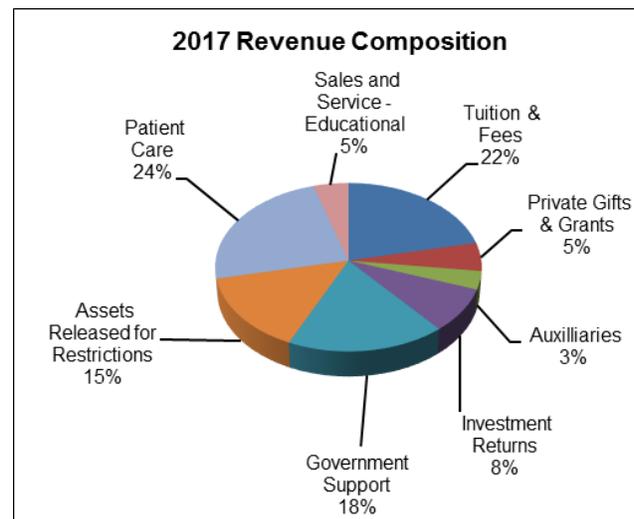
The University reported positive net income results in three of the last five years. Year-to-year fluctuations are largely due to realized and unrealized investment returns from Columbia's substantial investment portfolio. In fiscal year 2016, investment losses totaling \$280.0 million, an increase in pension obligations of \$37.5 million, and a \$14.5 million reclassification resulted in a negative change in Unrestricted Net Assets of \$60.8 million. For fiscal year 2017, investment gains of \$248.0 million contributed to a positive change in unrestricted net assets of \$944.7 million. Overall, the University's Net Income Margin averaged 11.3% annually over five years, reflecting strong investment performance adding to positive operating results. Net cash from operating activities has also been strong, averaging \$574.7 million over the last five years.

As illustrated in the chart that follows, the University's overall revenue mix is diverse, making it less vulnerable to fluctuations from a single revenue source. For fiscal year 2017, only 22% of the University's total operating revenues came from net tuition and fees compared to the 48% median in 2016 for all Research/Doctoral institutions in the DASNY portfolio.

At 24%, patient care revenue represented the largest revenue category. This level of exposure presents some risk due to susceptibility to regulatory and government

payer changes. Patient care activities relate to three distinct areas: medical faculty practice plans, affiliation agreements, and medical and professional service agreements. In fiscal year 2017, medical faculty practice revenues of \$797.4 million were the largest component of patient care revenues, followed by revenue from affiliation agreements at \$337.2 million. The University maintains several clinical and educational affiliations, the most significant of which are with New York-Presbyterian Hospital, Lawrence Hospital, and Harlem Hospital.

Government grants and contracts for research activities comprised 18%, investment returns 8%, receipts from other educational and research activities (largely royalty and license income from patents) made up 5%, and private gifts, grants, and contracts 5% of revenues.



Since 2013, the University has demonstrated an average annual debt coverage ratio of 3.2:1.

Table 4 – Selected Financial Position Statistics

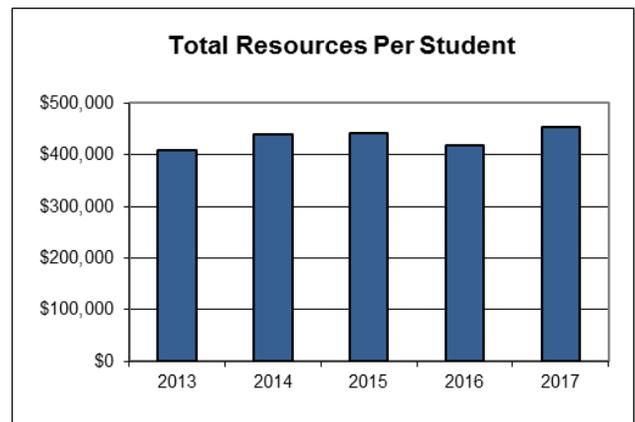
<i>(dollars in thousands)</i>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
Total Assets	\$14,728,942	\$16,046,022	\$16,871,019	\$16,737,032	\$18,565,178
Total Liabilities	3,028,245	2,941,210	3,195,910	3,456,272	3,826,636
Net Assets					
Unrestricted	5,105,563	5,727,139	6,024,449	5,963,691	6,908,365
Temporarily Restricted	4,057,273	4,654,194	4,770,391	4,304,959	4,436,575
Permanently Restricted	<u>2,537,861</u>	<u>2,723,479</u>	<u>2,880,269</u>	<u>3,012,110</u>	<u>3,393,602</u>
Total Net Assets	\$11,700,697	\$13,104,812	\$13,675,109	\$13,280,760	\$14,738,542
Long-Term Debt	\$1,599,323	\$1,546,820	\$1,664,435	\$1,919,851	\$2,078,827
Viability Ratio (DASNY 2016 Median: 1.0:1)	4.8	5.5	5.2	4.2	4.4
Primary Reserve Ratio (DASNY 2016 Median: 0.7:1)	2.2	2.4	2.3	2.0	2.1
Leverage Ratio (DASNY 2016 Median: 1.9:1)	5.7	6.7	6.5	5.3	5.5
Available Assets Ratio (DASNY 2016 Median: 2.0:1)	4.0	4.5	4.4	4.0	4.0
Total Resources Per Student (DASNY 2016 Median: \$78,918)	\$408,377	\$439,467	\$442,222	\$419,091	\$454,347

FEASIBILITY - BALANCE SHEET ANALYSIS: The University's liquidity ratios are strong and compare favorably with the 2016 DASNY medians. For fiscal year 2017, Columbia reported a Viability Ratio of 4.4 times (1.0 median) and an Unrestricted Resources to Debt Ratio of 2.2 times (0.4 median) reflecting sufficient reserves to more than cover all its outstanding indebtedness.

The University reported a Primary Reserve Ratio of 2.1 times (0.7 median) at FYE 2017, indicating an ability of the University to operate for over two years using reserve balances only.

The University had total net assets of \$14.74 billion at FYE 2017, of which \$6.91 billion were unrestricted. Total Net Assets have increased significantly since 2013, up \$3.0 billion, or over 25%. Reflecting the growth in assets, return on net assets averaged 6.9% over the five years. The College's financial resource base, as measured by expendable net assets, grew from \$7.69 billion in 2013 to \$9.08 billion in 2017. This growth has occurred even during a period of high capital spending due to strong fundraising (see below) and investment returns. Columbia achieved a capitalization ratio (net assets to total assets) of 79.4% as of FYE 2017, well above the 2016 DASNY median of 55.9%.

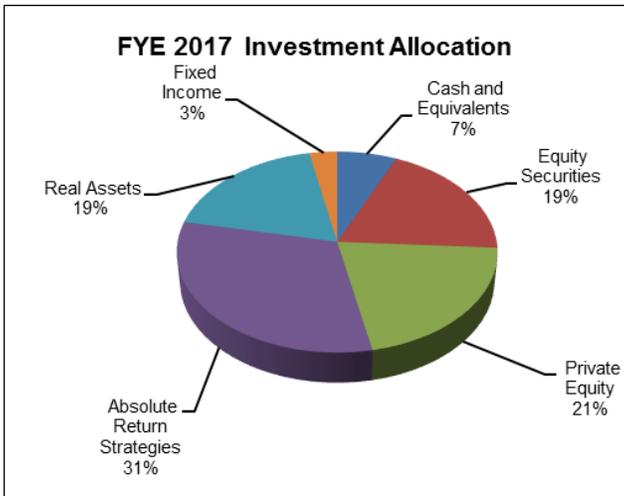
The following graph illustrates the magnitude of the University's total resources per student which has averaged over \$430,000 for the past five years.



FUNDRAISING: Fundraising continues to play an important role in the Manhattanville expansion. On December 31, 2013, Columbia set an Ivy League record by raising more than \$6.1 billion over eight years. When launched in 2006, the \$4 billion “Columbia Campaign” was the largest in the history of American higher education. The campaign was originally scheduled to conclude in December 2011, but as of September 30, 2010 the campaign had raised over \$3.7 billion. Accordingly, the campaign was expanded to a \$5 billion goal with an end date of December 31, 2013. The campaign raised: (i) \$2.1 billion for faculty and research; (ii) \$1.2 billion for students; (iii) \$1 billion for facilities; (iv) \$500M for annual giving; and (v) \$1.3 billion in “Other” giving (i.e. program support for existing curriculum; new program development, etc.). Columbia’s donor base increased by 52% during the eight year campaign. Fundraising has allowed the University to make substantial capital investment without significantly impacting leverage.

SUMMARY: Columbia University is a strong institution with a history of positive enrollment trends, solid operating performance, and significant financial resources. Staff recommends that the Board adopt a Resolution to Proceed for one or more series of bonds with terms not to exceed 35 years to be sold at one or more times in an aggregate amount not to exceed \$350,000,000 on behalf of Columbia University.

INVESTMENTS: The University’s endowment consists of nearly 5,300 separate funds established over many years for a wide variety of purposes. At FYE 2017, the University reported investments with a total market value of just under \$10.0 billion. The chart that follows presents the composition of the University’s endowment with market valuations as of June 30, 2017.



The University’s current endowment spending rule is based on two factors: (1) the market value multiplied by a 5% target spending rate, which receives a 40% weighting (providing a response to investment market conditions); and (2) the prior year’s spending with an inflation factor, which receives a 60% weighting (tying spending increases to operating needs and cushioning spending against market volatility). This allows the University to maintain the purchasing power of the endowment assets held in perpetuity or for a specified term as well as to provide additional real growth through new gifts and investment return.

The University’s endowment includes a significant residential real estate portfolio consisting of properties proximate to the Morningside Heights and Washington Heights campuses providing housing to faculty, staff, and graduate students. Income from the rental properties in the portfolio is used to support operating costs. As of FYE 2017, the book value of the real estate was \$587.1 million.

