

# COAA Project Leadership Award 2018

University of Central Florida  
Research I





**Research I**



**COAA**  
*Building Success for Construction Project Owners*  
**PROJECT LEADERSHIP AWARDS  
NOMINATION FORM**

**SECTION I - GENERAL PROJECT INFORMATION:**

**Name of Project:**

Research I

**Location of Project:**

Orlando, FL (UCF Main Campus)

**Name and Address of Owner:**

University of Central Florida  
Attn: Bill Martin, Director Facilities Planning and Construction  
Facilities Planning and Construction  
3528 North Perseus Loop, Bldg 16A  
Orlando, FL 32816-3020

**Name and Address of Design Professional(s):**

Architect:

Ponikvar & Associates  
720 SW 2<sup>nd</sup> Ave; Gainesville, FL 32601

MEP/FP Engineer:

Moses & Associates  
2209 NW 40<sup>th</sup> Terrace #A; Gainesville, FL 32605

Civil Engineer:

CHW Professional Consultants  
132 NW 76<sup>th</sup> Drive; Gainesville, FL 32607

Landscape Architect:

VHB  
225 E. Robinson Street Suite 300; Orlando, FL 32801

Structural Engineer:

Structural Engineers Group Inc.  
4114 Sunbeam Road, Bldg 200; Jacksonville, FL 32257

**Name and Address of Construction Professional(s):**

Charles Perry Partners, Inc (CPPI)  
200 E Palm Valley Drive; Oviedo, FL 32765

**Other Consultants or Professionals:** N/A

**Type of Project:** University - Laboratory/Research Building

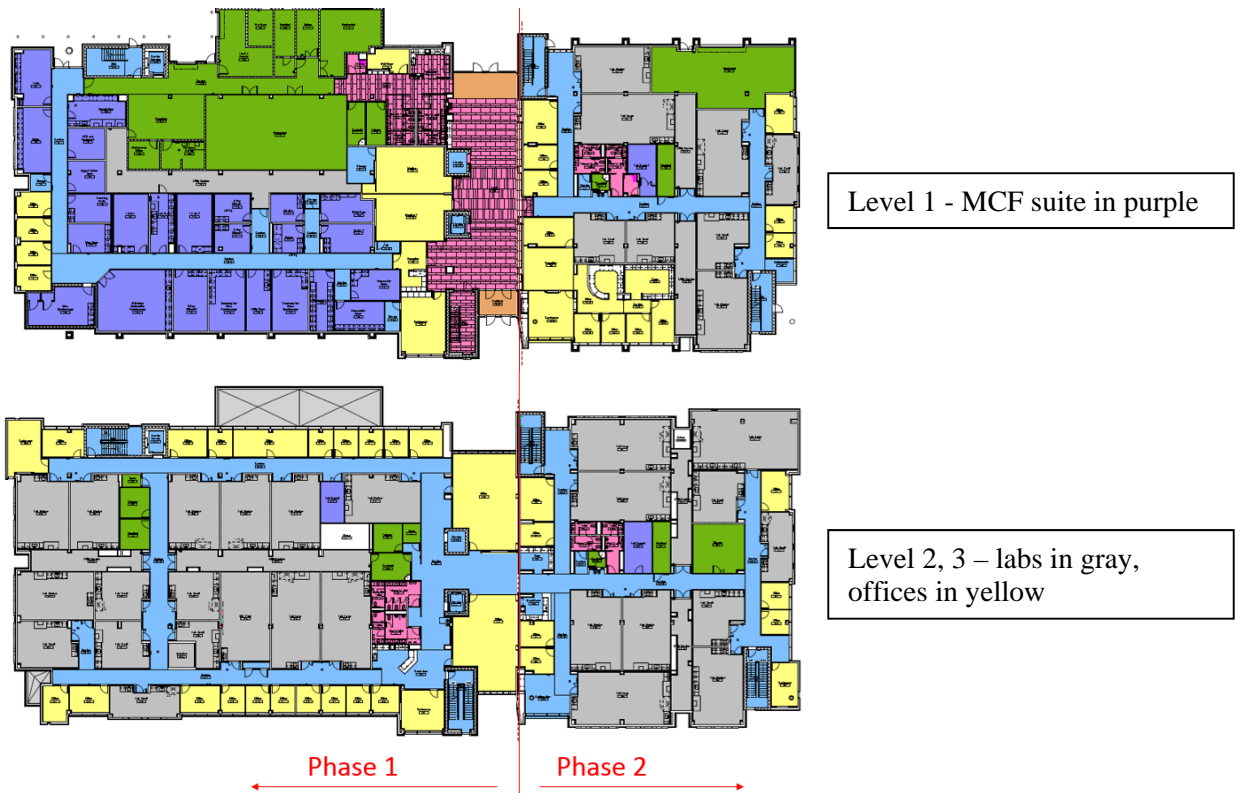
**Delivery Method:** CM @ Risk

## General Project Description:

The University of Central Florida is one of the largest Universities in the United States, with over 67,000 students. However, the physical size of our building inventory is much less than many of our peer institutions. UCF has roughly 8 million GSF of buildings (not counting parking decks), which is significantly less than our peers with similar size student populations. This is partially due to our relative youth (we were established in 1963) and also due to our limited state funding (in comparison to some of our peers). Research, with most Universities, is a primary focus of UCF and we have ambitious research goals set forth in our Collective Strategic Impact Plan. The Research I building plays a key part in achieving these research goals.

