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# Campus Planners' Preferences For Residence Hall Project Delivery Methods

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# CAMPUS PLANNERS' PREFERENCES FOR RESIDENCE HALL PROJECT DELIVERY METHODS

by

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# Abstract

This research determined the preferred project delivery method utilized by campus planners when building student housing on a university campus. Four key performance indicators were also evaluated to determine if they influenced the campus planner to select a particular project delivery method. The four key performance indicators were: owner input, cost, safety, and on-time completion. Campus planners identified though the Society for Campus and University Planners (SCUP), were invited to participate in this survey research method. Five research questions were explored in this study. They were:

1. What is the preferred project delivery method (PDM) when building a residence hall on a college campus?
2. Do key performance indicators influence a campus planner's choice of preferred project delivery method?
3. Does the preferred project delivery method differ by the number of beds?
4. Does the preferred project delivery method differ geographically?
5. Does the preferred project delivery method differ between public and private institutions?

Based on the survey findings, analyzed using SPSS, sufficient information was garnered from the data to allow responses to the five research questions. In sum, there was a significant preference on the part of campus planners for the construction management at risk project delivery method when building student housing. This finding was consistent across regions and between public and private institutions. The design-bid-build project delivery method was the preferred approach when building student housing of less than 200 beds. Key performance

indicators were shown to have little influence on the decision regarding which project delivery method to choose.

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# Chapter 1: Introduction

## Introduction

During the academic year 2007-2008, nearly 3 million students resided in university provided campus housing (see Table 242, National Center for Educational Statistics, 2007). Campus housing units are extensions of the university environment and often influence students to consider conflicting values, behavioral adjustments, and life changing decisions (Willoughby, 2002). Other studies also have shown that the physical characteristics of campus buildings influence prospective college students (Banning & Cunard, 1986; Sturner, 1973; Thelin & Yankovich, 1987). Moreover, students who are considering attending a college or university are more sophisticated and consumer oriented, often demanding more amenities and services (Padjen, 2002). Therefore, designing and building a proper residence hall is critical to student satisfaction and the academic mission of the university.

The process of designing and constructing a residence hall is complicated and involves complex decisions to be made by many partners (Chau, Anson, & Zhang, 2003). The implementation of building student housing is typically the responsibility of the university campus planner. The campus planner is often charged with the obligation of identifying the site for the new building, securing proper financing for the project and identifying the proper project delivery method to be used in order to construct the actual building (Dober, 1963). Thomas Jefferson, certainly one of the first university campus planners in America, personally designed the University of Virginia. Dober (1963) stated, “By any measure, Thomas Jefferson stands as

the most extraordinary master planner in American education … [as he] selected the site, designed the buildings, wrote the specifications, [and] supervised the construction" (p. 21).

Graphic redacted, paper copy available upon request to home institution.

*Figure 1*. Early campus planning example: design for student housing for the College of William and Mary.

One of the earliest attempts at campus planning occurred at the College of William and Mary in Williamsburg, Virginia. Engraving plates dated 1773 show elevation drawings of the main building (Dober, 1963). Included in the plans were rooms designated for student housing.

> Each professor had a private apartment of two plainly finished rooms, corresponding with the hall and chamber of a private dwelling. Leftover spaces were distributed among the "better Sort of the big Boys" living three or four to a room, while Grammar School students slept in the undivided dormitories over the hall and chapel. Thirteen dormer windows lit each of these barrack-like rooms, and in each case, a fireplace at the eastern end was the only source of heat. Curtains may have afforded some visual separation between individuals or groups, but compared to other students, those who occupied these common sleeping rooms enjoyed little privacy. (Wenger, 1995, p. 344)

The Society of Campus University Planners (SCUP) defines campus planning to include, “Planning for budget/resource allocations, community relations, facilities and space management, to name a few, yet all of these areas within campus planning are driven by campus-wide academic and strategic planning processes” (SCUP, n.d.). The term campus planner is used interchangeably with project manager in the literature. Utilizing another term often found in the literature, Halpin (2010) stated that the role of a construction manager is to, “efficiently and economically apply the required resources to realize a constructed facility of acceptable quality within the time frame and budgeted cost specified” (p. 14).

As campus plans were being considered by many states, student housing was deliberately woven into the fabric of the university campus. This intentional process was evident in the way the state of Florida campus planners designed the initial consolidated university system to include the planning of residence halls.

**A Case Study: The State of Florida**

It was the Buckman Act of 1905 that consolidated the state universities in Florida (Kerber, 1979; Tate, 2002). White male students would attend a university located in Gainesville while Tallahassee was the site selected for a women's college. In addition, the State Normal School for Colored Students was assigned land less than two miles from the state capitol. The Act created the Board of Control for Florida Institutions of Higher Learning, which reported to the state Board of Education. Funding for the three universities came from the state legislature, which also managed salaries, campus locations, building size, and academic course offerings. In 1954, Fred H. Kent, chairman of the Board of Control for Florida Institutions of Higher Learning, initiated a statewide review to determine the viability of developing additional state universities across the state of Florida. The committee presented their findings and recommendations in July, 1956. In all, 14 recommendations were submitted. The final recommendation was related to facilities. It stated:

> 14. That adequate facilities be provided in the state university system to meet immediate and emerging needs for instruction, research, and service.
>
> a. That conditions of faculty service be improved to attract and retain highly competent staff members.
>
> b. That capital outlay funds be provided for two new state institutions recommended for the Tampa Bay area and the lower East Coast area.
>
> c. That for the existing state universities capital outlay funds be provided in the immediate future for only such *nonresidential facilities* [italics mine] as are necessary to replace obsolete and temporary buildings and to provide facilities for

such specialized needs a faculty offices, new programs of instruction, and expanding research activities.

d. That the existing state universities be encouraged to provide additional housing for students, through projects that are either entirely or primarily self-liquidating, so as to provide residential facilities for the maximum number of students that can be accommodated in their present nonresidential space. (Brumbaugh & Blee, 1956, pp. XII-XIII)

The results suggested the need for institutions of higher education to be strategically located around the state to meet the regional needs of the citizens of Florida. Moreover the recommendation to create an auxiliary funding model to build campus residence halls became the catalyst for the residential building boom that followed.

Creating residential space on campus was deliberate and planned. According to Brumbaugh and Blee (1956), the requirements for additional residential space had been projected on the basis of the following assumptions:

(1) that of the total enrollment in 1970, there will be 58,000 students in the state university system (10,000 in each new state institution), 41,000 in community colleges, and 33,000 in private institutions; (2) that the percentages of the total enrollment housed would be the same in 1970 as it was in 1953-1954 (55 per cent in state university system, 0 per cent in the community colleges, and 45 per cent in private institutions); (3) that the amount of space now available in each type of institution per student—295 square feet in public universities and 224 square feet in private institutions—will be available in 1970; and (4) that residential space can be built and equipped at a cost of $15.00 (1953 constant dollars) per square foot. (pp. 59-60) Table 1 documents the anticipated need for student

housing space by 1970 using constant dollars. According to the US Census Bureau, constant dollar value is, "a value expressed in dollars adjusted for purchasing power. Constant-dollar values represent an effort to remove the effects of price changes from statistical series reported in dollar terms."

* Source: U.S. Bureau of Economic Analysis (www.bea.gov/industry/gpotables/gpo_action.cfm).
** "Constant-dollar value (also called real-dollar value) is a value expressed in dollars adjusted for purchasing power. Constant-dollar values represent an effort to remove the effects of price changes from statistical series reported in dollar terms" (www.census.gov/hhes/www/income/histinc/constdol.html).

Table 1

*Amount and Cost of Additional Residential Space Required by 1970 (1953 Constant Dollars)*

| Type of Institution | Space Needed (In millions of sq. ft.) | Cost |
|---|---|---|
| State University System | 6.6 | $ 99,000,000 |
| Community College | 0 | $ 0 |
| Private Institutions | 1.5 | $ 22,500,000 |
| Total | 8.1 | $ 121,500,000 |

Note: Adapted from Higher Education and Florida's Future (p. 194) by Ivey, Brumbaugh, McGrath, Reeves, & Russell, 1956. Tallahassee, FL.

In 1906, the first residence hall constructed at the University of Florida was Buckman Hall to commemorate the work of Henry H. Buckman, the state legislator who drafted the Buckman Act. Blansett (2003) gave the description of Buckman Hall from the National Register of Historic Places as the following:

> 1907, Edwards and Walters, architects. Brick, 31/2 stories, elongated central block with symmetrical wings, hipped roof with dormers and low crenulated wall, 6 projecting two-story bays, decorative stonework. Late Gothic and Jacobethan Revival elements. One of 2 extant original structures at the University of Florida; reflects institutional architecture which became standard for university buildings in eastern U.S. (pp. 7-8)

Over the next two decades, six universities were created; four were designated to meet the specific needs of upper-division students. Oversight for these new institutions of higher

learning continued under the Board of Control through 1968, when the Board of Regents was created under the state Board of Education.

## Problem Statement

Designing and building a residence hall that reflects current trends is assigned to the campus planner, who must meet strict budget expectations while constructing a building that is relevant to today's college student. The demand for university campus student housing continues to increase (Abramson, 2012). A variety of project delivery methods are available to campus planners; thus, identifying a preference for a particular project delivery method using key performance indicators could be a useful study in the field of campus planning. The purpose of this study was to measure campus planners' preference for a particular project delivery method by using key performance indicators. By examining secondary data sources about existing student housing projects, patterns emerged regarding the type of housing being constructed, key performance indicators, and the project delivery method being utilized by campus planners throughout the United States.

## Significance of Study

This study is of interest to housing professionals and facilities planners on university campuses nationwide. There is sparse research focused on the project delivery method utilized to build student housing. Given the fact that campus student housing continues to be a growing trend (Abramson, 2012), this study would serve to inform future research on the topic of preferred construction methods. This study is important for several reasons beyond the benefit of the subject matter. This study can serve as a guide for future research into the design and construction of future residence halls, as well as explore future financing models that will have a

positive impact on the construction budget. Moreover, this study could be repeated in future years to determine if construction methodology has changed or remained the same.

**Organization of Study**

This research study was organized into five chapters. Chapter 1 provided a case study of the state of Florida with specific emphasis on the evolution of residence halls. The chapter also provided a rationale for the significance of the study and offers working definitions of terms used. Chapter 2 examined the literature regarding genesis of residence halls, generally acceptable project delivery methods, and information on key performance indicators. Chapter 3 described the methodology utilized, how data was collected and analyzed, and study limitations. Chapter 4 highlighted the findings of the research aligned with the research questions. Chapter 5 offered insight and analysis of the findings and direction for future research studies.

**Delimitations of the Study**

The research timeframe and financial resources needed to survey multiple institutions were delimitations. Other institutions and campus planners may generalize the results and apply the findings to their particular campus. Although the generalization of results from this study could save money and research time, the quantitative results may not apply to multiple geographical locations or represent all characteristics of the transitioning population (Creswell, 2008). Another delimitation of this research was that the survey instrument did not contain many open-ended questions. The instrument was not designed to allow for participants to express many of their views beyond the choices provided (Creswell, 2008; Neuman, 2006).

**Research Questions**

Based on the problem statement and the studies significance, the following research questions were developed:

1. What is the preferred project delivery method (PDM) when building a residence hall on a college campus?
2. Do key performance indicators influence a campus planner's choice of preferred project delivery method?
3. Does the preferred project delivery method differ by the number of beds?
4. Does the preferred project delivery method differ geographically?
5. Does the preferred project delivery method differ between public and private institutions?

**Working Definitions**

The following are working definitions of the terms as used in this dissertation by the author.

**Architect:** "A person who is qualified by education, training, experience, and examination and who is registered under the laws of the locale to practice architecture" (Merritt & Rickets, 1994, p. 2.2).

**Civil engineer:** "Determines the location of a project on a site by studying the subsurface soil conditions and the topography of the land. They design roads, bridges, tunnels, parking lots, storm water drainage, and sewage treatment plants" (Gould & Joyce, 2002, p. 39).

**Construction management at risk:** A method of construction contracting that reflects the industry trend of project owners placing greater reliance on others to successfully deliver their projects (Smith, 2005, p, 04.1).

**Design-bid-build:** According to Hale, Shrestha, Gibson, and Migliaccio (2009), is a "project delivery method in which the owner enters into a contract with an architect/engineer firm that provides design services based on the requirements provided by the owner. The A/E deliverables include plans and specifications for the construction of the project. These documents

are subsequently used by the owner as the basis to make a separate contract with a construction company" (p. 579).

**Design-build:** The design-build delivery method is an "integrated, project delivery technique whereby the owner contracts directly with a single entity to deliver a project" (Abi-Karam, 2005, p. 14).

**Electrical engineer:**

> Calculates the overall electrical load required and size of equipment, accordingly, and supplies drawings that show power lines, motors, transformers, switchgear, and telecommunications. They determine the amount of lighting required for the owners intended use and design lighting layouts to meet the architect's criteria. (Gould & Joyce, 2002, p. 39)

**Gross square footage:** "The sum of all areas on all floors of a building included within the outside faces of its exterior walls, including all vertical penetration areas, for circulation and shaft areas that connect one floor to another" (National Center for Educational Statistics, 2006, p. 20).

**Interior designer:** "Works on a project's nonstructural interior spaces … [such as] interior finishes, paint, window treatment, flooring, ceilings, furniture, and signs" (Gould & Joyce, 2002, p. 36).

**Key performance indicators:** "Compilations of data measures used to assess the performance of a construction operation" (Cox, Issa, & Ahrens, 2003, p. 410).

**Landscape architect:**

> Their work includes identification of plant species and location of trees and shrubs. They set grades; establish walkways, walls, and fences, and specify paving types. They also get

involved with site design, pedestrian and vehicular circulation, park design, and conservation methods. (Gould & Joyce, 2002, p. 37)

**Mechanical engineer:**

Designs heating, cooling, water supply, and sanitary systems. They work with architects to make sure that enough room is provided for ducts and fans. They share information about equipment weight with structural engineers and power requirements with electrical engineers. (Gould & Joyce, 2002, p. 39)

**Net assignable square feet:** "The sum of all areas on all floors of a building assigned to, or available for assignment to, an occupant or specific use" (National Center for Educational Statistics, 2006).

**On-time completion:**

Parallels the job cost approach in that it serves as a holistic measurement of performance according to schedule duration, and the two are often incorporated to better understand the current construction performance. On-time milestone completion determines if construction is proceeding according to schedule. Acceptable productivity is measured solely on the basis of time spent with respect to the overall scheduled duration. (Cox et al., 2003, p. 143)

**Owner:**

Serves as the instigating party that gets the project financed, designed, and built. Public owners are public bodies of some kind, and range from the federal government down through state, county, and municipal entities. … Private owners may be individuals, partnerships, corporations, or various combinations thereof. (Sears, Sears, & Clough, 2008, p. 4)

**Project cost performance:** "Used to show how well the project adheres to the agreed budget. It is important because resources are often limited and cost overruns are to be avoided" (Cheung, Suen, & Cheung, 2004, p. 364).

**Project delivery method:** "A system designed to achieve the satisfactory completion of a construction project from conception to occupancy. A project delivery method may employ any one or more contracting formats to achieve the delivery" (Construction Management Association of America, 2012, p.6).

**Project manager:** "Serves as the owner's primary contact, responsible for scheduling in-house work and identifying necessary staffing levels for both in-house personnel and outside consultants" (Gould & Joyce, 2002, p. 49).

**Specification writer:** "Prepares a written document called the specifications. Done in conjunction with the drawings, this document lays out the level of performance requirements and the quality expected on the project" (Gould & Joyce, 2002, p. 36).

**Structural engineer:** "Calculates the strengths, and deflections, foundation sizes, beam thickness, and strength of floor slabs. They ensure that a building can withstand the forces of wind, gravity, and seismic activity" (Gould & Joyce, 2002, p. 39).

**Surveyor:**

Measures distances and elevations of land surfaces. They locate natural features such as hills, valleys, vegetation, rock outcroppings, and water bodies. They also measure built features such as curbs, paved areas, utilities, structures, and property boundaries. This information is used as the basis for any site development. (Gould & Joyce, 2002, p. 39)

# Chapter 2: Literature Review

## Introduction

The landscape for residence hall design has substantially changed over the past decades (Abramson, 2012). This substantive change has forced university administrators to rethink the role of student housing on campus (Shushok & Manz, 2012). Today's college students have higher standards and do not expect to live in sub-standard campus housing; indeed, they demand better quality, privacy, and competitive pricing (Klein, 2010). Architecturally, students are drawn towards buildings that offer functionality as well as pleasant surroundings, and these housing preferences often factor into their choice of a particular university (Boyer, 1987; Thelin & Yankovich, 1987). University administrators must seek innovative, cost effective residence hall construction models that are seen as viable living options for future students. More important is the relationship between residence hall building design and student satisfaction (Strange & Banning, 2000).

## History of Higher Education with Emphasis on Student Housing

To understand the impact residential housing has had on the university campus, a review of the literature was conducted. This review is divided into four sections: the first section relates to the history of higher education with an emphasis on student housing; the second section defines campus master planning and its importance to the university planner; the third section describes project delivery methods available to the campus planner when building residence halls; the fourth section is a discussion on the key performance indicators that are used as measurements of a successful construction project.

The genesis of student housing is most commonly associated with the European universities as early as the 12th century. In their infancy, universities were founded in major metropolitan areas, which forced students to travel in order to study. Housing was an obvious need. In Paris, students attending the College des Dix-Huit (College of the 18) were provided living accommodations in the Hospital of the Blessed Mary of Paris (Haskins, 1923). Being aligned with a university also meant the rent was controlled by the university and not by unscrupulous landlords (Lucas, 2006). During the Middle Ages, it was the students in the Italian universities that developed the structure and set the rules for each other. Common rules were established to maintain order and discipline. According to Lucas (2006):

> No student shall bring friends [*extraneos*] frequently to drink at the expense of the community; if he does he has to defray the cost," it was ordered. "No student shall have the keys to the kitchen. No woman of whatever status shall eat with students in their chambers. If anyone does this he must pay a fixed penalty." Further, it was decreed, "If a student attacks, knocks down or severely beats one of the students he has to pay one sester of wine to his fellows, and the wine ought to be of a better to best quality. (p. 67)

In most instances, these universities were managed by the students (Ross, 1976). In contrast, university administrators in Paris and Oxford viewed their role differently and set forth a hierarchy of "Masters" who managed the students and set the expectations (Rashdall, 1936). Masters assumed the role of tutor and mentored the younger students during their time at the university. Because the Masters often lived with the students, it was inevitable that this mentoring relationship would extend into the living environment. Students and their teachers would frequently continue the classroom discussion over a meal or while preparing the lesson for the next day.

Medieval universities gained a preferred status in society and were often exempt from the laws that governed the citizens of the city. Control of the students was deferred to the administration, often to the frustration of the citizens who lived nearby (Rashdall, 1936; Silver 2000). Because most of the students came from the upper class, they were accustomed to living outside of the rules. Universities had to establish boundaries in order to manage their students and control their behavior. The creation of environments where students could live and eat was a natural outcome.

Not surprisingly, the European model of university housing was adopted by the colleges formed in the American colonies during the 16th century (Handlin & Handlin, 1970; Herbst, 1982). The early years were difficult financially due to competing agendas in the New World. Pecuniary resources for these colleges were meager and university presidents were expected to raise much of the operating budget. As early as 1660, the president of Harvard, Charles Chauncy, bemoaned the fact that the wealthy would not support higher learning (Morison, 1935). To raise more money, these fledgling schools often sent ambassadors overseas to solicit money from wealthy land owners still living in Europe (Handlin & Handlin, 1970). The notion of charging fees to students as a way to cover operating costs became popular and residential housing offered a viable revenue stream.

Many universities attempted to establish modern living accommodations, modeled after the dormitories being utilized in Europe, but without much success. Lack of resources was perhaps the greatest hindrance (Brubacher & Rudy, 2004). Students living on campus encountered a very different residential experience: "The often crude rooming arrangements, lacking privacy or comfort, which these dormitories provided were the setting on which the

collegiate way took form" (Rudolph, 1968, p. 96). Initially, the living accommodations were sparse and utilitarian.

For financial considerations, these buildings were designed simply to provide a place for the student to sleep and perhaps share a meal. It was not until 1814 that an actual architectural rendering for a college residence hall was commissioned for Union College (Brubacher & Rudy, 2004). While some university leaders supported on-campus housing, other campus presidents advised against providing campus housing to students. In particular, President Francis Wayland of Brown University (1842) suggested that having a residential component on a campus:

> Encouraged the spread of disease, fostered unsanitary habits, reinforced the declination of students to exercise regularly, isolated young men from community life and the world's affairs, diverted funds needed for building up libraries and classrooms, imposed supervisory responsibilities the college lacked the means to discharge effectively, and actually served to expose impressionable young scholars to the devices and evil habits dormitories were intended to eliminate. (cited in Lucas, 2006, p. 127)

Despite President Wayland's perspective, several university leaders persisted and embraced the notion of providing campus housing for enrolled students. "Between 1896 and 1915 Columbia, the University of Minnesota, Cornell, the University of Illinois, and the University of Michigan for the first time subscribed fully to the dormitory rationale" (cited in Rudolph, 1968, p. 100). Resources to build dormitories were limited, forcing universities to seek alternative housing options.

Both Harvard and Yale experimented with a privatized housing model. Wealthy students were provided with extravagant facilities (Brubacher & Rudy, 2004, p. 121). Indeed, Harvard encouraged private developers to build the "Gold Coast" a series of dormitories constructed from

1876 – 1904; which were designed to attract students who were accustomed to a higher living standard, “These buildings introduced steam heat, electricity, private bathrooms, and elevators to Cambridge. Rival investors strived to attract the most affluent students, and exclusive clubs contributed to the ambience of the area” (Sullivan, 1999, para 1). Private developers did not limit their attention only to Harvard.

Yale University was also targeted for privatized dormitory development. The college endeavored to offer their wealthier students the opportunity to live in luxury by supporting the construction of:

> “the Hutch,” an expensively privately owned dormitory where swells patronized private tutors, ruined expensive suits in prank sprees and rioting, ordered fine cigars by the hundred-lot, and look down on the poorer boys who had gone to public high schools. (Baltzell, 1987, p. 130)

By providing privatized housing to their students, institutions such as Harvard and Yale distinguished themselves as serving an elite clientele. After observing the class distinction caused by the privatized model, Harvard’s president, Charles W. Eliot, suggested that it was “necessary for colleges to build dormitories with ‘common rooms’ and dining halls so that ‘students of all sorts’ could mix freely” (cited in Brubacher & Rudy, 2004, p. 122). The emphasis on residential living and academic learning was essential for a student to have a well-rounded collegiate experience. Not every state was fortunate to have private support for universities as noted in Massachusetts or Connecticut; federal assistance would also be needed.

As the United States matured, the need for more farmers and technically skilled workers became apparent. Without federal support, states would continue to struggle to produce a highly skilled work force. It was the Morrill Act of 1862 that provided a way for states to develop and

maintain new and existing colleges and universities. Congress approved this legislation that "provided grants of federal land to the states, which they could sell and use the proceeds to fund colleges and universities" (Carleton, 2002, p. 27).

At that time, university leaders had focused their curriculum on the sciences and mathematics with little to no emphasis on the practical aspects of general education. The intent of the Morrill Act was to "provide a broad segment of the population with a practical education that had direct relevance to their daily lives" (National Association of Public & Land Grant Universities, 2012, p. 1). This federally funded initiative provided, "30,000 acres per representative and senator, changing the benchmark to the 1860 census, and adding the requirement that the study of military tactics be supported" (Carleton, 2002, p. 34). While the Morrill Act was instrumental in creating and maintaining colleges and universities, it would be the states that would assume the burden of building and maintaining the campus physical plant: "the state was expected to contribute to the maintenance of its land-grant institution as well as to provide its buildings" (National Association of Public & Land Grant Universities, 2012, p. 4). Due emphasis was placed on developing campus structures over the next several years. "As universities raced for status, they began adding specialized facilities: laboratories, football stadiums, students' residence halls, auditoriums, and carillon towers that served as focal points for the campus" (Cohen & Kisker, 2010, p. 116).