New Money Candidates

Campus	ARC Project	Location	PROJECT DESCRIPTION	Total Development Cost	Prior Bond Reimbursement	2017A Reimbursements	Remaining Trustee Authorization	Remaining 2017 TEFRA Authorization
Manhattanville	CP001533	Manhattanville	Jerome L. Greene Science Center	\$ 645,500,000	\$ 276,212,915	\$ 53,603,964.13	\$ 65,683,121.04	\$ 55,725,035.87
Medical Center	CP001658	CUMC	William Black Building	\$ 30,000,000	\$ 19,833,847	\$ 695,897.01	\$ 9,470,255.82	\$ 8,006,102.99
Morningside	CP001960	Morningside	A&S - Pupin Hall Physics Theory Center 800 & 900 levels	\$ 5,259,000	\$ 416,924	\$ 5,000.00	\$ 4,392,075.93	\$ 1,225,000.00
Morningside	CP002062	Morningside	A&S - Nanoscience Shared Facilities Clean Room Upgrade & Expansion in CEPSPR 1000 level	\$ 6,490,000	\$ 536,790	\$ 17,445.96	\$ 5,345,764.50	\$ 2,067,554.04
Manhattanville	CP002094	Manhattanville	Studebaker	\$ 12,900,000	\$ 9,613,912	\$ 246,599.45	\$ 3,039,488.38	\$ 1,320,400.55
Morningside	CP002189	Morningside	Fairchild Hall 800 level	\$ 7,850,000	\$ 4,879,362	\$ 216,345.53	\$ 2,754,292.51	\$ 2,412,654.47
Manhattanville	CP002209	Manhattanville	Columbia Business School & Foundation	\$ 959,300,000	\$ -	\$ 94,701,979.49	\$ 260,898,020.51	\$ 260,898,020.51
Morningside	CP002252	Manhattanville	A&S - Chandler Hall Chemistry Department Laboratory 700 level	\$ 1,100,000	\$ 833,894	\$ 84,654.74	\$ 181,451.26	\$ 271,345.26
Morningside	CP002253	Morningside	A&S - Watson Hall Statistics Faculty Offices 600 level	\$ 1,440,000	\$ 887,648	\$ 41,322.84	\$ 511,029.21	\$ 500,677.16
Morningside	CP002266	Morningside	Northwest Building Department of Physics Professor Basov Laboratory Renovation 1100 level	\$ 6,000,000	\$ 393,767	\$ 53,896.25	\$ 5,552,336.99	\$ 4,978,103.75
Morningside	CP002287	Morningside	A&S - Havemeyer Hall Chemistry Laboratory 400 lvl	\$ 1,750,000	\$ 150,050	\$ 45,072.61	\$ 1,554,877.07	\$ 1,414,927.39
First Time Projects								
Medical Center	CP002223	CUMC	CDM - VC 5 Clinical Care and Simulation	\$ 19,799,350	\$ -	\$ -	\$ 18,000,000.00	\$ -
Manhattanville	CP002267	Manhattanville	615 West 131st St 100 & 200 lvls CUFO Support Staff	\$ 9,800,403	\$ -	\$ -	\$ 9,800,000.00	\$ -
Medical Center	CP002434	CUMC	P&S - IGM Hammer 5th & 6th flrs (app'd portion)	\$ 5,661,000	\$ -	\$ -	\$ 5,661,000.00	\$ -
Morningside	CP002348	Morningside	A&S - Physics Lab CEPSPR 900 lvl (Will)	\$ 3,500,257	\$ -	\$ -	\$ 3,500,000.00	\$ -

Manhattanville	\$ 339,420,629.93
CUMC	\$ 33,131,255.82
Morningside	\$ 23,791,827.47
	<u>\$ 396,343,713.22</u>

Project Document

MANHATTANVILLE IN WEST HARLEM
NEW COLUMBIA BUSINESS SCHOOL
Sites 6B and 7
Construction Phase

App B/SS 11/15
Trustees 12/15
OMB #1670
CPOO 1051

Statement of Purpose and Need

The Manhattanville campus is planned to be constructed above a multilevel, interconnected underground space referred to as the Central Below Grade Facility. The construction of the Central Below Grade Facility has been established as a pre-requisite for the construction of above grade academic and research facilities for the Manhattanville campus according to the General Project Plan (GPP) and the Restrictive Declaration (RD).

The second phase (Phase II) portion of the Central Below Grade Facility will be comprised of the foundations and infrastructure required to house the central loading facility, support spaces required to service above grade construction on sites 6B, 7 and supporting program spaces for the Columbia Business School. The construction of the central loading facility during this phase will be an important step toward maintaining compliance with the approved GPP and RD providing a central location for the receipt and distribution of deliveries and services for the Manhattanville campus. The below-grade floor slabs which provide needed program support areas for the Columbia Business School will also function as structural diaphragms providing needed structural bracing for the existing slurry walls around the perimeter of sites 6B and 7 once excavation of the site begins. This second phase will also allow for the extension of the Central Energy Plant infrastructure, utilities, telecommunication equipment and additional support spaces serving above-ground facilities.

Following its completion, the new Columbia Business School will serve as an academic anchor for future University development in Manhattanville and will allow much needed space relief on the Morningside Campus. The new location for the Columbia Business School is planned for sites 6B and 7 between 130th and 131st Streets as part of the second phase of the University's proposed campus expansion in Manhattanville in West Harlem.

The Columbia Business School's strategic plan calls for targeted growth in several key areas. The School's current facilities are housed in three primary locations on the Morningside campus: Uris Hall, William and June Warren Hall, Armstrong Hall as well as a satellite location in midtown Manhattan. Opportunities to expand within the confines of the School's current facilities have been exhausted resulting in the need to provide a new location consistent with the School's growth projections.

A functional and space requirements program for the school has been completed. The new Columbia Business School will span two buildings for a total of approximately 492,000 square feet. The program sets the stage for the creation of a place for business education providing a

productive, vibrant, "global" society and "global" business network, with seamless communication and cross-cultural awareness, understanding and tolerance. A fundamental premise of the program for the new building is that the best education is best delivered in places that foster community – where small communities of common interests are supported, sustained and embraced, and where broader relationships are nurtured within the school so that the larger community of the Business School, nourished intellectually, socially and collegially, can flourish as a community of the whole.

Project Scope

Previous requests have provided for the selection of architects, engineers and a construction management team to complete the design and construction documentation phases of the new Business School and to coordinate with the project team working on Phase II Foundations and Central Below Grade Facility.

The work that will be undertaken in this phase of the project will include the procurement and construction of elements required to complete the construction of the new Columbia Business School in Manhattanville.

Project Budget

	Previous Request	Current Request	Total Request
Construction	\$1,000,000	\$393,086,450	\$394,086,450
A/E Fees and Expenses	35,000,000	10,993,380	45,993,380
Furniture, Fixtures and Equipment	0	35,822,360	35,822,360
Commissioning	0	2,011,080	2,011,080
Contingency	3,510,000	80,587,190	84,097,190
Project Management	2,508,600	27,380,940	29,889,540
Shared Infrastructure*	0	11,800,000	11,800,000
Total	\$42,018,600	\$561,681,400	\$603,700,000

*Shared Infrastructure costs represent an allowance for connections and infrastructure from the Central Below Grade Facility, Central Plant Equipment, and other site utility costs.

Project Financing

The total request of \$603,700,000, which is based upon estimates for construction trade costs provided by Turner Construction as well as pending contract awards, will be funded with \$100,000,000 in Central University reserves, then, to the extent possible, gifts in-hand or pledged, with the remainder to be funded with Columbia Business School operating reserves. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based upon current cost estimates is \$603,700,000 plus costs of issuance and any reserves

established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Operations and Maintenance

The Columbia Business School will be responsible for the direct operations and maintenance costs of the new buildings such as custodial, maintenance, and fire safety officers. These costs are estimated to be approximately \$6,553,000 (in fiscal year 2016 dollars) per year, to commence once the buildings have been placed in service. The Central University will be responsible for the operations and maintenance costs of the overall campus, such as supervision/management, overhead, grounds, and waste management. These costs are estimated to be approximately \$2,204,000 (in fiscal year 2016 dollars) per year, to commence once the buildings have been placed in service.

Energy Considerations

The Columbia Business School will be responsible for the direct energy costs for the new buildings. These costs are estimated to be approximately \$2,652,000 (in fiscal year 2016 dollars) per year, to commence once the buildings have been placed in service.

Sustainable Design

This project will conform to the U.S. Green Building Council's Leadership in Energy and Environmental Design rating system at a silver level.

Safety and Security

This project will be designed in accordance with all University and New York City safety and security regulations. The Columbia Business School will be responsible for safety and security costs for weekends and weekdays beyond the standard 8AM-4PM shift. These costs are estimated to be approximately \$1,083,000 (in fiscal year 2016 dollars) per year, to commence once the buildings have been placed in service. The Central University will be responsible for safety and security costs during the standard 8AM-8PM shift during weekdays. These costs are estimated to be approximately \$1,920,000 (in fiscal year 2016 dollars) per year, to commence once the buildings have been placed in service.

Consideration for the Disabled

This project will be designed to comply with the 2010 Americans with Disabilities Act (ADA) requirements and Columbia University's commitment to accessibility. This project will include

the appropriate building accessibility upgrades to further the goal of fully accessible buildings throughout the campus.

Mode of Accomplishment

The firms of Scofidio + Renfro, the design architect, and FXFOWLE LLP, the architect of record, will provide design services. Turner Construction, a construction management firm will provide construction services through this phase of the project. The Manhattanville Development Group will provide project management services. All vendors will be selected in accordance with University procurement procedures.

Certificate of Occupancy

This new facility will require a Certificate of Occupancy at project completion.

Project Schedule

This phase of the project is anticipated to be completed in 2021.

Approved by:

DocuSigned by:

David M Greenberg

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2/15/2016

David M. Greenberg, Executive Vice President, Columbia University Facilities and Operations

Date

DocuSigned by:

Glenn Hubbard

72B86E975CA74BC

3/30/2016

Glenn R. Hubbard, Dean, Columbia Business School

Date

DocuSigned by:

Nancy K. Johnson

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2/23/2016

Nancy K. Johnson, Vice President, Budget and Financial Planning

Date

Project Document

JEROME L. GREENE
SCIENCE CENTER FOR THE MIND, BRAIN AND BEHAVIOR INITIATIVE
MANHATTANVILLE IN WEST HARLEM
Construction Phase

Statement of Purpose and Need

The Jerome L. Greene Science Center for the Mind, Brain, Behavior Initiative, will be built as part of the initial phase of development of the University's campus expansion plans into Manhattanville in West Harlem. The new research building will bring together significant research activities from the Medical School and the Morningside Heights campus to expand upon the University's pre-eminence in this area of study. This building will allow the University to provide additional capacity to develop new related interdisciplinary thematic programs to foster scientific discoveries.

Project Scope

Previous approvals have provided for the programming, schematic design and design development phases associated with the Jerome L. Greene Science Center as well as the procurement of major trades for curtainwall systems and structural steel. The work that will be undertaken in this phase of the project will include the remaining procurement and construction of all systems required to complete the Jerome L. Greene Science Center.

It is anticipated that the majority of HVAC and electrical systems to be included in the Jerome L. Greene Science Center will be purchased during the Fall of 2011 and remaining equipment, systems and supporting construction will be procured during the Spring and Summer of 2012.