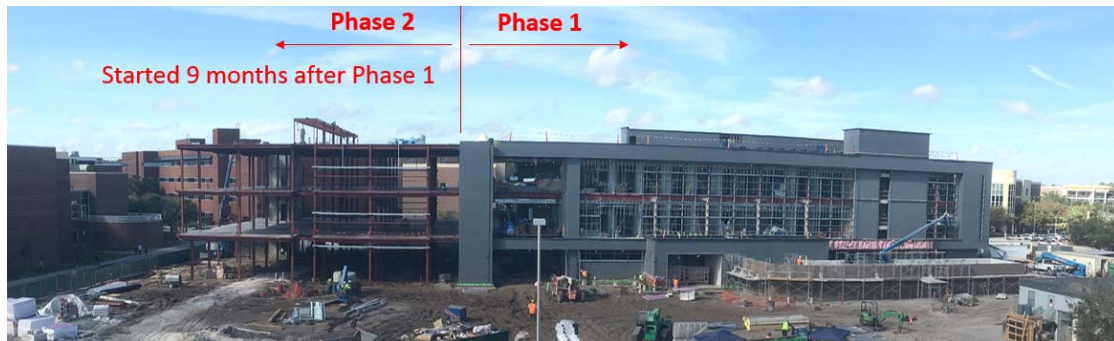
Research I began programming and design in October, 2014. At the time of its planning, only one end user department was known – the Materials Characterization Facility (MCF). The MCF provides researchers and industrial partners a place to analyze materials for research and education – using a myriad of special equipment such as transmission electron microscopes. This UCF program receives over \$6M of research grants annually. The MCF spaces required intense planning and design to accommodate the equipment and research needs of this group.

The remainder of the project was designed as generic labs of three (sizes small, medium, and large) to accommodate research programs of various sizes. Multiple utility distribution systems were evaluated, and it was decided early in the project to provide basic utilities within each generic lab, with full utilities in the adjacent research support corridors. The intent with this design was to maximize the quantity and size of labs that we could build, with future build-out needs being provided by individual research start-up funds.



The ultimate program of the building includes 79 NFPA 45 labs, 84 offices, conference rooms break rooms, and support rooms. The building is three stories, and is 105,775 gross square feet. Due to budget limitations, the project was designed as one building, but documented in two phases for bidding/construction purposes. Phase 1 was roughly 2/3 of the total building area, with Phase 2 as the remainder.

The construction of Phase 1 started in January 2016. Well into construction, funding was provided for Phase 2 of construction, which started in September 2016. Therefore we had one project site and one building, with two phases that were months apart in construction progress. This created a project management challenge as each phase was financially treated as a separate project – double the paperwork. To complicate matters, mid-construction the University began to make decisions on the occupants for the generic labs. This essentially created a design project within a construction project. The Architect and Engineer re-programmed and redesigned labs and infrastructure to meet the updated needs while construction was ongoing, and the contractor provided pricing for the added work. These budgets had to be tracked by department (as they had to fund their requested changes) and by phase. Ultimately, facilities recommended a two month schedule extension to Phase 1 for the added work, and that Phase 2 be extended to align with the Phase 1 deadline so the building could open as one structure. This greatly simplified the commissioning and turnover process, and ultimately proved to be a successful strategy.



Facilities and the AEC team was also challenged by a change in our suggested opening date. Our original recommendation was a February 2018 delivery date, but the University insisted on a January 2018 opening date. Delivering the project on this date required extraordinary teamwork between the Architect, Engineer, Contractor, Facilities, and the Commissioning agent. Next to a hospital, a laboratory building is perhaps one of the most difficult buildings to commission. While this project was not without its challenges, the team effort did allow us to open the building on schedule in January 2018.

Research I is a model research building for UCF, and is a key physical asset to help UCF reach its next level of research success. It was an extremely challenging project to deliver, which is why it is a great candidate for this award.



**Project Duration:**

Programming – October 2014 to February 2015 (5 months)  
Design – March 2015 to September 2015 (7 months)  
Permit/Bid – October 2015 to December 2015 (3 months)  
Construction, Phase 1 – January 2016 to January 2018 (24 months)  
Construction, Phase 2 – September 2016 to January 2018 (15 months)  
TOTAL – 39 months (3 years, 3 months)

**Project Start Date:**

October 2014

**Project Completion Date:**

Phase 1 – Planned July 2017; Actual January 2018 due to University changes/adds  
Phase 2 – Planned November 2017; Actual January 2018 due to University changes/adds

**Changes in Schedule:**

Please refer to the General Project Description.

**Initial Construction Cost (\$):**

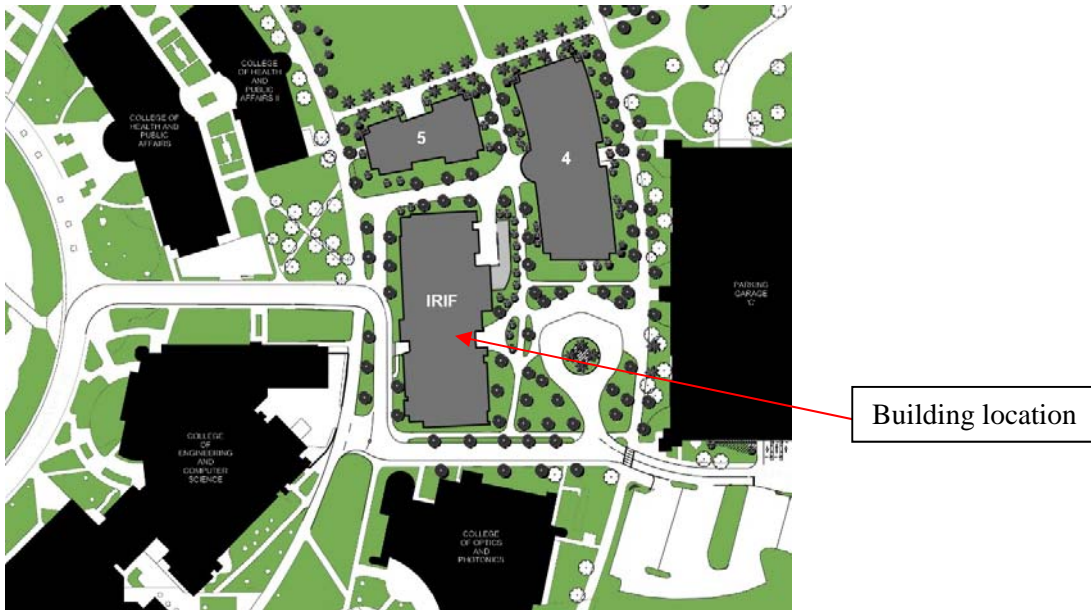
Phase 1 - \$30M  
Phase 2 - \$15M  
University changes/adds to both Phase 1 and 2 - \$8.8M  
Total - \$53.8M

**Final Construction Cost (\$):**

Total - \$53.3M (\$500K under budget)

**Percent of Change Orders:**

Unforeseen conditions and scope gap change orders accounted for **less than 1%** of the overall budget. The majority of change orders were for owner scope adds as previously described – making for a massive amount of paperwork to manage.