While institutions of higher learning were primarily focused on men, some women's colleges also began to be established. In the late 1800s women's schools such as Vassar, Smith, and Wellesley began as small private institutions that were founded for, as in the case of Smith College, "offering education equal to that to which men are entitled" (Quesnell, 1999, p. 64). Like their male counterparts, these women's colleges offered student housing to their students,

"The women's colleges adopted the male collegiate tradition of professional faculty, 4-year curriculum, and dormitory living but modified it somewhat with a greater emphasis on the arts, languages, and humanities" (Cohen & Kisker, 2010, p. 120).

**The Servicemen's Readjustment Act of 1944**

The Servicemen's Readjustment Act of 1944, better known as the GI Bill of Rights, was signed into law by President Roosevelt on June 22, 1944. Among the significant benefits afforded military veterans was the ability to receive a college education. The impact of this legislation on colleges and universities was dramatic. The federal government sponsored millions of GIs who chose to enroll in a college or university in pursuit of higher education. Campuses immediately felt the housing impact, "As early as January 1945 a nationwide survey by the New York Times reported that colleges were 'turning away thousands of discharged war veterans because of insufficient housing, overcrowded classrooms and lack of instructional staff " (Olson, 1974, p. 66). Reflecting on its own history, Emory University developed a campus in Valdosta, Georgia in the 1930s and constructed its first residence hall. By the end of the Second World War, the university experienced the need to expand its housing options to provide living accommodations for returning veterans. School officials had to be creative:

> The school reopened in 1946 with a record enrollment of 247, buoyed by an infusion of students on the G.I. Bill and an aggressive recruiting drive. Additional classrooms and a dorm comprised of Army surplus buildings were brought from nearby Moody Air Force Base. In a nod to the nearby Okefenokee, the dorm quickly become known as Swamp Hall, due to its Spartan accommodations. Emory Magazine: *Enigma: A Postcard from the Past*, (1999)

Construction projects surged at the conclusion of World War II and again when the Korean Conflict ended. Using surplus property, provided by the Surplus Property Act of 1944, colleges and universities were able to utilize goods and materials to construct temporary buildings while they acquired the finances to build more permanent structures. This boom also led to a need for more housing options as students flocked to college. This trend continued through the 1960s as students viewed a college degree as important to their success. Enrollment at colleges and universities increased in the mid-1960s as many students used the universities as a sanctuary to avoid the draft (Card & Lemieux, 2001). Still, funding was a problem. According to Hauptman (2001), "Most states dealt with the projected growth in the number of college students in the 1960s by using debt to finance the capital expenses required for building new public campuses or expanding existing ones" (p. 67).

**The Higher Education Facilities Act of 1963**

It was the Higher Education Facilities Act of 1963 that provided nearly one billion dollars of construction funding to colleges and universities, to be used expressly for the construction of academic spaces. The Act was amended in 1965 to permit colleges and universities to use the money to construct student housing (Moynihan, 1975). The funding was managed through the Department of Housing and Urban Development (HUD). This funding was the catalyst for many of the high rise dormitory style building present on many campuses today. Housing administrators, university architects, and campus planners found it necessary to consider building taller buildings to accommodate growing demand for student housing. According to (Brubaker et al., 1964) "high-rise residence halls are defined as units in which primary reliance is on elevators for access to student rooms" (p. 2). Efficiency and cost savings were factors considered when building and designing a high-rise dormitory. Early studies of students living in a high-rise

dormitory suggested that, “Residential satisfaction in low-rise dormitories (2 to 5 storeys) was much greater than that in 10- and 13-storey high-rise dormitories” (cited in Gifford, 2007, pp. 5-6). Regardless of the height of the building, the emphasis at that time was on construction and functionality.

The dormitories constructed in the 1960s were considerably different than student housing seen on today’s college campus. These early housing units were small and uninviting. Jencks and Reisman (1962), when referring to the housing units at Harvard, noted, “At an average cost of roughly $4,000 per student, the average student residence joins 2 students, 2 beds, 2 bureaus, 2 desks, 2 straight chairs, and 200 square feet of floor in an attempt to produce enlightenment” (p. 732). To manage the growth of students returning to college, larger, more unwieldy dormitories were constructed. Heilweil (1973) observed, “dormitories tend to have rooms distributed along both sides of long, straight corridors which are interrupted only to turn at right angles into other long, straight corridors” (p. 379). When discussing the notion of community, Heilweil (1973) further stated:

> Residents are grouped in batches of 25 to 50, depending on local building and fire regulations, the whims of the architect, the placement of stairwells, and often the arbitrary assumptions as to what number constitutes the optimum for a resident staff member to counsel. (p. 379)

Clearly the intent of these large early structures was to maximize occupancy and minimize amenities. As Dober stated,

> Typically, six-to-eight-story structures were arranged on the campus perimeter … with no perceptible design relationship to the other campus sectors, the end product was huge

> complexes of dormitory residences … with little thought to the way in which residence life might be integrated into academic life. (Davis, 2003, p. 161)

Blimling (1993), when discussing these kinds of dormitories, stated, "With few exceptions, these buildings are an architectural mistake that needs to be addressed" (p. 11). Still, students preferred the on-campus experience due to convenience and the ability to personalize their living spaces (Sommer, 1968). Moreover, significant research supported the notion that college students living together improved their persistence towards completing a degree, acceptance towards diversity, social tolerance, and interpersonal development (Cabrera, Nora, Bernal, Terenzini, & Pascarella, 1998; Johnson & Johnson, 1994; Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996; Slavin, 1995; Terenzini & Pascarella, 1976, 1980; Vogt, 1997; Whitt, Edison, Pascarella, Terenzini, & Nora, 2001).

College administrators are optimistic that students living—as well as learning together—will create a sense of community (Shapiro & Levinen, 1999). Designing and funding a residence hall that compliments students' needs and the desires of the universities has been a constant challenge. A campus master plan is critical to the success for designing and building a residence hall.

**The Campus Master Plan**

Placing any building, including a residence hall, on a university campus is often the result of an extensive campus master planning process. "Colleges and universities periodically initiate campus facilities planning or develop master plans to address specific and, often multiple issues" (Rudden, 2008, p. 33). Successful campus master planning incorporates the academic and physical needs of the campus for at least 10 years (Caruthers & Layzell, 1999). Kirk (1999) suggested, "The physical campus is a literal embodiment of an institution's philosophies, goals

and administrative decisions" (p. 39). Table 2 provides compelling reasons for master planning as developed by Rudden (2008).

Table 2

*Reasons for Master Planning*

| Reason for Plan | Principle Advantages of Planning Effort | Main Challenges of Planning Effort | Key Elements for Implementation of Planning Effort |
|---|---|---|---|
| Address result of result of recent strategic plan | Respond to strategic plan initiatives<br>Maintains momentum of campus wide engagement | Understanding that the breadth of comprehensive planning may result in less depth<br>Ensuring the campus planning team has required expertise | Identify key priorities to better manage costs<br>Update academic plan for more efficient effort<br>Align plans to specific measurable goals as described in the strategic plan |
| Respond to change of leadership | Becomes tool for change | Early: Involving most or all constituencies in outreach<br>Mid: Defining appropriate depth in assessment<br>Legacy: Providing guidance versus prescription | Early: Ensure grassroots outreach efforts<br>Mid-term: Focus more on assessment versus synthesis<br>Legacy: Provide direction for new leadership team |
| Respond to local jurisdictional regulatory requirement | Ensures campus development aligns with municipal plans | Maintaining flexibility in face of community need for predictability | Align with municipal long-range plan development plan<br>Understand public review process |
| Meet prerequisite for state/county funding approval | Emphasizes capital improvement<br>Identifies sources and uses of funds | Ensuring a flexible plan ready to implement when capital becomes available | Prepare flexible project implementation plan |
| Improve space allocation, distribution, and utilization | Optimizes existing space resources | Maintaining up-to-date space inventory in a format that can be benchmarked | Maintain physical space inventory in easily updatable format |

| | | | |
|---|---|---|---|
| | | Sourcing peer institution data for comparison | |
| Address deferred maintenance and renewal projects | Establishes priorities and costs of facilities renewal and deferred maintenance | Understanding that the process can be capital intensive due to extensive field work required | Develop assessment in a format suitable for updating internally |
| Evaluate potential land acquisition of disposition | Provides land asset management and assessment tool | Integrating new land into existing campus seamlessly | Involve real estate consultant<br>Accept confidentiality requirements |
| Improve town-gown relationship | Develop more effective relationships with town constituencies<br>Combine town-gown resources to undertake joint initiatives | Overcoming past issues of mistrust<br>Establishing long-term commitments | Make commitment to engaging and supporting the local community |
| Plan reactively to address pressing facilities issues | Guides short-term campus development without mortgaging future options | Understanding fully the consequences of short-term projects on future development projects | Initiate condense planning process to address pressing project needs<br>Ensure fully informed decisions |
| Identify campus development growth thresholds | Helps clarify question, "How big should we be?" | Developing key growth parameters | Undertake campus build-out analysis<br>Initiate scenario planning to understand impact of future development options |

Note: Adapted from Ten reasons why colleges and universities undertake campus master planning, by Rudden, 2008, *Planning for Higher Education*, *36*(4), 33–42.

Much of the campus planning in the late 1940s was an "approach that emphasized establishing principles for future growth" (Turner, 1984, p. 260). Two decades later master planning for residence halls predicted future student housing expectations. "It is becoming increasingly more difficult to satisfy student requirements with conventional type dormitories. In

short, future requirements for housing must be attuned to changing desires and conditions" (Pinnell & Wacholder, 1968, p. 89). Designating residential space on campus is an integral part of any campus master plan as well as designing building types that will attract and retain students.

Building student housing is costly and must be considered carefully before proceeding. A 2012 survey of 50 colleges and universities revealed that the median cost (Table 3) to build a residence hall was $33,520,000.

Table 3

*Cost and Size of Residence Halls*

| Residence Halls | Cost of Total Project* | Number of Students | Size of Project (Sq.Ft.) | Cost per Student | Cost per Sq. Ft. | Sq. Ft. per Bed |
|---|---|---|---|---|---|---|
| All reporting colleges (sample size 50) | $33,520,000 | 499 | 152,404 | $68,106 | $202.86 | 311.6 |
| Fewer than 200 beds (sample size 7) | $11,200,000 | 132 | 55,0000 | $79,545 | $203.64 | 520.2 |
| 201 to 500 beds (sample size 19) | $24,700,000 | 416 | 120,566 | $66,500 | $190.77 | 294.1 |
| More than 500 beds (sample size 24) | $47,878,126 | 619 | 204,750 | $67,231 | $212.98 | 314.4 |
| Midwest (sample size 11) | $48,170,000 | 442 | 228,639 | $94,275 | $232.00 | 382.1 |
| Northeast (sample size 10) | $49,128,126 | 550 | 176,129 | $79,285 | $294.39 | 308.2 |
| Southeast (sample size 12) | $25,000,000 | 525 | 142,000 | $48,106 | $168.30 | 314.9 |
| Southwest (sample size 13) | $26,600,000 | 438 | 113,178 | $54,887 | $184.59 | 294.1 |
| West (sample size 4) | $49,250,000 | 651 | 166,891 | $115,434 | $404.83 | 282.7 |
| Public (sample size 42) | $35,465,400 | 525 | 174,477 | $68,106 | $206.38 | 309.3 |
| Private (sample size 8) | $11,410,000 | 141 | 61,834 | $72,714 | $186.43 | 434.1 |

Note: *All figures are medians for the sample shown. Each median was determined independently so figures may not add up. To read this table: The median cost of 50 reporting residence halls was $33,520,000. The median cost among the seven residences with fewer than 200 students was $11,200,000 but cost per student in the smaller halls was $79,545 compared to $67,231 for larger projects with more than 500 students. (Abramson, 2012, p. 3)

In 2011, the annual cost of competed construction projects on university campuses was slightly over $11 billion (Abramson, 2011). Because the funding cycle for capital projects is protracted, it is conceivable that many of the 2012 campus capital projects were approved and funded in 2009 or 2010. Total construction cost from 1995-2011 climbed slightly over $4.9 billion, with 2006 showing the highest amount of money allocated, $15,052,540, during that annual period (Table 4).

Due to the risk of inefficient space allocation, colleges and universities must develop a comprehensive master planning process to anticipate and organize how the campus is to be organized, and maintained over time. Moreover, the process must be intentional and deliberate, taking into consideration all aspects of a university environment. As Kriken (2004) suggested, "Campus planning must span a long development life" (p. 32).

A vital part of any campus master plan is the location and types of residence halls to be renovated or constructed. Moreover, funding the capital project requires foresight and planning. Poorly planned projects can create financial difficulties on an institution (Dickmeyer, 1992). The typical housing unit is a mixture of single and double occupancy rooms clustered around a common area or bathroom facility with a range of amenities. Older residence halls are often candidates for renovation where the rooms are enlarged and private bathrooms are installed. However, campus planners, architects and student affair's professionals have created several variations of student housing living options.

Careful consideration must be given to balance the various wants of each constituent. Without constraint, master planning can be costly and inefficient. Duderstadt (2000) stated the following:

> Another important cost driver is the cost related to space, which constitutes a large component of the total budget of all universities. This includes the costs of new construction and remodeling, together with those of utilities, maintenance, custodial services, and safety. Space growth is clearly limited by a university's total resource base and central allocation decisions. The fact that the allocation decisions are made at one level, while the needs are assessed at another, creates the strong possibility of misallocation, inefficiencies, and a greater-than-optimal supply of space. (p.174)

Table 4

*Campus Construction Completed (in Dollars) 1995-2011*

| | **1995 Cost** | **% of Total** | **1996 Cost** | **% of Total** | **1997 Cost** | **% of Total** | **1998 Cost** | **% of Total** | **1999 Cost** | **% of Total** | **2000 Cost** | **% of Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| New | $4,131,972 | 67.7% | $4,528,792 | 72.4% | $4,260,969 | 73.8% | $4,384,893 | 69.2% | $4,567,166 | 67.2% | $4,780,898 | 65.5% |
| Additions | $507,809 | 8% | $541,697 | 8.7% | $529,013 | 9.2% | $857,051 | 13.5% | $986,864 | 14.5% | $1,039,178 | 14.3% |
| Retrofits | $1,463,373 | 24% | $1,181,310 | 18.9% | $986,993 | 17.1% | $1,090,206 | 17.2% | $1,239,307 | 18.2% | $1,467,785 | 20.1% |
| Total | $6,103,154 | | $6,251,799 | | $5,776,975 | | $6,332,150 | | $6,793,337 | | $7,287,861 | |
| | **2001 Cost** | **% of Total** | **2002 Cost** | **% of Total** | **2003 Cost** | **% of Total** | **2004 Cost** | **% of Total** | **2005 Cost** | **% of Total** | **2006 Cost** | **% of Total** |
| New | $6,029,621 | 61.8% | $7,050,533 | 63.8% | $7,453,511 | 67.4% | $9,024,829 | 66.0% | $9,792,474 | 67.4% | $10,327,086 | 68.6% |
| Additions | $1,586,614 | 16.2% | $1,732,084 | 15.7% | $1,761,110 | 15.9% | $2,151,836 | 15.7% | $2,067,987 | 14.2% | $2,109,843 | 14.0% |
| Retrofits | $2,147,947 | 22.0% | $2,272,794 | 20.6% | $1,843,611 | 16.7% | $2,491,079 | 18.2% | $2,662,689 | 18.3% | $2,615,611 | 17.4% |
| Total | $9,764,182 | | $11,055,411 | | $11,058,232 | | $13,667,744 | | $14,523,150 | | $15,052,540 | |
| | **2007 Cost** | **% of Total** | **2008 Cost** | **% of Total** | **2009 Cost** | **% of Total** | **2010 Cost** | **% of Total** | **2011 Cost** | **% of Total** | | |
| New | $10,186,254 | 70.2% | $9,345,152 | 70.3% | $8,087,132 | 75.5% | $7,913,650 | 71.6% | $8,122,015 | 73.5% | | |
| Additions | $1,774,674 | 12.2% | $1,981,866 | 14.9% | $1,254,902 | 11.7% | $1,440,304 | 13.0% | $1,545,743 | 14.0% | | |
| Retrofits | $2,539,088 | 17.5% | $1,972,920 | 14.8% | $1,370,462 | 12.8% | $1,703,390 | 15.4% | $1,376,209 | 12.5% | | |
| Total | $14,500,016 | | $13,299,938 | | $10,712,496 | | $11,057,344 | | $11,043,967 | | | |

Note: Adapted from Living on campus: 2011 college housing report, by Abramson, 2011, *College and Planning Management*.

Campus housing has evolved and now offers a number of designs to meet the needs of college students. Campus planners have attempted to influence the room design of the buildings in order to create a sense of community and increase student satisfaction. A few studies have been conducted specific to residence hall design and student satisfaction (Heilweil, 1973; Sommer, 1968) in which student perception of crowding was tangentially linked to building heights and room types such as a double loaded corridor design or a suite design. However, little research has been conducted since: "One reason for the lack of interest in research on student housing over the last 30 years may simply be financial" (Devlin, Donovan, Nicolov, Nold, & Zandan, 2008, p. 488). Designing residence hall rooms that are functional and meet the emerging needs of today's college student is a constant challenge. Appendix A shows several housing room types that are typically used in student housing design. The project delivery method for constructing student housing is discussed in the next section.

**Types of Construction Project Delivery Methods**

While significant literature is available on the characteristics and qualities of project delivery methods (Hale et al., 2009; Kent & Becerik-Gerber, 2010; Korkmaz, Riley, & Horman, 2011; Mahdi & Alreshaid, 2005), there exists a dearth of specific literature regarding construction methods for university residence halls. According to the Construction Management Association of America (CMAA, 2012), a project delivery system is defined as "a system designed to achieve the satisfactory completion of a construction project from conception to occupancy. A project delivery method may employ any one or more contracting formats to achieve the delivery" (p. 6). The focus of this portion of the literature review came from the fields of construction, engineering, and project management. Upon review of a wide array of

textbooks, technical reports, and peer reviewed journal articles, general themes emerged to give relevance to the topic.

Selecting the proper project delivery method requires the campus planner to consider myriad factors. Understanding each construction method is vital to developing a successful project. Employing improper construction techniques can result in significant delays and have negative financial implications. Moreover, the success of the project is measured by the user's satisfaction with the outcome (Ratnasabapathy & Rameezdeen, 2006).

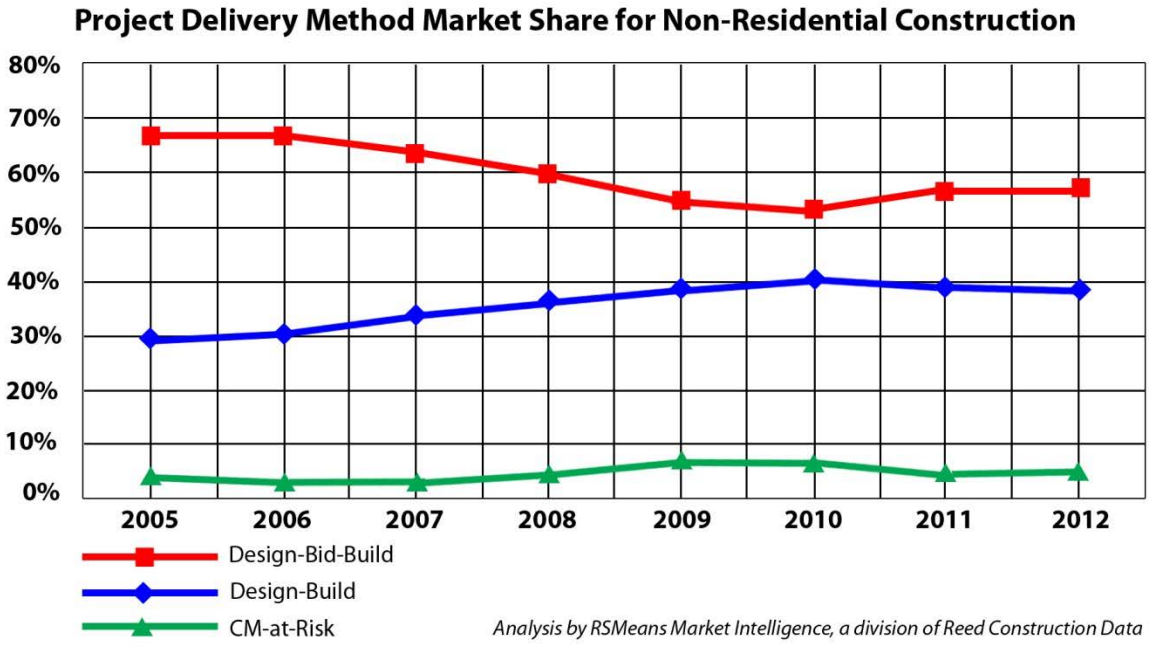


*Figure 2.* Project delivery method market share for non-residential construction.

Contemporary construction methods, often referred to as project delivery methods, permit the owner to design and build unique, signature buildings that blend form and function together in order to create a usable structure. Campus planners are often confronted with multiple construction methods and must decide which approach will best suit the needs of the university (Mahdi & Alreshaid, 2005). Generally the most accepted construction methods are design-build,

design-bid-build, and construction management at risk (El-Sayegh, 2009; Konchar & Sanvido, 1998; Mahdi & Alreshaid, 2005). Within these broad categories, variations exist; including the Integrated Project Delivery method. Hallowell and Toole (2009) suggested, "The premise of integrated project delivery is not that constructors would assume the role of performing building performance engineering design, however. Ideally, construction entities would work with designers to provide constructability input, not substitute as a design firm" (p. 542). Collaboration among all parties contributes to a fluid transition from design to speedier construction.

**Design-Build Method**

One of the more common commercial construction methods is design-build. According to Abi-Karam (2005), the design-build delivery method is an "integrated, project delivery technique whereby the owner contracts directly with a single entity (Design/Builder) to deliver a project" (p. 14). Unique to the design-build model is the notion that the designer and builder are integrated. This method is gaining popularity in the public sector (Loulakis, 2003), as the more traditional methods of project delivery are often plagued with cost overruns and poor scheduling (Al-Reshaid & Kartam, 2005). Moreover, Konchar and Sanvido (1998) found that many design-build projects reported substantial savings and enhanced schedule performance in contrast to more traditional construction methods. The Design Build Institute of America (1997) suggested that nearly 45% of non-residential construction projects were utilizing the design-build method by 2005 (as cited in Gransberg and Molenaar, 2004, p. 162). Under a design-build model, the builder and the architect are joined, typically contractually, as a team. Theoretically, the outcome of this merger is an expedited schedule (fast-tracking) and a better design (Gransberg & Windel, 2008). By having the builder and architect collaborate on the constructability of the project,

decisions can be made at an earlier stage, preventing costly delays that could impact the project schedule and budget (Chang, Shen, & Ibbs, 2010). While efficiency of design and speed of construction are hallmarks of design-build, building owners may find quality assurance issues with the finished product (Arditi & Lee, 2003). Appropriate quality performance standards must be set and rigorously maintained in order to attain a quality project at an accelerated pace.

The concept of accelerating projects is not new, tracing its roots to the 1960s (Cho, Hyun, Koo, & Hong, 2010). By constricting the schedule and overlaying various construction trade functions, the project is accelerated. Many companies have used the expedited schedule successfully. Songer, Diekmann, Hendrickson, and Flushing (2000) stated:

> Although owners' demands may seem unreasonable, responsive companies gain a distinct competitive advantage. In fact, several proactive companies have found ways to meet incredible schedule constraints without jeopardizing worker safety or sacrificing functionality of the completed project. They have met those demands by challenging the old assumptions associated with traditional project delivery methods. (p. 185)

Time is a critical factor in most construction projects, and the concept of fast-tracking has been a useful tool for owners and builders who are seeking an alternative to traditional project delivery methods.

Using the fast-tracking model, projects may be expedited, potentially resulting in significant construction savings (Peña-Mora & Li, 2001). However, significant emphasis on experience and management is necessary to arrive at successful project completion. As with any project delivery method, there are advantages and disadvantages. Understanding the differences can often lead the owner into making a sound financial decision when considering a new building project, such as a university residence hall.

A notable advantage of design-build as a project delivery method is fewer change orders. As with any building design, changes occur. However, once the contract is agreed upon, changes post contract will result in costs to the owner. In rare exceptions, the change may be mutually agreed upon resulting in no cost. design-build has proven to be effective in reducing change orders during the construction phase (Perkins, 2009).

