

# REPORT OF THE OFFICE OF PROJECT MANAGEMENT FY 2013



*Penn Pavilion*

October 2013

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*Student Lounge inside renovated Gilbert-Addoms Residence Hall*

## **INTRODUCTION**

Facilities Management prepared the report on the Office of Project Management (OPM) at the request of Tallman Trask III, Executive Vice President and Peter Lange, Provost. 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 2014 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 12 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, two National Council of Architectural Registration Board (NCARB) interns, one professional engineer, one professional engineer in training, one certified planner and three LEED certified individuals.

## **FY13 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 FY13:

- Began creating a central building database.
- Created a Directory of Buildings and Landscapes.
- Overhauled Duke's design guidelines including a graphic facelift.
- Provided a full-time project manager as an on-site consultant for the Duke Kunshan University construction.
- Drafted the 2024 Master Plan which was approved by the Board of Trustees.
- Updated the Project Management Manual to standardize current Policies and procedures for the Office of Project Management.
- Changed the business model at the quarry so that the yield has increased from 12 square feet per ton to 18 square feet per ton.
- Reopened quarry for the first time in 10 years and quarried enough stone to last approximately 10 more years.
- 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 861 projects valued in excess of \$296 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 11	271	81 M	3.0%
FY 12	277	87 M	3.2%
FY 13	313	128 M	2.9%



*Environment Hall north elevation*



*Installation of chilled water lines along Campus Drive*

The table below depicts the OPM FY13 Budget/Actual/Variance and the FY14 Budget:

	<b>FY13 Budget</b>	<b>FY13 Actual</b>	<b>FY13 Variance</b>	<b>FY14 Budget</b>
Salaries	\$1,619,529	\$1,651,927	-\$32,398	\$1,887,048
Training & Travel	\$6,050	\$5,243	\$807	\$6,500
Professional Services	\$135,000	\$158,515	-\$23,515	\$134,000
Space Rental	\$49,596	\$47,980	\$1,616	\$44,783
University G&A	\$389,731	\$423,469	-\$33,738	\$410,034
Internal G&A	\$282,131	\$282,131	\$0	\$260,857
Office Expenses	\$38,822	\$52,516	-\$13,694	\$37,334
<b>Total Expenses:</b>	<b>\$2,520,859</b>	<b>\$2,621,780</b>	<b>-\$100,921</b>	<b>\$2,780,556</b>
Revenue	\$2,520,859	\$3,668,686	\$1,147,827	\$2,780,556
<b>Gain/(Loss)</b>	<b>\$0</b>	<b>\$1,046,905</b>	<b>\$1,046,905</b>	<b>\$0</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
- Fees are modified at project completion to match actual project costs
- **Average rate for all FY 13 projects at Duke equaled 2.9%.**

### ***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, 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.

### ***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% net pretax of the cost of the managed work.



***Gross Hall Skylight***

Another benchmark data point is on an hourly rate basis. The equivalent hourly rate for Duke's OPM is \$125/hour for 2013 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 \$130-\$175/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 FY13 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 economic condition and dramatic drop in construction projects nationally and locally, these increases were more than offset due to increased competition and smaller profit margins. 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.

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



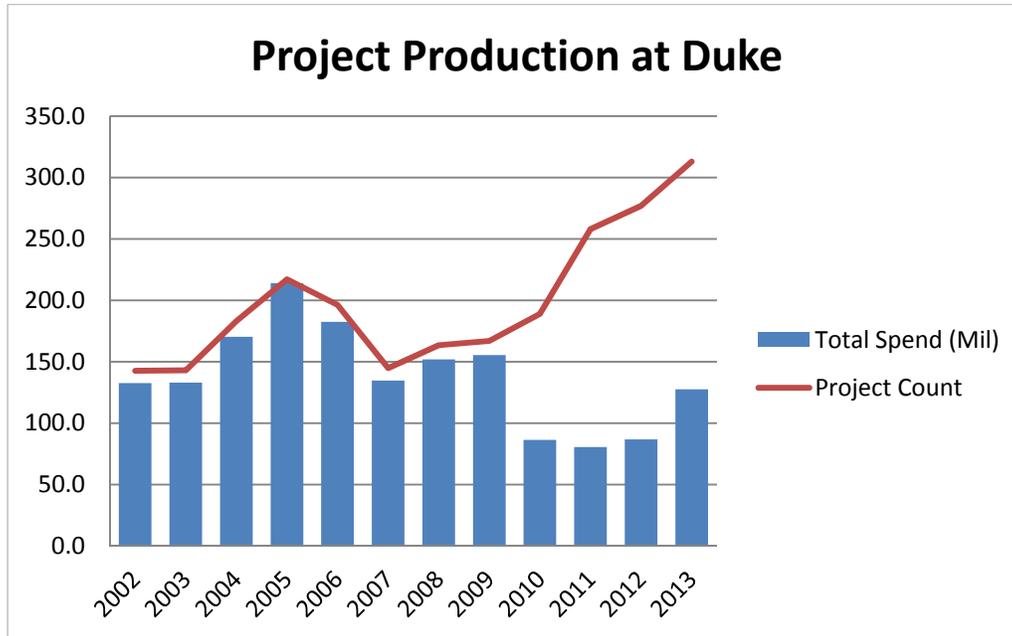
*Interior of Library Services Center.*



*Aerial of Reclamation Pond*

## PROJECT PRODUCTION

Duke has seen an increase in the number of projects and a decrease in the total amount spent since 2008 due to the increased number of smaller projects. This trend has ceased during FY13, with the project volume increasing to 313 projects and the total spend increasing to \$128 million. The table below shows the amount spent on projects over the last twelve years.