## **SECTION II - OVERALL PROJECT MANAGEMENT:**

*Entire section should not exceed four (4) pages.*

### **Project Management:**

*Provide two (2) examples which demonstrate project management excellence by the Owner's Project Manager.*

#### Project Management Excellence, Example 1:

STAKEHOLDER COORDINATION - The design of projects at UCF (and probably at any sophisticated Owner institution) involves numerous campus stakeholders. At UCF this includes (partial list):

- end users - who will ultimately reside in the building
- facilities operations – maintains the facility
- landscape and natural resources – maintains the hardscape/landscape/irrigation
- resource management – postal, surplus
- environmental health and safety – lab compliance, building code, state fire marshal
- utilities and energy services – chilled water, power, domestic water
- quality management and improvement – process compliance
- office of instructional resources – Audio Visual
- UCF IT – information technology networking
- UCF police – safety and security
- department of security and emergency management – access control, cameras
- parking and transportation services – parking lots, garages, bus coordination
- space planning, analysis, and administration – space assignment and approval
- business services – vending, copy machines

FP&C Project Managers must coordinate design workshops at every major project milestone, which on a project such as Research I consists of full day meetings with scheduled appointments for participants. Also included in these meetings are the Architect, Engineers, and Construction Manager. All written comments must be recorded, consolidated, communicated to the design team, responded to, evaluated, and closed out by our Project Manager. This is a substantial amount of tedious, yet critical, information to process and ensure gets properly incorporated into project documents at every phase. Our Research I Project Manager, Trey Beck, did a fantastic job with this responsibility, and it resulted in a thorough set of construction documents. The project budget had less than 1% of non-Owner requested change orders.

#### Project Management Excellence, Example 2:

WORKLOAD BALANCE - FP&C manages over 600 projects per year with a staff of 13 Project Managers. Our PMs manage both small and large projects, from inception to completion. While some owners have dedicated large project PMs and small project PMs, and some have dedicated design PMs and construction PMs – UCF believes that our approach is best, as it gives project ownership to our PM team, produces more well-rounded PMs, and spreads the project management efforts more evenly between our team members. Our typical PM has one large project, and up to 25 small projects under their management at any given time.

Trey Beck managed several major projects over the 39 month life span of the Research I building - including a \$6M lab/office renovation and a \$4M campus road project. As any manager knows, small projects are extremely time consuming and tedious – Trey managed over 100 minor projects (under \$2M construction cost) in the 39 month Research I design/bid/construction period. This balance of priorities, communications, and paperwork can only be accomplished with exceptional project management skill.

## **Scheduling:**

*Provide two (2) examples which demonstrate the Owner's expertise in managing the schedule; that is, identify some steps taken by the Owner which contributed to the management of the schedule.*

### Scheduling Excellence, Example 1:

The original project schedule was developed early in programming, and focused on the high level design, bidding, permitting, and construction milestones. This schedule satisfied the University's delivery dates, and was successfully tracked and managed. FP&C's project management team decided early in the project to divide the design documents of the full project into two phases, in order to meet the budget constraints of the University. This created one fluid design process, which would allow two phases of construction. This project management tactic proved fruitful when the University decided to fully fund the second phase of the project, and design drawings were ready for bid and permit. Had the initial project design not included the full construction documents of phase 2, as directed and managed by the UCF Project Management team, it would have caused a year of delay rather than months of delay between phase 1 and phase 2 of construction.



### Scheduling Excellence, Example 2:

As described under the General Project Description, the Research I project encountered many scope changes throughout its development. The most significant occurred during construction, when laboratory and office spaces were assigned to specific units. These assignments required significant changes to the project scope (added power, fume hood changes, wall demolition to combine labs, etc.) which took considerable time to evaluate and design, and time to bid and construct. The UCF Project Management team developed two schedule options which were presented to the Vice President of Administration and Finance and the Provost for approval. The first option (FP&C's preferred option), pushed back the phase 1 schedule completion from July 2017 to February 2018, and extended the phase 2 schedule completion from November 2017 to February 2018 (so the building would open at one time). This would provide the contractor the time needed to implement all requested changes prior to occupancy. The second option left the completion dates as-is, with a phased opening, and allowed for none of the requested changes to be completed at move-in. This option would require the changes to be constructed over time, after occupancy, which would have a considerable impact on the new building occupants. University leadership chose FP&C's recommended schedule option. However, they requested that the building be open by January 2018, at the start of the Spring 2018 semester, cutting a month off out of our proposed schedule. The UCF Project Manager worked closely with the Construction Manager to shave time from the schedule wherever possible, and the project was successfully delivered in January 2018.



## **Cost Management:**

*Describe what action the owner took with the project team to manage the project costs.*

Cost Management at UCF has been one of the most successful aspects of our project management. Proper cost management starts with establishing a detailed total project budget early in the process, including a healthy Owner contingency. We typically start our budgets with a minimum of 5% Owner contingency, which we can reduce at our discretion. Likewise, we reserve a 1% design contingency for unanticipated Owner scope changes. In addition to Owner contingency, we require our Construction Managers to start with a 10% contractor contingency at Schematic Design, which can be gradually reduced to a minimum of 3% at the time of the Guaranteed Maximum Price (GMP) proposal. Between these contingencies, we have been extremely successful in delivering campus projects on budget. Research I is no exception – even with the significant changes to scope and schedule, our contingencies allowed us to deliver the project under budget.



In addition to delivering the project under budget, there are two major challenges on this project that illustrate exceptional cost management. The first challenge is that the project was bid and constructed in two separate phases. This created two separate GMPs, two schedule of values, two sets of payment applications, and a serious challenge in tracking change orders, line-to-line transfers, and contingency approvals. Tracking of these thousands of transactions was successfully executed by our UCF Project Manager and our accounting support team.