One significant disadvantage for an inexperienced owner is the speed of the design-build format. New users or those unfamiliar with the design-build model may find themselves uncomfortable with this project delivery method due to a lack of information early in the project design (Chang et al., 2010). As noted earlier, fast-tracked projects prefer design-build because it permits design and construction to occur simultaneously, creating dissonance for an inexperienced owner.

Owners must be engaged and possess construction competency in order to utilize the design-build method as a project delivery option. Communication is also critical, as suggested by Lam, Chan, and Chan (2008) when they stated, "Effective means of communication can also safeguard transmission of messages among project participants from site to office in order to reduce abortive work" (p. 339). Construction contract changes can serve to disadvantage a construction job if the change does not bring value to the project (Perkins, 2009). Adaptability and flexibility on the part of the owner are necessary when managing a project using the design-build approach.

Owner involvement in a design-build project is essential to the success of the project outcome. As previously discussed, design-build projects should be carefully supervised and overseen by a seasoned project manager (Al-Reshaid & Kartam, 2005). Ultimately, the project will belong to the owner who has to use the building as designed. Because the design-build

project delivery method is usually quicker, the building owners make the project a priority and do not allow the management to be delegated to staff members who are unfamiliar with this type of project delivery method. As Jergeas and Fahmy (2006) stated, "owners need to assign their most knowledgeable project manager and operations and maintenance staff to work with the design-builders owner and other design team members" (p. 33). Managing a design-build project by having a strong owner team will enhance the success of the building program.

**Design-Bid-Build Method**

In October of 1972, the United States Congress passed the Brooks Act, which required a qualification based selection criteria for any construction professional conducting work with the federal government. Prior to this bill passing, there were signs that the existing project delivery selection process was resulting in conflicts with the contractors, project delays, and increased use of the change order process (Cushman & Loulakis, 2001). Change orders, according to Sears et al. (2008), are "alterations to the contract involving modifications to the time or price of the project. … These changes may alter the contract by additions, deletions, or modifications to the work and can be initiated by the owner, architect-engineer, or contractor" (p. 280). Thus, selection of a project delivery method would no longer be based on price, rather, on qualifications and price. Firms that wanted to perform work for the federal government would need to be qualified based on competency, qualifications, and experience (Brooks Act, 1972). Once a firm was identified, they would enter into negotiations on pricing. If the negotiation failed, the federal agency would move to the next qualified firm and the process would repeat until a successful firm was hired. This project delivery method is often referred to as design-bid-build.

Similar to design-build, the design-bid-build model is considered an efficient construction method, particularly when working within federal and state government entities (Rosner, Thal, & West, 2009). Miller, Garvin, Ibbs, and Mahoney (2000) stated, "Since World War II, the American strategy for infrastructure procurement has evolved to rely primarily upon a single delivery method, design/bid/build" (p. 58). Design-bid-build, according to (Hale et al., 2009) "is a project delivery method in which the owner enters into a contract with an architect/engineer (A/E) firm that provides design services based on the requirements provided by the owner" (p. 579).

Whereas the design-build model incorporates the total cost of the project, design-bid-build documents are "subsequently used by the owner as the basis to make a separate contract with a construction company" (Hale et al., 2009, p. 579). Consider, as suggested by Gransberg and Molenaar (2004), that the design-bid-build method is like a "three-legged stool with the legs being defined as cost, schedule, and quality" (p. 162). Cost, project schedule, and quality assurance are all positive factors related to this project delivery method. It is important to note that under the design-bid-build model, "all dealings between the designer and contractor go through the owner. There is no legal agreement between the designer and the contractor" (Jackson, 2004, p. 44). This is an important distinction because the owner assumes more of the risk under this project delivery method. Design-bid-build is most commonly used by government agencies that must "comply with local, state or federal procurement statutes" (CMAA, 2012, p. 12).

The design-bid-build project delivery model has been credited with contributing to sustainability measures and outcomes because it allows for early participation of the owner and architect to discuss and plan for sustainable construction (7Group & Reed, 2009; Enache-

Pommer & Horman, 2009). Korkmaz, Horman, Molenaar, Sobin, and Gransberg (2010) suggested that "Early involvement of participants, level and methods of communication, and compatibility within project teams, overall known as the characteristics of integrative design, would result in better outcomes" (p. 1).

Significant disadvantages to the design-bid-build model have been identified in the literature. Perkins (2009) suggested contractual changes are more difficult under a design-bid-build model because the contractor is advantaged in this model. "Changes and their pricing often force an adversarial relationship between three parties: the owner, the A/E, and the contractor" (p. 588). Construction scheduling has been identified as a weakness of the design-bid-build method. Because design-bid-build requires the design and procurement be accomplished prior to construction commencing, the owner is reliant on the contractor to keep the construction schedule on track (CMAA, 2012). Moreover, Migliaccio, Gibson, and O'Connor (2009) found that the extended procurement process under the design-bid-build model could be streamlined for efficiency. Toole (2002) suggested that, within the design-bid-build model, the safety of the workers is concentrated on the subcontractors, thus increasing the safety risk. A subcontractor, according to Gould and Joyce (2002), can include, "mechanical, electrical, excavation and demolition contractors. They are usually hired by and work for the general contractor" (p. 42). Finally, Konchar, and Sanvido (1998) suggested that when considering quality, schedule performance, and cost, the design-build model was preferred over the design-bid-build or construction management at risk model.

**Construction Management at Risk**

Construction management at risk is designed to permit the owner to hire a construction manager early in the project, often at the design stage. A construction manager is "applied to the

provision of professional management services to the owner of a construction project with the objective of achieving high quality at minimum cost" (Sears et al., 2008, p. 9). According to the American Institutes of Architects (2005):

> Construction management at risk is seen by many policy-makers and legislators as an innovative approach to public sector project delivery. The construction management at risk delivery method is an alternative procurement process similar to long-standing private sector construction contracting. Construction management at risk is a cost effective and time conscious alternative to the traditional design-bid-build process. (para. 4)

This is a valuable tool for owners who may lack construction experience and need to rely on a professional to assist them through the design and construction process. The construction manager is responsible for the project through completion. Construction management at risk "is a method of construction contracting that reflects the industry trend of project owners placing greater reliance on others to successfully deliver their projects" (Smith, 2005, para. 5). Under this model, the construction manager assumes risk when they provide the owner with a guaranteed maximum price.

Boukendour and Bah (2001) defined guaranteed maximum pricing as when "the contractor is paid his actual cost in addition to an agreed upon fee while he guarantees that the total cost to the owner will not exceed a stipulated guaranteed amount" (p. 564). The obvious advantage to the owner is that, under the construction management at risk model, the owner may be protected from cost overruns once certain milestones are achieved. The risk is assumed by the contractor. Critical to understanding of guaranteed maximum price is that, while the terminology suggests a guarantee, there are opportunities for costs to exceed the guaranteed maximum price

(as cited in Chan, Chan, Lam, & Wong, 2010). The escalation of costs often occurs if the owner continues to make changes to the project or if the design is incomplete (Perry & Barnes, 2000).

Masterman (2002) suggested that the contractor has an incentive to perform efficiently as any savings may be realized by the contractor if negotiated in advance. To that end, the contractor must anticipate all contingencies or risk. Risk, according to Al-Bahar and Crandall (1990) is defined as, "The exposure to the chance of occurrences of events adversely or favorably affecting project objectives as a consequence of uncertainty" (p. 534).

The owner plays a significant role in the construction management at risk model as owners develop the project priorities, set the budget for the project, and help to select the team, which also includes the architect and the contractor. The architect is charged with developing a working design that reflects the will of the owner and is able to be built within the construction budget. The contractor is responsible for actually building the project and keeping the project on budget. Lewis (2002) noted that to reduce the risk to the contractor, the contractor often will shift the risk to the subcontractors by inflating the bid in the guaranteed maximum price. Should there be a savings, both parties may share in the savings, based upon an agreed formula. If the cost exceeds the guaranteed maximum price, the contractor assumes all expense (Carty, 1995). Under this scenario, contracts are signed between the owner and designer, and the owner and the contractor (Jackson, 2004). Separating the responsibilities and duties of the designer from the contractor will permit the owner more flexibility with the project and potentially greater financial stability.

For the construction management at risk model to be successful, all parties involved must cooperate with each other. One of the major disadvantages to the construction management at risk project delivery method is the reliance on communication and cooperation (Gould & Joyce,

2002). Another cited disadvantage is that any change order processed after the contract may cost the owner more money (Chan et al., 2010). Moreover, any contested cost overrun is subject to dispute. If the contract does not clearly state the terms of each cost, the parties utilizing a construction management at risk project delivery method may find themselves in a legal battle to determine which party is responsible for the additional work beyond the original project scope (Fan & Greenwood, 2004).

**Request for Qualification**

Soliciting a request for qualification, which the National Association of State Facilities Administrators and the Associated General Contractors of America (2008) described where "consideration is given to the qualifications and expertise of the proposed firm," (p. 10) is an early step in starting a building project. By using the request for qualification process, the owner is able to review the qualifications of each applicant to determine if their skill set and experience are congruent with the desires of the building owner. The request for qualification is a way for the owner to be persuaded that the team is competent enough to design and/or construct the project.

Naturally, criteria set forth by the owner are associated with the request for qualification and are the basis for reducing the initial number of teams into a smaller category, often called a short list (Abi-Karam, 2005; Migliaccio et al., 2009). Short-listed teams may be invited to provide a presentation, submit to an interview, or be rated on the basis of additional documents submitted at the request of the owner. Due to the competitive nature of these projects, and because of stringent state or federal purchasing guidelines (Gransberg & Barton, 2007), firms must be careful to submit all documents as requested or risk being dropped from the process for non-compliance with the stated selection procedure.

Qualified firms are then asked to submit a request for proposal, a document which has been created by an architect to define the owner's basic design criteria. The owner is, "the architect's client. They are not necessarily the users of the building, but they begin, finance, and usually own the project" (Simmons & Olin, 2001, p. 3). An architect, according to Merritt and Rickets (1994), "is a person who is qualified by education, training, experience, and examination and who is registered under the laws of the locale to practice architecture there" (p. 2.2). The request for proposal is used as a basis for design and provides the firm the opportunity to understand the desires of the owner. In the case of a student housing project, the university would describe the potential site, the number of beds required, amenities desired (fitness facility, washer/dryer in rooms, full kitchen in the unit, etc.), as a way to help the bidder to further understand the project. Included in the request for proposal would be a timeline for the selection of a firm to complete the project. The document would be advertised in putative construction publications for a specified period of time.

Firms are given specific dates to review the document and solicit answers from the owner's representative on any questions related to the request for proposal. There must be a comprehensive understanding of the project, and desires of the owner must be made clear (Gransberg & Molenaar, 2004; Gransberg & Windel, 2008). In the case of a student residence hall, due to the size of the project, it is not uncommon for the owner's representative to host a mandatory pre-bid meeting. During this open meeting, design firms are afforded the opportunity to ask any questions related to the project. The advantage of the mandatory pre-bid meeting is that everyone hears the same answers, which eliminates confusion during the bid process. The firm takes this information back and creates a series of documents based on the owner's requirements.

To develop a complete bid package, the bidding firm works with a variety of construction professionals who contribute expertise to the project. A structural engineer, according to Gould and Joyce (2002), "calculates the strengths, and deflections, foundation sizes, beam thickness, and strength of floor slabs. They ensure that a building can withstand the forces of wind, gravity, and seismic activity" (p. 39). A mechanical engineer, "designs heating, cooling, water supply, and sanitary systems. They work with architects to make sure that enough room is provided for ducts and fans. They share information about equipment weight with structural engineers and power requirements with electrical engineers" (p. 39). The electrical engineer:

> calculates the overall electrical load required; size equipment accordingly, and supply drawings that show power lines, motors, transformers, switchgear, and telecommunications. They determine the amount of lighting required for the owner's intended use and design lighting layouts to meet the architect's criteria. (p. 39)

Additional professionals are needed, including a civil engineer who "determines the location of a project on a site by studying the subsurface soil conditions and the topography of the land. They design roads, bridges, tunnels, parking lots, storm water drainage, and sewage treatment plants" (p. 39). Surveyors are important because they

> measure distances and elevations of land surfaces. They locate natural features such as hills, valleys, vegetation, rock outcroppings, and water bodies. They also measure built features such as curbs, paved areas, utilities, structures, and property boundaries. This information is used as the basis for any site development. (p. 39)

Further into the project, a specification writer would be used to "prepare a written document called the specifications. Done in conjunction with the drawings, this document lays out the level of performance requirements and the quality expected on the project" (p. 36). Once

the building was competed, an interior designer would be selected to "work on projects nonstructural interior spaces … work out interior finishes, paint, window treatment, flooring, ceilings, furniture, and signs" (p. 36). Finally a landscape architect would be chosen. Their work includes, "identification of plant species and location of trees and shrubs. They set grades; establish walkways, walls, and fences; and specify paving types. They also get involved with site design, pedestrian and vehicular circulation, park design, and conservation methods" (p. 37). All of these professionals contribute to the bid package, which is assembled by the bidder to submit for the owner's consideration.

At the designated time, these documents are delivered to the owner's representative. At most universities, this process is managed by the purchasing department. Because these bids are competitive, the actual date and time they are received is recorded. Typically included in these documents are the contractor's qualifications and a sealed bid (price proposal). Review of the contractor's qualifications is crucial to a successful project. Doloi (2009) stated, "Selection of an inappropriate contractor for the job increases the chance of the client being dissatisfied" (p. 1245). Moreover, Banaitiene and Banaitis (2006) suggested three "prime causes of inadequate contractor selection" (p. 276). Drawing on a survey questionnaire, the authors were able to determine contributing factors. "Firstly, inappropriate criteria are selected when evaluating qualification of a contractor. Secondly, inappropriate significance is attributed to the criteria (e.g., to bid price). Thirdly, inappropriate methodology is applied for the contractor evaluation and selection task" (p. 276). Because these projects often involve huge sums of money, contractors are fiercely competitive to win the project.

Providing the lowest bid is often the best strategy for the contractor but not necessarily for the owner. As stated by Lo and Yan (2009), "The unanticipated situation resulting from

contractors' opportunistic bidding behavior has been considered as an inherent problem in the competitive bidding system and the main cause of abnormally low bids and consequent poor project quality" (p. 458). Under such circumstances, upon winning the bid, the contractor often performs poor quality work or seeks concessions from the owner during the project (Hatush & Skitmore, 1997). To compensate, many owners consider criteria beyond price when making a major building decision.

Qualification-based selection permits the owner to include other measures of selection when choosing a contractor. "Besides the price, non-price criteria such as the contractor's past performance, financial capability, technical and management skills are adopted in the contractor selection process" (Lo & Yan, 2009, p. 458). Contractors who have been successful under similar circumstances, have demonstrated a competency to perform the work at an acceptable level, and have shown their ability to manage construction costs are evaluated against other contractors with similar skill sets. The owner has a choice to make, but is not limited to price alone as the sole criteria.

Graphic redacted, paper copy available upon request to home institution.

*Figure 3*. Procurement of residential building services (Migliaccio, Gibson, & O'Connor, 2009).

Inherent in all construction methods is the need for quality control. Beyond simply meeting design codes and requirements, the team (whether for design-build, design-bid-build, or construction management at risk projects) must have periodic reviews scheduled in order to ensure proper quality control for the project. Brown (as cited in Gransberg & Windel, 2008). Properly prepared construction documents must be reviewed and challenged periodically during the design phase in order to reconcile acceptable construction methods with the intended design. Choosing the best project delivery method is fundamental to obtaining a successful project outcome. The use of key performance indicators to select the best project delivery method has proven to be an effective tool.

**Key Performance Indicators**

The construction process has many uncertainties and in many ways is unpredictable and complex (Chan & Chan, 2004). As with most projects, designing and building a residence hall involves different stakeholders, many who measure success differently (Toor & Ogunlana, 2008). The use of key performance indicators is a way to quantify the success or failure of the any construction project. Key performance indicators are more broadly expanded by Cox et al. (2003), who defined them as, "compilations of data measures used to assess the performance of a construction operation" (p. 142). Whereas measures can be quantified, indicators are more based on perception and preference (Freeman & Beale, 1992).

Atkinson (1999, p. 338) coined the term "iron triangle" when referring to measurement of a successful project. The three sides of the triangle include time, cost, and quality. Generally speaking, these three indicators have been acceptable standards. More emphasis has been placed on expanding these standards to include additional criteria (Cooke-Davies, 2002; Pheng & Chuan, 2006) such as the satisfaction of the owner (Pinto & Slevin, 1988) and stakeholders

(Bryde & Brown, 2005). Construction projects may be considered successful if many of the key performance indicators have been met.

In some instances, these data sets can be measured to a satisfactory degree of accuracy. According to Love and Holt (2000) "measures" can be used for benchmarking (p. 410). Table 5 provides a summary of the research regarding key performance indicators. It is obvious that there exist many forms of performance indicators that are used to determine the success or failure of any construction project. While not exhaustive, Table 5 represents many of the indicators that are considered important when contemplating a new project or measuring the success of an existing project. As evidenced, there are several key performance indicators that can be used to measure the success of a construction project. For the purposes of this study, emphasis was placed on the following key performance indicators: safety, cost, on-time completion, and owner input.

Table 5

*Key Performance Indicators*

| Latham (1994) | Egan (1998) | Construction Productivity Network (1998) | Construction Industry Board (1998) |
|---|---|---|---|
| -Client satisfaction<br>-Public interest<br>-Productivity<br>-Project performance<br>-Quality<br>-Research & development<br>-Training and recruitment<br>-Financial | -Construction cost<br>-Construction time<br>-Defects<br>-Client satisfaction (product)<br>-Client satisfaction (service)<br>-Profitability<br>-Productivity<br>-Safety<br>-Cost predictability (const.)<br>-Time predictability (const.)<br>-Cost predictability (design)<br>-Time predictability (design) | -People<br>-Processes<br>-Partners<br>-Products | -Capital cost<br>-Construction time<br>-Time predictability -Cost predictability -Defects<br>-Safety productivity -Turnover & profitability<br>-Client satisfaction |

Note: Adapted from A framework for determining critical success factors influencing construction business performance, by Mbugua, Harris, Holt, & Olomolaiye, 1999. In W.

Hughes (Ed.), *15th Annual ARCOM Conference* (Vol. 1, pp. 255–64). Liverpool England: Association of Researchers in Construction Management.

**Safety as a Key Performance Indicator**

Statistics released from the Bureau of Labor Statistics (2012) reveal that more than 4,600 construction fatalities occurred in the United States in 2011. Some researchers (Korman, Kohn, & Daniel, 1999) are exploring design professionals' (including architects) incorporation of safety concepts during the design phase. Moreover, construction work is dangerous and is considered a high risk occupation (Ringen, Seegal, & Englund, 1995). Gambatese (2003) postulated that poor design and an improper design process may unintentionally create a safety hazard in the construction process. The governmental agency responsible for worker safety is the Occupational Safety and Health Administration (OSHA). Under OSHA guidelines, the safety of the worker on any construction project rests with the contractor. Moreover, Behm (2005) suggested:

> Project owners who place a priority on a safe construction site also place the burden of construction site safety squarely on the constructor by utilizing pre-qualification practices of selecting only those contractors with good safety performance, lower insurance rates, and written safety programs. (p. 590)

Safety on a construction site has been identified as a key performance indicator (Cox et al., 2003).

**Cost as a Key Performance Indicator**

A construction project may be considered successful if it is completed at or below the cost estimate (Navon, 2005). According to Cheung et al., (2004), "Project cost performance is used to show how well the project adheres to the agreed budget. It is important because resources are often limited and cost overruns are to be avoided" (p. 364). Central to the success of any construction project is the ability to control the expenses. Before the project is approved, the cost

must be estimated. To accomplish this, project managers utilize a project cost system. A project cost system, according to Sears et al. (2008), is "concerned with the control of expenses on current projects and the gathering of production information for use in estimating the cost of future work" (p. 23). By utilizing data from previous projects, project managers make reasonable assumptions about the cost of any new projects.

As with any construction project, delays may occur and it is the job of the project manager to minimize these delays thus reducing cost. Finding the impediment to successfully completing a construction project is paramount to keeping the project on schedule (Al-Saggaf, 1998). The proper planning of any construction project is critical to the success of the overall project. Yang and Wei (2010) suggested, "Planning and design for a construction project significantly influence its total cost and schedule. Delays in the planning phase usually compress the schedule in the design or subsequent construction phase when project completion date is fixed" (p. 83).

**On-Time Completion as a Key Performance Indicator**

Meeting the completion date for any construction project is vital to the success of the project and is a goal shared by all parties involved (Cheung, Ng, Wong, & Suen, 2003). A project that is completed on time has been identified as key performance indicator for customer satisfaction (El-Mashaleh, Minchin, & O'Brien, 2007). Cox et al. (2003) suggested that on-time completion:

> Parallels the job cost approach in that it serves as a holistic measurement of performance according to schedule duration, and the two are often incorporated to better understand the current construction performance. On-time milestone completion determines if

> construction is proceeding according to schedule. Acceptable productivity is measured solely on the basis of time spent with respect to the overall scheduled duration. (p. 143)

The cooperation among the various entities involved in the construction must be evident in order to meet the deadline imposed by the contract (Yang & Peng, 2008). Adversarial relationships between the contractor and the owner can severely impact the on-time completion of the project. The conflict that often occurs is typically between the owner's cost to finance the project and the contractor's desire to maximize profits (Larson, 1997). If left unattended, lack of trust on both sides of the project can delay the completion of the project.

The recommended approach to an on-time completion is for the owner and contractor to partner on the project. Assuming a team approach to the construction project may lead to better cooperation and a stronger working relationship (Bennett & Jayes, 1998). Still, some critics (Bresnen, 2007), have wondered if it is possible to deliberately create an environment of cooperation between the owner and the contractor. If, during the project, delays are encountered, it is crucial that the cause of the delay is determined and a correction is made (Al-Saggaf, 1998). Typically, this is the role of the project manager. Under the various project delivery methods, the campus planner plays a central role. Ideally, this individual is representing the owner (in this instance, the university) and is evaluating the project to ensure an on-time delivery.

**Owner Input as a Key Performance Indicator**

Owner input has been identified as a key performance indicator (Chang & Ibbs, 1998). Building owners generally contract with a professional team to design and manage the construction of a new building because they typically do not understand building construction or the various project delivery methods available (Minchin, Henriquez, King, & Lewis, 2010). If a construction project is to be successful, the owner must be accessible and provide timely

responses to the construction team (Molenaar & Songer, 1998). The owner assumes the financial risk for the project and thus plays a vital role in the outcome (Miller et al., 2000).

If the owner has little experience with construction projects, Jergeas and Put (2001) found that this lack of understanding can create voids in the construction planning and programming, which may impact the project completion schedule. Minchin et al. (2010), in surveying owners regarding their satisfaction, found, "the biggest problem reported by owners as a whole was design drawings and specifications generated excessive changes, requests for information (RFIs), or claims" (p. 286). Educational owners, including colleges and universities, were found to have the highest level of dissatisfaction, again citing too many changes as the top reason (Minchin et al., 2010).

**Summary**

This chapter was divided into four sections: the first section was related to the history of higher education with an emphasis on student housing; the second section defined campus master planning and its importance to the university planner; the third section described project delivery methods available to the campus planner when building residence halls; the fourth section was a discussion on the key performance indicators used as measurements of success in a construction project. The historical context chronicled the genesis of student housing from the early 12$^{th}$ century and highlighted milestones that contributed to changes in student housing programs. The section on master planning provided a context for the way construction projects are developed once the need is established. Identifying the preferred project delivery method is central to a successful student housing project. The major project delivery methods were described to inform the reader about the differences between each method. The final section

focused on key performance indicators and how they influence overall satisfaction with the project.

# Chapter 3: Methodology

## Introduction

This chapter describes the research design and methodology that was used to measure the perceptions of campus planners on the construction methods, key performance indicators, and decision making involved in planning and constructing student housing on a university campus. The purpose of this chapter is to provide a framework and persuasive rationale for using a quantitative approach for data collection and findings.