Project Budget

	<u>Previous Request</u>	<u>Current Request</u>	<u>Total Request</u>
Construction	\$73,000,000	\$362,191,842	\$435,191,842
A/E Fees and Expenses	45,000,000	17,565,218	62,565,218
Furniture, Fixtures and Equipment	0	51,126,441	51,126,441
Contingency	11,600,000	53,200,000	64,800,000
Commissioning	950,000	700,045	1,650,045
Project Management	3,930,000	26,236,454	30,166,454
Infrastructure*	<u>0</u>	<u>0</u>	<u>0</u>
Total	\$134,480,000	\$511,020,000	\$645,500,000

*Infrastructure costs include the Below Grade, the central energy plant, and other site utility costs. A portion of these costs will be allocated to this project in the future.

Project Financing

The overall project budget of \$645,500,000 is based upon detailed cost estimates for construction trade costs prepared by Lend Lease (US) Construction LMB Inc. at 50% completion of the design development phase. This estimate is based upon design development documents prepared by Renzo Piano Building Workshop and Davis Brody Bond Architects and on an estimated building area of 445,000 gross square feet.

The total project cost of \$645,500,000 will be funded as follows: \$250,000,000 with gifts in-hand or pledged and central reserves to the extent possible with the remainder to be funded by University debt to be serviced by the schools that will ultimately draw benefit from the work and by the Central University budget. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based upon current cost estimates is \$395,500,000 plus costs of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Maintenance and Operations

Maintenance and Operations costs that will be incurred by the construction of this facility will be determined at the end of the design phase. These costs will be the responsibility of the end-users that will ultimately occupy the building and by the Central University.

Energy Considerations

Energy costs that will be incurred by the construction of this facility will be determined at the end of the design phase. These costs will be the responsibility of the end-users that will ultimately occupy the building and by the Central University.

Sustainable Design

Sustainable elements of the project include conformance with Laboratories for the 21st Century (Labs21). The project has also been registered with the U.S. Green Building Council LEED v2.2.

Safety and Security

This project will be designed in accordance with all University and New York City safety and security regulations.

Yearly safety and security costs associated with this facility will be determined at a subsequent date. These costs, once identified, will be the responsibility of the Central University.

Consideration for the Disabled

This project will be designed to be in compliance with the Americans with Disabilities Act requirements.

Mode of Accomplishment

The firms of Renzo Piano Building Workshop, the design architect, and Davis Brody Bond LLP, the architect of record, will provide construction documentation services. Lend Lease (US) Construction LMB Inc. has provided pre-construction services to date and they will provide construction management services through the completion of construction. All vendors are selected in accordance with University procurement procedures. The Columbia University Facilities Manhattanville Development Group will provide project management.

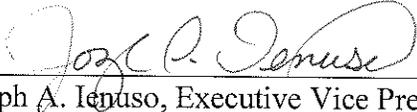
Certificate of Occupancy

This new facility will require a Certificate of Occupancy at project completion.

Project Schedule

The anticipated start of construction of the building is scheduled to be the Fall of 2012 and the project is estimated to be completed in 2016.

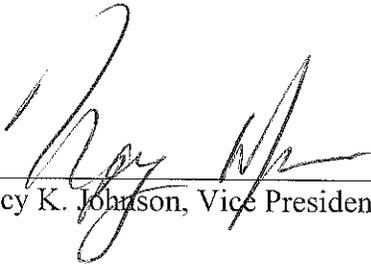
Approved by:



Joseph A. Ienuso, Executive Vice President, Columbia University Facilities

2/17/12

Date



Nancy K. Johnson, Vice President, Budget and Financial Planning

4/3/12

Date

Project Document

MANHATTANVILLE IN WEST HARLEM
PHASE II FOUNDATION &
CENTRAL BELOW GRADE SERVICE FACILITY
Sites 6B and 7
Construction Phase – Core and Shell

OMB # 2205
CP 00 2209
APP 13155
11/15

Statement of Purpose and Need

The Manhattanville campus is planned to be constructed above a multilevel, interconnected underground space referred to as the Central Below Grade Facility. The construction of the Central Below Grade Facility has been established as a pre-requisite for the construction of above grade academic and research facilities for the Manhattanville campus according to the General Project Plan (GPP) and the Restrictive Declaration (RD).

The GPP and the RD identified the reduction of street-level traffic congestion resulting from the below grade receipt and distribution of deliveries made possible by the loading facility within the below grade facility as a key element in the approval of the overall Manhattanville development plan. To facilitate this, the Central Below Grade Facility has been planned to interconnect 125th/129th to the south, 133rd Street to the north, Broadway to the east and 12th Avenue to the west. For Columbia University, this provides a more secure and effective distribution network for campus wide distribution of materials and services.

The construction of the first phase (Phase I) portion of the Central Below Grade Facility was comprised of the slurry walls surrounding development sites 2, 3, 4, 6, 6b, 7 and the open space adjacent to these sites. This first phase also provided for the construction of foundation slabs and below grade infrastructure required to support the Jerome L. Greene Science Center, Central Energy Plant and the Lenfest Center for the Arts.

The second phase (Phase II) portion of the Central Below Grade Facility will be comprised of the foundations and infrastructure required to house the central loading facility, support spaces required to service above grade construction on sites 6B, 7 and supporting program spaces for the Columbia Business School. The construction of the central loading facility during this phase will be an important step toward maintaining compliance with the approved GPP and RD providing a central location for the receipt and distribution of deliveries and services for the Manhattanville campus. The below-grade floor slabs which provide needed program support areas for the Columbia Business School will also function as structural diaphragms providing needed structural bracing for the existing slurry walls around the perimeter of sites 6B and 7 once excavation of the site begins. This second phase will also allow for the extension of the Central Energy Plant infrastructure, utilities, telecommunication equipment and additional support spaces serving above-ground facilities.

Following its completion, the new Columbia Business School will serve as an academic anchor for future University development in Manhattanville and will allow much needed space relief on the Morningside Campus. The new location for the Columbia Business School is planned for sites 6B and 7 between 130th and 131st Streets as part of the second phase of the University's proposed campus expansion in Manhattanville in West Harlem.

Project Scope

Previous requests associated with the Phase I Foundation project included design development documentation work for the Phase II Central Below Grade Facility as outlined below:

- Pressure slabs and pilings below sites 6, 6B and 7
- Bridge structures to support a portion of 130th and 131st Streets
- Central Energy Plant infrastructure including utility and telecommunications pathways to support future Phase II above grade construction
- Fit-out of support areas
- Parking facility
- Central loading facility

The previous request for Phase II included the construction documentation of critical core and shell elements (foundations, structural systems and mechanical, electrical and plumbing infrastructure only) of the areas below sites 6B, 7 and the Large Square in preparation for a construction award. This included:

- Pressure slabs, foundation pilings and structural systems below sites 6B, 7 and the Large Square
- A temporary foundation wall between sites 6 and 6B
- Bridge structures to support the eastern portion of 131st Street
- Utility and telecommunication pathways to support future Phase II above grade construction
- Central loading facility and truck ramp
- Coordination with the project teams working to develop the design of the new Columbia Business School on sites 6B and 7

The work that will be undertaken in this phase of the project will include the procurement and construction of core and shell elements (foundations, structural systems and mechanical, electrical and plumbing infrastructure only) of the areas below sites 6B, 7 and the Large Square in Manhattanville.

This funding request does not include further construction associated with the fit-out of future below-grade program areas, components of the Phase II Central Energy Plant or the Phase II Siteworks including the Large Square.

Project Budget

	Previous Request	Current Request	Total Request
Construction	\$500,000	\$276,705,000	\$277,205,000
Furniture, Fixtures & Equipment	0	5,425,000	5,425,000
A/E Fees and Expenses	5,850,000	10,280,000	16,130,000
Contingency	400,000	37,918,000	38,318,000
Project Management	450,000	18,072,000	18,522,000
Total	\$7,200,000	\$348,400,000	\$355,600,000

Project Financing

The total request of \$355,600,000 is based on estimates for construction trade costs provided by Lend Lease as well as pending contract awards and will be funded to the extent possible with Central University reserves with the remainder to be funded by University debt to be serviced by the Central University. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based upon current cost estimates is \$355,600,000 plus costs of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Operations and Maintenance

Operations and maintenance costs are anticipated to increase by approximately \$1,866,000 per year (in fiscal year 2016 dollars) and will be the responsibility of the Central University. These costs will commence when the below grade facility is placed into service.

Energy Considerations

Any increase in energy consumption costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of the Central University.

Sustainable Design

Sustainable elements of the project will include the recycling of construction materials and debris, the use of recycled content in concrete and steel where appropriate and available. Costs associated with these sustainable components will be negligible.

Safety and Security

This project will be designed and constructed to be in accordance with all University and New York City safety and security regulations. Safety and security costs are estimated to be \$565,000 per year (in fiscal year 2016 dollars) and will commence when the below grade facility is placed into service.

Consideration for the Disabled

This project will be designed to be in compliance with all Americans with Disabilities Act requirements.

Mode of Accomplishment

The firm of Davis Brody Bond, the architect of record, will continue to provide design services. Construction management will be provided by Lend Lease, a construction firm. D&B Environmental Services, Inc., an environmental engineering firm, has been selected to provide environmental borings and testing services to assess future requirements for remediation and abatement of hazardous materials. The Manhattanville Development Group will provide project management services. All vendors are selected in accordance with University procurement procedures.

Certificate of Occupancy

This project will require a Certificate of Occupancy which will be obtained in concert with the Certificate of Occupancy for the Columbia Business School on sites 6B and 7.

Project Schedule

This phase of this project is anticipated to be completed in 2018.

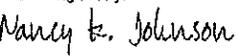
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1/29/2016

David M. Greenberg, Executive Vice President, Columbia University Facilities and Operations Date

DocuSigned by:

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2/4/2016

Nancy K. Johnson, Vice President, Budget and Financial Planning Date

Project Document

STUDEBAKER BUILDING **FULL FLOOR RENOVATION** **600 Level** **Design and Construction Phase**

Statement of Purpose and Need

The Studebaker building, located at 615 West 131st Street, is a six-story building of approximately 210,000 square feet that houses a significant portion of the University's central administration office space.

The 300, 400 and 500 levels house University administrators from the Departments of Finance, Human Resources and Columbia University Information Technology (CUIT). The 200 level houses the offices of the University Facilities Manhattanville Development Group, Sponsored Projects Administration and Internal Audit. Most of the 100 level houses file storage for various Finance and Human Resources departments and support spaces for the operation and maintenance of the building.

The 600 level measures approximately 35,000 square feet and was previously occupied by a non-University tenant, the Alexander Doll Company, Inc., who has since vacated the floor as of December 2012. The space has been reprogrammed for University use.

