

# REPORT OF THE OFFICE OF PROJECT MANAGEMENT FY 2014



*West Campus Union and Rubenstein Library construction cranes flanking Duke Chapel, August 5, 2014*

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*Arial View of the Morris Williams Track Stadium and the Chris and Ana Kennedy Tower  
September 2014*

## **INTRODUCTION**

Facilities Management prepared the report on the Office of Project Management (OPM) at the request of Tallman Trask III, Executive Vice President. The report provides an annual financial status of the office, updated benchmark data, a summary of initiatives, and guidelines for Department managed projects and a look ahead to the current 2015 fiscal year.

## **THE OFFICE OF PROJECT MANAGEMENT**

The OPM is led by Director, Paul Manning who reports to the Vice President for Facilities, John Noonan. The office is organized into three primary functions: Planning, Small Projects and Large Projects. The Planning function includes the responsibilities of applying standard project management methodology, processes, and tools to project managers and ensuring that the information entered into the project database is clear and consistent. This function also includes maintaining FMD's as-built information through Computer Aided Design and Geographic Information Systems (CAD/GIS). The Small Projects and Large Projects functions are managed separately due to differences in scope, cost, timing and deliverables. A total of 13 Project Managers comprise these functions. In addition, there is one Project Accountant that resides within Business Services; however works exclusively with the OPM for project support. The project management staff includes four registered architects, one National Council of Architectural Registration Board (NCARB) intern, three professional engineers, one certified planner and four LEED certified individuals.

## **FY14 OPM INITIATIVES**

The processes, methodologies and overall functions within the OPM are vital to the smooth transition from the initiation of a project through its completion. As such, the OPM continually seeks opportunities to better improve its ability to serve the needs of the University. Below are a few highlights of the initiatives that occurred in FY14:

- Completed a central building database.
- Wrote and published a Project Delivery Guide which serves as a procedural reference.
- Revised and published Duke's Construction Standards which define the minimum requirements for performance, appearance, and quality of design and construction on campus.
- Continued to provide a full-time project manager as an on-site consultant for the Duke Kunshan University construction.
- Continued to ensure that best costs are received from consultants and contractors by reducing overhead and profit percentages through pre-audits and final audits.

**BUDGET OVERVIEW**

Over the last three years OPM managed 1098 projects valued in excess of \$387 million. The OPM fees associated with these projects are required to fund salaries, expenses, and G&A.

Fiscal Year	# of projects	Cost of projects	Avg. % Fee
FY 12	277	87 M	3.2%
FY 13	313	128 M	2.9%
FY 14	508	173 M	3.3%

The average fee between 2.5% for Tier 3 projects and 4.0% for Tier 0, 1, and 2 increased in FY 14 due to the increase in Tier 0, 1, and 2 projects.



*Environment Hall north elevation*



*Waterproofing basement of 1928 Rubenstein Library*

The table below depicts the OPM FY14 Budget/Actual/Variance and the FY15 Budget:

	FY14 Budget	FY14 Actual	FY 14 Variance	FY15 Budget
Salaries	\$1,887,048	\$1,911,544	-\$24,496	\$2,007,140
Training & Travel	\$6,500	\$38,519	-\$32,019	\$6,500
Professional Services	\$134,000	\$152,651	-\$18,651	\$155,000
Space Rental	\$44,783	\$56,234	-\$11,451	\$50,379
University G&A	\$410,034	\$448,797	-\$38,763	\$432,437
Internal G&A	\$260,857	\$308,051	-\$47,194	\$496,064
Office Expenses	\$37,334	\$189,437	-\$152,103	\$20,006
<b>Total Expenses:</b>	<b>\$2,780,556</b>	<b>\$3,105,232</b>	<b>-\$324,676</b>	<b>\$3,167,526</b>

**BENCHMARKING OPM**

The fee structure implemented in July 07 was structured as noted below:

- 4.0% for projects less than \$2.5 million
- 2.5% for projects greater than \$2.5 million and less than \$50 million
- Calculated for individual projects greater than \$50 million
- Percentage fees are modified at project completion to match actual project costs
- **Average rate for all FY 13 projects at Duke equaled 3.3%.**

***Ivy Plus***

OPM stays current with fee percentages for project management services at peer Institutions which are not centrally funded and that have similar size building programs. These fees during FY 14, range from flat fees of 3.75% at John Hopkins to 6.5% at Columbia. Chicago uses a flat fee of 3.0%. Duke’s incremental fee structure continues to be at the low end of the range providing best management at an effective cost.