## Statement of Purpose

The purpose of this study was to examine the perceptions of university campus planners regarding their preferences towards project delivery methods using key performance indicators when building a residence hall on a university campus. The use of campus planners was an appropriate target population for this research as they are charged with the responsibilities of developing and maintaining the campus master plan. Research was needed to determine the perceptions of those who are charged with campus planning as they often are responsible for substantial portions of the annual capital budget requests, including residence halls. As has been previously established, colleges and universities continue to increase their physical plants. Approximately 14% of all students enrolled in post-secondary institutions live on campus (see Table 242, National Center for Educational Statistics, 2007). Due to the competitive nature of student housing and the persistent attempts of off-campus developers to entice students to live elsewhere, colleges and universities are under pressure to develop and build more elaborate buildings with high-end amenities as a way to attract and retain students who are more particular

and demanding about their college living environment (Boyer, 1987; Klein, 2010; Thelin & Yankovich, 1987).

**Experience and Bias on the Part of the Researcher**

It is incumbent upon any researcher to state her or his bias when conducting a study. Creswell and Miller (2000) included researcher bias as one of the eight verification procedures within qualitative research (pp. 126-127). My interest in this topic and subsequent research stems from my background and experience with financing, planning, and constructing residence halls in the states of Florida and Illinois. I have worked in campus housing for more than 27 years. During that time, I have been involved in the construction of three residence halls and numerous residence hall renovations. In addition, I have consulted with other universities on residence hall construction projects, served as a consultant to private developers, and I was a delegate to the Association of College and University Housing Officers, International (ACUHO-I) for the 21st Century Project initiative. This initiative was aimed at designing a residence hall for the 21st century. "Three campuses—Colorado College, Indiana University, and Baylor University—were selected to utilize the 21st Century Project methodology when considering construction and renovation projects on their campuses" (ACUHO-I, n.d.). In addition, I have held leadership positions with the Southeastern Association of Housing Officers (SEAHO), which represents student housing programs in 10 states, and ACUHO-I, an organization that provides leadership and support for housing programs around the world.

**Research Questions**

The focus of this study was to determine preferences of university campus planners regarding a project delivery method used when building student housing on a university campus. The research questions that guided this study were as follows:

1. What is the preferred project delivery method (PDM) when building a residence hall on a college campus?
2. Do key performance indicators influence a campus planner's choice of preferred project delivery method?
3. Does the preferred project delivery method differ by the number of beds?
4. Does the preferred project delivery method differ geographically?
5. Does the preferred project delivery method differ between public and private institutions?

Quantitative methodology begins with the researcher formulating a theory and hypothesis, then attempting to measure using acceptable quantitative techniques (Cooper & Schindler, 2008). The goal in most quantitative studies is to understand the effect caused by an independent variable in order to make generalizations outside the boundaries of the study (Johnson & Christensen, 2008). Further, as Newman and Benz (1998) suggested, "Most quantitative research approaches, regardless of their theoretical differences, tend to emphasize that there is a common reality on which people can agree" (p. 2). The findings from the research must include internal and external validity and provide the researcher with confidence that the research design actually produced what it was intended to measure.

This research project was descriptive in nature. Key (1997) stated, "A descriptive study is used to obtain information concerning the current status of the phenomena to describe 'what exists' with respect to variables or conditions in a situation" (p.12). Moreover, Johnson and Christensen (2008) posited that:

> Educators sometimes conduct descriptive research to learn about attitudes, opinions, beliefs, behaviors, and demographics (e.g., age, gender, ethnicity, education) of people. Although the survey method is commonly used in descriptive research, keep in mind that

this method (i.e., the use of questionnaires and/or interview protocols as discussed in Chapter 6) can also be used in predictive and explanatory research. (p. 377)

This study was designed to determine campus planners' preferences for a project delivery method when constructing student housing on a university campus. As was demonstrated in the literature review, there was a paucity of empirical data on campus planners' preferences for project delivery methods. It was therefore necessary to administer a survey to this population (campus planners) to gather additional information about their preferences for a particular project delivery method. The data from the survey was used to determine current practices and to measure preferences, both present and future.

The survey used three industry standard project delivery methods: design-build, design-bid-build, and construction management at risk. In addition, the survey measured campus planners' preferences towards these projects delivery methods using four key performance indicators: cost, owner input, safety, and on-time completion. The survey was hosted on the Survey Monkey website.

**Reliability and Validity**

Reliability and validity are indicators of what we can learn about the phenomena being studied and what we can infer from the findings (Leedy & Ormrod, 2005). Moreover, Bryman (2008) suggested that if you can confirm validity, the data is presumed to be reliable. Bias in a research project can alter the results. It is vital that bias be reduced or minimized. This can be accomplished through reliability and validity. Reliability, according to Johnson and Christensen (2008), "refers to the consistency or stability of a set of test scores. If a test or assessment procedure provides reliable scores, the scores will be similar on every occasion" (p. 144). Moreover, Yin (2008) suggested that reliability is established when you control for errors and

any biases that may exist. Reliability must be established if research is to be considered credible. Validity can be defined as "a measure of the extent to which a measure actually measures what it is presumed to measure" (Pearson, 2010, p.48). Validity is consistency. It can be presumed to occur again and again. Criterion validity allows the researcher to use a statistically acceptable measurement tool to create a new way to measure a research project. In all instances, the measurement must be representative of the instrument being used in the research construct.

To test the validity of my research instrument, I used subject matter experts to participate in the pilot survey. These individuals (none of who participated in the actual study) agreed to test the survey instrument and provide feedback to me on each question. I needed to confirm that the document was easy to access in an online environment, the directions were understandable, and the mechanics of the survey were operational. Having the pilot survey completed by subject experts allowed for me to gauge the amount of time was necessary to complete the instrument. Adjustments to the survey instrument were made as a result of the feedback provided by the pilot participants.

**Rationale for Survey Research Methodology**

Survey research was chosen for this study because of its specific qualities. Johnson and Christensen (2008) defined survey research as "a nonexperimental research method in which questionnaires or interviews are used to gather information, and the goal is to understand the characteristics of a population" (p. 222). Marshall and Rossman (2006) further supported the notion of survey research: "In deciding to survey a group of people, researchers make one critical assumption—that a characteristic or belief can be described or measured accurately through self-reporting" (p. 125). Further, Leedy and Ormond (2005) suggested survey research as a tool that permits the researcher to gain new knowledge about groups of people—including their attitudes

and perceptions—through a questionnaire and by documenting their responses. A critique of survey research is that it may not always provide the information the researcher is seeking. When discussing survey research, Marshall and Rossman (2006) also stated, "They are of little value for examining complex social relationships or intricate patterns of interactions" (p. 126). In this study, however, surveying members of the Society of Campus University Planners, who typically are the individuals on campus who plan, assist with financing, and build student residence halls, the use of an internet survey was deemed the most appropriate research method.

Internet based research provides the researcher access to individuals and pre-defined groups that ordinarily would not be reachable (Garton, Haythornthwaite, & Wellman, 1999). In the case of this research study, locating a group of university campus planners was a matter of conducting an electronic search and identifying a professional organization of campus architects and planners. That organization, Society of Campus University Planners, "is a community of senior higher education leaders who are responsible for, or are involved in, the integration of planning on their campuses and for the professionals who support them" (SCUP, n.d.). According to the association website, the Society of Campus University Planners has 5,000 members worldwide and is represented in 24 countries. In addition, the Society of Campus University Planners publishes *Planning for Higher Education*, which is a peer reviewed journal that is available to its membership and the general public.

The data from the surveys was analyzed using the Statistical Package for Social Sciences (SPSS, version 18, 2009) using the level of significance of 0.05. Using a 7-point Likert scale (1 = not important to 7 = very important), the respondents read a statement and provided a response with a varying degree of agreement. The use of this scale allowed the researcher to discern differences in preferences towards each question. The data collected was studied to determine the

perceptions of campus planners. The Likert or summated rating scale, according to Johnson and Christenson (2008) is:

> Composed of multiple items that are designed to measure the same idea or the same construct. Each of the items is rated by each respondent using a rating scale (e.g., a 4-or 5-point rating scale), and then the ratings on the multiple items are summed by the researcher for each participant, providing a single score for each person. (p. 185)

The survey chosen for this research project is contained in Appendix C and was refined through the assistance of subject experts who agreed to test the pilot survey. These individuals had considerable experience with student housing projects on other campuses and had worked with campus planners in the past. Included in this group were architects, project managers, and student housing professionals. It should be noted that none of these individuals participated in the actual study. In addition, members of my dissertation committee provided valuable comments that aided in the development of the instrument. The intent of this process was to test for validity and to determine if there were any questions on the survey that would jeopardize the reliability or validity of the instrument (Patten, 2002).

**Rationale for Online Survey**

Online surveys had their beginnings through the use of email (Bachmann, Elfrink, & Vazzana, 2000). Internet guided research generated excitement and provided electronic researchers with a tool that permitted them to expand their research base and potentially collect more data (Musch & Reips, 2000). The use of the internet provides "a once-in-a-lifetime opportunity for scholars to test theories of technology diffusion and media effects during the early stages of a new medium's diffusion and institutionalization" (DiMaggio, Hargttai, Neuman, & Robinson, 2001, p. 308). Because of diminishing paper survey results, the web based

instrument has gained prominence (Cook, Heath, & Thompson, 2000). In 2006, the Council of American Survey Research Organizations noted that 76% of its membership utilized internet surveys (as cited in Vehovar & Manfreda, 2008). This powerful tool has proven valuable to researchers in part because of the potential to reach more people and offer new ways to collect data.

> The value of any new research technique lies not in its capability to examine questions already testable using other methods, but in its ability to offer new opportunities for research, examining questions previously too difficult to answer (Castellan, 1991; Lesgold, 1991) or exploring questions that take advantage of its unique strengths. (as cited in Smith & Leigh, 1997, p. 496)

Online research allows researchers to be more flexible and nimble as they consider various research designs and the tools by which they can collect their data.

Research can be time consuming and protracted. Finding the time to manage the mechanics of the data collection instrument and physically collecting the data is a challenge faced by most researchers. Ilieva, Barton, and Healey (2002) noted that internet based research allows researchers more time to focus on other aspects of research while simultaneously collecting their data. During a typical internet based survey instance, the computer program may serve as a bridge between the participants and the researcher. Often, the participants are asked to respond to a series of questions or select a response. The computer program can be designed to initiate more questions based on a participant's responses.

The electronic format allows the researcher more time to interpret the results of the data rather than allocate the resource of time on the collection of data (Andrews, Nonnecke, & Preece, 2003). However, time saving is not without risk. Some scholars have suggested that surveys

conducted using only the internet need to safeguard the validity of the study (Michalak & Szabo, 1998; Schmidt, 1997) because of the internet user's bias and sampling strategies (Alvarez, Sherman, & VanBeselaere, 2003; Bradley, 1999). The inability of the researcher to manage technical issues with the survey instrument can be considered a hindrance to achieving a satisfactory return rate. Users participating in an online survey may experience a technical difficulty or their computer software may be configured differently, which could impact the data collection (Krantz, 2001).

Utilizing electronic survey methods may also produce significant cost savings (Hewson & Laurent, 2008). The production, distribution, collection, and analysis of a traditional paper survey may prove to be cost prohibitive if the researcher intends to study a large population (Bachmann et al., 2000; Ilieva et al., 2002; Yun & Trumbo, 2000). Surveys, according to Lavrakas, Shuttles, Steech, and Fienberg (2007), have been compared to a census, however, the cost of a survey makes it a more attractive option:

> At far less cost than a census, a survey can sample a representative subset of the population, gain a very high response rate, gather data on the same variables a census measures, and do so much more quickly than a census. (p. xxxvi)

Moreover, it is unlikely that individuals needed in the study will be in the same location, which would add costs to the research project. Telephone calls, travel expense, and the cost of transcription are examples of additional costs typically associated with the traditional paper survey. Many of these expenses may be mitigated by the use of online research strategies. Online research may deliver an efficient method of distributing, collecting, and analyzing research data. However, consideration should also be given to the possible disadvantages of using an electronic survey method, including access to the correct survey population and piloting the sample survey.

One disadvantage of the electronic survey method is gaining access to the sample population the researcher desires to study. Because of the proliferation of the electronic survey approach, invited participants are less likely to participate (Bachmann et al., 2000). In addition, significant research (Duhamel, Langerak, & Schillewaert, 1998; Hudson & Bruckman, 2004; Swoboda, Muhlberger, Weitkunat, & Schneeweib, 1997) has found that members of these online communities may be offended by a casual request to participate in an electronic survey or research project and, as a result, will not participate, or worse, disconnect the researcher from the group. Developing a relationship with online users is difficult to accomplish, which is another disadvantage to using the electronic survey approach.

Internet research studies must be carefully designed, planned, and piloted (Birnbuam, 2004; Hewson & Laurent, 2008). Because the internet is so widely available, there are multiple opportunities for researchers to collect data, including passive data such as archival material (Bordia, 1996), or they can connect to databases from all around the world. This broad access to information and people must be carefully managed as there could be a tendency to move away from acceptable data collection standards and conduct "poorly designed studies" (Hewson & Laurent, 2008, p.59). The study must follow acceptable design standards in order to safeguard the reliability and validity of the research findings. Reliability is the measure of consistency of results, meaning the results should be replicated if the same measurements are conducted using similar data. Moreover, when conducting a quantitative research study, it is necessary that validity be tested and aligned with the instrument and type of research design (Cooper & Schindler, 2006).

**Internet Research Design**

If using the internet for research, it is important to plan the research design in advance in order to anticipate how the data will be collected and deal with any issues that may occur as a result of using this format. Questions to be considered in any internet research design may include: dropout rates, demographic question placement, dealing with multiple submissions, and incentivizing the research participants (Reips, 2002). Factors that contribute to higher dropout rates include: the length of the actual survey, a lack of incentives offered to the participant, and issues that are considered sensitive (Knapp & Heidingsfelder, 2001).

**Survey Pilot Test**

Conducting a pilot study prior to administering the main survey is highly desirable largely because the pilot study validates the questions and also confirms that the instrument functions properly (Bryman, 2008). A pilot study, according to Polit, Beck, and Hungler (2001), may be used as a "small scale version or trial run in preparation for a major study" (p. 467). Simon (2011) opined that the following factors can be resolved by using a pilot study:

- Check that instructions are comprehensible;
- Check that investigators and technicians are sufficiently skilled in the procedures;
- Check the wording of the survey;
- Check the reliability and validity of the results;
- Check the statistical and analytical processes to determine if they are efficacious. (p. 2)

In this study, the survey instrument was developed and piloted to 10 professionals who had significant experience in the area of construction (architects, and project managers), or who were senior campus administrators with extensive experience in building residence halls

(associate vice president, campus housing directors). These individuals were currently working at a college or university and had experience in building student housing or working for outside firms that design and build student housing for colleges and universities.

An introductory email was sent to each individual asking them to participate in the pilot study along with a brief description of the research. The survey instrument was modified so that each question had a narrative box that allowed the pilot participant to make comments about the questions. After the pilot surveys were submitted, they were analyzed for reliability and validity using SPSS. Adjustments to the questions were made as a result of the feedback and the final survey was prepared for distribution to the Society of Campus University Planners membership.

**Sample Population**

A sample population according to Johnson and Christensen (2008), "is the set of all elements. It is the large group to which a researcher wants to generalize his or her sample results" (p. 224). The survey was designed using the website Survey Monkey. The population of the study was culled from membership records provided by the Society of Campus University Planners. According to the Society of Campus University Planners website ("Society of Campus, and University Planners" 2013) members of the organization included chief planning officers, campus planners, project managers, and architects. The roles of these individuals varied according to university campus, but each of them was qualified, by nature of their position, to respond to the survey questionnaire. The researcher was able to work directly with the membership director in the Society of Campus University Planners organization to identify the population to receive the survey. The survey instrument was sent to the Society of Campus University Planners members within the United States only, due to the differences in construction techniques outside of the United States. The intent of a sample was to identify a

large group of individuals who shared the same interests—in this case, those associated with campus planning.

**Data Analysis**

The data from the surveys was coded using SPSS, version 18.0 (2009). The survey, which contains both Likert and open-ended questions, was sent to members of the Society of Campus University Planners. Use of a 7-point continuous scale with two labeled endpoints allowed the researcher to treat the variables as interval scales, allowing for the use of mean and standard deviations to describe the data in a meaningful way (Ferrando, 2003). Demographic information from this survey was used to describe the respondents and to create categories by which to measure the individual responses.

**Survey Questions**

For the survey instrument, the first question had to do with university designation. Measuring public versus private institutions allowed me to compare responses from both designations to determine if there were any significant differences between these two institution types. Questions 2-4 were related to total enrollment, undergraduate enrollment, and number of students living on campus, which permitted me to further divide the data to determine if there were significant differences between larger universities and smaller universities.

In question 17, determining the age of the individual served to measure the response of the participants to determine if age influenced the preference of campus planners for a particular project delivery method. Question 18 asked about the highest degree attained by the individual to measure whether additional education impacted a campus planner's preferences. It was interesting to if someone with real-life experience minus formal education had a different preference towards a project delivery method than a younger planner with more formal

education. Thus, question 19 was vital in order to measure the responses of each survey participant. Much like the degree question (question 18), when asking the question about length of time in the position, question 20, I measured how experience influenced project delivery preferences. Question 21 asked about the state in which the individual worked. Knowing the region the respondents were located was beneficial in order to determine if there was a preference for a particular project delivery method in one part of the country. Asking the respondent's gender in question 22 informed me as to how many men and women were active in the field of project management, and also helped to determine if there was a preference for a particular project delivery method according to gender.

Question 11 asked about the likelihood of building a residence hall in the next 1-5 years. The rationale behind this question was to determine if the participant's response should be considered in this survey. An answer in the affirmative permitted me to question the respondent's preference for a project delivery method. Question 5, regarding whether the respondent had ever been involved in the construction of a residence hall, was useful because it allowed me to measure the project delivery preferences of individuals who had constructed a residence hall against those individuals who had never constructed a residence hall.

Question 6 was linked with question 5. For survey participants who indicated previous involvement in the construction of a residence hall, I was able to determine their level of involvement, which allowed me to compare various roles to project delivery preferences. For respondents who had previous experience in construction of residence halls, I asked about the number of beds in the project (question 7) and the square footage per bed space (question 8). Question 7 allowed me to further parse the data to determine whether project delivery preferences change based on the size of the project. Understanding the square footage of each

project was helpful in determining whether colleges and universities were building the same size of buildings across the country. Question 9 asked about the total construction cost, excluding furniture, fixtures, and equipment. By removing the cost of furniture, fixtures, and equipment from each project, I was able to compare the total cost of construction by region, public versus private, as well as large schools against smaller schools.

Question 10 inquired about the project delivery method utilized. Determining the preferences of campus planners for a particular project delivery method was the basis of this study. Asking the survey respondents to share which project delivery method they used for a previous project allowed me to determine if there were any changes with regard to future projects. Question 12 asked what project delivery method would be preferred when constructing a residence hall. This question was intended to make the participant think about the future construction of a residence hall and to determine which project delivery method would be preferred. Question 13 expanded upon the answer to question 12, requesting an explanation for the preferred project delivery method. This was a narrative question allowing survey participants to further explain their answers.

Questions 14 through 16 dealt with key performance indicators. Question 14 asked how important each key performance indicator was when considering a design-build project delivery method for building a residence hall. This question measured the importance of each key performance indicator in the selection of the design-build project delivery method. Question 15 asked the same when considering a design-bid-build project delivery method for building a residence hall. This question measured the importance of each key performance indicator in the selection of the design-bid-build project delivery method. Question 16 asked about the importance of each key performance indicator when considering a construction management at

risk project delivery method for building a residence hall. This question measured the importance of each key performance indicator in the selection of the construction management at risk project delivery method. This same questioning method was used for the remaining key performance indicators.

**Survey Instrument**

The survey instrument (Appendix C) followed acceptable performance standards as approved by my dissertation committee and the Institutional Review Board (Appendix B). Participants were greeted with a statement from the principle investigator outlining the research questions and thanking them for participating in the survey research. On the following page, the consent document provided appropriate and required IRB information. Survey participants were asked to complete the survey based on their work experience. The survey software (Survey Monkey) captured the participants' responses to each of the survey questions. Survey participants' Internet protocol (TCP-IP) addresses were not collected in order to ensure that respondents remained anonymous.

**Survey Responses**

The survey was launched (Appendix D) on January 13, 2014 to 2,224 members of the society of Campus University Planners. Their member database exceeds 5,000 members; however, it was determined that more than 3,000 members were not directly working at a college or university. In order to maximize existing members' participation, the survey was initially advertised in the Society of Campus University Planners newsletter. By January 28, only 3.1% of the population had responded to the survey. Therefore, it was determined that direct emails to the Society of Campus University Planners members would improve results.

## Survey Timeline

The survey timeline stretched from January 2014 through March 2014. The timeline detailing the survey process is given in a table format in Appendix E for reference.

## Data Collection

In all, 328 members of the Society of Campus University Planners consented to participate in the study (question 1 on the survey), representing a 14.8% return rate. Thirteen of the respondents reported that they were not employed in some capacity at a college or university campus (question 2) and were immediately diverted to a thank you page, as the focus of this research was on the Society of Campus University Planners members who were currently working on a college or university campus. Another 44 respondents discontinued their participation in the survey after question 3. Forty-two respondents did not answer the question about role (question 9 for those who had built student housing and question 21 for those who had not built student housing) and/or did not answer the questions after the question regarding role, questions that were vital to the research. Thus, usable responses were available from 218 of the respondents.

## Measurement of Variables

The following transformations were made prior to data analysis:

1. One hundred and ten cases missing significant data relevant to this inquiry were not considered in the analysis. A description of these cases can be found under Data Collection (p. 65). Thus the usable sample was reduced from 328 to 218.
2. The two open-ended variables asking for the total number of full time undergraduate students enrolled at the institution at which the student housing project occurred (question 6) and where respondents currently worked (question 18) were recoded into one of four

categories: very small (<1,000 FTE undergraduates), small (1,000-2,999 FTE undergraduates), medium (3,000-9,999 FTE undergraduates), and large (10,000 or more FTE undergraduates), as suggested by McCormick and Chao, 2005.

**Summary**

Chapter 3 described the methodology utilized for this study. A survey instrument was tested using seasoned professionals who provided feedback on the survey development. The rationale behind each question was presented as well as a detailed description on the use and effectiveness of internet survey instruments. The final survey was launched on January 13, 2014. As was stated in the data collection section of this chapter: In all, 328 members of the Society of Campus University Planners consented to participate in the study (question 1 on the survey), representing a 14.8% return rate. Thirteen of the respondents reported that they were not employed in some capacity at a college or university campus (question 2) and were immediately diverted to a thank you page, as the focus of this research was on the Society of Campus University Planners members who were currently working on a college or university campus. Another 44 respondents discontinued their participation in the survey after question 3. Forty-two respondents did not answer the question about role (question 9 for those who had built student housing and question 21 for those who had not built student housing) and/or did not answer the questions after the question regarding role, questions that were vital to the research. Thus, usable responses were available from 218 of the respondents.

Chapter 4 provides the research findings of the data collected.

# Chapter 4: Research Findings

## Introduction

This chapter presents the research findings of the survey results, as guided by the five research questions. Specific findings are shared from the data tables to inform the reader about campus planners' preferences for a specific project delivery method when building student housing. Demographic information is provided that demonstrates the broad range of experience and roles played by the survey participants. Institutional characteristics of both public and private institutions are provided in order to compare the project delivery preferences of campus planners working at these institutions. Geographic information collected during the survey is provided to determine whether there is any difference in campus planners' preferences by region. Finally, the five research questions are answered using the data analysis techniques described in Chapter 3.

## Research Questions

The research questions that guided this study were as follows:

1. What is the preferred project delivery method when building a residence hall on a college campus?
2. Do key performance indicators influence the choice of a preferred project delivery method?
3. Do preferred project delivery method and key performance indicators differ by number of beds?
4. Do preferred project delivery method and key performance indicators differ geographically?

5. Do preferred project delivery method and key performance indicators differ according to classification of institution as public or private?

**Demographic Data**

There were 218 participants in this study. Respondents were asked about their gender, age, educational background, length of time in their current position and current role. Data from their responses are presented below in Table 6.