Project Scope

The previous request funded pre-design services and site preparation work for the 600 level. The scope of work for that request included abatement, demolition and the installation of new windows. In addition, minor design and construction was completed to provide a base level of heating and fire protection to the shelled space at the completion of abatement and demolition.

The current request seeks funding for design and construction work for the build-out of the 600 level to house four to five administrative groups. The scope of work will include the build-out of new offices and workstations as well as shared facilities including conference rooms, bathrooms and an entry area. A new mechanical and electrical room will be built, leveraging the existing building infrastructure.

Project Budget

	Previous Request	Current Request	Total Request
Construction	\$1,820,000	\$5,437,000	\$7,257,000
A/E Fees and Expenses	100,000	683,000	783,000
Hazardous Materials	0	450,000	450,000
Furniture, Fixtures & Equipment	60,000	1,798,000	1,858,000
Commissioning	60,000	250,000	310,000
Legal Fees	25,000	0	25,000
Contingency	294,000	1,136,000	1,430,000
Project Management	153,000	634,000	787,000
Total	\$2,512,000	\$10,388,000	\$12,900,000

Project Financing

The current request of \$10,388,000 is based on the cost per square foot of recent projects completed in the building. The total request of \$12,900,000 will be funded with debt to be serviced by the Central University. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund this phase of the project, based upon current cost estimates is \$12,900,000 plus costs of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Maintenance and Operations

Any increase in maintenance and operations costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of the Central University.

Energy Considerations

Any increase in energy consumption costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of the Central University.

Sustainable Design

Sustainable elements of the project may include the recycling of construction materials and debris, the use of recycled carpet, energy efficient lighting and low volatile organic compound (VOC) paint. Costs associated with these sustainable components will be negligible.

Safety and Security

This project will be designed and constructed in accordance with all University and New York City safety and security regulations.

Consideration for the Disabled

This project will be designed to comply with the 2010 Americans with Disabilities Act (ADA) requirements and Columbia University's commitment to accessibility. This project will include the appropriate building accessibility upgrades to further the goal of fully accessible buildings throughout the campus.

Mode of Accomplishment

An architectural firm to be chosen during this phase of the project will provide design services. Construction services will be provided by a general contractor to be selected during this phase of the project. Columbia University Facilities Department of Capital Project Management will provide project management services for the project. All vendors will be selected in accordance with University procurement procedures.

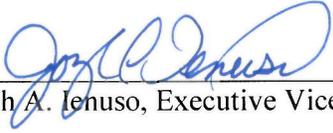
Certificate of Occupancy

The Certificate of Occupancy for the Studebaker building will be amended to reflect the change in occupancy for the 6th floor.

Project Schedule

This phase of the project is scheduled to be completed in the fall of 2015.

Approved by:



Joseph A. Ienuso, Executive Vice President, Columbia University Facilities and Operations

2/11/14
Date



Nancy K. Johnson, Vice President, Budget and Financial Planning

3-19-14
Date



Project Document
STUDEBAKER BUILDING
FACILITIES AND OPERATIONS
MANHATTANVILLE SUPPORT SPACE FIT-OUT
Levels 100 and 200
Construction Phase

OMB 02247

CP00 2267

App B/SS 05/21/16

Trustee 06/10/16

Statement of Purpose and Need

As part of the initial phase of the University's campus expansion in Manhattanville in West Harlem, the Jerome L. Greene Science Center, the Central Energy Plant and the Lenfest Center for the Arts will be placed into service in 2016. Additionally, the University Forum will be placed into service in 2018. Columbia University Facilities and Operations (CUFO) will require space to house staff and equipment that will support their efforts to secure, operate and maintain these new facilities as they are brought online.

The space requirements include office space for facilities managers, shops for mechanics and custodial staff, locker rooms with showers, toilet facilities and a break room. Approximately 17,000 square feet of space in the Studebaker Building on the 100 level and 12,000 square feet of space on the 200 level have been identified as appropriate spaces to accommodate these functions.

Project Scope

The previous phase of the project included a feasibility study and design. As a result of the previous study, the locker and shower rooms with their related functions have been found to be best suited for the 200 level and the shops are best suited for the 100 level which will include direct street access to the new buildings to the south.

This request is to fund the construction of these programs for both levels. The scope on the 200 level includes the fit-out of locker rooms, showers, toilet facilities, a break room and a small training room. Additionally, the scope includes the relocation of current CUFO occupants within the 200 level.

The scope of work for the 100 level includes the construction of shops that will support the operations of the Manhattanville campus. These include plumbing, carpentry, service mechanics, refrigeration, controls, apprentice space, maintenance worker space, and storage spaces. Fixed furnishings and equipment for these shops are included in this request as well as new infrastructure to support the newly occupied program spaces. The current request does not provide for a paint booth or the fit-out of periphery space on the 100 level.

Project Budget

	Prior Request	Current Request	Total Request
Construction	\$65,000	\$6,261,000	\$6,326,000
A/E Fees and Expenses	449,000	79,400	528,400
Furniture, Fixtures and Equipment	45,000	837,100	882,100
Legal Fees	35,000	0	35,000
Contingency	73,000	1,089,000	1,162,000
Commissioning	14,000	254,000	268,000
Project Management	44,000	554,500	598,500
Total	<u>\$725,000</u>	<u>\$9,075,000</u>	<u>\$9,800,000</u>

Project Financing

The current request of \$9,075,000 is based on schematic estimates and an initial bid for the 200 level. The total request of \$9,800,000 will be funded with \$2,000,000 in Manhattanville property net income and \$7,800,000 in University debt to be serviced by the Central University. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based upon current cost estimates is \$9,800,000 plus costs of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Operations and Maintenance

This project will increase operations and maintenance costs by approximately \$318,000 per year due to new programming and more intensive occupancy. These additional costs will be the responsibility of the Central University.

Energy Considerations

This project will increase energy consumption costs by approximately \$124,300 per year due to new programming and more intensive occupancy. These additional costs will be the responsibility of the Central University.

Sustainable Design

Sustainable design components include the reuse of some existing furnishings. Costs associated with these sustainable components will be negligible.

Safety and Security

This project will be designed and constructed in accordance with all University and New York City safety and security regulations. Yearly safety and security costs associated with this project will be determined during this phase of the project. These costs will be the responsibility of the Central University.

Consideration for the Disabled

This project will be designed to comply with the 2010 Americans with Disabilities Act (ADA) requirements and Columbia University's commitment to accessibility. This project will include the appropriate building accessibility upgrades to further the goal of fully accessible buildings throughout campus.

Mode of Accomplishment

The firm of Integrated Design Group has been selected to provide design services. General contractors will be selected during this phase of the project. The Columbia University Facilities and Operations Department of Capital Project Management will provide project management services for the project. All vendors are selected in accordance with University procurement procedures.

Certificate of Occupancy

This project will require modifications to the certificate of occupancy of the Studebaker Building at project completion.

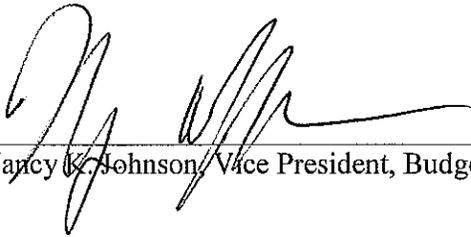
Project Schedule

This project is scheduled to be completed in May of 2017.

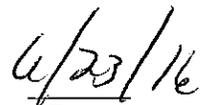
Approved by:

David M. Greenberg, Executive Vice President, Columbia University Facilities and Operations

Date



Nancy K. Johnson, Vice President, Budget and Financial Planning



Date

Project Document

COLUMBIA UNIVERSITY MEDICAL CENTER
WILLIAM BLACK AND PHYSICIANS AND SURGEONS
18TH AND 19TH FLOORS AND
HAMMER HEALTH SCIENCES 17TH FLOOR RENOVATIONS
INSTITUTE FOR COMPARATIVE MEDICINE
Design and Construction

Statement of Purpose and Need

The existing Institute for Comparative Medicine Animal Facilities in the William Black, Physicians and Surgeons and Hammer Health Sciences buildings are in need of repair and modernization to be in compliance with regulatory agencies as well as to address antiquated and deteriorating infrastructure. The forty year old infrastructure, vivarium systems, animal caging and security systems are at the end of their life cycle and in severe need of replacement. The layout and functionality is in need of improvement to accommodate more efficiency in managing animal populations, enhancing procedural activities and research functions. There is a lack of current/integrated vivarium systems, including animal watering, security, variable air volume (VAV), animal lighting control and optimization systems, which have resulted in a poor and underperforming facility that risks major failure.

Project Scope

A previous project document requested funds for an evaluation and feasibility study to identify various deficiencies and prioritize proposed improvements for the animal care facility. This request is for the design and construction of the project. The scope of work will include updating and replacing the aged infrastructure, developing flexible planning efficiencies, remodeling the cage wash areas at each location, and conducting phased renovations of animal research and support spaces in the Black and Physicians and Surgeons buildings 18th and 19th floor project as well as in the Hammer Health Sciences building 17th floor project.

Project Budget

	<u>Previous Request</u>	<u>Current Request</u>	<u>Total Request</u>
Construction	\$0	\$22,254,398	\$22,254,398
Asbestos Abatement	0	106,250	106,250
Furniture, Fixtures and Equipment	0	40,000	40,000
A/E Fees and Expenses	\$300,000	\$2,305,329	\$2,605,329
Tel/Data	0	265,000	265,000
Other Project Costs	0	328,500	328,500
Commissioning	0	129,511	129,511
Contingency	30,000	2,542,899	2,572,899
Project Management	19,800	1,678,313	1,698,113
Total	<u>\$349,800</u>	<u>\$29,650,200</u>	<u>\$30,000,000</u>

Project Financing

The previously approved project document 2011.112 for \$349,800 was funded with reserves residing in account #0-13772 and was approved in September 2010. The current request of \$29,650,200 is for the design and construction of the project and will be funded with University debt to be serviced by the College of Physicians and Surgeons. Columbia University Medical Center has set a maximum target budget of \$30,000,000. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based on current cost estimates is \$30,000,000 plus costs of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Maintenance and Operations

Any impact on maintenance and operations costs that will result from this project will be assessed upon the completion of the construction documents. These costs, once identified, will be the responsibility of the Columbia University Medical Center.

Energy Considerations

Any impact on energy consumption costs that will result from this project will be assessed upon the completion of the construction documents. These costs, once identified, will be the responsibility of the Columbia University Medical Center.

Sustainable Design

Sustainable design components will be developed during this phase of the project.

Consideration for the Disabled

This project will conform to all applicable regulations that govern handicapped access. Specifically, this project will conform to recent Americans with Disabilities Act requirements and New York City Local Law #58.