The second challenge is that the project experienced over \$8M of changes mid-construction. These changes had to be priced by phase and department, as costs were being provided by individual university units for their respective additions. Keeping these costs in their respective “buckets” required an intense amount of tracking and budgeting. Once the costs were approved by the University, a contract amendment was issued to officially approve the changes, and the schedule of values of both phases were updated with the additional funding amounts. This effort took a tremendous amount of coordination from the FP&C Director, Associate Director, Project Manager, and accounting support staff – and required intense management of the Architect, Engineers, and Construction Manager. But this hard work paid off, as the project was delivered under budget to the University.

## **Quality Management:**

*Provide a brief narrative describing the methods of quality control/quality assurance and the Owner's participation in this area.*

There are a number of process requirements that all large projects are required to complete at UCF in order to assure the delivery of a quality project. Some of these include:

- AE and CM selection following state required criteria – which focuses on hiring qualified professionals and contractors, rather than low bidders
- Creation of an Owner's Project Requirement (OPR) document to define the Owner requirements which the design team must address in their contract documents
- Review of the Architect and Engineer's Basis of Design (BOD), which addresses in detail how they will accomplish the requirements listed in the OPR
- Review of a Life Cycle Cost Analysis (LCCA), created by the Engineer, to review the short and long term costs of various building systems, in order for UCF to make the best decisions for the long term success of the project
- Review of LEED Checklists prepared by the Architect, Engineer, and Contractor to ensure that all mandatory portions of UCF's Green Building Policy are being achieved and that the project will achieve a LEED Gold rating
- Facilitation of stakeholder workshops at all major project milestones to ensure that all necessary parties at UCF have input; follow-up on comments to ensure that design documents address all stakeholder comments
- Coordination with the Building Code Office and State Fire Marshal for preliminary code reviews during design, which helps accelerate official permit reviews
- Facilitation of UCF Standards reviews – UCF has a CSI based set of standards which must be complied with by the Architect, Engineer, and Contractor. Deviations from the UCF Standards require approval from the UCF Standards Committee, which is often difficult to obtain as cost savings is not generally considered to be an adequate reason for deviations. Navigating this process is an intense project management activity, but ensures that UCF receives a quality building
- Attendance at bid openings and initialing of bids to ensure the bid process is being conducted in a fair and transparent manner
- Regular attendance at Owner Architect Contractor meetings to ensure that the project is on schedule and to help facilitate any urgent Owner issues/decisions
- Facilitate the UCF Substantial Completion process – which includes 21 checklist items that are above and beyond the Architect's Certificate of Substantial Completion. This process is very demanding at UCF and requires management of, and coordination between, multiple Facilities and Safety departments
- Creation and completion of a punch list generated by all project stakeholders
- 11 month walk through to ensure that all systems are operating as designed

Facilities Planning and Construction also has a peer department within our Facilities and Safety (F&S) Division called Quality Management and Improvement (QMI). This group's focus within F&S is multi-functional. At a project level, their staff helps with "on the ground" project quality, such as attending design meetings, providing feedback on design documents, and walking construction sites. At a division level, QMI helps ensure that UCF policies and procedures are being followed and seeks to improve our processes by holding lessons learned meetings and soliciting customer feedback. QMI appears to be a fairly unique entity in university facilities departments – often there are quality management pieces within a department, but they are not often their own department. We have found QMI to be a strong asset to the quality of both our project delivery and department improvement.

### SECTION III - OVERALL PROJECT SUCCESS:

*Identify and briefly explain the factors that contributed to the success of the project such as the selection of the A/E, Prime Contractor and Subcontractors, approach to decision-making, handling end user requests, etc. Entire section should not exceed two (2) pages.*

Section II addressed several specific challenges of the Research I project, and the proactive management by our FP&C team that led to the successful delivery of the project on budget, on schedule, and with a high level of quality. However, it cannot be stressed enough how much a TEAM MENTALITY played to the success of this project – in particular the partnership and trust between the Owner, Architect/Engineer (AE), and Construction Manager (CM). This project is a prime example of a project that follows the COAA Way.

This partnership, of course, starts with the selection of the prime team members. At UCF, as with other state of Florida schools, we must follow the procurement requirements outlined by the Florida Board of Governors (BOG). These requirements focus on a qualifications based selection of Architects and Construction Managers. Our solicitations focus on the qualifications of specific team members of each company (experience, expertise, and education), the design or construction of similar projects, their understanding of the project, and their ability to provide the service that we require (demand). UCF establishes a committee of 3 to 5 people who independently score RFP books and shortlist 3 to 5 companies to interview. The ultimate recommendation of an Architect and/or Construction Manager is determined during the interview process, where the Owner can get a true understanding of who the best qualified company is to deliver our project.



Our Architects and Construction Managers are typically advertised at the same time. The CM is selected early, so they can be involved in Preconstruction efforts throughout the design of the project. This helps ensure that the project is being designed to a budget; the CM also provides feedback on materials and constructability. Additionally, UCF hires directly a Commissioning Agent (CxA) who is involved from the start of projects in helping UCF create our OPR, reviewing the AE's BOD, reviewing all milestone drawings, reviewing submittals during construction, and performing MEP and building envelope commissioning during construction.

The Research I project was a success, fundamentally, because of the TEAM approach to the project. This is reflected in both the Professional and Contractor recommendation letters at the end of this application. The Owner, Architect, and Construction Manager worked together through all of scope changes, unforeseen conditions, and schedule demands of our ultimate client – the University. As you can read from the UCF recommendation letters, the result is a high quality building with which the University is extremely pleased.