Table 6

*Demographic Characteristics of Respondents*[1]

| Demographic Data | | |
|---|---|---|
| Characteristic | Category | Number (Total = 218) and Percentage |
| Gender | Male | 152 (69.7%) |
| | Female | 58 (26.6%) |
| | Other | 2 (0.9%) |
| | Missing | 6 (2.8%) |
| Age | 21 – 29 | 2 (0.9%) |
| | 30 – 39 | 12 (5.5%) |
| | 40 – 49 | 47 (21.6%) |
| | 50 – 59 | 92 (42.2%) |
| | 60 or older | 59 (27.1%) |
| | Missing | 6 (2.8%) |
| Educational Background | Vocational Certificate | 1 (0.5%) |
| | Associate's Degree | 3 (1.4%) |
| | Bachelor's Degree | 56 (25.7%) |
| | Master's Degree | 124 (56.9%) |
| | Ph.D. or Ed.D. | 22 (10.1%) |
| | Other | 6 (2.8%) |
| | Missing | 6 (2.8%) |
| Length of Time in Current Position (in years) | 5 years or less | 66 (30.3%) |
| | 6 – 10 years | 55 (25.2%) |
| | 11 – 15 years | 35 (16.1%) |
| | 16 – 20 years | 19 (8.7%) |
| | 21 or more years | 28 (12.8%) |
| | Missing | 15 (6.9%) |
| Current Role | Management | 149 (68.3%) |
| | Designer | 12 (5.5%) |
| | Execute | 34 (15.6%) |
| | Support | 6 (2.8%) |
| | Utilization | 2 (0.9%) |
| | Planning | 10 (4.6%) |
| | Other | 5 (2.3%) |

[1] The demographic characteristics of the respondents reflect their current situations. Five percent of the respondents reported having built a residence hall but they are currently working in a different institution. When reporting data about residence hall projects, the region in which the project occurred and the role the respondent played in the project are used.

**Gender of respondents.** Respondents of the study were predominately male (69.7% versus 26.6% female, 0.9% other). Some respondents (2.8%) did not disclose their gender when asked. This information is also given in Table 6.

**Age of respondents.** As depicted in Table 6, 69.3 % of the respondents indicated that they were over the age of 50, while 28% were under the age of 50. A small percentage of respondents, 2.8%, chose to not disclose their age.

**Educational background of respondents.** Table 6 shows the educational background of the respondents. A small percentage, 0.5% of respondents, indicated they had either a vocational certificate or an Associate's degree. A Bachelor's degree had been obtained by 25.7% of the respondents. Survey respondents who had achieved a Master's degree (56.9%) represented the largest degree category. Of note, 10.1% of the campus planners indicated they had earned a doctorate (either a Ph.D. or an Ed. D.). Finally, 5.6% of the respondents either chose not to respond or indicated "other," which could mean the respondent was a licensed architect or held another professional license.

**Respondents' length of time in current position.** Table 6 displays the length of time the campus planners had been in their current position. Of the respondents, 30.3% reported 5 years or less, while 16.1% of respondents indicated they had been working at their current institution between 11-15 years. With regard to work history, 8.1% had a work history of 16-20 years in the same position. Finally, 12.8% had been working at their current institution for more than 21 years. Some respondents, 6.9%, chose not to respond to this question. Notable in the results is the length of time the respondents indicated they had been in their current position. With regard to length of experience in their current position, 55.5% of respondents indicated they had been in their current role for 10 years or less. A full 30.3% had 5 years or less experience in their current

position. Importantly, 84% of all respondents noted (Table 8) they had previously been involved in the construction of student housing.

**Respondents' role on campus.** Respondents were asked to provide their role on campus when building student housing (Table 6). The majority, 68.3%, indicated that they currently held a management role on their respective campus. For this survey, management included: vice-president, associate vice-president or director (Suermann, 2009). Of the respondents, 29.4% claimed to be in "other" roles. Such categories would include: designers, architects, engineers, project and assistant project managers, clerical, budget officers, purchasing, legal, compliance, LEED, facility managers, trade supervisors, and contracted employees. Some, 2.3% of the respondents, chose not to provide their current role on campus. When asked what role they had played in building residence hall/student housing, 16 of the respondents checked "other" and provided an explanation of their role. These 16 responses were examined and 15 were recoded into to one of the response options given. For example, "campus architect" was recoded as 2, designer (architect, engineer, etc.).

**Regional Designation and Institutional Characteristics**

The Society of Campus University Planners uses the following regional designations to segregate their membership: Mid-Atlantic, North Central, Southern, North-Atlantic and Pacific. Table 7 shows the states associated with each region. The two variables asking the state in which the student housing project occurred (question 5) and where the respondents currently work (question 17) were recoded into the Society of Campus University Planners regions: Mid-Atlantic, North Central, Southern, North Atlantic, and Pacific.

Table 7

*Regional Designation*

| SCUP Region | | | | |
|---|---|---|---|---|
| Mid-Atlantic | North Central | Southern | North Atlantic | Pacific |
| Delaware | Illinois | Alabama | Connecticut | Alaska |
| Maryland | Indiana | Arkansas | Maine | Arizona |
| New Jersey | Iowa | Florida | Massachusetts | California |
| Pennsylvania | Kansas | Georgia | New Hampshire | Colorado |
| Virginia | Michigan | Kentucky | New York | Guam |
| Washington, | Minnesota | Louisiana | Rhode Island | Hawaii |
| DC | Missouri | Mississippi | Vermont | Idaho |
| West Virginia | Nebraska | North Carolina | | Montana |
| | North Dakota | Oklahoma | | Nevada |
| | Ohio | Puerto Rico | | New Mexico |
| | South Dakota | South Carolina | | Oregon |
| | Wisconsin | Tennessee | | Utah |
| | | Texas | | Washington |
| | | Virgin Islands | | Wyoming |

**Institutional Characteristics**

In this survey instrument, respondents were asked to classify the size of their institution (Table 7) as one of four groups: very small (less than 1,000 FTE undergraduates), small (1,000-2,999 FTE undergraduates), medium (3,000-9,999 FTE undergraduates), or large (10,000 or more FTE undergraduates). Institutions were represented in each category; however the large institution category represented 54.6% of the overall responding institutions. Multiple respondents from the same institution may have participated in this survey. The analysis may be influenced by any institution that is represented by more than one respondent. The breakdown of respondents by institution size is given in Table 8 and was drawn from the Carnegie classification for institution size. The kind, size, and location of the institution of the respondents reflected their current work location. Six respondents checked both public and private and, therefore, they were excluded from the analysis done when comparing public and private schools. Their responses were included when looking at other variables, including project delivery methods and key performance indicators.

Table 8

*Institutional Characteristics of Respondents' Current Workplace*[2]

| Institutional Characteristics | | | | |
|---|---|---|---|---|
| Institutional Characteristics | Category | Respondents Involved in Building a Residence Hall (Total N = 184) | Respondents Not Involved in Building a Residence Hall (Total N = 34) | Total (Total All Respondents N = 218) |
| Kind of Institution | Public | 109 (59.2%) | 15 (44.1%) | 124 (56.9%) |
| | Private | 58 (31.5%) | 15 (44.1%) | 73 (33.5%) |
| | Public and Private[3] | 6 (3.3%) | 0 (0.0%) | 6 (2.8%) |
| | Missing | 11 (6.0%) | 4 (11.8%) | 15 (6.9%) |
| Size of Institution | Very Small (<1,000 FTE undergraduates) | 2 (1.1%) | 0 (0.0%) | 2 (0.9%) |
| | Small (1,000 – 2,999 FTE undergraduates) | 20 (10.9%) | 8 (23.5%) | 28 (12.8%) |
| | Medium (3,000 – 9,999 FTE undergraduates) | 56 (30.4%) | 11 (32.4%) | 67 (30.7%) |
| | Large (10,000 or more FTE undergraduates) | 105 (57.1%) | 14 (41.2%) | 119 (54.6%) |
| | Missing | 1 (0.5%) | 1 (2.9%) | 2 (0.9%) |
| SCUP Region | Mid-Atlantic | 18 (9.8%) | 7 (20.6%) | 25 (11.5%) |
| | North Central | 35 (19.0%) | 7 (20.6%) | 42 (19.3%) |
| | Southern | 54 (29.3%) | 3 (8.8%) | 57 (26.1%) |
| | North Atlantic | 37 (20.1%) | 9 (26.5%) | 46 (21.2%) |
| | Pacific | 40 (21.7) | 8 (23.5%) | 48 (22.0%) |

Survey respondents were asked to identify their institutional designation. Table 8 represents survey respondents who had been involved in building student housing by public versus private institution. Respondents (N = 218) from public institutions represented 59.2% of the survey participants, while 31.5% of the respondents reported affiliation with a private institution. There were 11 responses (6%) missing and 6 respondents (3.3%) claimed both private and public designations and as previously discussed, these responses were excluded from the analysis.

[2] The kind, size, and location of the institution of the respondents reflect their current situation. When reporting data about residence hall projects, the kind, size, and location in which the project occurred are used.

[3] Six respondents checked both public and private and, therefore, they were excluded from the analysis done when comparing public and private schools. Their responses were included when looking at other variables, including PDMs and KPIs.

One hundred and eighty-four, or 72%, of the respondents reported they had been involved in building student housing on a college campus. Eleven of the respondents did not specify the type of institution (public or private) in which the student housing project occurred, but 173 did give the institution type.

Table 8 also represents survey respondents who have had no involvement in building student housing by public versus private institution. Respondents from public institutions represented 44.1% of the survey respondents, while 44.1% of the respondents reported being affiliated with a private institution. There were four responses (11.8%) missing data in this category. Public institutions in the Southern and Pacific regions and private institutions in the North Atlantic SCUP region were more likely to have been involved in student housing building projects. This breakdown is provided in Table 9.

Table 9

*Location of Student Housing Building Projects by Region and Type of Institution*[4]

| | Type of Institution | | | |
|---|---|---|---|---|
| Region | Public | Private | Public and Private | Total |
| Mid-Atlantic | 11 (61.1%) | 7 (38.9%) | 0 (0.0%) | 18 (100%) |
| North Central | 20 (69.0%) | 6 (20.7%) | 3 (10.3%) | 29 (100%) |
| Southern | 41 (82.0%) | 7 (14.0%) | 2 (4.0%) | 50 (100%) |
| North Atlantic | 14 (35.9%) | 24 (61.5%) | 1 (2.6%) | 39 (100%) |
| Pacific | 26 (70.3%) | 11 (29.7%) | 0 (0.0%) | 37 (100%) |
| Total | 112 (64.7%) | 55 (31.8%) | 6 (3.5%) | 173 (100%) |

**Cost and Size of Student Housing Projects**

Table 10 represents the median cost per square foot of student housing by region. The average high end median cost per square foot is $256, while the low end median cost is $215 median cost per square foot. The Southern and North Central regions reported a lower median cost per square foot while the Mid-Atlantic and North Atlantic regions reflected a higher median

[4] The data in this chart reflects the region, kind of institution in which the residence hall project occurred and the role the respondent had with that project. This may be different than the role the respondent has at his/her current institution.

cost per square foot to build student housing. Survey respondents reported higher costs per bed space in the North Atlantic and Mid-Atlantic regions ($116,279) while the Southern and North Central regions averaged ($59,868) median cost per student.

When comparing private universities versus public institutions (Table 10), the median cost per square foot varied from the low of $200 per square foot by the public universities to a high of $329 per square foot as reported by the private universities in the SCUP regions. Table 10 also identifies the gross square footage of student housing projects by their respective SCUP regions. The Southern region identified 56 student housing projects with a median of 165,000 GSF, followed by the Pacific region with 37 projects and a median of 125,000 GSF. The Mid-Atlantic region reported 18 student housing projects with a median of 117,000 GSF. North Central and North Atlantic reported 32 and 40 student housing projects, respectively, with a median of 104,000 and 86,800 GSF, respectively.

Construction costs (Table 10) for the 183 projects considered had a median cost between $30-35 million and a median of 401-500 beds. The median gross square footage of the projects was 126,000 GSF. The cost per bed space was a calculated number. For example: Under the category of "All Reporting Institutions" the following calculations were used to derive the "cost per bed space" number.

$30,000,000/401 (number of beds) = $74,812.97

$30,000,000/500 (number of beds) = $60,000.00

$35,000,000/401 (number of beds) = $87,281.79

$35,000,000/500 (number of beds) = $70,000.00

Using this formula, the cost per bed space was determined to be between the low of $60,000 to a high of $87,281.79 for "All Reporting Institutions" in the survey.

The median cost per bed space for all projects was $60,000-87,282 while the median cost per square foot was $238-278. The net assignable square footage per bed space for all projects was between 151-200 square feet. The cost per bed space for 200-500 beds when calculated produced a considerable spread ($50,000-$149,253). It is probable that this spread can be attributed to the private institutions building smaller projects (76,000 GSF) versus public institutions (150,000 GSF) and paying more per bed space ($66,667-$124,378) versus the median cost of ($60,000-$87,282) for public institutions. The per square foot construction costs ($346-$403) was higher in the North Atlantic region (Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont) which is consistent with national norms.

**Respondent's Role by Institutional Classification and Region**

Table 11 displays survey respondents' roles with regard to building a student housing project by institutional classification (public or private) and by SCUP region. With regard to differences between categories when comparing public and private institutions, results for most categories were within two percentage points of each other with only a few exceptions. The primary difference was in the "management" category. Respondents who identified themselves in this category and as being affiliated with a public institution comprised 61.6% of the public institution survey population; while respondents who identified themselves in the "management" category and as being affiliated with a private institution comprised 70.9% of the private institution survey population. Notable in the totals section is that there were no respondents in the categories of "utilization" and "other" for private institutions. It is possible that private schools were less likely to fund specific positions and that the campus planner assumes multiple roles on campus.

Table 10

*Cost and Size of Student Housing Projects*

| Cost and Size of Student Housing Projects | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Sample Size | Cost of Total Project | Number of Beds in Project | Size of Project (Sq. Ft.) | Cost per Bed Space** | Cost per Sq. Ft.** | Sq. Ft. per Bed |
| All Reporting Institutions (Totals) | 183 | $30,000,001 - $35,000,000 | 401 - 500 | 126,000 | $60,000 - $87,282 | $238 - $278 | 151 – 200 NASF |
| Institution Size | | | | | | | |
| Fewer than 200 beds | 38 | $10,000,001 - $15,000,000 | < 200 | 53,000 | $50,251 - $75,377 | $189 - $283 | 151 - 200 NASF |
| 201 – 500 beds | 75 | $25,000,001 - $30,000,000 | 201 - 500 | 108,000 | $50,000 - $149,253 | $231 - $278 | 151 – 200 NASF |
| 501 – 800 beds | 42 | $35,000,001 - $40,000,000 | 501 - 800 | 187,300 | $43,750 - $79,840 | $187 - $214 | 151 – 200 NASF |
| 801 - > 1000 beds | 28 | $70,000,001 - $75,000,000 | 801 - >1,000 | 343,738 | $70,000 - $93,633 | $204 - $218 | 201 – 250 NASF |
| SCUP Region | | | | | | | |
| Mid Atlantic | 18 | $30,000,001 - $35,000,000 | 301 - 400 | 117,500 | $75,000 - $116,279 | $255 - $298 | 201 – 250 NASF |
| North Central | 32 | $15,000,001 - $20,000,000 | 401 - 500 | 104,000 | $30,000 - $49,875 | $144 - $192 | 151 – 200 NASF |
| Southern | 56 | $30,000,001 - $35,000,000 | 501 - 600 | 165,000 | $50,000 - $69,860 | $182 - $212 | 151 – 200 NASF |
| North Atlantic | 40 | $30,000,001 - $35,000,000 | 301 - 400 | 86,800 | $75,000 - $116,279 | $346 - $403 | 151 – 200 NASF |
| Pacific | 37 | $30,000,001 - $35,000,000 | 401 - 500 | 125,000 | $60,000 - $87,282 | $240 - $280 | 151 –200 NASF |
| Institution Type | | | | | | | |
| Public | 112 | $30,000,001 - $35,000,000 | 401 - 500 | 150,000 | $60,000 - $87,282 | $200 - $233 | 151 –200 NASF |
| Private | 54 | $20,000,001- $25,000,000 | 201 - 300 | 76,000 | $66,667 - $124,378 | $263 – $329 | 151 – 200 NASF |

** *Calculated number*

Table 11

*Role Played in Residence Hall Project by Region and Type of Institution*[5]

| Role Played in Residence Hall Project by Region and Type of Institution | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCUP Region | Mid Atlantic | | North Central | | Southern | | North Atlantic | | Pacific | | Total | |
| Institution Type | Public | Private | Public | Private | Public | Private | Public | Private | Public | Private | Public | Private |
| Role | | | | | | | | | | | | |
| Management (Vice President, Associate VP, Director, etc.) | 7 (63.6%) | 4 (57.1%) | 13 (65.0%) | 4 (66.7%) | 30 (73.2%) | 5 (71.4%) | 8 (57.1%) | 17 (70.8%) | 11 (42.3%) | 9 (81.8%) | 69 (61.6%) | 39 (70.9%) |
| Designer (Architect, Engineer, etc.) | 1 (9.1%) | 1 (14.3%) | 1 (5.0%) | 0 (0.0%) | 1 (2.4%) | 1 (14.3%) | 1 (7.1%) | 0 (0.0%) | 1 (3.8%) | 1 (9.1%) | 5 (4.5%) | 3 (5.6%) |
| Execution (Project Manager, Assistant Project Manager, etc.) | 2 (18.2%) | 1 (14.3%) | 3 (15.0%) | 1 (16.7%) | 6 (14.6%) | 1 (14.3%) | 2 (14.3%) | 6 (25.0%) | 9 (34.6%) | 1 (9.1%) | 22 (19.6%) | 10 (18.5%) |
| Support (Clerical, Budget, Purchasing, Legal, Compliance, LEED) | 0 (0.0%) | 1 (14.3%) | 1 (5.0%) | 1 (16.7%) | 1 (2.4%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 2 (7.7%) | 0 (0.0%) | 4 (3.6%) | 2 (3.7%) |
| Utilization (Facility manager, Trade Supervisor) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 (2.4%) | 0 (0.0%) | 1 (7.1%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 2 (1.8%) | 0 (0.0%) |
| Planning (Consultant, Contracted Employee) | 1 (9.1%) | 0 (0.0%) | 2 (10.0%) | 0 (0.0%) | 2 (4.9%) | 0 (0.0%) | 1 (7.1%) | 1 (4.2%) | 2 (7.7%) | 0 (0.0%) | 8 (7.1%) | 1 (1.9%) |
| Other | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 (7.1%) | 0 (0.0%) | 1 (3.8%) | 0 (0.0%) | 2 (1.8%) | 0 (0.0%) |
| Total | 11 (100%) | 7 (100%) | 20 (100%) | 6 (100%) | 41 (100%) | 7 (100%) | 14 (100%) | 24 (100%) | 26 (100%) | 11 (100%) | 112 (100%) | 55 (100%) |

[5] The data in this chart reflects the kind of institution in which the residence hall project occurred and the role the respondent had with that project. Both may be different than the current situation.

**Project Delivery Methods Utilized**

Respondents were provided with five options ("design-build," "design-bid-build," "construction management at risk," "do not know," and "other") when asked which project delivery method was utilized in their most recent student housing project (Table 12). Notable was that construction management at risk was the preferred project delivery method with public institutions (45.0%). Private institutions also preferred the construction management at risk (31.5%), project delivery method. The design-build method was considered a favorable delivery method (24.2%) for public institutions. A limitation to this research was that it only focused on three main project delivery methods. In this table, the "other" column speaks to the hybrid project delivery method models that are being used in student housing construction, namely the integrated project delivery method, which utilizes a team approach to project delivery.

Table 12

*Project Delivery Methods Utilized in Student Housing Projects by Public and Private*

| Preferred Project Delivery Method | Public % | Private % | Public & Private % |
|---|---|---|---|
| Design-Build | 24.2% (N = 29) | 16.4% (N = 12) | 0.0% (N = 0) |
| Design-Bid-Build | 17.5% (N = 21) | 24.7% (N = 18) | 66.7% (N = 4) |
| Construction Management at Risk | 45.0% (N = 54 | 31.5% (N = 23) | 33.3% (N = 2) |
| Do Not Know | 6.7% (N = 8) | 19.2% (N = 14) | 0.0% (N = 0) |
| Other | 6.7% (N = 8) | 8.2% (N = 6) | 0.0% (N = 0) |

Respondents to the survey were asked to describe their role in the student housing project. The data analysis included their role by the project delivery method that was used during the project. Table 13 revealed that those individuals who reported their role as "management" utilized the construction management at risk project delivery method (40.4%) followed by design-bid-build (27.2%) and design-build (25.4%). This same pattern continued for the other roles offered during the survey.

Table 13

*Project Delivery Method Utilized in Residence Hall Project by Role Played*

| Role | Design-Build | Design-Bid-Build | CM at Risk | Do Not Know | Other | Total |
|---|---|---|---|---|---|---|
| Management | 29 (25.4%) | 31 (27.2%) | 46 (40.4%) | 3 (2.6%) | 5 (4.4%) | 114 (100%) |
| Designer | 3 (27.3%) | 2 (18.2%) | 5 (45.5%) | 1 (9.1%) | 0 (0.0%) | 11 (100%) |
| Execution | 9 (23.1%) | 9 (23.1%) | 11 (28.2%) | 0 (0.0%) | 10 (25.6%) | 39 (100%) |
| Support | 0 (0.0%) | 4 (66.7%) | 1 (16.7%) | 1 (16.7%) | 0 (0.0%) | 6 (100%) |
| Utilization | 0 (0.0%) | 0 (0.0%) | 2 (100%) | 0 (0.0%) | 0 (0.0%) | 2 (100%) |
| Planning | 4 (44.4%) | 2 (22.2%) | 2 (22.2%) | 0 (0.0%) | 1 (11.1%) | 9 (100%) |
| Other | 0 (0.0%) | 0 (0.0%) | 1 (50%) | 0 (0.0%) | 1 (50.0%) | 2 (100%) |
| Total | 45 (24.6%) | 48 (26.2%) | 68 (37.2%) | 5 (2.7%) | 17 (9.3%) | 183 (100%) |

Table 14

*Project Delivery Method Utilized in Residence Hall Project by Number of Beds*

| Number of Beds | Design-Build | Design-Bid-Build | CM at Risk | Do Not Know | Other | Total |
|---|---|---|---|---|---|---|
| Less than 200 | 7 (18.4%) | 15 (39.5%) | 11 (28.9%) | 1 (2.6%) | 4 (10.5%) | 38 (100%) |
| 201 – 500 beds | 18 (24.0%) | 20 (26.7%) | 29 (38.7%) | 3 (4.0%) | 5 (6.7%) | 75 (100%) |
| 501 – 800 beds | 10 (23.8%) | 7 (16.7%) | 20 (47.6%) | 0 (0.0%) | 5 (11.9%) | 42 (100%) |
| 801 > 1,000 | 10 (35.7%) | 6 (16.7%) | 8 (28.6%) | 1 (3.6%) | 3 (10.7%) | 28 (100%) |
| Total | 45 (24.6%) | 48 (26.2%) | 68 (37.2%) | 5 (2.7%) | 17 (9.3%) | 183(100%) |

Data collected from the survey was analyzed to determine if the project delivery method differed by the number of beds that were constructed. Notable in Table 14 was that the design-bid-build method was preferred with construction of less than 200 beds (39.5%). This variation may be related to the cost of the design-build process and the emphasis on quality assurance. In all other categories and bed counts, construction management at risk was the preferred project delivery method.

**Project Delivery Methods Preferred**

Survey participants were asked to identify their preferred project delivery method (Table 15) if they were to build student housing on their campus. The construction management at risk method (39%) was the preferred method, followed by design-build (21.1%) and design-bid-build (20.6%). Of note was the selection of "Other" (6.9%). As has been previously stated, the focus of

this study was on the three main project delivery methods—design-build, design-bid-build, and construction management at risk. There are other project delivery methods available and utilized in the construction field. One project delivery method that is frequently mentioned is the integrated project delivery method. Under this method, the risk of the project is contractually distributed among the principle parties: owner, designer, and builder.