Safety and Security

This project will be designed to be in accordance with all University and New York City safety and security regulations.

Mode of Accomplishment

A request for proposal for architectural services has been issued and the selection process for architectural and engineering firms is underway. Construction management will be provided by a construction firm. All vendors are selected in accordance with University procurement procedures. Project management will be provided by the Columbia University Medical Center's Facilities Project Management Department.

Certificate of Occupancy

This phase of the project will not affect the Certificate of Occupancy of the William Black, Physicians and Surgeons or the Hammer Health Sciences buildings.

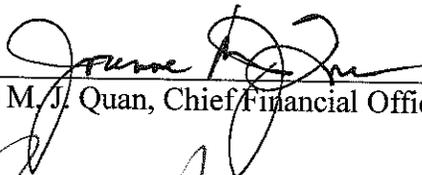
Project Schedule

This project is scheduled to be completed in the spring of 2016.

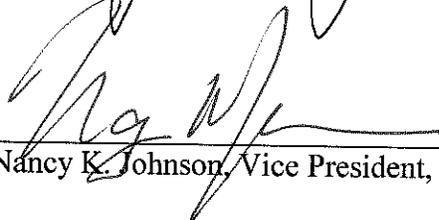
Approved by:



Amador Centeno, Vice President, Columbia Medical Center Facilities
2/6/12
Date



Joanne M. J. Quan, Chief Financial Officer, Columbia Medical Center
2/10/12
Date



Nancy K. Johnson, Vice President, Budget and Financial Planning
3/5/12
Date

Project Document

COLUMBIA UNIVERSITY MEDICAL CENTER
VANDERBILT CLINIC
COLLEGE OF DENTAL MEDICINE
RENOVATION AND EXPANSION
5th Floor
Construction Phase

Statement of Purpose and Need

The College of Dental Medicine seeks to develop a new state-of-the-art facility that will incorporate the College's expansion, modernization and enhancement of its programs including simulation and clinical care expansion. The 5th floor of the Vanderbilt Clinic building has been identified as a suitable space for the College, with 16,000 square feet of space available for renovation. The space is currently occupied by temporary occupants that will vacate prior to commencement of the renovation. The 5th floor renovation will enhance the programs offered by the College as well as offer optimal space programming and utilization, as the College already occupies the 7th, 8th and 9th floors of the Vanderbilt Clinic building. This project will renovate the existing office space into a new facility to meet the modern teaching and clinical care needs of the College. The College seeks to develop an entirely new dental operator that will accommodate the foreseeable new paradigm of dental education and practice that is the underlying objective of the entire practice.

Project Scope

Previous requests were for the design phase through construction documents and bidding, and the design and construction of infrastructure improvements to the compressed air system.

The current request is for the construction phase of the project. The scope of work will include asbestos abatement, demolition of the existing spaces, installation of new partitions, floor coverings, ceilings, office furniture, and the construction of 48 new dental operatories and two new Americans with Disability Act compliant restrooms. New data and telephone infrastructure will be installed as well as integrated audiovisual equipment to support digital dentistry. New electrical, plumbing and fire protection systems will be installed and tied into the base building infrastructure. Additionally, mechanical system upgrades including the replacement of all horizontal distribution ductwork and the replacement of the existing air handling unit will be included.

Project Budget

	Previous Request	Current Request	Total Request
Construction	\$733,400	\$9,750,000	\$10,483,400
A/E Fees and Expenses	1,982,000	250,000	2,232,000
Hazardous Materials	0	500,000	500,000
Furniture, Fixtures and Equipment	0	2,081,475	2,081,475
Commissioning	140,000	0	140,000
Contingency	286,100	1,258,525	1,544,625
Project Management	188,500	830,000	1,018,500
Total	\$3,330,000	\$14,670,000	\$18,000,000

Project Financing

The current request of \$14,670,000 is for the construction phase and is based on bids received. The total request of \$18,000,000 will be funded with \$10,000,000 in debt to be serviced by the College of Dental Medicine and operating reserves of \$6,800,000 residing in UR001440 and \$1,200,000 from the Physicians and Surgeons 2020 Vision Fund residing in UR006887. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of the United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based on current cost estimates is \$18,000,000 plus cost of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Operations and Maintenance

Any increase in maintenance and operations costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of the College of Dental Medicine.

Energy Considerations

Any increase in energy consumption costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of the College of Dental Medicine.

Sustainable Design

Sustainability considerations will be incorporated into the project including LED lighting, lighting sensors and timers, the use of low volatile organic compound finishes, furniture and finishes made with recycled material content, and recycling programs for staff waste.

Safety and Security

This project will be designed and constructed in accordance with all University and New York City safety and security regulations.

Consideration for the Disabled

This project will be designed to comply with the 2010 Americans with Disability Act requirements and Columbia University's commitment to accessibility. This project will include the appropriate accessibility upgrades to further the goal of a fully accessible campus. Specifically, two Americans with Disability Act compliant bathrooms will be constructed.

Mode of Accomplishment

Architectural services will be provided by Jeffrey Berman Architects and engineering services will be provided by Cosentini Associates. A general contractor will be selected during this phase of the project. The Columbia University Medical Center's Facilities Capital Project Management Department will provide project management services for the project. All vendors are selected in accordance with University procurement procedures.

Certificate of Occupancy

This project will not affect the certificate of occupancy for the Vanderbilt Clinic.

Project Schedule

This phase of the project is anticipated to be completed in June of 2017.

Approved by:

Amador Centeno, Vice President of Facilities Management and Campus Services

Date

Christian Stohler, Dean, College of Dental Medicine

Date

Joanne M. J. Quan, Chief Financial Officer, Columbia Medical Center

Date

Nancy K. Johnson, Vice President, Budget and Financial Planning

Date

Project Document

COLUMBIA UNIVERSITY MEDICAL CENTER
HAMMER HEALTH SCIENCES BUILDING
INSTITUTE OF GENOMIC MEDICINE RENOVATION
5th and 6th Floors
Construction Phase

Statement of Purpose and Need

Columbia University Medical Center (CUMC) seeks to renovate approximately 24,200 square feet of existing laboratories, offices, support space and corridors on the 5th and 6th floors of the Hammer Health Sciences Building to accommodate the permanent relocation of the Institute for Genomic Medicine (IGM), under the leadership of Dr. David Goldstein.

The IGM conducts genomic research as a central component of Columbia's initiatives in the field of precision medicine. The newly renovated space will be occupied by the Institute's core personnel including the director, faculty, researchers, and finance and administration team. The space will accommodate both current faculty and staff and create a wet lab for future research.

Project Scope

The scope of work includes demolition, new partitions, flooring, ceilings, office furniture, laboratory casework, signage, data and telephone infrastructure, temperature controls and reconfiguration of the existing electrical, mechanical plumbing and fire protection systems.

Project Budget

	Total Request
Construction	\$3,960,000
Hazardous Materials	90,000
Commissioning	95,000
Furniture, Fixtures & Equipment	709,000
Contingency	486,000
Project Management	321,000
Total	\$5,661,000

Project Financing

The total request of \$5,661,000 is based upon bids received and will be funded with debt to be serviced by Columbia University Medical Center. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based on current cost estimates is \$5,661,000 plus costs of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Operations and Maintenance

This project will have no significant effect on operations and maintenance costs.

Energy Considerations

This project will have no significant impact on energy consumption.

Sustainable Design

Sustainability considerations will be incorporated into the project including LED lighting, a building management system (BMS) controlled HVAC system, lighting sensors and timers, low VOC finishes, incorporating furniture and finishes with recycled material content and recycling programs for staff waste.

Consideration for the Disabled

This project will be designed to comply with the 2010 Americans with Disabilities Act requirements and Columbia University's commitment to accessibility. This project will include the appropriate building accessibility upgrades to further the goal of fully accessible buildings throughout the campus.

Safety and Security

This project will be designed and constructed to be in accordance with all University and New York City safety and security regulations.

Mode of Accomplishment

Tapert Architecture, PC and Loring Consulting Engineers Inc. have been selected to provide architecture and engineering services. Construction services will be provided by a construction firm to be selected during this phase of the project. Project management will be provided by the Columbia University Medical Center Facilities Capital Project Management Department. All vendors are selected in accordance with University procurement procedures.

Certificate of Occupancy

This project will have no impact on the certificate of occupancy of the Hammer Health Sciences Building.

Project Schedule

This phase of the project is anticipated to be completed in February of 2018.

Approved by:

Amador Centeno, Vice President, Facilities Management and Campus Services

Date

Martha A. Hooven, Vice Dean of Administration, College of Physicians and Surgeons

Date

Joanne M. J. Quan, Chief Financial Officer, Columbia Medical Center

Date

Nancy K. Johnson, Vice President, Budget and Financial Planning

Date

Project Document

FAIRCHILD HALL
DEPARTMENT OF BIOLOGICAL SCIENCES
LABORATORY RENOVATION
800 Level
Design and Collateral Project Construction Phase

Statement of Purpose and Need

The Department of Biological Sciences has recruited two new faculty members that conduct research of molecular mechanisms and cellular development.

The recruitment of Professor Hobert and Professor Greenwald requires the renovation of existing laboratory areas and support spaces in Fairchild Hall to accommodate their research. A space of approximately 6,000 square feet on the 800 level of Fairchild Hall has been identified to house the wet laboratories, administrative space and new equipment rooms for the two researchers.

The program will also include the collateral relocations of three existing laboratories that currently occupy the designated space on the 800 level. Two faculty members in the Department of Biological Sciences will be relocated to a newly renovated laboratory space of approximately 1,700 square feet in Fairchild 1002, 100A, B, C, D, F and G. Additionally, the Proteomics Lab currently located on the 800 level of Fairchild will be relocated to a newly renovated laboratory space of approximately 900 square feet in Mudd 738, 740 and 740A.

Project Scope

The previous request was for a feasibility study to define the program, establish a range of costs as well as relocation options. This phase of the project will include the design phase for the entire scope of work including the collateral relocations and the construction work for only the collateral relocations. Both the existing and collateral spaces will undergo a gut renovation that will require new HVAC, electrical, plumbing, sprinklers, finishes and data upgrades to meet the research needs of the wet biological lab spaces.

Project Budget

	Previous Request	Current Request	Total Request
Construction	\$21,000	\$1,879,000	\$1,900,000
A/E Fees and Expenses	57,000	617,000	674,000
Furniture, Fixtures and Equipment	0	215,000	215,000
Contingency	11,800	368,200	380,000
Commissioning	1,200	81,800	83,000
Project Management	9,000	196,000	205,000
Total	\$100,000	\$3,357,000	\$3,457,000

Project Financing

The current request of \$3,357,000 is based upon the proposed scope of work and the cost per square foot for similar past projects. The total request of \$3,457,000 will be funded with debt to be serviced by Arts and Sciences. The total cost of the project will be determined after this phase of the project. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based on current cost estimates is \$3,457,000 plus costs of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Operations and Maintenance

Any increase in operations and maintenance will be determined during this phase of the project. These costs, once determined, will be the responsibility of Arts and Sciences.