## **SECTION IV – PROJECT COMPLEXITY:**

*Provide a brief narrative (i) in bullet form and (ii) maximum of one page; describing the complexity of the project including challenges, constraints and the solutions.*

Most of the project challenges, constraints, and solutions have been described on the previous pages. A summary is listed below of the key challenges and how they were addressed by the project management team. For additional details, please refer to previous pages:

- **SCHEDULE/BUDGET - DESIGN**
  - Challenge – Initial budget was established as \$45M, broken into two phases due to cash flow availability.
  - Solution – Project was designed in two phases, so it could be bid and permit in separate packages that could be built years apart, if necessary
- **INITIAL SCOPE DEVELOPMENT**
  - Challenge – design a building that maximizes lab space for the available budget, and include flexible labs that can be easily adapted for future tenants; provide for all MCF tenant needs
  - Solution - Programming and decision making on lab sizes and building systems were reviewed early in design; MCF suite development included detailed discussions and documentation on equipment and utility needs
- **SCHEDULE/BUDGET - CONSTRUCTION**
  - Challenge – Funding for phase 2 was provided shortly after phase 1 started construction
  - Solution – Phase 1 construction was modified to eliminate exterior skin where the two phases connect (as this would now be interior space), a second project schedule and budget was created
- **STAKEHOLDER COORDINATION**
  - Challenge – include and incorporate feedback from over a dozen UCF stakeholder groups
  - Solution – UCF Project Manager facilitated workshops at all major milestones of design to solicit input and ensure that all comments were addressed by the design team
- **WORKLOAD BALANCE**
  - Challenge – the UCF PM, Trey Beck, was required to manage over 100 other projects (mostly small projects) concurrently with Research I, due to our chosen organizational structure and staffing limitations
  - Solution – Trey was efficient and effective in managing his workload, displaying exemplary project management abilities
- **SCOPE CHANGES**
  - Challenge – University assigns space to various tenants mid-construction, leading to significant scope changes and additions.
  - Solution – UCF Project Management proposes the project phases be extended and aligned to deliver a single building at one time; UCF coordinates the budget of the additional scope with the AE, CM, and University to ensure adequate funding is provided to cover project costs. Ultimately, the project is delivered on time and under budget.

## **SECTION V – SUSTAINABILITY ELEMENTS/EFFORTS:**

*Provide a brief narrative (i) in bullet form and (ii) maximum of one page; describing sustainability elements/efforts, if any.*

Research I has a variety of sustainability elements that were incorporated at the onset of project design, ranging from energy and water savings, to sustainable materials and resources. Below is a partial list:

### Energy Savings:

- Cooling: High efficiency campus Central Energy Plant (CEP) serves a variable volume chilled water pumping system
- Heating: Heat recovery chillers at campus CEP serve a variable volume heating hot water pumping system with backup condensing boilers
- Laboratory HVAC: Variable volume laboratory supply and exhaust tracking system with occupancy sensors for setback and a proprietary lab air sampling system (Aircuity) that aggressively reduces lab air change rates of the lab air is proven free of contaminants.
- Office HVAC: Variable air volume with supply air reset, night setback, and CO<sub>2</sub> control
- Air handling: Fan arrays with high efficiency motors and Variable Frequency Drives (VFDs) with static pressure reset
- Central fume exhaust fans: multiple redundant fans with high efficiency motors and VFDs
- LED lighting with occupancy sensors and selective switching for light levels
- Potable water booster pumps with high efficiency motors and VFDs
- Domestic hot water: Condensing type water heaters
- Process cooling water system with high efficiency motors and VFDs
- Submetering for Measurement & Verification (M&V) Plan
- BAS: Building Automation System integrating lab controls, HVAC controls, optimization sequences for occupancy, pressures, temperatures, CO<sub>2</sub> levels, lighting, and M&V Plan
- Heat island: 100% of roof square footage has high reflectance and emittance at 93 SRI, siplast veral aluminum & 107 SRI, siplast parapro roof membrane
- 30.3% total energy cost savings via whole building energy simulation against ANSI/ASHRAE/IESNA Standard 90.1-2007
- 5,664,000 kWh of green power purchased to offset two years

### Water Savings:

- 41.98% reduction in fixture water use from code baseline using:
  - Low flow water closets
  - Low flow urinals
  - Low flow faucets
- Closed loop process cooling water system for lab equipment

### Sustainable Materials and Resources:

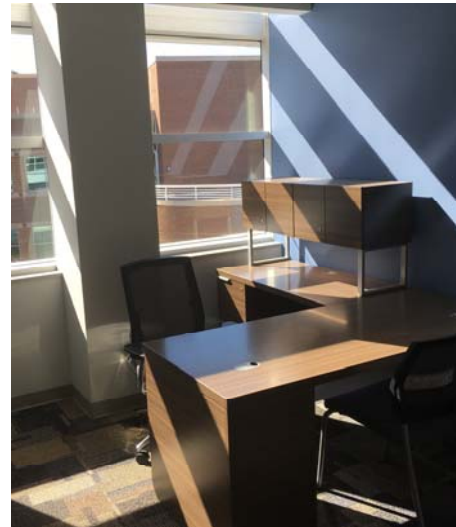
- Construction waste management: 943.3 tons of construction debris and concrete diverted from the landfill, equaling 84.53% of total construction waste.
- 25.15% of building materials contain recycled content
- 36.95% of building materials contain regional materials (within 500 miles of site)
- 72.36% of building materials contain FSC certified wood

## SECTION VI – CONFLICT RESOLUTION:

*Provide a brief narrative (i) in bullet form and (ii) maximum of one page, describing the owner's role in minimizing and resolving conflicts.*

Conflicts are an unavoidable part of all design and construction projects. It is important that the project management team think critically, plan ahead, and proactively address problems as they arise. Knowing that all problems are impossible to avoid, it is also important HOW a problem is addressed. Below are a number of key elements that were a part of conflict avoidance and resolution on Research I:

- **PLANNING** – it is impossible to know if you are off track if you don't have a baseline scope, schedule, and budget. These were solidified early in the project programming, ensuring that all team members knew the project goals.
- **CONTINGENCIES** – no project goes perfectly, there are always issues that arise throughout a project's development that are impossible to predict. That is why contingencies – both in budget and schedule – are critical to a project's success. We must EXPECT things to go wrong, and have the ability to adjust without compromising the overall project goals. Research I had comfortable budget contingencies, which resulted in quick approvals for the University's added scope and avoided time delays in obtaining additional funding as issues arose – this ultimately led to a project delivered under budget. Research I had minimal schedule contingencies and an aggressive due date, but with a team effort we were able to deliver the project on-time.
- **TEAMWORK** – ultimately trust and integrity are at the core of the Owner/Architect/Construction Manager relationship. With our qualifications based delivery method, we all have roles to play – but they all rely on us acting as a team to meet our goals. In the end, all parties must win for a project to be successful. Research I required many Owner management decisions on short notice, which the AE and CM executed quickly due to the trust relationship between the three parties. With all of the challenges on this project, Research I would not be a success without this team effort.