Table 15

*Preferred Project Delivery Method*

| Project Delivery Method | Number (Percentage) |
|---|---|
| Design-Build | 46 (21.1%) |
| Design-Bid-Build | 45 (20.6%) |
| Construction Management at Risk | 85 (39.0%) |
| Do not know | 23 (10.6%) |
| Other | 15 (6.9%) |
| Missing | 4 (1.8%) |
| Total | 218 (100%) |

**Key Performance Indicators**

Survey respondents were asked to score four key performance indicators as they related to their preferred project delivery method. According to Table 16, survey respondents consistently ranked owner input as the most important key performance indicator. On-time completion was ranked second, followed by cost and safety.

Table 16

*Key Performance Indicators Ranked by Project Delivery Method*

| Key Performance Indicator | Design-Build N = 46 | | Design-Bid-Build N = 45 | | CM at Risk N = 85 | |
|---|---|---|---|---|---|---|
| | Mean | Rank | Mean | Rank | Mean | Rank |
| Owner Input | 6.7778 | 1 | 6.7045 | 1 | 6.8333 | 1 |
| Cost | 6.6000 | 3 | 6.5000 | 3 | 6.5714 | 3 |
| Safety | 6.2273 | 4 | 5.9318 | 4 | 6.2530 | 4 |
| On-Time Completion | 6.7333 | 2 | 6.6046 | 2 | 6.8271 | 2 |

Table 17

*Key Performance Indicators by Project Delivery Method and Respondents' Roles*

| Project Delivery Method | Respondents' Roles | Owner Input | Cost | Safety | On-Time Completion |
|---|---|---|---|---|---|
| Design-Build | Management | 6.8214 | 6.6786 | 6.1481 | 6.9286 |
| | Designer | 6.0000 | 7.0000 | 6.0000 | 7.0000 |
| | Execution | 6.4444 | 6.3333 | 5.6250 | 6.8889 |
| | Support | | | | |
| | Utilization | | | | |
| | Planning | 7.0000 | 6.3333 | 6.0000 | 6.6667 |
| | Other | | | | |
| Design-Bid-Build | Management | 6.8000 | 6.4667 | 5.6552 | 6.6667 |
| | Designer | 7.0000 | 6.0000 | 6.5000 | 7.0000 |
| | Execution | 6.5556 | 6.4444 | 6.1111 | 6.8889 |
| | Support | 6.3333 | 6.3333 | 6.0000 | 6.0000 |
| | Utilization | | | | |
| | Planning | 7.0000 | 6.5000 | 7.0000 | 6.5000 |
| | Other | | | | |
| Construction Management at Risk | Management | 6.8182 | 6.5000 | 6.1364 | 6.7143 |
| | Designer | 7.0000 | 7.0000 | 7.0000 | 7.0000 |
| | Execution | 6.6364 | 6.6364 | 5.9091 | 6.9000 |
| | Support | | | | |
| | Utilization | 7.0000 | 6.5000 | 7.0000 | 7.0000 |
| | Planning | 7.0000 | 7.0000 | 7.0000 | 7.0000 |
| | Other | 7.0000 | 7.0000 | 7.0000 | 7.0000 |

Based on the data, the key performance indicators do not seem to distinguish why respondents used a particular project delivery method. In fact, 50% or more of the respondents who used one of the four project delivery methods in a student housing project consistently rated all four of the key performance indicators as "very important." Nevertheless, in all three cases, safety received the lowest rating

An examination of the key performance indicators by project delivery method and respondents' roles in a student housing project (Table 17) confirms what was evident when the key performance indicators were examined by project delivery method alone: regardless of role, safety had the lowest mean score.

**Likelihood of Building Student Housing by Region**

Respondents were asked about the likelihood that they would be building student housing in the next 1-5 years (Table 18). Only 15% reported it was "not at all likely." Colleges and universities in the Southern and Pacific regions are the most likely to build residence halls/student housing in the next 1-5 years, following the well-documented areas of the United States where population growth is increasing.

Table 18

*Likelihood of Building Residence Hall/Student Housing by Region*

| Residence Hall Construction | Mid-Atlantic Region | North Central Region | Southern Region | North Atlantic Region | Pacific Region | Total |
|---|---|---|---|---|---|---|
| Extremely likely | 9 (36.0%) | 15 (35.7%) | 23 (40.4%) | 12 (26.1%) | 27 (56.3%) | 86 (39.4%) |
| Very likely | 2 (8.0%) | 3 (7.1%) | 12 (21.1%) | 8 (17.4%) | 8 (16.7%) | 33 (15.1%) |
| Moderately likely | 3 (12.0%) | 10 (23.8%) | 5 (8.8%) | 6 (13.0%) | 7 (14.6%) | 31 (14.2%) |
| Slightly likely | 2 (8.0%) | 4 (9.5%) | 11 (19.3%) | 8 (17.4%) | 6 (12.5%) | 31 (14.2%) |
| Not at all likely | 9 (36.0%) | 9 (21.4%) | 3 (5.3%) | 12 (26.1%) | 0 (0.0%) | 33 (15.1%) |
| Missing data | 0 (0.0%) | 1 (2.4%) | 3 (94.7%) | 0 (0.0%) | 0 (0.0%) | 4 (1.8%) |
| Total | 25 (100%) | 42 (100%) | 57 (100%) | 46 (100%) | 48 (100%) | 218 (100%) |

Of interest to this study was to determine, by region, which project delivery method was preferred. Table 19 shows that the construction management at risk project delivery method was preferred across all regions, with the notable exception of the North Central region. The North Central region indicated a preference for the design-bid-build method. This finding may be accounted for by state requirements for this particular project delivery method.

Table 19

*Preferred Project Delivery Method by Region*

| Project Delivery Method | Mid-Atlantic | | North Central | | Southern | | North Atlantic | | Pacific | |
|---|---|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % | # | % |
| Design-Build | 4 | 16.0% | 9 | 22.0% | 12 | 22.2% | 8 | 17.4% | 13 | 27.1% |
| Design-Bid-Build | 3 | 12.0% | 15 | 36.6% | 10 | 18.5% | 10 | 21.7% | 7 | 14.6% |
| CM at Risk | 11 | 44.0% | 13 | 31.7% | 28 | 51.9% | 17 | 37.0% | 16 | 33.3% |
| Do Not Know | 7 | 28.0% | 2 | 4.9% | 2 | 3.7% | 9 | 19.6% | 3 | 6.3% |
| Other | 0 | 0.0% | 2 | 4.9% | 2 | 3.7% | 2 | 4.3% | 9 | 18.8% |

**Summary of Findings**

Based on the findings of the survey as analyzed using SPSS, version 18.0 (2009), five research questions were explored. The findings extracted from the analyzed survey data produced sufficient information to respond to the five research questions. There is a significant preference on the part of campus planners towards the construction management at risk project delivery method when building student housing. This finding was consistent across all regions and between public and private institutions. The design-bid-build method was the preferred approach when building student housing of less than 200 beds. Key performance indicators were shown to have little influence on the decision regarding which project delivery method to choose. Survey respondents consistently ranked owner input, cost, and on-time completion as "very important" when making a decision on which project delivery method to choose, while safety, as a key performance indicator, ranked last in all instances. Chapter 5 presents a summary of the findings, conclusions, and implications for future research.

# Chapter 5: Conclusion

## Introduction

Architecturally, every university reflects its own personality in the types of buildings constructed on campus. As with any campus, one would discover academic spaces such as classrooms, research laboratories, lecture halls and libraries. The campus footprint also includes support spaces such as parking lots, plant facilities and utility corridors that serve various functions for the members of that campus community. Beyond the academic and support spaces, a campus must offer student spaces such as a student union, gymnasiums, stadiums, dining halls and student housing. Student housing on a university campus contributes to the learning, growth, and development of students who live on campus. Throughout the history of higher education, students have had the opportunity to live on a college campus and participate fully in the collegiate experience.

The demand for student housing continues to grow (Abramson, 2012). Moreover, universities are completing master plans that include new student housing as well as renovations to existing housing facilities in order to stay competitive. As previously stated physical characteristics of campus buildings can influence perspective college students (Banning & Cunard, 1986; Sturner, 1973; Thelin & Yankovich, 1987). Participants in this study (55.6%) indicated that they were "extremely likely" or "very likely" to build student housing in the next 1-5 years. The Pacific region: Alaska, Arizona, California, Colorado, Guam, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming reported the highest likelihood (56.3%) of building student housing in the next 1-5 years.

The campus planner has the responsibility to combine all the elements of an academic community into functional buildings that meet the needs of the user. This study examined the preference of campus planners when choosing a project delivery method to build student housing. A national review of campus planners revealed a preferred project delivery method while also uncovering subtle differences in how campus planners approach project delivery methods.

This chapter provides a summary of the previous chapters. As a part of the data analysis, each research question was answered using the data that was collected during the survey. There is a section on the summary of findings. A discussion about the implications and significance is included, followed by recommendations and suggestions for future research.

**Summary of the Chapters**

This study sought to determine the preferences campus planners had towards a project delivery method when building student housing on a university campus. To that end, each chapter in this study was written to provide a clear understanding of this important topic. Chapter 1 introduced the demand for on campus student housing and documented the importance of understanding the consumer oriented expectations of the residential student when making a decision to live on campus. The concept of the campus planner was introduced and an explanation of the role related to the construction of student housing was discussed. A case study of the State of Florida was presented to highlight the deliberate and intentional process that was followed when the state was creating its higher education model with a particular focus on student housing. The study's significance, organization, and delimitations were discussed and the research questions were defined. The chapter concluded with working definitions for the study.

Chapter 2 examined the literature regarding the genesis of student housing by tracing the history of student housing through several generations. From humble beginnings, student

housing has grown into a highly profitable and dynamic enterprise on a university campus. Milestones such as the Servicemen's Readjustment Act of 1944 and the Higher Education Facilities Act of 1963 were discussed and the importance of these governmental initiatives as they related to student housing was explored. The importance of the campus master plan provided context to the discussion about where student housing is located on a college campus.

Chapter 2 also introduced the three project delivery methods that were considered in this study: design-build, design-bid-build, and construction management at risk. Design-build is defined as an "integrated, project delivery technique whereby the owner contracts directly with a single entity to deliver a project" (Abi-Karam, 2005, p. 14). According to Hale, Shrestha, Gibson, and Migliaccio (2009), design-bid-build is "a project delivery method in which the owner enters into a contract with an architect/engineer firm that provides design services based on the requirements provided by the owner" (p. 579). And finally, Smith (2005) described construction management at risk as a method of construction contracting that reflects the industry trend of project owners placing greater reliance on others to successfully deliver their projects.

Also in chapter 2, key performance indicators were introduced and discussed as they relate to project delivery methods. Key performance indicators are a way to quantify the success or failure of the construction project, Toor & Ogunlana (2008). A component of this study was to determine if campus planners were influenced by key performance indicators when choosing a project delivery method. While there are many key performance indicators, this study focused on the following four indicators: cost, owner input, safety, and on-time completion.

According to Cheung et al. (2004), "Project cost performance is used to show how well the project adheres to the agreed budget. It is important because resources are often limited and cost overruns are to be avoided" (p. 364). Controlling expenses and managing the project to a

successful financial conclusion are considered positive key performance indicators. Owner input follows the notion that the owner feels engaged and is able to provide timely responses to the construction team (Molenaar & Songer, 1998). On-time completion was another key performance indicator considered in this study. Cox et al. (2003) suggested that on-time completion:

> Parallels the job cost approach in that it serves as a holistic measurement of performance according to schedule duration, and the two are often incorporated to better understand the current construction performance. On-time milestone completion determines if construction is proceeding according to schedule. Acceptable productivity is measured solely on the basis of time spent with respect to the overall scheduled duration. (p. 143)

Paramount to a successful project is the completion date which is determined prior to the start of the project. This date allows the owner to predict occupancy and when the building can be used. The final key performance indicator considered in this study was safety. Within this category is the emphasis on safety during the construction phase as well as evidence of a safety program sponsored by the general contractor. Safety on a construction site has been identified as a key performance indicator (Cox et al., 2003).

Chapter 3 described the methodology utilized to collect and analyze the data. Survey research was discussed and the importance of validity and reliability when evaluating the data. By developing an original survey instrument, the researcher was able to ascertain critical data that informed the outcome of the study. The survey that was developed was initially piloted to a group of professional colleagues who had experience in campus planning and student housing construction. Each survey question that they reviewed allowed for them to provide a critique or suggestion in order to improve each question. As Simon (2011) suggested, the use of the pilot study or survey is helpful to:

- Confirm that instructions are comprehensible;
- Check that investigators and technicians are sufficiently skilled in the procedures;
- Check the wording of the survey;
- Check the reliability and validity of the results;
- Check the statistical and analytical process to determine if they are efficacious. (p. 2)

Chapter 4 highlighted the findings of the research aligned with the research questions and stated a clear conclusion of the research data. Using SPSS, version 18.0 (2009), data collected from the survey results were coded and analyzed to answer the five research questions posed by this study.

**Research Questions Answered**

The research questions that guided this study were as follows:

1. What is the preferred project delivery method when building a residence hall on a college campus?

A careful analysis of the data revealed that the construction management at risk approach was the preferred project delivery method. This finding was consistent among public and private institutions as well as regionally. Construction management at risk is designed to permit the owner to hire a construction manager early in the project, often at the design stage. As previously discussed, the construction management at risk model is attractive to owners (or in this instance, campus planners) because it disperses the risk to include the construction manager, thereby creating a potential financial shield to the owner. Survey participants indicated that they believed this project delivery method provided faster delivery, created a more cohesive management team, and higher collaboration. The consequence of this model is that the price may be inflated in order to protect the risk of the construction manager. While cost may be increased under the construction management at risk model, when considering key performance indicators, it was

apparent that campus planners were less influenced by the cost of a project and more by their ability to have input in the project.

2. Do key performance indicators influence a campus planner's choice of preferred project delivery method?

For this study, the participants were asked to choose from the following four key performance indicators: cost, owner input, on-time completion, and safety. The data showed that regardless of the project delivery method, campus planners indicated that owner input was the most important key performance indicator when building student housing. On-time completion was ranked as the second most important key performance indicator, followed by cost, and finally safety.

The use of key performance indicators is a way to quantify the success or failure of the any construction project. Atkinson (1999, p. 338) coined the term "iron triangle" when referring to measurement of a successful project. The three sides of the triangle include time, cost, and quality. Generally speaking, these three indicators have been acceptable standards. More emphasis has been placed on expanding these standards to include additional criteria (Cooke-Davies, 2002; Pheng & Chuan, 2006) such as the satisfaction of the owner (Pinto & Slevin, 1988) and stakeholders (Bryde & Brown, 2005). Construction projects may be considered successful if many of the key performance indicators have been met.

Consistent in these findings was the emphasis on owner input as the top key performance indicator. As indicated earlier, the construction management at risk model may often be more expensive however, campus planners will agree to higher cost at the expense of losing their ability to have input in the project. Other key performance indicators were shown to have little influence on the choice of which project delivery method to utilize when building student housing. Of significance was the consistent finding that safety, regardless of the project delivery

method, ranked as least important in this study. Strong safety programs on construction site often result in lower insurance rates and fewer lost accident days (Behm, 2005) for the overall project. Despite these facts, campus planners in this study were not influenced enough to rank safety any higher.

3. Does the preferred project delivery method differ by the number of beds?

The data was analyzed to determine if there was a clear preference for a project delivery method based on the number of beds constructed. The analysis showed that campus planners who had constructed student housing of less than 200 beds actually preferred the design-build model. Cost and schedule are contributing factors to the decision to use the design-build model for buildings under 200 beds. Konchar and Sanvido (1998) found that many design-build projects reported substantial savings and enhanced schedule performance in contrast to more traditional construction methods. Recall that the design-build model allows for the campus planner to integrate the designer and the builder into a single entity for the purpose of constructing a building. According to Abi-Karam (2005), the design-build delivery method is an "integrated, project delivery technique whereby the owner contracts directly with a single entity (Design/Builder) to deliver a project" (p. 14). Unique to the design-build model is the notion that the designer and builder are integrated. Construction management at risk was the preferred project delivery method for any student housing over 200 beds.

4. Does the preferred project delivery method differ geographically?

The data indicated that the construction management at risk was the preferred project delivery method across all regions with the exception of the North Central region (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin). A contributing factor could be that some of these states have mandated project delivery methods and public colleges and universities are not at liberty to choose an

alternative delivery method. For example, the Design-Build Institute of America published a state statute report (2013) that outlined which states permit the use of design-build and which states do not permit the use of design-build. Similarly the American Institute of Architects and the Associated General Contractors of America (2011) developed a matrix (Appendix F) that provided an overview of which project delivery method was approved for use by each state. State regulations that limit the option of choosing a particular project delivery method may have influenced this study.

5. Does the preferred project delivery method differ between public and private institutions?

Notable in the analysis of the data was that the construction management at risk was the preferred project delivery method regardless of the type of institution (public or private). This finding is consistent with other data analysis. The idea of transferring risk away from the owner (in this case, the university) is an attractive strategy for many campus planners. While campus planners have budget authority over a project, they are not responsible to secure the funding, nor are they obligated for the debt payment on the project. This distinction is important because, as was shown, it would be plausible for a campus planner to select a more expensive project delivery method based on the desire to be more involved rather than choosing to save money over the lifespan of the project.

**Summary of Findings**

Based on the survey findings, analyzed using SPSS, version 18.0 (2009), sufficient information was garnered from the data to allow response to the five research questions. In sum, there is a significant preference on the part of campus planners for the construction management at risk project delivery method when building student housing. This finding was consistent across regions and between public and private institutions. The design-bid-build project delivery

method was the preferred approach when building student housing of less than 200 beds. Key performance indicators were shown to have little influence on the decision regarding which project delivery method to choose. Survey respondents consistently ranked owner input, cost, and on-time completion as "very important" when making a decision on which project delivery method to choose, while safety, as a key performance indicator, ranked last in all instances.

**Discussion of Findings**

This study contributed to a body of knowledge about project delivery methods, and the preferences of campus planners regarding their preferred method, when building student housing in that it identified a preferred project delivery method. Furthermore, this study revealed the importance of owner input in the construction phase. The study findings determined that, regardless of geographic locations, campus planners prefer the construction management at risk project delivery method. In addition, findings from the study indicate that campus planners consider cost, on-time delivery, owner input and safety to be important key performance indicators to measure the success of the construction project. This study focused on campus planners who had built student housing on a college or university campus because they are often the principal individuals responsible for choosing the project delivery method. The literature review demonstrated that there were no specific empirical data specifically related to this topic; related information had to be gleaned from project management and building construction professional journals. Therefore, this research study significantly contributed to the literature surrounding the topic of student housing construction, project delivery methods, and key performance indicators. According to the data collected for this research, 54.1% of survey participants indicated that they were "extremely likely" or "very likely" to build student housing in the next 5 years. Thus, the results of this study have importance to campus planners as well as student housing professionals. As campus planners consider new student housing options, they

must acknowledge the realities of the current environment, namely, reduced funding, higher expectations on the part of the student consumer, and multiple project delivery methods.

By conducting this research, a definite project delivery method preference (construction management at risk) emerged related to construction of student housing. In a competitive construction market, the contractor has an increasingly larger role on the project team as owners (campus planners) are demanding more from the project. As previously shared, the relationship between the owner, the architect, and the contractor is defined under the construction management at risk model whereby the financial risk is assumed by the construction manager. The use of the construction management at risk model, as demonstrated in this paper, is the preferred method because it also allows for creative solutions that can improve the quality of the project (Smith, 2005). Under this method, the budget allocated for the project must be maintained. That is, there is little opportunity for cost overrun. While this is generally a preferred approach, it could prevent the project from taking advantage of a new feature or characteristic that would enhance the functionality of the structure or add to the buildings life cycle.

In the case of building student housing, the construction management at risk model necessitates that the project team has a competent architect as a part of the team. An architect as defined by Merritt and Rickets (1994) is: "A person who is qualified by education, training, experience, and examination and who is registered under the laws of the locale to practice architecture" (p. 2.2). As student housing construction has increased (Abramson, 2012), some architectural firms have focused exclusively on the student housing market and have developed an impressive portfolio of student housing projects. Opportunities for future research on the impact of the architect on a student housing project are intriguing.

Moreover, the study revealed that there was a general consensus among campus planners regarding the importance or value of key performance indicators (cost, owner input, on-time

delivery and safety) when building student housing. This research is significant in that it included all regions in the United States, allowing for a comprehensive overview of the campus student housing landscape with regard to preferred project delivery methods. Each region of the country is subject to the needs of their individual campuses; however, the research revealed that there was little difference among the regions when choosing a preferred project delivery method.

**Limitations of the Study**

This study measured the preferences of campus planners towards a preferred project delivery model and had a number of limiting factors. First, it is possible that other institutions and campus planners may generalize the results and apply the findings to their particular campus without considering all of the implications. Building student housing is a complicated process and campus planners should use every resource to make an informed decision about which project delivery method to utilize. Second, the study was limited to only three project delivery methods: design-build, design-bid-build, and construction management at risk. As previously mentioned, there are other project delivery methods that were not considered for this study. Additional methods are available and in some instances hybrids of the three methods studied may be utilized for student housing construction. Third, this study was only conducted with campus planners who are currently working on a university campus. As a result, the findings from this study only reflect the view from the on-campus housing perspective. This approach eliminated any public private partnerships, any off campus private developer, and any building that was assumed or purchased by the university. Fourth, this study was constrained geographically to the United States. International students often live in student housing and understanding the similarities and differences to our own project delivery methods would make for an interesting study. Fifth, this research focused on undergraduate student housing. Examining project delivery methods for graduate or family housing could also be considered.

Sixth and finally, as previously discussed, 30.5 % of study participants indicated that they had five years or less experience as campus planners. The lack of experience and expertise on the part of one-third of the survey respondents may have influenced the outcome of this study.

**Recommendations for Future Research**

Based on these findings, the following future research recommendations could be considered:

1. Since the focus of this research was on campus planners, additional research could perhaps determine the preferred project delivery method of private developers who are in the student housing market. The surge of companies who specialize in developing the student housing market off campus continues to increase, and the individuals who build student housing would contribute to the body of knowledge surrounding this topic.
2. Comparing which project delivery method is used on-campus as opposed to the off-campus market would contribute to a growing body of knowledge around project delivery methods for student housing.
3. As indicated in the study limitations section, only three project delivery methods were considered. Future research could expand the project delivery methods to include emerging project delivery methods and the blending of project delivery methods.
4. Some states mandate a particular project delivery method. Research on the reasons behind these mandates and whether there is an opportunity to provide a better project delivery method could be explored.
5. Student housing is not limited to the United States. Further research on construction methodology from an international perspective could be explored and compared or contrasted to construction methods in the United States.

6. This research generally focused on undergraduate housing construction. Determining which project delivery method is utilized for graduate or apartment style housing would a beneficial study.

**Conclusion**

When I was thinking about my research, I was encouraged to write about a topic that I found interesting or something with which I had experience. Naturally, my attention quickly turned to student housing and construction. My entire career has been in higher education with a focus on student housing. As with many professions, your skills grow as you encounter new experiences. In my case, I learned about student housing construction by being involved in several projects over the years. I can recall in those formative years being overwhelmed and underprepared.

It is fair to assume that many student affairs graduate programs do not place an emphasis on facilities and construction. But consider for a minute that during their career, a student affairs professional may be responsible for a housing project that could cost in excess of $50 million dollars. Learning and understanding more about construction methodology is, I believe, as important as learning student development theory. This was the lens by which I approached my research topic.

The demand for student housing continues to increase (Abramson, 2012). As student housing facilities age and students' expectations of better student housing options increase (Klein, 2010), campus administrators must be prepared to address consumer demand. Living on campus has been shown to be more successful. Significant research supports the notion that living together improves college students' persistence in completing a degree, acceptance of diversity, social tolerance, and interpersonal development (Cabrera et al., 1998; Johnson &

Johnson, 1994; Pascarella et al., 1996; Slavin, 1995; Terenzini & Pascarella, 1976, 1980; Vogt, 1997; Whitt et al., 2001).

From its earliest inception, student housing has influenced the campus community and provided a designated place for students to go at the end of the day to rest and study. As student housing has matured and developed, the students themselves have become a more particular consumer, and come to college with higher expectations around the type of housing that is provided. The college student today assumes they will have privacy and a comfortable living environment. The importance of the campus planner and campus planning is evident.

Campus planning allows institutions to pause and reflect on their planned growth and development. The institution can assess their resources, facilities and opportunities for growth during a campus planning exercise. Paramount to this process is the involvement of the campus constituents (faculty, staff, students and the surrounding community) when expanding the campus footprint. An important feature of campus planning is the location, size and use of student housing. Campus planners have substantial influence on the choice of which project delivery method is selected when building student housing.