*Orrin Pilkey Marine Science & Conservation Center, Duke Marine Lab, Beaufort, NC*

***Private Sector***

Comparable fees with the same costs included when using outside project management consultants for similar size projects from both local to international consultant firms range between 3.0% for large projects and 6.0% for small projects as profit is included in these fees. Profit targets are normally a multiplier of two times the projected direct personnel expense or 1.5% to 2.5% net pretax of the cost of the managed work.

Another benchmark data point is on an hourly rate basis. The equivalent hourly rate for Duke’s OPM is \$125/hour for 2014 for any projects that are advisory rather than managed. This rate has held constant since 2007. In checking with firms specializing in full-service architecture, interior design, engineering, construction management and program management, the average hourly rate for project management services is \$150-\$200/hour for private sector work.

Consequently, the fee structure provided here at Duke is well within the peer institutions and the private sector.

## CONSTRUCTION MARKET ECONOMICS:

The economics of the construction market during FY14 were insignificant. Several indices that track construction costs in materials, labor and geographically all indicated a slowly escalating market. Escalation was almost entirely a result of fluctuating commodity prices. However due to the current poor economic condition and reduced construction nationally and locally, these increases were mitigated. The *Engineering News-Record* (ENR) provides news, analysis and data for the construction industry and features information regarding infrastructure, buildings, business management, policy, products, technology, education and economics. OPM uses the information to stay abreast of the changes in the construction industry to help manage the projects at Duke in the best possible manner.

Due to an expected increase in construction volume locally in 2015, we expect to see escalation return to on average 2.0% annually due to the reduced construction vendors and manpower.

The Tier 3 projects this past fiscal year averaged an approximate 3% total underrun of the actual final costs, versus the approved final budget. Thus, this allowed the unused contingencies to be returned to the client.



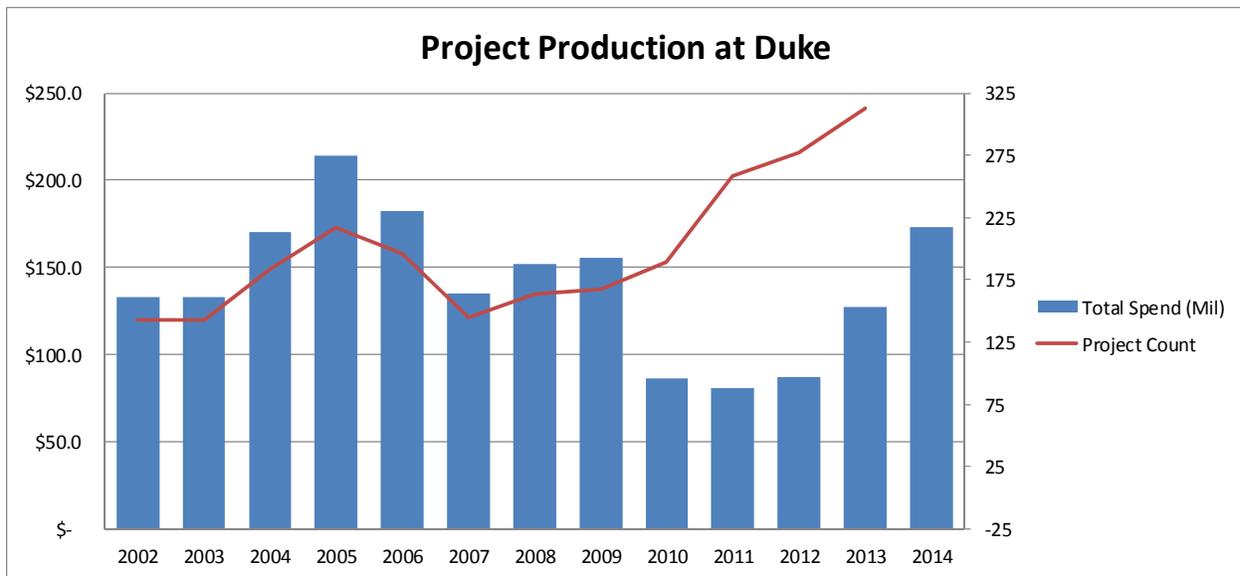
*Interior of the Power House, new home for TIP.*



*Interior of Page Auditorium during renovation.*

## PROJECT PRODUCTION

The total amount spent on projects has recovered to the same level seen before the economic downturn in 2008, and the number of projects continues to rise dramatically. The table below shows the amount spent on projects over the last thirteen years.