**SECTION VII - CUSTOMER SATISFACTION:**

Please attach to the Nomination Form the following letters of recommendation:

1. A letter from the Design Professional describing how they found the Owner contributed to the project success.
  - See attached letter from the Engineer of Record, Moses & Associates (Frank Moses, Principal)
  
2. A letter from the Construction Professional describing how they found the Owner contributed to the project success.
  - See attached letter from the Construction Manager, CPPI (Wendi Ward, Project Manager)
  
3. A letter from the customer or end user of the facility describing their overall satisfaction with the building/facility.
  - See attached letters (2) from our faculty and space planning liaison, Manoj Chopra; and our end user, Ernie Gemeinhart

**AFFIRMATION AND RELEASE:**

Nomination is submitted by:	<u>Bill Martin, Director Facilities Planning and Construction</u>
Name:	<u>Research I</u>
Company:	<u>University of Central Florida</u>
Street Address:	<u>4353 Scorpius Street</u>
City, State/Province, Zip/Postal Code:	<u>Orlando, FL 32816</u>
Phone Number:	<u>o) 407-823-3196, c) 407-516-9288</u>
Email Address:	<u>bill.martin@ucf.edu</u>

In submitting this application, I affirm to the best of my knowledge, that the information contained herein is accurate and correct. I also agree to grant permission for COAA ® to use the nomination materials in their entirety (including photographs) for promotional purposes which may include, but not be limited to, the COAA® website and the *Owners Perspective* magazine.

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

TITLE : \_\_\_\_\_



Moses & Associates, Inc.  
2209 NW 40<sup>th</sup> Terrace, Suite A  
Gainesville, FL 32605  
O.352.372.1911  
F.352.372.0186  
www.moses-eng.com

July 23, 2018  
COAA Project Leadership Awards Committee  
Construction Owners Association of America  
5000 Austell Powder Springs Road  
Suite 217  
Austell, GA 30106

Re: University of Central Florida  
Research 1 Building Nomination

Attn: Project Leadership Awards Committee

It is a distinct privilege to write in support of the Project Leadership Award for UCF Facilities Planning & Construction (FP&C). The technical complexity of this university research facility was a professional challenge for the A/E and the Construction Manager (CM). However, circumstances arose that made the project management even more complex: namely, the traditional triad of Scope-Budget-Schedule kept changing. Without the Owner's project management excellence from top-to-bottom, the project would not have been a success.

The Owner's contribution to project success started with **team building**. UCF FP&C competitively selected an A/E (Ponikvar & Moses & Associates), a CM (CPPI), and a Commissioning Agent (TLC). Selection criteria focused on the team approach and previous experience working together and for the Owner. UCF FP&C also integrated selected UCF technical resources into the project team: Utilities, Energy Conservation/Sustainability, IT/AV (designed by A/E and installed by UCF), Security and In-house Building Official. Finally, UCF FP&C project management identified and coordinated getting the right Users to provide the right input at the right time. This varied from the highly specific requirements of over 20 tools in the Material Characterization Facility (MCF), to the broad needs of the generic labs; no easy task, but crucial to project success.

The Owner's excellence in project management was also evident by the **vision** identified and the **plan implementation**. The challenges here included the normal Scope-Budget problems, but extended further. The Program notwithstanding, the UCF leadership insisted the project provide the maximum square feet of one-pass air labs possible, in addition to the MCF. The UCF Project Manager (Trey Beck) and the UCF Director, FP&C (Bill Martin) immediately recast the vision of the project to include small, medium and large generic one-pass air labs coupled with a two phase delivery scheme. Recognizing that the new scope/vision needed to be reconciled with the available funds, UCF FP&C aggressively directed the A/E and CM to prepare a matrix of possible lab utilities, as well as options for buildout: 1) infrastructure only, 2) infrastructure and distribution, and 3) full buildout into the labs. Option 2 was chosen. In a similar manner, casework options were considered. The Owner selected modular casework. These decisions by the Owner reduced first cost and increased lab flexibility, as these costs were deferred to fitout. The Owner further directed that the project be designed in two phases and that alternates be developed for Phase 1. The market was extremely volatile at bidding. Without the Owner's leadership in selling this implementation plan to UCF leadership, the project would have stalled.



None of this would have been possible without clear lines of **communication**. Trey Beck scheduled Standup Reviews for all design phases, which reduced project design time. Mr. Beck also provided all coordination with utility providers. In addition, he facilitated and reconciled all design review comments from the various stake-holders to secure buyin.

During construction, the Owner's project managers had ample opportunity for **problem resolution** which required prompt **decision making**. Problems ranged from typical Contractor and A/E issues to a change in the intended use of the building part way during construction. This change required redesign of numerous generic labs to be fit out for specific UCF programs. This resulted in a construction project being built in two phases, each with a "renovation" to the original design. Bill Martin personally directed an accelerated design of the fit outs and CM pricing by lab. Bill Martin and Trey Beck conducted "walk thrus" of each lab with the A/E, CM and subcontractors to observe field conditions of the work in progress. Mr. Martin then directed adjustments on a lab-by-lab basis to preserve the new scope while minimizing demolition, cost and time. Without this hands on **key decision making**, the revised project requirements could not have been completed on time. Finally, Mr. Martin's personal involvement enabled the associated large change orders to be reviewed and approved in a timely manner.

The success of the Research 1 project was a **team effort**. During my 40 year professional engineering career I have focused primarily on institutional projects, with an emphasis on university research facilities. I have had the pleasure of working with and for many of UCF's peer institutions. So I recognize excellence in **team building, vision, plan implementation, communication, problem resolution** and **decision making**. All of these require the Owner to have a robust project management organization with efficient processes and procedures. UCF has these; and Research 1 was a success because of that.