Energy Considerations

Any increase in energy consumption costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of Arts and Sciences.

Sustainable Design

Sustainable elements of the project will include the recycling of construction materials and debris, the use of recycled carpet, energy efficient lighting and low volatile organic compound paint. Costs associated with these sustainable components will be negligible.

Safety and Security

This project will be designed and constructed to be in accordance with all University and New York City safety and security regulations.

Consideration for the Disabled

This project will be designed to comply with the 2010 Americans with Disabilities Act (ADA) requirements and Columbia University's commitment to accessibility. This project will include the appropriate building accessibility upgrades to further the goal of fully accessible buildings throughout the campus.

Mode of Accomplishment

The firm of Mitchell | Giurgola Architects has been selected to provide design services. Construction services will be provided by a general contractor to be selected during this phase of the project. The Columbia University Facilities and Operations Department of Capital Project Management will provide project management services for the project. All vendors will be selected in accordance with University procurement procedures.

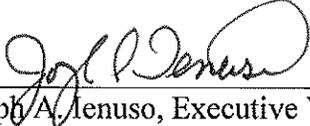
Certificate of Occupancy

Any modifications to the certificate of occupancy for Fairchild Hall will be determined during this phase of the project.

Project Schedule

This phase of the project is scheduled for completion in April of 2015.

Approved by:



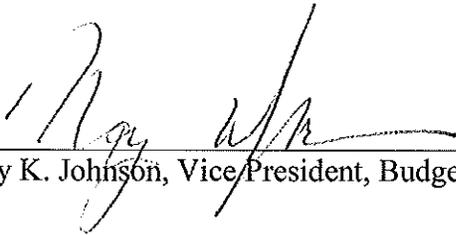
Joseph A. Menuso, Executive Vice President, Columbia University Facilities and Operations

1/14/15

Date

David B. Madigan, Executive Vice President, Arts and Sciences

Date



Nancy K. Johnson, Vice President, Budget and Financial Planning

2/16/15

Date

Project Document

NORTHWEST CORNER BUILDING

FIT-OUT

1100 Level

Design and Construction Phase

Statement of Purpose and Need

The Northwest Corner building, completed in December 2010, advances the University's mission of being one of the world's most important centers for academic research and a distinctive and distinguished learning environment for students in many scholarly and professional fields. The building added 188,000 gross square feet to the University's Morningside campus and provides academic research, teaching and study space for a community of faculty members and students. The laboratories provide research space for the nanotechnology, physics, chemistry, biophysics, biochemistry and synthetic chemistry fields. The 1000, 1100 and 1400 levels were not programmed and left as shelled floors.

The 1100 level of the Northwest Corner building is assigned to the Department of Physics who will use it to support their planned Condensed Matter Physics Initiative.

Recently, Arts and Sciences and Zuckerman Mind Brain Behavior Institute (Z-MBBI) in the Jerome L. Greene Science Center have agreed to fit out the entire 1100 level as temporary lab space for neuroscience researchers from Z-MBBI in the south and central laboratory locations, and to fit out the north laboratory location for the Department of Physics. The space to be occupied by the Z-MBBI researchers on a temporary basis will then revert to the Department of Physics.

With an accelerated design and construction schedule, the temporary Z-MBBI laboratories and permanently assigned Condensed Matter Physics laboratory will be available for occupancy by fall 2014. The temporary Z-MBBI laboratories will be vacated by Z-MBBI by December 31, 2016 for conversion and occupancy by Condensed Matter faculty. Any further customizations for future A&S physics recruits will not be funded through this request.

Project Scope

The work that will be undertaken during this phase of the project will be to design and construct the fit-out the entire 1100 level which is approximately 12,000 net usable square feet.

The space will be designed to meet the needs of the temporary neuroscience researchers from Z-MBBI in the south and central laboratory locations, and to fit out the permanent north laboratory location for the Department of Physics. All research space will be designed and built with flexibility to allow for future conversions for the benefit of the Department of Physics.

Project Budget

	Current Request
Construction	\$8,600,000
A/E Fees and Expenses	880,000
Furniture, Fixtures and Equipment	500,000
Contingency	987,000
Commissioning	300,000
Project Management	733,000
Total	\$12,000,000

Project Financing

The current request of \$12,000,000 is based upon similar projects completed in the building. Funding will be provided as follows: \$6,500,000 in University debt to be serviced by Arts & Sciences and \$5,500,000 in Zuckerman Mind Brain Behavior Institute operating reserves. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based on current cost estimates is \$12,000,000 plus costs of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Operations and Maintenance

Any increase to maintenance and operations costs as a result of this project will be determined during this phase. These costs, once identified, will be the responsibility of Z-MBBI while their researchers occupy the space and Arts and Sciences.

Energy Considerations

Any increase to energy costs as a result of this project will be determined during this phase. These costs, once identified, will be the responsibility of Z-MBBI while their researchers occupy the space and Arts and Sciences.

Sustainable Design

The Northwest Corner Building achieved the status of LEED Gold in its core and shell construction in 2011. The framework for energy efficient building and lab systems was put in place at that time. The fit-out work will be completed in a manner consistent with the original LEED intent.

Safety and Security

This project will be designed in accordance with all University and New York City safety and security regulations. These costs, once identified, will be the responsibility of Z-MBBI while their researchers occupy the space and Arts and Sciences.

Consideration for the Disabled

This project will be designed to comply with the 2010 Americans with Disabilities Act (ADA) requirements and Columbia University's commitment to accessibility. This project will include the appropriate building accessibility upgrades to further the goal of fully accessible buildings throughout the campus.

Mode of Accomplishment

An architectural firm and construction management firm will be selected during this phase of the project. All vendors will be selected in accordance with University procurement procedures. Columbia University Facilities' Capital Project Management department will provide project management services for the project.

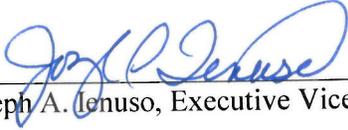
Certificate of Occupancy

This project will not affect the Certificate of Occupancy for the Northwest Corner building.

Project Schedule

This project is scheduled for completion by the fall of 2014.

Approved by:



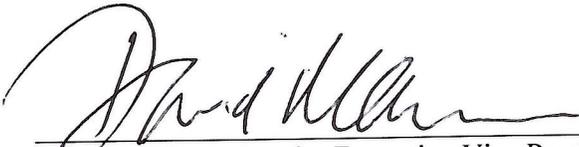
Joseph A. Ienuso, Executive Vice President, Columbia University Facilities

10/4/13
Date



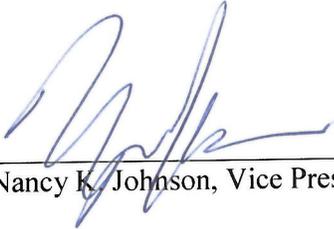
Thomas M. Jessell, Claire Tow Professor of Motor Neuron Disorders in Neuroscience
and Professor of Biochemistry & Molecular Biophysics

11/21/13
Date



David Madigan, Interim Executive Vice President, Arts and Sciences

11/7/12
Date



Nancy K. Johnson, Vice President, Budget and Financial Planning

10.23.13
Date

Project Document

PUPIN HALL
DEPARTMENT OF PHYSICS
PHYSICS THEORY CENTER
800 and 900 Levels
Construction Phase

Statement of Purpose and Need

As part of the Arts and Sciences Science Master Plan, the Department of Physics will establish a new Physics Theory Center to provide modern, contiguous and secure office, meeting and scientific interaction space for research in theoretical physics. Faculty, postdoctoral researchers and graduate students will be located in this space, which is designed to facilitate the type of interactions between its occupants that lead to new scientific advances. The Theory Center will make it possible to compete effectively with the department's peers in attracting the best theoretical talent to Columbia University. This new Center will occupy the former Physics Library on the 800 and 900 levels of Pupin, part of which was vacated with the construction of the new consolidated Science Library in the Northwest Corner building.

Project Scope

The previous phase provided for design services for the project. This phase of the project will include construction through project close-out. The scope of work for the overall project will include the renovation of the former library on the east side of the 800 level and office space on the east side of the 900 level, a space of approximately 7,500 square feet. The office space on the east side of the 900 level will need to be vacated before the project can proceed and these relocation costs are not included in the scope of this project. All costs associated with the required relocations will be funded by the Physics Department.

The new center will provide office space for approximately 39 occupants. The space will include scientific interaction space, a pantry, a copy area, storage rooms and the required ancillary mechanical spaces to support the area. The offices will be designed with the flexibility to be converted based on programmatic needs. All areas will be provided with new finishes, furniture, lighting, electrical and mechanical systems and data connectivity. In addition, a dedicated mechanical room will be constructed on the 800 or 900 level to support the center.

Project Budget

	<u>Previous Request</u>	<u>Current Request</u>	<u>Total Request</u>
Construction	\$41,500	\$3,201,500	\$3,243,000
A/E Fees and Expenses	399,756	7,244	407,000
Furniture, Fixtures and Equipment	0	325,000	325,000
Contingency	61,470	365,530	427,000
Commissioning	11,000	108,000	119,000
Project Management	32,774	260,226	293,000
Total	<u>\$546,500</u>	<u>\$4,267,500</u>	<u>\$4,814,000</u>

Project Financing

The current request of \$4,267,500 is based upon comparable costs of similar campus projects. The total cost of the project of \$4,814,000 will be funded by a gift of \$250,000 received by the Physics Department and the remaining \$4,564,000 will be funded with debt to be serviced by Arts and Sciences. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based on current cost estimates is \$4,814,000 plus costs of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Operations and Maintenance

Any increase in maintenance and operations costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of Arts and Sciences.

Energy Considerations

Any increase in energy consumption costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of Arts and Sciences.

Sustainable Design

Sustainable elements of the project will include the recycling of construction materials and debris, the use of recycled carpet, energy efficient lighting and low volatile organic compound (VOC) paint. Costs associated with these sustainable components will be negligible.

Safety and Security

This project will be designed and constructed to be in accordance with all University and New York City safety and security regulations.

Consideration for the Disabled

This project will be designed to comply with the 2010 Americans with Disabilities Act (ADA) requirements and Columbia University's commitment to accessibility. This project will include the appropriate building accessibility upgrades to further the goal of fully accessible buildings throughout the campus.