In addition, the chart below depicts the 313 total projects in FY 13 broken down by Tier and total cost:

Tier #	# of Projects	Total Amount (Millions)
Tier 3	28	\$90.7
Tier 2	104	\$29.9
Tier 1	50	\$3.9
Tier 0	131	\$2.9
<b>Total</b>	<b>313</b>	<b>\$127.6</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 to roof replacements for offices, utility projects, dining, classrooms and athletic facilities.

## HIGHLIGHTS OF MAJOR PROJECT

The table below highlights the major projects for the year:

Project Title	Comments
Library Services Center Module #3	This off campus expansion of the Library Services Center off Riggs Ave. adding a 3 <sup>rd</sup> module of high density book storage with automatic storage and retrieval system was completed in September of 2012 at a cost of \$7M.
West Campus Steam Plant	Conversion of existing steam plant from coal to gas as a primary fuel and upgrades to the controls and ancillary equipment and restores the original 1928 building. Project cost \$38 M. Completion expected February 2014.
Baldwin Auditorium Renovation	The renovation of Baldwin, completed July 2013, has transformed the auditorium into an acoustically superb, intimate, and beautiful 685 seat performance venue. The total cost was \$15M.
Paul M. Gross Hall	Renovation of the 2 <sup>nd</sup> and 3 <sup>rd</sup> floor of Gross Hall included a new skylight in the roof over a new two story "winter garden" and replacing the precast panels on the south façade with a glass curtain wall. The project was completed in August of 2013 at a cost of \$21M.
Environment Hall	This new 72,000 gsf building will serve as the home to the Nicholas School. Construction is underway and expected to be complete in May 2014. Estimated cost is \$39 M.
Penn Pavilion	Penn Pavilion serves as an interim dining facility while the West Campus Union undergoes extensive renovations. Once West Campus Union reopens, the Events Pavilion will be converted into a full service events hall. The building was completed August 2013 at a cost of \$25M.
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 \$85 M and expected completion date is January 2016.
Water Reclamation Pond Project	Construction of this storm water reuse pond is underway. Once established, 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 expected completion date is August 2014.
Orrin H. Pilkey Marine Science and Conservation Genetics Center	This 9,560 gsf building located at the Duke Marine Lab will feature research laboratories, office space, a teaching lab and meeting areas. Estimated cost is \$6M and the expected completion date is early 2014.
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 restoration of the Gothic Reading Room. Enabling projects began summer 2013. The estimated cost is \$59M and is expected to be completed in August 2015.
Gilbert-Addoms Residence Hall Restoration	Major renovations to the 10 bathrooms, upgrade of the electrical system and lighting, and as well as updates the commons rooms and lobby. This \$7M renovation was completed in 12 weeks.
Practice Fields along Frank Bassett Drive	This \$4.6M project replaces two grass fields with one new artificial turf regulation lacrosse field and two natural fields, with appropriate site security and lighting.
Track and Field Stadium	A new \$9M track and field complex will be constructed next to Koskinen Stadium. The project includes the construction of a new media tower that will serve the new track and field complex and the soccer stadium. Expected completion date is October 2014.
Chilled Water Pipe Installation along Campus Drive	Installation of underground piping to connect East Campus to the West Campus chilled water loop took place during the summer months of 2013 and work will continue during the summer of 2014. The total cost is estimated to be \$10M.



*Excavation of the new fields along Frank Bassett Drive*



*New windows and sliding glass doors from Bryan Center Bookstore onto Plaza.*

### **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 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 LEED Silver.



*West Campus Steam Plant Conversion nears completion*

**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
Ocean Science Teaching Center	Gold	2006	5,600
East Campus Steam Plant	Gold	2010	7,000
Chilled Water Plant #2	Gold	2012	31,000
Home Depot Smart Home	Platinum	2008	6,000

**Total**

**2.59 M sf**



*Orrin Pilkey Marine Science & Conservation Genetics Center*

*Gross Hall's new façade overlooking Towerview.*



**LEED Buildings Registered Projects (9 total)**

<b>Project</b>	<b>Target Certification Level</b>	<b>Square Feet</b>
Baldwin Auditorium	Silver	38,291
Perkins Renovation Phase 2. 3	Silver	115,341
Penn Pavilion	Silver	25,000
Gross Hall	Silver	142,481
West Campus Union	Silver	124,771
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 FY14**

**FY14 List of Projects:**

West Campus Steam Plant  
 West Campus Union  
 Environment Hall  
 Water Reclamation Pond Project  
 Rubinstein Library at Perkins Renovation  
 Playing Fields on Bassett Drive

Track and Field Complex  
 Page Auditorium  
 Duke Chapel Repairs  
 Bostock Library Research Commons  
 Wallace Wade Upgrades  
 East Campus Chilled Water Lines



*Baldwin Auditorium*

### **FY13 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 execution 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:

- Issue the updated and streamlined Project Delivery Processes from concept to commissioning to simplify and expedite the process and make it transparent to the client groups.
- Revise and update the Design Guidelines to current best practices
- Update the Project Management Manual and standardize all documents and processes.
- Summary level Project Status Reporting to internal clients and stakeholders for regular and accessible cost reporting.
- Continue to provide internal Programming and Space Planning Group to assist clients with early programming options.
- Continue to improve interdepartmental communication and interface for improved project coordination