But it takes more than organization and process; it takes dedicated people. Those people must lead the team with **integrity** and **fairness**. Mr. Beck and Mr. Martin required the team to provide whatever information was needed to resolve whatever problem was on the table, whether technical, budget or schedule. They made prompt decisions and gave clear direction. And we never looked back; we didn't have time. In the final analysis, the Owner's leadership in this manner enabled the team to trust one another.

From this (now retired) professional engineer, **integrity** and **fairness** define excellence in project management. These traits are embodied in Mr. Beck and Mr. Martin; and they were key to the success of Research 1.

Sincerely,



PW Moses, PE



Sam Frasier, PE

President

Moses & Associates, Inc.



# Charles Perry Partners, Inc.

construction management | design-build | general contracting

July 25, 2018

Bill Martin  
Director of Facilities Planning and Construction  
University of Central Florida  
3528 North Perseus Loop, Building 16  
Orlando, FL 32816

Re: Research One (R1) Project Management

Mr. Martin:

UCF Research One (R1) project presented many logistical and coordination challenges that required a unique approach that could have only been developed and executed by forward thinking and a full teamwork approach. In addition to being a high end research lab with over 110,000 square feet the project was designed, bid and released in multiple phases to meet schedule goals. UCF's staff and their project management team was instrumental in meeting the goals and deadlines for the project.

First and foremost, UCF recognized that this was an incredibly complex project and it was imperative that they select Design and Construction teams with vast experience in Research Laboratory Construction. Using a qualifications based selection in lieu of traditional hard bid ensured the right teams were selected for both the design and construction. Secondly, UCF understood the importance teamwork would play for a project of this magnitude and their participation in the project team building exercise at the beginning of the project. UCF was represented at this event by their Project Manager, and the Director and Associate Director of UCF Facilities & Planning, which lead to an overall healthier working relationship throughout the project. During this day long team building session all the stakeholders, including major trade contractors, learned how to best communicate with each other and together developed common project goals. All involved in this teambuilding session remained committed to these common goals throughout the project duration.

The project became exponentially more difficult as the 2<sup>nd</sup> phase and later the interior buildout phases came online. UCF recognized the need for expeditious decision making in order to keep the project on schedule and achieve the already aggressive completion dates. They accomplished this by empowering their project manager to make decisions quickly at weekly OAC meetings. And for more difficult or cost related changes, the design and construction teams were provided with direct access to the decision makers at the highest level needed.

As new researchers came on board adding both build out and scope to the project the finish date remained fixed. UCF recognized the need to balance schedule with costs and not jeopardize the project

end date. With each added phase allowances were established for unknown items to expedite change requests. Strategic decisions were made with the design and construction team to select products that could be procured timely without impacting the schedule. UCF also allowed for strategic overtime for selected trades on the critical path.

Like most projects the Research One project started with a vision for the University. Goals were established for both budget and scheduled to accomplish this vision. UCF implemented all the strategies mentioned above and combined these with constant daily communication with the project team and end users to achieve their vision on time and under budget.

Sincerely,  
Charles Perry Partners, Inc.



Wendi Ward  
Project Manager



To whom it may concern,

I have been involved with the University of Central Florida's Research 1 building project since design began in 2014. I was brought on board Research 1's design team as a representative for the Materials Characterization Facility (MCF) and later also representing NanoScience Technology Center (NSTC) when they were identified as likely having space in the building. In 2014, I was the laboratory manager and safety officer for the Advanced Materials Process and Analysis Center (AMPAC, the home unit for the Materials Characterization Facility) and NanoScience Technology Center. I have laboratory experience as an undergraduate and graduate student researcher in biology and chemistry laboratories and as a laboratory and facilities manager in my professional career overseeing biology, chemistry, engineering, robotics, biomedical, physics, pharmaceutical, optics, and computational laboratories. With this experience, the design team relied on my input for many practical, day-to-day usage aspects of Research 1. In early 2018, I was promoted to building manager for Research 1, and my early and ongoing involvement with the project has definitely assisted with my transition to this position. I witness the success of the building's launch on a daily basis as I interact with satisfied occupants across all fields of research.

Initially, Research 1 was named Interdisciplinary Research and Incubator Facility (IRIF), and the concept was to create a state-of-the-art home for MCF, provide incubator space for UCF-born intellectual properties, and house "wet" research laboratories for UCF faculty. The goal was to maximize the square footage of wet lab space while still allowing a great degree of flexibility in the end, and possibly ever-changing, use of each laboratory space. Victories in these efforts are very clearly evident. Many research teams across all scientific disciplines (materials, aerospace, civil, environmental, electrical, and computer engineering; biology; medicine; agriculture; health and public affairs; anthropology; chemistry; optics and lasers; education; physics; nanosciences; psychology; hospitality; etc) have moved into Research 1 since commissioning, and are already being very productive. Having researchers from these diverse fields under one roof and satisfied with their research space is a daunting task which Research 1 has taken on with fervor.


The design team was asked to incorporate generous formal and informal meeting space as well as collaborative or "collision" space wherever such opportunities arose. At early design, UCF was just starting to wade into the concept of cluster hires where researchers from myriad backgrounds would be brought together to tackle multi-disciplinary issues such as coastal erosion, nanotechnology, cybersecurity, renewable energy, energy conversion, and propulsion. Providing collaborative areas to allow researchers to meet and, often quite literally, "bounce ideas off the wall" was a fun challenge the design team met with enthusiasm, and to great effect. Research 1's meeting spaces and collaborative areas are already known across campus as being top notch, and Research 1 users rely heavily on these spaces in their daily routines. Ten meeting rooms of various sizes provide Skype capabilities via Microsoft Surface HUBs or Crestron classroom presentation technology to bring those off-site into our facility in 1080p. Several informal collaborative areas; complete with café and lounge-type furniture, copious writing surfaces, and generous wireless networking capabilities; throughout the building are

frequently used by research teams to share their science in a casual, conversation-friendly environment. Graduate student teaching assistants also utilize these spaces for study sessions and group lessons.

Other than MCF, the building's occupants were not identified until closer to building commissioning. Due to the design team's vision; progressive architectural and engineering design; and effective, competent project management from day one, fitting the laboratories to the needs of the end users has been very straightforward, and Research 1 occupants have been very pleased with their new research space.

