Integrated Project Planning in a Construction Management Environment
The College of DuPage’s Naperville, Illinois, Satellite Campus
by Ellen Bailey Dickson and Robin Whitehurst

When the whole team knows the “why” behind the planning and design process, the result is a better “what.”

PROJECT DESCRIPTION/PROBLEM STATEMENT

Cutting-edge facilities are a key aspect of a college’s ability to attract and retain students and faculty as well as deliver a top-notch education. But can construction managers be part of an integrated team without tipping the scales of planning away from education and toward budget and schedule? Throughout its history, the College of DuPage (COD) has involved architects, engineers, and general contractors in the design and construction process. Bailey Edward, the prime architecture and engineering firm, and Pepper Construction, the construction management company, were selected through separate qualification-based processes to form the planning team for the recent renovation of the college’s satellite center in Naperville, Illinois.

Can construction managers be part of an integrated team without tipping the scales of planning away from education and toward budget and schedule?

THE BIG PICTURE

The American Association of Community Colleges, through the generous support of the Bill & Melinda Gates Foundation, launched the Pathways Project to create a national focus on building the capacity of community colleges to design and implement structured academic and career pathways at scale for all their students (American Association of Community Colleges 2016a). It is an initiative to make education accessible to many, ensure that the education is of the highest value, and encourage completion of education as a path to a better life. In alignment with these goals, the educational environment needs to be structured for serious academics and fulfill the teaching and learning needs of many levels of students.

Founded in 1967 in Glen Ellyn, Illinois, COD serves as a world-class educational institution in its community and is the state’s second-largest provider of undergraduate education behind the four-year University of Illinois at Urbana-Champaign. In 1991, COD expanded its campus options, adding two suburban locations in Naperville and Westmont, Illinois, to better serve its constituency. With three campuses across DuPage County, COD was a classic community college primarily providing two-year associate’s degrees and vocational classes and certifications.

With the selection of Michael Murphy as the college’s third president in 1994, change began in earnest. By 2002, a $183 million bond referendum was passed to fund renovation and rebuilding on the 273-acre main campus in Glen Ellyn and create two more satellite locations in Carol Stream and West Chicago. In 2003, a new president, Dr. Sunil Chand, took the helm and the college completed a master plan that reflected...
the goals of the Pathways Project. This inspirational plan set the college on two paths: one, the creation of new projects to entice more students from DuPage County and parts of Cook and Will Counties to attend COD and, two, the expansion of core services, degrees, and certifications ultimately leading to offering 3+1 (three years at community college and one at a partner's four-year institution) bachelor's of science and bachelor's of arts degree programs, thus making COD an affordable direct competitor to many four-year institutions.

Achieving the 2003 master plan's agenda—“Preparing for Tomorrow’s Careers through Progress, Renovation and Revitalization”—called for a massive capital program. Since COD did not have a formal facilities department, a new department, Facilities Planning and Development, was formed with Gavin Tun leading the implementation of $300 million of capital improvements to more than double the size of the existing campus.

The department created the following facilities planning and construction mission statement:

- Facilities Planning and Development will provide and maintain an outstanding physical environment in which residents of the community can pursue the highest quality education and cultural opportunities.
- Facilities Planning and Development will strive for architectural excellence in function and esthetics and to set the standard for facilities for community college education.
- Facilities Planning and Development will continually monitor and improve the quality of our services to meet and exceed the needs of the COD community (College of DuPage 2016).

In 2010, after the installation of Dr. Robert Breuder as president, DuPage County voters passed a $168 million bond referendum and the college instituted operational savings to fund the remaining goals of the master plan. “When I came here, I felt the institution ... had gotten stale and it was a huge aircraft carrier that got dry-docked,” Dr. Breuder said (Yue 2013, ¶ 15).

Using the last $5 million of the total $351 million from the referendums (not money from operational savings), and with only 12 months to spend it, COD hired Bailey Edward and Pepper Construction in 2013 to begin the process of planning, designing, and constructing the renovation of COD’s busiest satellite facility, the Naperville Center satellite location. COD’s primary goal was to have the Naperville site serve as a miniature version of the main campus, housing most of the same services including admissions, advising, testing, and IT as well as general education courses such as English, science, and computers. Finally, as a microcosm of the main campus, the Naperville site needed to create a sense of community for a unique group of students in a facility that was respectful of those students’ futures.

Pepper Construction is a nationally acclaimed and well-respected general contracting firm with a special talent for the construction management process. Having been involved in the main campus’s new construction and renovation, “their insight into COD’s construction standards was invaluable to the planning efforts,” stated Susan Turner, Bailey Edward’s project manager (pers. comm.).

Bailey Edward brought the “glue” to the process. With its 25 years of experience in the higher education market and a reputation for being both capable and creative, the firm could bridge the gap between design intent (client vision) and executable solutions (constructability).

**UNIQUE CONSTITUENCY**

Community colleges cater to a unique group of students. This group’s “community” is often defined by where members work and live rather than where they go to school. School is generally not their full-time activity, with nearly two-thirds of
them working while attending college (American Association of Community Colleges 2016c). These students value flexibility, convenience, and proximity as much as a quality education. To address these needs, community colleges have found it is important to supplement their main campus location with regional centers.