Understanding their preferred project delivery method is important and noteworthy. This study identified a project delivery preference for campus planners who were responsible for building student housing on a college or university campus. This descriptive study used a survey questionnaire to identify individual preferences of campus planners across the United States. Moreover, these same individuals were asked to identify the importance of key performance indicators when building student housing. Their responses were analyzed and it was determined that campus planners prefer the construction management at risk project delivery method when building student housing.

The decision to build student housing is often a function of the president or board of trustees. It would be important to have a broader understanding of the types of project delivery methods available. Gaining insight into the preferences of campus planners across the country would serve to inform the president or board of trustees about a credible construction delivery model. Since each model has positive as well as negative characteristics, campus administrators would be able to select the project delivery model that best fit their particular student housing needs. The results indicated a clear preference for the construction management at risk project delivery method, regardless of the geographic region. Campus planners were equally consistent when discussing key performance indicators, essentially ranking all of them as important. Additional research is recommended to determine whether off campus developers have the same preference for the construction management at risk project delivery method when building student housing on a college campus.

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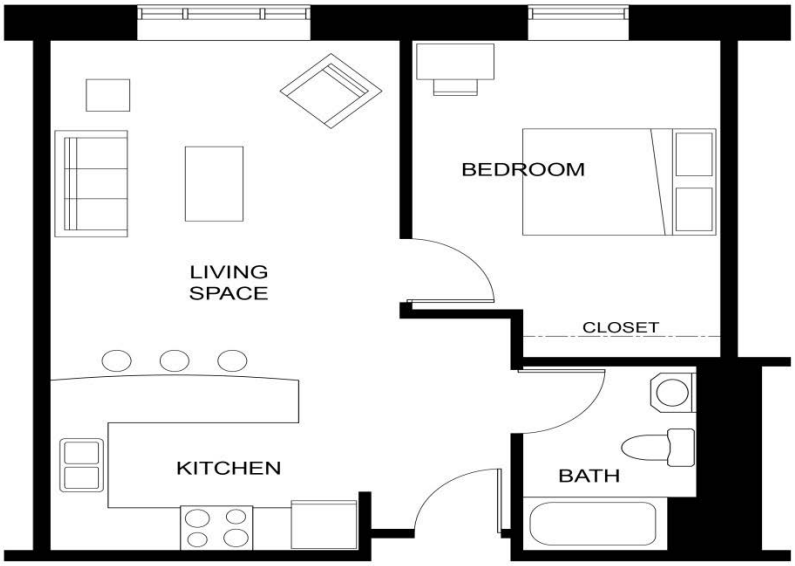
## Appendix A:

## Room Types Typically Used in Student Housing Construction

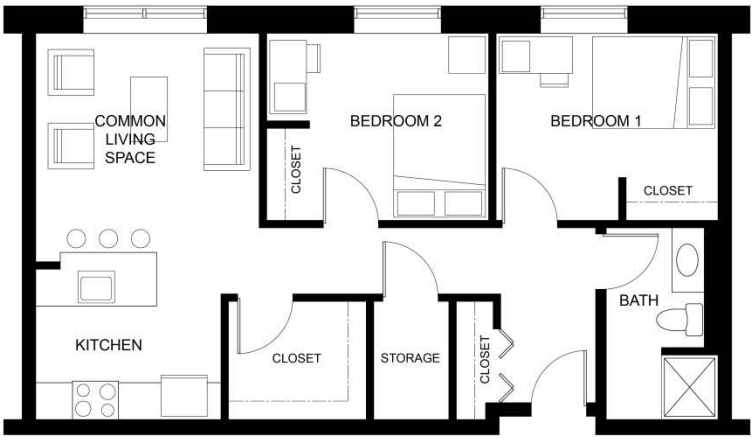
Images used by permission

**One Bedroom Apartment**




1 BEDROOM APARTMENT
scion

## Two Bedroom Apartment




2 BEDROOM APARTMENT
scion

## Three Bedroom Apartment


3 BEDROOM APARTMENT
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USED BY PERMISSION
EPSTEIN

## Four Bedroom Apartment


4 BEDROOM APARTMENT
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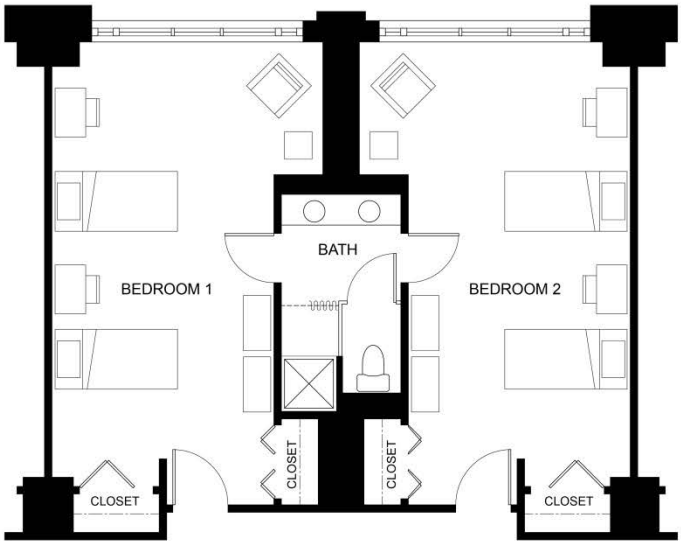
USED BY PERMISSION
EPSTEIN

## Semi-Suite




COMMUNITY KITCHEN NEARBY

SEMI-SUITE
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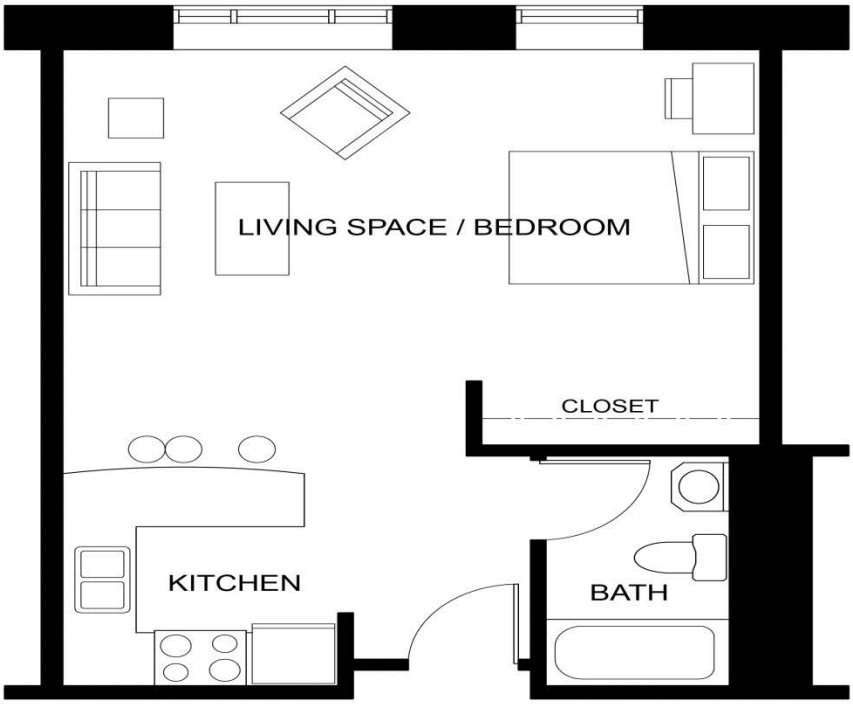
**Studio Apartment**

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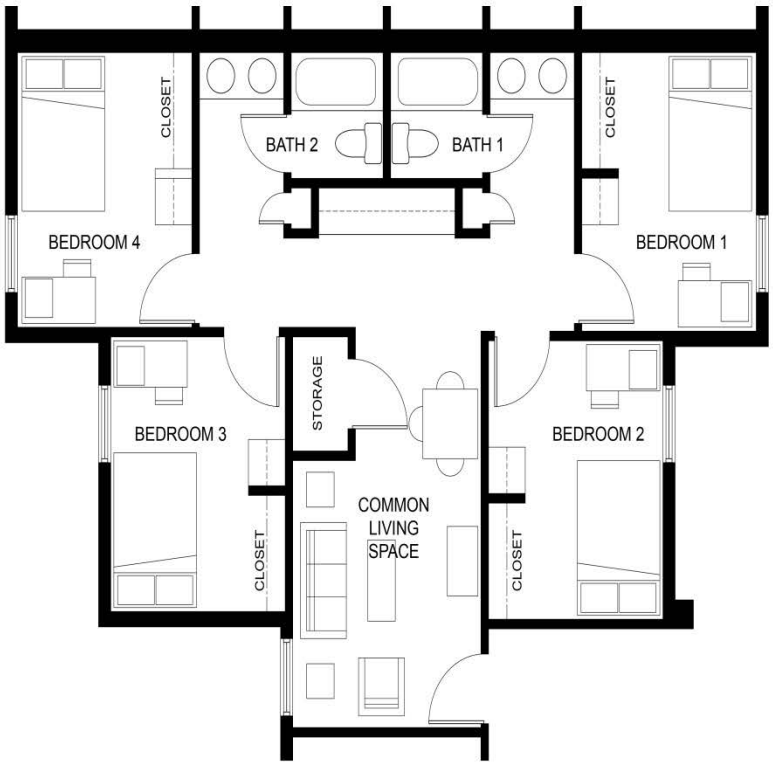
**Suite**

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## Traditional Plus


COMMUNITY BATHROOM AND KITCHEN NEARBY

TRADITIONAL PLUS
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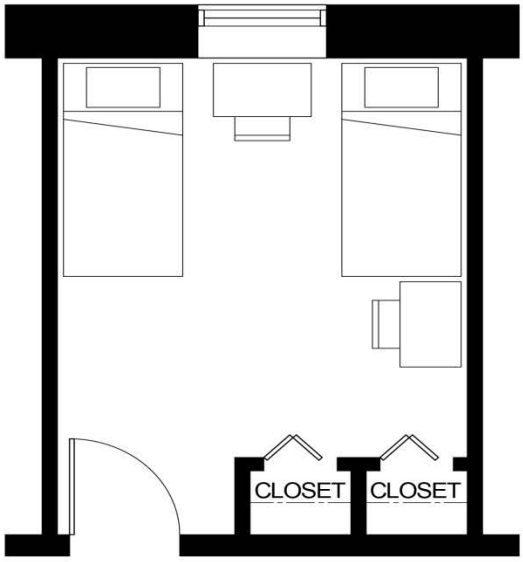
**Traditional**




COMMUNITY BATHROOM AND KITCHEN NEARBY

TRADITIONAL
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## Appendix B:

## IRB Approval Document

UNF
UNIVERSITY of NORTH FLORIDA.
Office of Research and Sponsored Programs
1 UNF Drive
Jacksonville, FL 32224-2665
904-620-2455 FAX 904-620-2457
Equal Opportunity/Equal Access/Affirmative Action Institution

**MEMORANDUM**

UNF IRB Number: 446786-2
Approval Date: 11-21-2013
Expiration Date: Exempt - None
Processed on behalf of UNF's IRB KLC

**DATE**: November 21, 2013

**TO**: Mr. Paul Riel

**VIA:** Dr. Luke Cornelius
LSCSM

**FROM:** Dr. Krista Paulsen, Chairperson
On behalf of the UNF Institutional Review Board

**RE**: Review of Revisions to New Project by the UNF Institutional Review Board IRB#446786-2: "Campus Planners Preferences Towards Residence Hall Project Delivery Methods"

---

This is to advise you that your project, "Campus Planners Preferences Towards Residence Hall Project Delivery Methods" was reviewed on behalf of the UNF Institutional Review Board and has been approved as "Exempt" Category 2. Therefore, this project requires no further IRB oversight unless substantive changes are made.

This approval applies to your project in the form and content as submitted to the IRB for review. All participants must receive a stamped and dated copy of the approved informed consent document when possible. Any variations or modifications to the approved protocol and/or informed consent forms that are substantive or might increase risk to human participants must be submitted to the IRB prior to implementing the changes. Please see the UNF Standard Operating Procedures for additional information about what types of changes might require an amendment. Any unanticipated problems involving risk and any occurrence of serious harm to subjects and others shall be reported promptly to the IRB within 3 business days.

**Your study has been approved as of 11/21/2013**. Because your project was approved as exempt, no further IRB oversight is required for this project unless you intend to make a change that is considered substantive or might elevate risk to participants. As an exempt study, continuing review will be unnecessary. When you are ready to close your project, please complete a Closing Report Form which can also be found in the documents library called "Forms and Templates" in IRBNet. This closing report will need to be submitted as a new package in IRBNet.

As you may know, **CITI Course Completion Reports are valid for 3 years**. Your completion report is valid through 8/25/2014 and Dr. Cornelius' completion report is valid through 11/02/2016. The CITI training for renewal will become available 90 days before your CITI training expires. Please renew your CITI training

within that time period by following this link: http://www.citiprogram.org/. Should you have questions regarding your project or any other IRB issues, please contact the research integrity unit of the Office of Research and Sponsored Programs by emailing IRB@unf.edu or calling (904) 620-2455.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within UNF's records. All records shall be accessible for inspection and copying by authorized representatives of the department or agency at reasonable times and in a reasonable manner. A copy of this approval may also be sent to the dean and/or chair of your department.

UNF IRB Number: 446786-2
Approval Date: 11-21-2013
Expiration Date: Exempt - None
Processed on behalf of UNF's IRB KLC

## Appendix C:

## Campus Planners Survey

Greetings,

I am a candidate for a doctoral degree in Higher Education conducting dissertation research involving the perceptions of campus planners towards project delivery methods using key performance indicators when building residence halls/student housing. The SCUP organization has given their permission for me to distribute this research survey to campus planners who are SCUP members.

I have worked in student housing for more than 28 years and would consider it a great honor if you would assist me with this last step in my educational journey. I am interested in your participation for this research study and look forward to sharing the results with the SCUP organization. This survey will take approximately 10-15 minutes to complete. Please take part in this research study by clicking "next" on this page.

Thank you in advance for participating in this research study.

Paul Riel, Doctoral Candidate

The University of North Florida

# CAMPUS PLANNERS SURVEY: Campus planners preferences

***1. CONSENT DOCUMENT**

**You are being asked to participate in a research study on administrator perceptions towards project delivery methods when building residence halls/student housing. Considering your administrator role within the university community, your perspective is valuable to this topic. Findings from this research may assist in understanding how perceptions of project management could influence future residence hall/student housing construction projects on a university campus.**

**The IRB Project number is 446786. If you agree to participate, you will be asked to**

**complete an online survey via Survey Monkey. The survey should take no more than 10-15 minutes to complete. There are no foreseeable risks to participating in this research. There may be no direct benefits from your participation in this research.**

**Participation in this study will involve no cost to you, and you will not be paid for participating in this study.**

**Your participation in this research study is completely voluntary. You may choose to terminate your participation at any time. Terminating your participation will not result in any penalty to you or loss of benefits or rights to which you are entitled. The survey is anonymous, and all responses will be kept private. You will not be identified by name in this project, nor in any papers or presentations that might result from this project. Study records and data will be securely stored in a password protected account. Only the researcher and authorized personnel will have access to the study records. Please note that only those who are 18 years or older may participate in this study.**

**If you have any questions, illness, or injury during your time in this study, please call the researcher promptly. Paul Riel, the lead of this research study, can be reached at**

**If you would like to speak with someone who is not directly involved in this research, or if you have questions about your rights as a research subject, contact the University of North Florida's Institutional Review Board Office (IRB) at (904) 620-2498 or irb@unf.edu.**

**If you choose to participate, please select “Yes, I agree to the above consent document” near the bottom of the screen to begin the survey and press the "next" button. You may print a copy of this page for your records. If you choose not to participate in this study,**

**you may exit the survey at this time.**

**Sincerely,**

**Paul E. Riel, Principal Investigator**

**Evanston, Illinois 60201**

**Dr. Luke Cornelius, Study Coordinator**
**The University of North Florida**
**Building 57/3423**
**1 UNF Drive**

**Jacksonville, Florida 32224**

Yes, I agree to the above consent document

***2. Are you currently employed full-time in some capacity on a college or university campus?**

- Yes
- No

***3. Have you ever been involved in building a residence hall/student housing on a college or university campus?**

- Yes
- No

CAMPUS PLANNERS SURVEY: Campus planners preferences

***4. Below is a list of commonly used descriptors of colleges and universities. How many of these descriptors describe the institutional setting in which you were <u>mostrecently</u> involved in building a student residence hall/student housing on campus? (Check all that apply)**

- Public
- Private
- Two-Year
- Four-Year
- Not-for-profit
- For-profit
- University
- Liberal arts college
- National college
- Community college
- Vocational-Technical or career college
- Religiously affiliated
- Co-ed
- Single-sex college
- Arts college (focus on the arts)
- Specialized-mission college (HBCU or HSI)
- Highly selective
- Other (please describe)

Other (please specify)

***5. In what state or U.S. territory did you most recently participate in a residence hall/student housing project on campus?**

6

***6. Considering your most recent residence hall/student housing project, what was the total number of full time <u>undergraduatestudents</u> enrolled at the institution (Full Time Enrollment)?**

# CAMPUS PLANNERS SURVEY: Campus planners preferences

***7. Considering your most recent residence hall/student housing project, what was the institution's total (undergraduate and graduate) enrollment?**

***8. Considering your most recent residence hall/student housing project, about how many undergraduate students lived in college/university owned buildings on campus? (NOTE: Please do not include any fraternity, sorority, off-campus or privatized housing students in your answer.)**

- 1-500
- 501-1,000
- 1,001-1,500
- 1,501-2,000
- 2,001-2,500
- 2,501-3,000
- 3,001-3,500
- 3,501-4,000
- 4,001-4,500
- 4,501-5,000
- 5,001-5,500
- 5,501-6,000
- 6,001-6,500
- 6,501-7,000
- 7,001-7,500
- 7,501-8,000
- Over 8,000

***9. Considering your most recent residence hall/student housing project, what role did you have with the project?**

- Management (Vice-President, Associate VP, Director, etc)
- Designer (Architect, Engineer, etc.)
- Execution (Project Manager, Assistant Project Manager, etc)
- Support (Clerical, Budget, Purchasing, Legal, Compliance, LEED)
- Utilization (Facility Manager, Trade Supervisor)
- Planning (Consultant, Contracted employee)
- Other

Other (please specify)

***10. Considering your most recent residence hall/student housing project, how many beds were in the project?**

- Less than 200
- 201-300
- 301-400
- 401-500
- 501-600
- 601-700
- 701-800
- 801-900
- 901-1,000
- more than 1,000

***11. Considering your most recent residence hall/student housing project, what was the average net assignable square footage (NASF) per bed space?**

- Less than 100 NASF
- 101-150 NASF
- 151- 200 NASF
- 201- 250 NASF
- 251- 300 NASF
- More than 300 NASF

***12. Considering your most recent residence hall/student housing project, what was the gross square footage (GSF) for the project?**

***13. Considering your most recent residence hall/student housing project, what was the totalconstruction cost? (NOTE: Do not include "soft costs" such as furniture, fixture and equipment or design fees.)**

- Under $5,000,000
- $5,000,001-$10,000,000
- $10,000,001-$15,000,000
- $15,000,001-$20,000,000
- $20,000,001-$25,000,000
- $25,000,001-$30,000,000
- $30,000,001-$35,000,000
- $35,000,001-$40,000,000
- $40,000,001-$45,000,000
- $45,000,001-$50,000,000
- $50,000,001-$55,000,000
- $55,000,001-$60,000,000
- $60,000,001-$65,000,000
- $65,000,001-$70,000,000
- $70,000,001-$75,000,000
- Over $75,000,000

***14. Considering your most recent residence hall/student housing project, which Project Delivery Method was utilized?**

- Design-Build
- Design-Bid-Build
- Construction Management at Risk
- Do Not Know
- Other

Other Project Delivery Method

5

6

***15. Which of the following best describes your current situation?**

- Still working at the same institution and in the same position as I was during my most recent experience building a residence hall/student housing
- Still working at the same institution but in a different position than I held during my most recent experience building a residence hall/student housing
- Working at a different institution

# CAMPUS PLANNERS SURVEY: Campus planners preferences

***16. Below is a list of descriptors of colleges and universities. How many of these descriptors describe the institutional setting in which you are currently employed? (Check all that apply)**

- Public
- Private
- Two-Year
- Four-Year
- Not-for-profit
- For-profit
- University
- Liberal arts college
- National college
- Community college
- Vocational-Technical or career college
- Religiously affiliated
- Co-ed
- Single-sex college
- Arts college (focus on the arts)
- Specialized-mission college (HBCU or HSI)
- Highly selective
- Other (please describe)

Other (please specify)

***17. In what state or U.S. territory is your current institution located?**

6

***18. What is the total number of full time undergraduatestudents enrolled at your current institution (Full Time Enrollment)?**

***19. What is your current institution's total (undergraduate and graduate) enrollment?**

***20. About how many undergraduate students live in college/university owned buildings on your current campus? (NOTE: Please do not include any fraternity, sorority, off-campus or privatized housing students in your answer.)**

- We do not provide housing in college/university owned buildings
- 1-500
- 501-1,000
- 1,001-1,500
- 1,501-2,000
- 2,001-2,500
- 2,501-3,000
- 3,001-3,500
- 3,501-4,000
- 4,001-4,500
- 4,501-5,000
- 5,001-5,500
- 5,501-6,000
- 6,001-6,500
- 6,501-7,000
- 7,001-7,500
- 7,501-8,000
- Over 8,000

***21. What is your role at your current institution?**

- Management (Vice-President, Associate VP, Director, etc)
- Designer (Architect, Engineer, etc.)
- Execution (Project Manager, Assistant Project Manager, etc)
- Support (Clerical, Budget, Purchasing, Legal, Compliance, LEED)
- Utilization (Facility Manager, Trade Supervisor)
- Planning (Consultant, Contracted employee)
- Other

Other (please specify)

***22. How likely are you to build undergraduate residence halls/student housing in the next 1-5 years on your current campus?**

- Extremely likely
- Very likely
- Moderately likely
- Slightly likely
- Not at all likely

***23. Please choose the Project Delivery Method you would prefer when constructing a residence hall/student housing.**

- Design-build
- Design-Bid-Build
- Construction Management at Risk
- Do Not Know
- Other

Other (please specify)

**24. Please use the space below to explain why you prefer that particular Project Delivery Method.**

***25. When building residence halls/student housing, please indicate how important each Key Performance Indicators are to you when considering a Design-Build project delivery method.**

| | Not Important 1 | 2 | 3 | 4 | 5 | 6 | | | Very Important 7 | Do Not Know |
|---|---|---|---|---|---|---|---|---|---|---|
| Owner Input | | | | | | | | | | |
| Cost | | | | | | | | | | |
| Safety | | | | | | | | | | |
| On-Time Completion | | | | | | | | | | |

***26. When building residence halls/student housing, please indicate how important each Key Performance Indicators are to you when considering a Design-Bid-Build project delivery method.**

| | 1 Not Important | 2 | 3 | 4 | 5 | 6 | Important 7 Very | Do Not Know |
|---|---|---|---|---|---|---|---|---|
| Owner Input | | | | | | | | |
| Cost | | | | | | | | |
| Safety | | | | | | | | |
| On-Time Completion | | | | | | | | |

***27. When building residence halls/student housing, please indicate how important each Key Performance Indicators are to you when considering a ConstructionManagementat Risk(CMatRisk) project delivery method.**

| | Not Important 1 | 2 | 3 | 4 | 5 | 6 | | Very Important 7 | Do Not Know |
|---|---|---|---|---|---|---|---|---|---|
| Owner Input | | | | | | | | | |
| Cost | | | | | | | | | |
| Safety | | | | | | | | | |
| On-Time Completion | | | | | | | | | |

Finally a few questions about you.

## *28. Which category below includes your age?

- 21-29
- 30-39
- 40-49
- 50-59
- 60 or older

## *29. Which of the following best describes your highest earned degree?

- Vocational certificate
- Associate (A.A. or equivalent)
- Bachelor's degree (B.A., B.S., etc.)
- Master's degree (M.A., M.S., etc.)
- Ph.D. or Ed.D.
- Other
- None

## *30. About how long have you been in your current position?

Years

Months

## *31. What is your gender?

- Male
- Female
- Other

Thank you for completing the Campus Planners Survey.