Mode of Accomplishment

The firm of Perkins Eastman Architects, P.C. was selected to provide architectural design services for the project. Construction services will be provided by a general contractor to be selected during this phase of the project. Columbia University Facilities Department of Capital Project Management will provide project management services for the project. All vendors are selected in accordance with University procurement procedures.

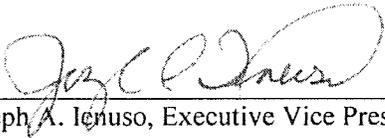
Certificate of Occupancy

Any modifications to the Certificate of Occupancy for Pupin Hall will be determined during this phase of the project.

Project Schedule

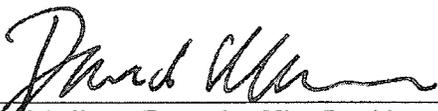
This phase of the project is scheduled for completion in December of 2014.

Approved by:



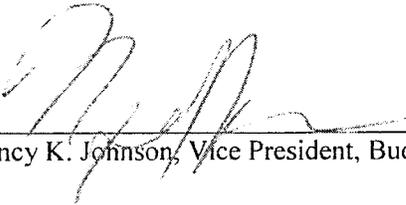
Joseph A. Ienuso, Executive Vice President, Columbia University Facilities

12/26/13
Date



David B. Madigan, Executive Vice President for Arts and Sciences

2/25/14
Date



Nancy K. Johnson, Vice President, Budget and Financial Planning

2-9-14
Date

Project Document

CHANDLER HALL
DEPARTMENT OF CHEMISTRY
LABORATORY RENOVATION
700 Level
Design and Construction Phase

Statement of Purpose and Need

The Department of Chemistry requests to convert a portion of an existing optics lab in room 758 on the 700 level of Chandler Hall into new and additional wet laboratory space for Professor Colin Nuckolls. The additional 1,100 square foot space is required to meet his expanding research needs. The relocation of the existing optics lab in this space will be completed separately by the Department of Chemistry and is not part of this project program or budget.

Project Scope

This request is for the design and construction to convert room 758 into a wet lab space as well as an instrumentation lab and graduate student space.

The scope of work includes the upgrade and expansion of the laboratory gas services, lighting, life-safety, mechanical and electrical systems. New laboratory work benches will be provided.

The scope will include four new large energy efficient, low-flow fume hoods that will match existing units that are currently used in the department. Mechanical supply and exhaust air ducts will be modified to obtain proper air exchange in each laboratory.

Project Budget

	Total Request
Construction	\$750,000
A/E Fees and Expenses	100,000
Furniture, Fixtures & Equipment	60,000
Contingency	92,000
Commissioning	30,000
Project Management	68,000
Total	\$1,100,000

Project Financing

The total request of \$1,100,000 is based upon a feasibility study and will be funded with debt to be serviced by Arts and Sciences. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based on current cost estimates is \$1,100,000 plus costs of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Operations and Maintenance

Any increase in maintenance and operations costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of Arts and Sciences.

Energy Considerations

Any increase in energy consumption costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of Arts and Sciences.

Sustainable Design

Sustainable elements of the project will include the recycling of construction materials and debris, energy efficient lighting and low volatile organic compound (VOC) paint. Costs associated with these sustainable components will be negligible.

Safety and Security

This project will be designed and constructed to be in accordance with all University and New York City safety and security regulations.

Consideration for the Disabled

This project will be designed to comply with the 2010 Americans with Disabilities Act (ADA) requirements and Columbia University's commitment to accessibility. This project will include the appropriate building accessibility upgrades to further the goal of fully accessible buildings throughout the campus.

Mode of Accomplishment

An architect will be selected during this phase to provide design services and a general contractor will be selected to provide construction services for the project. The Columbia University Facilities and Operations Department of Capital Project Management will provide project management services for the project. All vendors are selected in accordance with University procurement procedures.

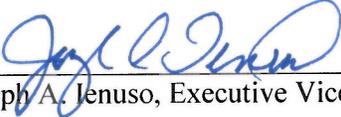
Certificate of Occupancy

This project will not affect the Certificate of Occupancy for Chandler Hall.

Project Schedule

The project is scheduled for completion in February of 2016.

Approved by:



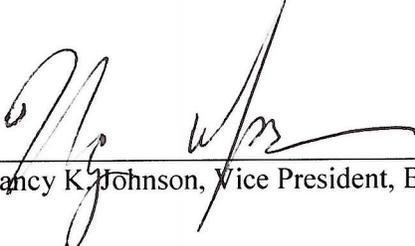
Joseph A. Ienuso, Executive Vice President, Columbia University Facilities and Operations

6/23/15
Date



David B. Madigan, Executive Vice President, Dean of the Faculty, Arts and Sciences

9/6/15
Date



Nancy K. Johnson, Vice President, Budget and Financial Planning

7/30/15
Date

Project Document

WATSON HALL
DEPARTMENT OF STATISTICS
STATISTICS FACULTY OFFICES
600 Level
Design and Construction Phase

Statement of Purpose and Need

The Department of Statistics has expanded beyond its current main space on the 9th and 10th floors at the School of Social Work Building, and requires space for additional faculty and student needs. The Office of the Provost in conjunction with Arts and Sciences would like to renovate the 600 level of Watson Hall to accommodate the expansion of the department.

Located at 612 West 115th Street, Watson Hall houses part of School of Arts Program, offices for CUIT, and is the future location of the Gender Based Misconduct Office. Approximately 3,000 square feet encompassing the entire 600 level has been selected to be upgraded into eight new offices, two conference rooms, and two new Americans with Disabilities Act (ADA) compliant restrooms. This request will address a long standing space need by providing offices for new faculty, postdocs, and graduate student workstations.

Project Scope

This request is to fund the design and construction for improvements to the 600 level of Watson Hall to support the program. The scope of work will include the refresh of rooms 609 to 619 with the installation of new carpeting, refinishing of walls and ceilings, and minor improvements to power and data systems. There will also be a partial gut renovation of rooms 600PL, 602, 603, 604 and 606 that will build out two new ADA compliant restrooms. New furniture will be provided to the entire space.

Project Budget

	Total Request
Construction	\$750,000
A/E Fees and Expenses	130,000
Furniture, Fixtures and Equipment	300,000
Contingency	142,000
Commissioning	30,000
Project Management	88,000
Total	\$1,440,000

Project Financing

The total request of \$1,440,000 is based on benchmark costs of similar projects and will be funded with debt to be serviced by Arts and Sciences. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based on the current budget estimate is \$1,440,000 plus costs of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Operations and Maintenance

Any increase in maintenance and operating costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of Arts and Sciences.

Energy Considerations

Any increase in energy consumption costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of Arts and Sciences.

Sustainable Design

Sustainable elements of the project will include reuse of the existing tables and chairs and low volatile organic compound (VOC) paint. Costs associated with these sustainable components will be negligible.

Safety and Security

This project will be designed and constructed to be in accordance with all University and New York City safety and security regulations.

Consideration for the Disabled

This project will be designed to comply with the 2010 Americans with Disabilities Act (ADA) requirements and Columbia University's commitment to accessibility. This project will include the appropriate building accessibility upgrades to further the goal of fully accessible buildings throughout the campus. Specifically, two ADA accessible bathrooms will be created on the 600 level.

Mode of Accomplishment

An architectural firm will be selected to provide design services and a general contractor will be selected to provide construction services. The Columbia University Facilities and Operations Department of Capital Project Management will provide project management services for the project. All vendors are selected in accordance with University procurement procedures.

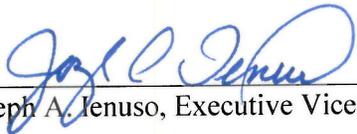
Certificate of Occupancy

This project will not affect the Certificate of Occupancy for Watson Hall.

Project Schedule

The project will be completed in two phases to be completed by January 2016.

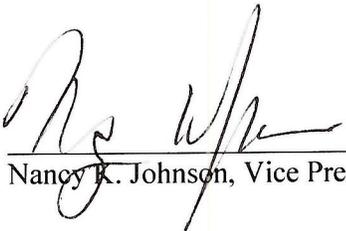
Approved by:



Joseph A. Jenuso, Executive Vice President, Columbia University Facilities and Operations 6/23/15
Date



David B. Madigan, Executive Vice President, Dean of the Faculty, Arts and Sciences 9/6/15
Date



Nancy K. Johnson, Vice President, Budget and Financial Planning 7/30/15
Date

Project Document

HAVEMEYER HALL
DEPARTMENT OF CHEMISTRY
PROFESSOR LAMBERT LABORATORY RENOVATION
400 Level
Design and Construction Phase

Statement of Purpose and Need

The Department of Chemistry requests to renovate 2,300 square feet of existing, unused laboratory space on the 400 level of Havemeyer Hall (rooms 412-414) for Professor Tristan Lambert. Renovation of this space will free-up approximately 3,100 square feet of existing laboratory space on the 500 level of Havemeyer Hall (rooms 510-512) currently occupied by Professor Lambert for the future recruitment of a senior organic chemist. Professor Lambert will utilize the newly renovated space to continue his research of catalysis, specializing in the development of novel catalytic strategies for selective organic synthesis.

Project Scope

This phase of the project will provide funding for the design and construction of the space. The finished laboratory will include space for wet laboratory functions, an equipment and gas storage room, a group room and an office. The scope will include new laboratory benches, fume hoods and their corresponding services, work desks, upgrades to existing floor surfaces and finishes, new lighting and the upgrade or replacement of the existing mechanical, electrical and life safety systems supporting the space. The scope will also include eleven new energy efficient, low-flow fume hoods that will match existing units that are currently used by the department. The mechanical supply and exhaust air ducts will be modified to obtain proper air exchange in each laboratory.

Project Budget

	Total Request
Construction	\$1,160,000
A/E Fees and Expenses	140,000
Furniture, Fixtures & Equipment	100,000
Contingency	200,000
Commissioning	43,000
Project Management	107,000
Total	\$1,750,000

Project Financing

The total request of \$1,750,000 is based upon a completed feasibility study and will be funded with debt to be serviced by Arts and Sciences. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based on current cost estimates is \$1,750,000 plus costs of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Operations and Maintenance

Any increase in maintenance and operations costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of Arts and Sciences.

Energy Considerations

Any increase in energy consumption costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of Arts and Sciences.

Sustainable Design

Sustainable elements of the project will include the recycling of construction materials and debris, energy efficient lighting and low volatile organic compound (VOC) paint. Costs associated with these sustainable components will be negligible.

Safety and Security

This project will be designed and constructed to be in accordance with all University and New York City safety and security regulations.