I am proud to have been a part of Research 1 since early in the process and look back at the design, construction, and commissioning process with fond memories. I walk into work each day with a sense of pride at the work that has been invested and a vigor for the challenges and rewards each day will bring.

Sincerely,

A handwritten signature in black ink, appearing to read 'EJG', followed by a long horizontal line extending to the right.

Ernest J. Gemeinhart

Building Manager, Research I



UNIVERSITY OF CENTRAL FLORIDA

**Civil, Environmental, & Construction Engineering**

12800 Pegasus Drive, Suite 211  
PO Box 162450  
Orlando, FL 32816-2450

July 25, 2018

COAA Project Leadership Awards Committee  
Construction Owner's Association of America  
5000 Austell Powder Springs Road, Suite 217  
Austell, GA 30106

Re: University of Central Florida (UCF)  
Research 1 Building Nomination

Members of the Awards Committee,

I would like to recommend the UCF Research I project for the COAA Project Leadership Award. This project has incredible significance to UCF in achieving the University's strategic research goals. UCF is striving to become a preeminent research university within the state of Florida, and in 2018, set a university record of \$183M in research funding. This level represents a 23 percent increase from 2017, and a 37 percent increase from 2015. The Research I building will allow UCF to execute the research activities associated with these grants more effectively, and position ourselves for continued growth in research programs and funding.

The Research I project was challenging to design and construct. At the project's inception, only one prime end user had been identified, the Materials Characterization Facility (MCF) of Advanced Materials Processing Center. The project was also tasked with building as much square footage as possible, which limited the buildout of specialized utilities in the labs due to budget constraints. This presented UCF Facilities Planning and Construction, the Architects, and the Engineers with a challenge to design generic labs that could be flexibly used and modified as and when they were assigned. The UCF Project Management team facilitated numerous meetings between UCF end users, UCF stakeholders, and the Architect/Engineer/Contractor (AEC) team to ensure that all project needs were met. The result is a large number of highly flexible lab spaces which can be customized to suit individual research needs.

It is worth noting that assignments of space to individual research groups (with the exception of MCF) started mid-construction of the first phase - which created tremendous logistic, scheduling, and budgetary challenges. The UCF Project Management team successfully led and navigated these challenges with University leadership and the AEC

team, establishing a revised budget and schedule that ultimately were met. The project opened to end users in January 2018, meeting the University's aggressive completion schedule.

It is also worth noting that this project was designed, built, and constructed in an extremely busy period of UCF's development. UCF has designed and constructed over 850,000 GSF of new space in the past 5 years, including academic, athletic, and support buildings. During this period the UCF Project Manager, Trey Beck, managed over 100 other small and large projects. This immense Project Management workload only emphasizes the efficiency of the leadership on this particular project.

Overall, UCF is very satisfied with the end results – a highly flexible laboratory and office building that will help UCF achieve the next level of research and preeminence. As the campus lead for research space through our Office of Research, I am very pleased with the outcome of this effort and have no hesitation in strongly recommending this project to you for this prestigious award.

Please feel free to contact me at (407) 823-5037 or by email at [chopra@ucf.edu](mailto:chopra@ucf.edu) if you require any further information in support of this recommendation.

Sincerely,

A handwritten signature in black ink that reads "Manoj Chopra". The signature is written in a cursive, flowing style.

Manoj Chopra, Ph.D., P.E.  
*Professor of Civil Engineering*  
*Campus Lead for Research Space, Office of Research*  
*Special Assistant to Associate Provost for Strategic Planning*







# FACILITIES PLANNING AND CONSTRUCTION LEADERSHIP

**L LEAD** TAKE CHARGE OF PROJECT MEETINGS; MAKE DECISIONS, INVOLVE LEADERSHIP WHEN NECESSARY; ADD VALUE TO THE PROCESS; SOLVE PROBLEMS; EXEMPLIFY POSITIVE VALUES

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**E ENTHUSIASM** BRING ENERGY AND PASSION TO PROJECTS; HAVE A POSITIVE AND SUPPORTIVE ATTITUDE; VOLUNTEER FOR NON-PROJECT DUTIES

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**A ADVISE** GUIDE CLIENTS ON THE BEST SOLUTIONS; EDUCATE CLIENTS ON DELIVERY SYSTEMS, PROCESSES, ETC.; BE AMBASSADORS FOR F&S AND FP&C POLICIES, PROCEDURES, AND PROCESSES

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**D DOCUMENT** USE AVAILABLE TOOLS TO FULLY DOCUMENT PROJECT INFORMATION - SCOPE, SCHEDULE, BUDGET, HISTORY, CRITICAL NEEDS, APPROVALS, FORMS, ETC.

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**E EVALUATE** CONSIDER THE BEST INTERESTS OF UCF WHEN REVIEWING PROJECTS - QUOTES, BIDS, PROPOSALS, CHANGE ORDERS, ETC.; LEARN UCF STANDARDS AND OWN THEM

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**R RESPOND** ACT QUICKLY WHEN INFORMATION IS REQUESTED; DO NOT OVER-PROMISES AND UNDER-DELIVER; SET CLEAR EXPECTATIONS EARLY AND STICK TO THEM

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**S SELF IMPROVE** BECOME A SUBJECT MATTER EXPERT; INVEST IN TRAINING FOR SELF/UCF BENEFIT; PUSH YOURSELF OUTSIDE YOUR COMFORT ZONE

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**H COMMUNICATE** HABITUALLY REGULAR (WEEKLY) COMMUNICATION ON ALL PROJECTS; VERBAL WITH WRITTEN FOLLOW-UP; DISCUSS ANY ISSUES WITH AD/D

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**I INTEGRATE** WE ARE ONE F&S TEAM - POSITIVE COMMENTS ONLY ABOUT OTHER DEPARTMENTS; FOLLOW ALL F&S AND FP&C PROCEDURES; RESOLVE ISSUES IN PERSON

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**P PROACTIVE** QUICK CLIENT CONTACT ON ASSIGNMENT; PUSH DESIGN AND CONSTRUCTION TEAMS; FOLLOW-UP W/O PROMPTING; PRIORITIZE, BUT ALL PROJECTS MATTER!