Tier #	# of Projects	Total Amount (Millions)
<b>Tier 3</b>	34	\$110.3
<b>Tier 2</b>	134	\$51.5
<b>Tier 1</b>	61	\$5.1
<b>Tier 0</b>	279	\$6.1
<b>Total</b>	<b>508</b>	<b>\$173</b>

The vast majority of projects completed on campus last year were on time and under budget, with final project costs averaging 3% under the approved Project Budget. In addition, many of the projects were complex in nature. The portfolio of projects included range from new buildings to gut renovations, roof replacements, offices, utility projects, student housing, academic and athletic facilities

## HIGHLIGHTS OF MAJOR PROJECTS

The table below highlights the major projects for the year:

Project Title	Comments
Duke Chapel Restoration	The restoration work between the roof and the ceiling has been completed. The remaining work involves extensive scaffolding so the Chapel will close for a year. During that time the roof will be replaced, the vaulted ceiling repointed, and the stained-glass windows, interior woodwork, wood carvings, and slate floor will be restored. Project cost is \$11 million and completion is expected by May 2016.
Environment Hall	This new 72,000 gsf building, which opened in April 2014, serves as the home to the Nicholas School. The building was designed to meet the LEED Platinum certification and cost \$39 M.
West Campus Steam Plant	This project converted the original steam plant from coal to gas as a primary fuel and upgraded the controls and ancillary equipment. The original 1928 building was restored. The plant was not shut down and produced steam during the duration of construction and was completed in May 2014. Project cost \$41M.
West Village Power House Renovation	This renovation of the Power House, built in 1926 as the power plant for Leggett and Myers Tobacco Company in downtown, has transformed the building into the headquarters for the Duke University Talent Identification Program (TIP). Completed June 2014, the total cost was \$5M.
Orrin H. Pilkey Marine Science and Conservation Genetics Center	This 9,560 gsf building located at the Duke Marine Lab features research laboratories, office space, a teaching lab and meeting areas. The grand opening took place May 4, 2014, and cost \$6M.
Page Auditorium Renovation	The seat count will be reduced to 1,100 to accommodate improved sound/light locks and the control room. The interior finishes will be updated and the theater seats refurbished and relocated on the orchestra level to improve sight lines. Estimated cost is \$7.5M and is expected to be complete in May 2015.
Perkins Library Renovation	This Renovation includes 1928 original building and the 1948 addition for a total of 115,000 square feet. The project includes the removal of the structural stacks, restoration of the Gothic Reading and Rare Book Rooms and an improved entry to the quad. The estimated cost is \$59M and is expected to be completed in August 2015.
Wallace Wade Stadium Upgrades	As soon as the 2014 season ends, construction will begin to lower the field so that field-level seating can be added. The project also adds ADA seating, and new stair and elevator tower. In January demolition of the Finch Yeager building will begin to make room for a new 5 story, 90,000 square foot tower which will house concessions, restrooms, a dining room and luxury suites as well as space for media, and broadcast and game-day operations. A new video board, twice as large as the existing one is also included in the project. The total cost is expected to be \$95M
Water Reclamation Pond Project	Once the pond is dammed this fall, it will provide water to chiller plant #2 and will cut the University's potable water use by 20%. The pond will also serve as an educational and recreational amenity. Estimated cost is \$10M and is expected to open to the public in May 2015.
West Campus Union Renovation	This total renovation will replace the mechanical systems, reprogram the internal space and return West Campus Union to its place of prominence in the life of Duke Students. Estimated cost is \$95 M and expected completion date is March 2016.
Track and Field Stadium	A new \$9M track and field complex is under construction next to Koskinen Stadium. The project includes a new media tower that will serve the new track and field complex and the soccer stadium. Expected completion date in December 2014.

## **RECENT PROJECT AWARDS**

### **Baldwin Auditorium**

LEED Silver Certification

BD+C Reconstruction Silver Award

2014 Lumen Award of Merit

2014 Illuminating Engineering Society Illumination Merit Award

2014 Associated Builders & Contractors Excellence in Construction Award

2013 Associated Builders & Contractors Excellence in Construction Award for Renovation, North Carolina

2014 ENR Best Renovation/Restoration Project

2014 Building Design and Construction Magazine Silver Award



### **Environment Hall**

2014 Associated Buildings & Contractors Excellence in Construction Award of Merit

2014 ENR Best Green Project

2014 Boston Society of Architects Award



### **Gross Hall**

Regional Eagle Award from Association of Builders and Contractors for best Renovation and Remodel Project \$10M - \$25M.