Consideration for the Disabled

This project will be designed to comply with the 2010 Americans with Disabilities Act (ADA) requirements and Columbia University's commitment to accessibility. This project will include the appropriate building accessibility upgrades to further the goal of fully accessible buildings throughout the campus.

Mode of Accomplishment

An architect will be selected during this phase of the project to provide design services and a general contractor will be selected to provide construction services for the project. The Columbia University Facilities and Operations Department of Capital Project Management will provide project management services for the project. All vendors are selected in accordance with University procurement procedures.

Certificate of Occupancy

This project will not affect the Certificate of Occupancy for Havemeyer Hall.

Project Schedule

The project is scheduled for completion in December of 2016.

Approved by:

David M. Greenberg, Executive Vice President, Columbia University Facilities and Operations Date

David B. Madigan, Executive Vice President, Dean of the Faculty, Arts and Sciences Date

Nancy K. Johnson, Vice President, Budget and Financial Planning Date

Project Document

SCHAPIRO CENTER FOR ENGINEERING AND PHYSICAL SCIENCE RESEARCH
ARTS AND SCIENCES AND
FU FOUNDATION SCHOOL OF ENGINEERING AND APPLIED SCIENCE
NANOSCIENCE SHARED FACILITIES
CLEAN ROOM UPGRADE AND EXPANSION
1000 Level
Construction Phase

Statement of Purpose and Need

The Columbia Nanofabrication Facility (CNF) is located on the 1000 level of the Schapiro Center for Engineering and Physical Science Research (CEPSR) building on Columbia's Morningside campus. The current facility does not support the growing list of microfabrication tools being acquired by the research programs. In addition, the facility requires modernization to handle the burgeoning needs of nanobiology and nanomedicine research which now represents more than half of the activity at CNF. The upgrade and expansion will allow for a much broader collaboration between the Morningside campus and the Columbia University Medical Center and, in addition, position Columbia as a regional center for nanofabrication that would strengthen links with nearby institutions such as New York University, City University of New York, Mount Sinai Hospital, Rutgers University, New Jersey Institute of Technology, Stevens Institute in New Jersey, as well as private industries, notably IBM Research and GE Life Sciences.

This project proposes to renovate and expand the existing 3,000 square foot Columbia Nanofabrication Facility to 4,600 square feet to support current and emerging efforts in nanobiology and nanomedicine, directly impacting the educational and research activities of over 200 researchers at Columbia (faculty, staff and students) who use these clean room facilities. This includes faculty in the Fu Foundation School of Engineering and Applied Science, Arts and Sciences and the School of Physicians and Surgeons. The classification of the CNF will be class 10,000 which is a level of cleanliness equivalent to 10,000 particles per cubic foot.

This project will also include the relocation of the Shared Material Characterization Lab (SMCL). SMCL is currently located in the expansion area of the 1000 level of CEPSR and therefore must be relocated to accommodate the clean room facilities expansion.

Project Scope

Previous requests included funding for schematic design, design services and construction documents for the upgrade and expansion of the current clean room on the western portion of the 1000 level of CEPSR (rooms 1027A, 1027B, 1027C, 1027D and 1027E) as well as part of the eastern portion of the same floor (rooms 1027F and 1027G).

In addition, previous requests funded the design and construction for the relocation of the SMCL to room 224 of Havemeyer Hall. Room 224, a space of approximately 750 square feet, currently houses shared instrumentation used by the Department of Chemistry that will be renovated to support the additional equipment from the existing SMCL. There will also be minor modifications to the existing lab benches as well as the electrical and mechanical systems.

The current request is for the construction phase of the clean room upgrade and expansion at the 1000 level of CEPSR. The 1,600 square foot addition to the current clean room will include a new gowning area and lithography bay. The ACID/Base Etch Bay and Furnace Bay in the current clean room space will be replaced and the space will be reorganized for better efficiency of use. The cost for new equipment for the clean room will not be included as part of this project budget.

Project Budget

	Previous Request	Current Request	Total Request
Construction	\$292,000	\$3,293,000	\$3,585,000
A/E Fees and Expenses	745,000	0	745,000
Furniture & Equipment	0	192,000	192,000
Contingency	124,000	576,000	700,000
Commissioning	31,000	105,000	136,000
Collateral Moves	0	202,000	202,000
Project Management	78,000	262,000	340,000
Total	\$1,270,000	\$4,630,000	\$5,900,000

Project Financing

The current request of \$4,630,000 is based upon the proposed scope of work and comparable costs of similar campus projects. The total request of \$5,900,000 will be funded with \$2,950,000 in debt to be serviced by Arts and Sciences and \$2,950,000 in Fu Foundation School of Engineering and Applied Science operating reserves. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based on current cost estimates is \$5,900,000 plus costs of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Operations and Maintenance

The need for one additional staff member to be funded by Arts and Sciences and the Fu Foundation School of Engineering and Applied Science has been identified as a result of this project. Any other additional operating expenses, if identified, will be funded 50% by Arts and Sciences and 50% by the Fu Foundation School of Engineering and Applied Science.

Energy Considerations

This project is anticipated to increase utilities costs by \$21,600 per year. These costs will be funded 50% by Arts and Sciences and 50% by the Fu Foundation School of Engineering and Applied Science.

Sustainable Design

Sustainable elements of the project will include the recycling of construction materials and debris, the use of recycled carpet, energy efficient lighting and low volatile organic compound paint. Costs associated with these sustainable components will be negligible.

Safety and Security

This project will be designed and constructed to be in accordance with all University and New York City safety and security regulations.

Consideration for the Disabled

This project will be designed to comply with the 2010 Americans with Disabilities Act (ADA) requirements and Columbia University's commitment to accessibility. This project will include the appropriate building accessibility upgrades to further the goal of fully accessible buildings throughout the campus.

Mode of Accomplishment

The architectural firm Stantec Architecture Inc. has been selected to provide design services. A construction manager will be selected during this phase of the project. Columbia University Facilities and Operations Department of Capital Project Management will provide project management services for the project. All vendors are selected in accordance with University procurement procedures.

Certificate of Occupancy

This phase of the project will not affect the Certificate of Occupancy for the Schapiro CEPSR building.

Project Schedule

This phase of the project is scheduled for completion in the fall of 2015.

Approved by:



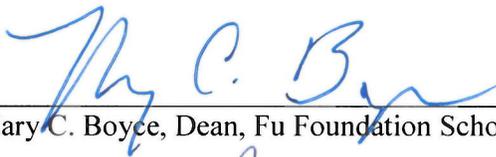
Joseph A. Jenuso, Executive Vice President, Columbia University Facilities and Operations

6/24/14
Date



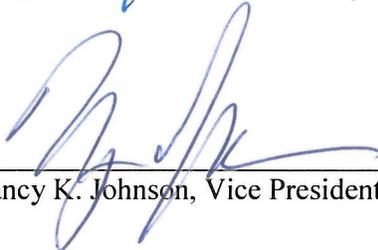
David B. Madigan, Executive Vice President, Dean of the Faculty, Arts and Sciences

8/26/14
Date



Mary C. Boyce, Dean, Fu Foundation School of Engineering and Applied Science

9/9/14
Date



Nancy K. Johnson, Vice President, Budget and Financial Planning

7/31/14
Date

Project Document

SCHAPIRO CENTER FOR ENGINEERING AND PHYSICAL SCIENCE RESEARCH **DEPARTMENT OF PHYSICS** **ASSOCIATE PROFESSOR WILL LABORATORY RENOVATION** **900 Level** **Design and Early Demolition Phase**

Statement of Purpose and Need

The Department of Physics has recruited Associate Professor Sebastian Will who conducts research in quantum optics. His recruitment requires the renovation of existing laboratory and support spaces in the Shapiro Center for Engineering and Physical Science Research (CEPSR) to accommodate his research.

A space of approximately 2,000 square feet on the 900 level of Shapiro CEPSR currently occupied by the temporary Clean Room has been identified for the renovation. The new laboratory will be designed to accommodate multiple specialized optics tables which will require meeting stringent criteria for temperature, humidity, air infiltration, acoustics and magnetic fields.

Project Scope

The proposed project includes a gut-renovation of two existing contiguous lab spaces, the adjacent service corridor and a nearby but unattached lab across the corridor. The current request is for the survey, design, bidding and early demolition. The anticipated construction scope of work includes new partitions, work benches, ceiling system, lighting, mechanical, electrical and plumbing systems required to meet the principle investigator's research requirements.

Project Budget

	Current Request
Construction	\$180,000
A/E Fees and Expenses	264,000
Contingency	12,500
Commissioning	13,000
Project Management	30,500
Total	\$500,000

Project Financing

The current request of \$500,000 will be funded with debt to be serviced by Arts and Sciences. The total cost of the project will be determined after this phase of the project. The final allocation of sources of funding will be made prior to the issuance of University debt.

This is a declaration of official intent for purposes of United States Treasury Regulations Section 1.150-2. The maximum principal amount of bonds expected to be issued to permanently fund the project, based on current cost estimates is \$500,000 plus costs of issuance and any reserves established in connection with the bonds. To the extent that costs increase, it is expected that the principal amount of bonds will be increased to fund the project. Any costs temporarily financed on an interim basis with University funds are expected to be reimbursed with bond proceeds to the extent that such costs are not funded with external sources and to the extent the University does not elect to permanently finance such costs with University funds.

Operations and Maintenance

Any increase in maintenance and operations costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of Arts and Sciences.

Energy Considerations

Any increase in energy consumption costs will be determined during this phase of the project. These costs, once determined, will be the responsibility of Arts and Sciences.

Sustainable Design

Sustainable elements of the project will include the recycling of construction materials and debris, energy efficient lighting and low volatile organic compound (VOC) paint. Costs associated with these sustainable components will be negligible.

Safety and Security

This project will be designed and constructed to be in accordance with all University and New York City safety and security regulations.

Consideration for the Disabled

This project will be designed to comply with the 2010 Americans with Disabilities Act (ADA) requirements and Columbia University's commitment to accessibility. This project will include the appropriate building accessibility upgrades to further the goal of fully accessible buildings throughout the campus.

Mode of Accomplishment

An architect will be selected to provide design services during this phase of the project. The Columbia University Facilities and Operations Department of Capital Project Management will provide project management services for the project. All vendors are selected in accordance with University procurement procedures.

Certificate of Occupancy

This project will not affect the Certificate of Occupancy for Schapiro CEPSR.

Project Schedule

The anticipated completion date for this phase of the project is January of 2017.

Approved by:

David M. Greenberg, Executive Vice President, Columbia University Facilities and Operations Date

David B. Madigan, Executive Vice President, Dean of the Faculty, Arts and Sciences Date

Nancy K. Johnson, Vice President, Budget and Financial Planning Date