## Appendix D:

## Newsletter Announcing the Survey

[Having trouble reading this message? Click here to view it online.]

Society for College and University Planning
INTEGRATED PLANNING FOR HIGHER EDUCATION

# The SCUP Scan

## PLANNING FOR HIGHER EDUCATION NEWS AND NOTES OF INTEREST

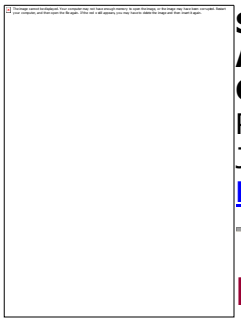
**Paul Riel, Thank you for being a member!**
The SCUP Scan | Volume 27, Number 2 | January 13-19, 2014 | Your Region: North Central



## TOP STORIES | Explored In Depth Below

**SCUP member opinions wanted!— Project Delivery Methods When Building Student Housing:** Do you work on a campus? Participate in a doctoral research survey to measure campus planners' preferences regarding project delivery methods. The results will be made available to SCUP members. What are **your** preferences regarding project delivery methods when building student housing?

If you are employed on a college or university campus, please respond now.



**SCUP's 49th Annual, International Conference**
Pittsburgh, PA
July 12–16, 2014
**Register Today!**

## Deadlines and Updates at SCUP

**SCUP Elections are Now Open:**
Two positions - North Atlantic Regional Chair and Southern Regional Chair.

Deadline is January 22!

## Appendix E:

## Survey Timeline

| Date | Action |
|---|---|
| January 13, 2014 | Survey released via SCUP newsletter. SCUP members asked to participate by clicking embedded link |
| January 14, 2014 | Communication with SCUP contact regarding poor response rate. Introduced the idea of a direct email to members. |
| January 16, 2014 | Discussed the possibility of a "promo" video with SCUP contact to stimulate interest in the survey. SCUP agreed to two direct messages to members as well as strong newsletter marketing. |
| January 20, 2014 | SCUP newsletter is released with survey link as the top story. |
| January 21, 2014 | Determined that email to SCUP membership failed. |
| January 22, 2014 | SCUP confirms email was sent to 2,314 members. |
| January 23, 2014 | Determined that SCUP members in Canada were not able to complete the survey. Advised SCUP liaison that the survey was focused on North America members only, which reduced the sample size. |
| January 27, 2014 | SCUP liaison, introduced idea of using social media to generate more interest. SCUP newsletter is released with the survey link as the top story. |
| January 28, 2014 | Total of 68 survey results received. It was agreed that a direct email to each member from the PI |

| | |
|---|---|
| | (Paul Riel) should be sent. |
| January 30, 2014 | Direct email sent by SCUP organization on behalf of the PI. Survey results doubled (139) within a few hours of the email being sent. |
| February 5, 2014 | Survey results: 204. |
| February 8, 2014 | Survey results: 208. |
| February 12, 2014 | SCUP liaison sent reminder to SCUP members via his LinkedIn account. |
| February 21, 2014 | Survey results: 228. |
| February 22, 2014 | Discussed PI sending direct emails using SCUP database to under-represented states asking members to complete survey. |
| February 24-28, 2014 | PI sent 994 emails to following states: Alabama: 23, Arkansas: 15, California: 224, Colorado: 44, Florida: 22, Georgia: 36, Illinois: 28, Massachusetts: 243, Michigan: 36, Nevada: 7, New Jersey: 26, New Mexico: 16, New York: 92, Pennsylvania: 68, South Carolina: 9, Tennessee: 18, Texas: 47, Washington: 40. [6] |

[6] These states were underrepresented in the initial survey results which resulted in a direct appeal by the PI to increase state participation.

| | |
|---|---|
| February 28, 2014 | Survey results: 316. |
| March 3, 2014 | Survey closed. Survey results: 328. |

## Appendix F:

## Project Delivery Statute Matrix

AIA

## Project Delivery Statute Matrix

| State | QBS Law | Statute # | Design Build | Statute | C-M at Risk | Statute # | Single, Multi-prime, or Hybrid |
|---|---|---|---|---|---|---|---|
| AL | Y | AL ST 41-16-21 Search | N | | | | Single |
| AK | Y | AK ST § 36.30 270 | Y | 36.30 | | | Single |
| AZ | Y | AZ ST § 34-603 | Y | 28-7361, 7362, 7363, 7364, 7365<br><br>15-213, 341, 2002<br><br>41-2503 | Y | 34-101<br><br>34-602<br><br>41-2578<br><br>41-2579 | Single |
| AR | Y | AR ST § 19-11-802 Search | Y | 27-67-206<br><br>19-11-807 | Y | Ark. Stat. Ann. 19-11-801 | Single |
| CA | Y | GC Section 4525 – 4529.5 | Y | 20160-20175.1 | Y | Public Contract Code §10510.4 to 10510.9<br><br>Govt. Code §4525 to 4529.5<br><br>Business and Profess. Code §7139 to 7139.10 | Single |
| CO | Y | CO ST § 24 30 Sections 1401-1408 Search | Y | 43-1-1401 – 1412 Search | | | Single |

| State | QBS Law | Statute # | Design Build | Statute | C-M at Risk | Statute # | Single, Multi-prime, or Hybrid |
|---|---|---|---|---|---|---|---|
| CT | Y | CGS § 4b-60-58 and 61 | Y | 173-10-282-289f | | | Single |
| DE | Y | DE ST TI 29 § 6962 | Y | | | | Single |
| FL | Y | FL ST § 287. 055 | Y | 287.055 | | | Single |
| GA | Y | 50-22-1 22-2, 22-3, 22-4, 22-5, 22-6, 22-7, 22-8, 22-9 | Y | 43-4-14<br>32-2-81 | | O.C.G.A. 36-91-20(c) | Single |
| HI | Y | 103D-304 | Y | 3-122-43, 45, 46<br>36-35<br>103D-303.5 | | | Single |
| ID | Y | 67-23-2320 | Y | 67-5711A<br>67-2309 | | | Single |
| IL | Y | 30 ILCS 535/ | Y | 30 ILCS 535/<br>Public Act 094-0716 | | | Multi- |
| IN | Y | IN ST 5-16-11.1 | N | Public Law 74 | N | 5-16-10 | Single |
| IA | | Administrative Code 11-105.9(8A)<br>Search | Y | | N | | Single |
| KS | Y | KSA 75-1250-1254, 1256, 1257 | N | | Y | 76-786 | Single |

* While every attempt has been made to ensure that the information in this publication is accurate, it is not intended to be either a source of legal advice or opinion.

| State | QBS Law | Statute # | Design Build | Statute | C-M at Risk | Statute # | Single, Multi-prime, or Hybrid |
|---|---|---|---|---|---|---|---|
| | | Search | | | | | |
| KY | Y | § 45A- 730, 735, 740, 745, 750, 837 | Y | 45A. 180, 181, 182 | Y | 45A.180<br>45A.030<br>65.025<br>45A.045 | Single |
| LA | Y | LA R.S. 38: 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318 | Y | 48.250.2, 3 | | | Single |
| ME | Y | 5-1743 | Y | 5-1743<br>23-753A | Y | Title 5 Section 1743 | Single |
| MD | Y | § 13-308 | Y | 4-126<br>3-602<br>3-102 | | 4-126 | Single |
| MA | Y | 1-2-7-38A B, C, D, E, F | Y | 149A, § 14, § 15, § 16, § 17, § 18, § 19, § 20 | Y | ALM GL ch. 149A, § 2 (2005) ch. 149A, § 7 149A, § 13 | Single |
| MI | Y | 18.1237b | N | | | | Single |
| MN | Y | 16c.095 | Y | 2005 Minn. Chapter Law 78; | Y | 2005 Minn. ALS 78; 2005 Minn. Chapter Law 78; 2005 Minn. S.F. No. 1335 | Hybrid |
| MS | Y | 65-1-85 | Y | CHAPTER NO. 504 SENATE BILL NO. 2486 2005 Miss. ALS 504 | | | Single |
| MO | Y | RSMo. 8.285 - 8.291 | Y | 327.465 | | | Single |
| MT | Y | MCA 18-8-201, | Y | Ch. 113 Senate Bill 56 | | | Single |

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| State | QBS Law | Statute # | Design Build | Statute | C-M at Risk | Statute # | Single, Multi-prime, or Hybrid |
|---|---|---|---|---|---|---|---|
| | | | | (2005)<br><br>Ch. 574 Senate Bill 342 (2005) | | | |
| **NE** | Y | 81-1713 | Y | 79-2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015 | Y | 79-2003 | Single |
| **NV** | Y | NV ST 625.530 | Y | 338, 148-155, 175-177, 180, 1711-1727 | | | Single |
| **NH** | Y | NH ST § 21-I:22 | Y | Ch. 55 House Bill 263 (2005) | | | Single |
| **NJ** | Y | P.L. 1997, Chapt. 399 | Y | *Transportation statute* | | | Choice of Single or Multi- |
| **NM** | Y | NM ST § 13-1-117.1, 117.2, 118, 119, 119.1, 120, 121, 122, 123, 124 | Y | NM ST 13-1-119.1<br><br>NMAC 1.5.7.7, 16.30.6.10 | Y | 13-1-40.1<br>13-1-100.1 | Single |
| **NY** | Y | State Fin. Law § 136-A<br>Search | | | | | Multi- (Wicks law) |
| **NC** | Y | G.S. 143-64.31 | Y | 136-28.11 | Y | 143-128, 143-128.1 | Choice of Single or Multi- |
| **ND** | Y | 54-44.7 | Y | *Transportation statute* | N | 48-01.1-01 - 09 | Multi- |
| **OH** | Y | 153.65.71 | Y | 4703.182<br><br>4703.332 | N | 9.33 | Multi- |

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| State | QBS Law | Statute # | Design Build | Statute | C-M at Risk | Statute # | Single, Multi-prime, or Hybrid |
|---|---|---|---|---|---|---|---|
| OK | Y | O.S. 61, 60-65 Search | Y | 61-202 Search | Y | 61-202 61-220 | Single |
| OR | Y | Chapt. 948 | Y | 383.005 | | | Single |
| PA | Y | PA ST 62 PA C.S.A. § 901-905 | Y | 62 Pa.C.S. § 322, 63 P.S. § 34.3, 63 P.S. § 34.15 | | | Multi- |
| RI | Y | RI ST § 45-55-8.1 | N | | N | 37-2-27 37-2-39 | Single |
| SC | Y | SC ST 11-35-3220 | Y | *Transportation statute and referred to in notes, but not in statute* | N | 11-35-2910 | Single |
| SD | N | | Y | 5-18-26, 28, 30, 32, 33, 35, 37, 39 | Y | 5-18-45 46, 47, 48, 49 | Single |
| TN | Y | TN ST § 12-4-109 | Y | 12-10-124 | Y | Tenn. Code Ann. § 12-10-124 (2005) | Single |
| TX | Y | TX GOVT § 2254 .003, .004 | Y | Educ. Code § 44.036<br><br>Local Gov't Code § 271.111, 271.119 | Y | § 44.038 § 51.782 § 2166.2532 § 271.118 § 60.462 | Single |
| UT | Y | UT ST § 63-56-42 | Y | 63-56-5, 36, 43.1, 105, 703,<br><br>11-39-101, 11-39-103 | | | Single |
| VT | N | | Y | 29-5-161 | | | Single |
| VA | Y | VA ST § 2.2-4301 | Y | 2.2-4301, 4303, 4306, 4307, 4308, 4317<br><br>33.1-12 | N | 2.2-4301 2.2-4306 2.2-4308 | Single |
| WA | Y | RCW 39.80 | Y | 39.10.051 | | RCW 39.04. 220, 39.10. 061 | Single |

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| State | QBS Law | Statute # | Design Build | Statute | C-M at Risk | Statute # | Single, Multi-prime, or Hybrid |
|---|---|---|---|---|---|---|---|
| WV | Y | WV ST § 5G-1-1, 2, 3, 4 | Y | 5-22A-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 16 | | | Single |
| WI | | Administrative Rules ADM 20 Section .07 | Y | 16.85 16.851, 16.854, 16.855, 16.858, 16.865, 16.87, 16.875, 16.88, 16.89, 16.895, 16.90, 16.91, 16.92, 16.93, 16.95, 16.955 | | | Multi- |
| WY | Y | WY ST § 9-2-1031 | N | | Y | HB 135 | Single |
| DC | | | | | | | |
| | | | | | | | |

* While every attempt has been made to ensure that the information in this publication is accurate, it is not intended to be either a source of legal advice or opinion.

# Vita

Paul E. Riel

***CAREER SUMMARY***

A highly motivated and dedicated professional with more than 27 years of experience in college and university administration. Significant experience in both housing operations and residence life. Expertise in facilities and physical environmental planning . Strengths include: staff supervision, construction management, crisis intervention, project and operations management, strategic planning, budgeting, forecasting, procurement, and contract negotiations. A detail-oriented, proven leader with excellent management, organization, and planning skills. A strong problem-solver, committed to fulfilling the university's mission and goals.

## EDUCATION

**Doctorate in Educational Leadership (Ed. D),** University of North Florida, (anticipated 2014)

"*Campus Planners Preferences towards Student Housing Project Delivery Methods"*

**Master of Education in Educational Administration**, University of North Florida

**Bachelor of Science in Education**, Liberty University

## PROFESSIONAL EXPERIENCE

**Executive Director of Residential Services** **July 2012 – Present**

**Northwestern University, Evanston, Illinois**

Oversees four principle offices in the Residential program: Residential Life, Academic Initiatives/ Residential Colleges, Housing Administration, Facilities and Construction

Manages a staff that includes four directors, three associate directors, and six assistant directors who manage residential services, academic initiatives, strategic planning, renovations/construction, summer conference housing and program planning, providing comprehensive services to all students, faculty and guests living or visiting Northwestern University

Defines key performance indicators and develop appropriate assessment procedures to evaluate the program through satisfaction, performance, and learning outcomes based assessment in order to drive continuous improvement

Establishes and maintains effective working relationships with the following groups: local government officials and agencies to ensure compliance with local, state and national laws; contractors, architects, and engineers in support of construction and replacement projects; campus colleagues and stakeholders to meet student and institutional needs; and unions in managing contract employees

Collaborates closely with other student affairs units, academic affairs, facilities management, budget planning, risk management, and university police regarding residential services

Plans and manages capital projects and major renovations in collaboration with other university units and external vendors/contractors for a community of over 5,000 students living in 31 residence halls, 2 apartment buildings, and 28 fraternity and sorority houses

Serves as a liaison between Residential Services and Northwestern University Police

Develop written Business Continuity Plan for Residential Services and university

Develop written Pandemic Plan for Residential Services and university

**Director of Housing and Residence Life** **June 2009 – June 2012**

**University of North Florida, Jacksonville, Florida**

Directly responsible for management and oversight of all housing services for a resident population of 3,000 students with an emphasis on student-centered learning environments, faculty collaboration, new construction, and budget management. Responsible for the design, financing, construction, and furnishings for a 1,000 bed residence hall (Osprey Fountains) an eighty-five million dollar ($85,000,000) complex

Actively participated in Professional staff and RA training programs

Negotiated and served as the Contract Manager for all housing vendor contracts including: laundry, cable/telephone/internet, trash, recycling, landscaping, painting, etc.

Designed and implemented Fall, Spring, and Summer marketing materials; resulting in 100% occupancies

Partnered with faculty and other units to create student based learning communities and programs for: Honors, Residential Freshman Interest Groups (RFIGS), Venture Studies, Greeks, LGBT, Athletes, and International students

**Director of Housing Operations** **May 2000 – June 2009**

**University of North Florida, Jacksonville, Florida**

Directly hired, trained, supervised, and evaluated (2) Associate Directors, (2) Assistant Directors, and clerical staff; indirectly supervised (9) Coordinators, (30) Maintenance and Custodial staff, and student staff

Managed a sixteen million dollar ($16,000,000) housing operating budget; creating budget surpluses that averaged nine hundred thousand dollars annually ($900,000)

Managed an independent Convenience Store and Grill

Developed housing policies and procedures

Developed and managed multi-million dollar renovation projects, examples below:

2004 Osprey Cove sprinkler project and room refurbishing

2006 Osprey Hall A/C Replacement

2007 Osprey Crossings room refurbishing

2008 Osprey Landing room refurbishing

2009 Renovated 10,000 sq/ft Housing Office

Created and managed several processes including: Summer Conferences, Housing Assignments, Fall Check-In, Spring Check-In, and Spring Returning Student Sign-Up

Continued to increase the number of beds (occupancies) available on-campus:

June 1998- 1,100 beds June 1999- 1,550 beds June 2002- 2,020 beds

June 2003- 2,200 beds June 2004- 2,300 beds June 2005- 2,400 beds

August 2009- 3,000 beds

Developed a 10 year long-range strategic plan for housing

Collaborated daily with many departments on campus including: Academic Affairs, Purchasing, University Police, Physical Facilities, and Facilities Planning

Served on several university committees, task forces, and commissions

Directed the transition from Housing Management System (HMS) software to the new Banner compliant software: Resident Management Software (RMS)

Responsible for the design, construction, financing, and furnishings for a 500 bed residence hall (Osprey Crossings), an $11 million dollar ($11,000,000) complex that opened in August 2001

**Associate Director of University Housing** **June 1998 - May 2000**

**University of North Florida, Jacksonville, Florida**

Directed the development of a comprehensive student focused housing program with 1,100 beds that placed an emphasis on individual student processes with the goal of increasing student satisfaction.

Partnered with other offices to provide a “one-stop” housing check-in process for new and returning students

Conducted student focus groups and assessment activities

Created a 5 year facility plan and updated the strategic goals for housing

Served as the client for new and existing facility construction and renovation projects

Recruited and managed summer conference groups; resulting in a 15% increase in conference revenue

Successfully negotiated vendor contracts to provide better services to students

Designed and implemented an on-line Housing Contract process

Developed a comprehensive furniture inventory management program to facilitate a repair and replacement schedule

Created the housing web page and the on-line housing forms.

**Director of Campus Safety and Security** **May 1992 – June 1998**

*Jacksonville University, Jacksonville, Florida*

Responsible for the safety and security of 2,400 students and 400+ faculty and staff with overall responsibility for the supervision of the Campus Safety and Security department.

Hired, trained, supervised and evaluated more than 18 full-time security officers

Responded to serious campus incidents

Negotiated vendor contracts

Managed an annual budget of seven-hundred thousand dollars ($700,000)

Increased revenue for traffic and parking citations by 10%

Implemented an electronic collections system for traffic and parking citations

Chaired the campus-wide safety committee

Developed and authored the JU Campus Emergency Management Plan

Reported and investigated on-campus incidents

Provided educational programming to the campus community

Taught a self-defense class for college credit

Published and distributed the JU Campus Safety Manual

Responsible for the issuance of all university ID cards

***Resident Director*** ***May 1988 – May 1992***

**Jacksonville University, Jacksonville, Florida**

Responsible for the overall operation of a 1,000 bed residence hall including budget and assignments. Directly supervised 36 Resident Assistants and 5 Graduate Assistants.

Directly responsible for conversion of food service from self-operating to contract management

Designed a convenience store in a residence hall

Directly responsible for staff recruiting, hiring, training, evaluating, and development

***Hall Director / Student Development Specialist*** ***May 1986 – May 1988***

**University of Florida, Gainesville, Florida**

Responsible for a 500 bed residence hall. Directly supervised 6 Resident Assistants. Worked in Central Office as Student Development Specialist.

Assisted with development of the charter residential honors program

Managed RA selection process for 120 Resident Assistants

Served in an on-call duty rotation for the Tolbert Area and responded to crisis situations

## SELECTED PEER REVIEWS AND CONSULTING

Florida International University 2012

Invited to provide a peer review of the FIU housing program

Indiana University Housing System 2014

Invited to serve as the student housing expert for the Indiana University housing system which included:

Bloomington, IUPUI, IUSE, and the South Bend campus

## SELECTED MEETINGS AND COMMITTEES

Student Affairs Leadership Team (SALT)

Strategic Enrollment Management (Weekly Meeting)

President's Executive Staff (Weekly Meeting) 2009-2011

Crisis Management Team

Certifications: IS 100, IS 200, ISC 300, IS 700, IS 800

Campus Safety and Security Committee

Technical Security Committee

Employee Grievance Committee

Provost Search Committee

Undergraduate Dean Search Committee

## COMMUNITY SERVICE

United Way Resource Management Board, 2000 - 2012

Chairman - Addressing and Preventing Abuse Subcommittee, 2006 - 2012

Chairman - Counseling and Family Support, 2002 - 2006

UNF Administrative and Professional Association, 2004 - 2012

President, 2004 - 2006

Southeast Citizen's Planning Advisory Committee (CPAC) District 3, UNF appointment, 1999 - 2005

Chairman--Education Committee, 2005 - 2007

Chairman--Land Use and Zoning Committee, 2001 - 2005

Jacksonville Housing Authority, Board Member, Mayoral Appointment, 2005- 2007

ACUHO-I 21st Century Project Summit, Delegate, 2006

University of North Florida Alumni Board, Board Member, 1997 - 2005

Leadership Jacksonville Celebration, Finance Committee, Co-Chair, 2004

Mayor's Transition Team, Sub-Committee for Neighborhoods, Mayoral Appointment, 2003

Jacksonville Community Council, Inc. (JCCI) Program Committee, 2000

Leadership Jacksonville, Class of 1997

Century Commission, City of Jacksonville, Delegate, 1997

Taxation, Revenue and Utilization of Expenditures (TRUE) Commission, City of Jacksonville, Mayoral Appointment, 1997

Citizens Planning and Advisory Committee (CPAC) District 2, Mayoral Appointment, 1994 - 1998,

Chairman-- Citizens Planning and Advisory Committee, 1996 - 1998

Jacksonville Community Council, Inc. (JCCI), Leadership Study, Member, 1995

## PUBLICATIONS AND SELECTED PRESENTATIONS

APPA Conference, Invited Presenter, 2014

Interface Housing Conference, Invited Presenter 2014

GLACUHO Professional Development Institute, Invited Faculty Presenter, 2014

"Leadership and Community Involvement," Invited presenter, Collegiate Leadership Jacksonville, 2005

"Developing a Budget Process and Planning," Invited presenter, UNF Auxiliary Units, 2004

"Building a Cohesive Team from the Ground Up," Invited presenter, Residence Life Staff Training, 2002-2010

"A & P Overview for New UNF Employees," Invited presenter, New Employee Orientation, 2000-2008

"*Crime on Campus*" Association of College Administration Professionals (ACAP), Invited presenter of two (2) sessions at the national meeting in San Diego, CA., 1997

"*Security on Campus*" Association of College Administration Professionals (ACAP), Invited presenter of the two (2) day workshop in Baltimore, MD. 1996

Morgan, C. & Riel, P. (1996). Partnership: Research and campus security working together. *Campus Law Enforcement Journal, 26* (1), 23-26.

## PROFESSIONAL AFFILIATIONS AND CONFERENCES

Association of College Personnel Administrators (ACPA)

Association of College and University Housing Officers, International (ACUHO-I)

CHO Institute Committee 2014

Project 21st Century, Invited Delegate, Chicago, IL February 2006

Host Committee Member National Conference 2003

Selected to the ACUHO-I Research and Educational Foundation of Excellence June 2003

International Committee Member 1997 - 2000

Florida Housing Officers

Attended Fall and Spring Meetings 1988 - 2011

Co-Host Spring 2004 Meeting

National Association of Student Personnel Administrators (NASPA)

Southeastern Association of Housing Officers (SEAHO)

SEAHO President (elected position) 2010 – 2011

SEAHO Treasurer (elected position) 2007 - 2010

Governing Council Member 2004 - 2012

Co-Host SEAHO Annual Conference, February 2005

Co-Host SEAHO Mid-Year Meeting, November 2004

Co-Host SEAHO Annual Conference, February 1994

Co-Host SEAHO Mid-Year Meeting, November 1993

Governing Council Member 1993 - 1995

State of Florida SEAHO Representative 1988

Great Lakes Association of College and University Housing Officers (GLACUHO)

Professional Development Institute—Invited Faculty Member 2014