### **West Campus Steam Plant**

2014 ENR Award of Merit



### **Power House**

2014 American School & University Magazine Outstanding Design Award





*Café Eden renovation*



*New tables in the Cameron locker room kitchenette are replicas of Coach K Court*

## **SUSTAINABILITY & LEED PROJECTS**

Duke University is committed to designing, planning and constructing sustainable buildings that protect and enhance our environment. Facilities Management supports the *Duke University Greening Initiative* with its commitment to green building and the USGBC's Leadership in Energy and Environmental Design (LEED) rating system. Buildings can qualify for four levels of certification based on a point rating system in various categories such as sustainable sites, water efficiency, energy and atmosphere, and materials and resources. The four levels of certification include: Certified, Silver, Gold and Platinum. At a minimum, it is Duke's goal to have all new construction and renovation meet LEED Silver standards.



*Construction continues on Reclamation Pond.*

**LEED Buildings Certified Projects (22 total)**

<b>Project</b>	<b>Certification Level</b>	<b>Year</b>	<b>Square Feet</b>
Smith Warehouse	Certified	2001	48,000
Kilgo Dorm Phase II	Certified	2003	98,115
Law School Addition	Certified	2004	100,000
Rubenstein Hall	Certified	2004	66,446
Kilgo Dorm Phase III	Certified	2005	
Bell Tower Dormitory	Certified	2005	73,304
Bostock/Perkins Library	Certified	2005	122,275
Law School Star Commons	Certified	2008	115,000
Few Quad Renovation	Certified	2008	138,185
Research Drive Parking Garage	Certified	2009	690,000
Fitzpatrick Center for Interdisciplinary Engineering, Medicine and Applied Sciences	Silver	2002	332,276
French Family Science Center	Silver	2005	293,495
Freidl Building	Silver	2007	62,045
Fuqua School of Business Breeden Hall	Silver	2008	91,359
Smith Warehouse Renovation	Silver	2009	140,000
Lemur Center	Silver	2010	18,000
Pascal Multi Purpose Field House	Silver	2012	81,391
Keohane K-4 Residence Hall	Silver	2013	71,000
Baldwin Auditorium	Silver	2013	38,291
East Campus Steam Plant	Gold	2010	7,000
Chilled Water Plant #2	Gold	2012	31,000
Ocean Science Teaching Center	Platinum	2006	5,600
Home Depot Smart Home	Platinum	2008	6,000

**Total**

**2.63 M sf**

**LEED Buildings Registered Projects (6 total)**

<b>Project</b>	<b>Target Certification Level</b>	<b>Square Feet</b>
Rubenstein Library at Perkins Renovation	Silver	115,341
Penn Pavilion	Silver	25,000
West Campus Union	Silver	124,771
Orrin Pilkey Marine Sciences & Conservation Genetics Center	Gold	12,300
West Campus Steam Plant	Gold	23,531
Environment Hall	Platinum	72,000
<b>Total</b>		<b>553,715 sf</b>

## LOOKING AHEAD FOR FY15

### **FY15 List of Projects:**

Alumni & Visitors Center  
Arts Building  
Bevan Building (Bottling Plant)  
Bostock Library Research Commons  
Bryan Center Entry  
Cameron Indoor Expansion  
Duke Chapel Restoration  
Duke Institute for Brain Sciences (DIBS)  
East Campus Union Dining Renovation  
Edens Quad Renovation  
Engineering & Physics Building  
Gross Hall Basement Renovation

Rubinstein Library at Perkins Renovation  
Science Drive/Cameron Parking Garage  
Scott Family Pavilion  
Softball Field  
Student Health and Wellness Center  
Track and Field Complex  
Page Auditorium  
Thomas Center Renovation & Addition  
Wallace Wade Upgrades  
Water Reclamation Pond Project  
West Campus Union



*West Campus Union, July 31, 2014*



*Spires removed in preparation of new roof*



*Seat installation in Wallace Wade Stadium*

### **FY15 Initiatives**

Over the past year, Facilities Management has been working diligently on the action items noted in its Strategic Initiatives. One of the ten strategies identified is **Processes**, which is described as developing a project delivery plan that clearly defines the roles and responsibilities during all phases of a project and updating the design and construction standards for all University projects. Listed below are some highlights of the actions that will be completed in the **Processes** Initiative:

- Project Delivery manual issued.
- Construction standards updated.
- Plan Review process improved.
- Strata software implemented to expedite approval process.
- Construction impact map published.
- Document management system upgraded.