At the Naperville Center, the mostly commuter student population was not using the facility as COD had envisioned. Only one quarter of all community colleges have on-campus housing (American Association of Community Colleges 2016b), meaning that the vast majority of students live off campus. A student’s time on campus or at an off-campus regional center is generally transitory; students drive in for class and leave right after.

However, COD felt that “drive in and drive out” student behavior reduced the opportunity for students to have face-to-face interactions with other students, faculty, and staff. When combined with attending a regional center instead of the main campus, there was little potential for students to create the kind of memories that lead to a lifelong commitment to the success of the institution. The college felt that it was important to develop opportunities within the facility for students to study, both individually and in groups, meet and mingle with others, and generally have more connection to the COD experience. Meeting many of these goals would also have the benefit of creating a collegial atmosphere similar to the four-year college experience whereby students develop long-term social connections, positive communication skills, and potential networking connections that lead to future success.

METHODOLOGY

Embracing construction management (an approach in which the general contractor is included in the overall planning, coordination, and cost control of a project from beginning to end) as COD’s primary design and construction project delivery method, Bailey Edward looked to maximize the involvement of Pepper Construction. Creating a planning approach with this added twist strengthened integrated planning efforts while effectively accomplishing COD’s unwritten goals. The true impetus behind COD’s use of a construction management approach was to avoid finger-pointing. The college wanted long-term partnerships and collaborative relationships in which people knew what to expect.

In reviewing COD’s previous experience with this approach, Bailey Edward saw that there was an advantage to adding construction management team members beyond merely having them cost the project in parallel with design efforts so as to meet tighter schedules. The design team wanted to have early input and assistance in the selection of proven systems and the ability to provide advice regarding constructability. Everyone envisioned a planning and construction process that embraced the idea of the whole team working together to create and construct the product. Therefore, it was as important for the construction management team to be involved in the design-focused portions of the project in order to understand the design issues, determine how they might be addressed, and become a part of the solutions as it was to offer expertise related to cost, schedule, and constructability. Pepper Construction was informed of the overall intent of and goals for participation and thereby tasked its project executive and project manager with attending the planning and design meetings starting with the charrette.

To ensure that the administrative and educational needs were identified and entered into the knowledge base, the first step was to bring together representatives from the administrative and academic sides. Shawn Maisch, manager of the COD Naperville Center, provided a voice for the admissions, advising, testing, and tutoring constituencies, while faculty members from each core subject (English, science, and computers) represented academia. All became an integral part of the planning team.
By this time, a nearly total turnover of Facilities Planning and Development staff had occurred, including the arrival of a new director, Bruce Schmiedl. Only one member of the project’s facilities group, COD's project manager Julie Carey, had been there longer than one year. Yet, key to the integrated planning team’s challenge was determining how to take the completed standards of the main campus, including its instruction approach and technological needs outlined by the educators involved, and both meet and rightsize them within a single building.

**CHARRETTE**

There were three major objectives of the project: create a wide variety of functional spaces within a limited footprint; create an energy-efficient, technologically sophisticated building; and meet the on-time, on-cost demands of the academic calendar and budget. To meet these objectives, COD and Bailey Edward selected a three-part charrette approach that examined programs, building conditions, and standards. Each session would have its special focus and result in the development of top-level goals that then would be narrowed down into the highest priorities by the entire team. In preparation, the design team focused on making the process as effective as possible by capitalizing on the knowledge and expertise of all participants, especially the value-added team members, in the search for the “why” of the project as they worked toward the “what.”

Covering multiple days, the charrette effort started with a focus on programming the uses of the building. Working closely with the users—the administrators and faculty—the entire team developed common educational goals and priorities for the facility’s use. From a programming standpoint, the users knew what they wanted, but did not know if it would fit. They relayed information regarding the quantity and type of spaces needed, including how the current facility needed to change or remain the same. It became obvious that the vocational bent of the existing facility was going to change, evolving from primarily being a beauty school to a general education facility. A reenvisioning of the entire facility was in order.

Discussion of the new teaching trend “reversing the classroom” came into play. In this concept, students watch assigned lectures outside of class as homework and devote class time to discussion and analysis—which previously had been the homework. This change in teaching approach, along with the evolution of personal technology, spurred a change in space demands. With laptops and smart phones, students can do the new homework anywhere and at any time, which increased the need for Internet and power access in the building. Therefore, the facility needed to include touchdown spaces that provided the essential connections. Ultimately, the users wanted to create a more student-focused facility through formal and informal spaces.

Additionally, community colleges need to respond to current course demands much more quickly than four-year institutions. Therefore, the classrooms needed to be technologically flexible enough to make semester-to-semester curriculum changes.

Beyond the educational requirements, the charrette process involved the development of sustainability goals, including LEED Silver certification. A key component of a sustainable or LEED-certified facility is the energy efficiency of its building and HVAC systems. These systems had been performing poorly in the Naperville Center, but COD's original planning budget did not include any changes. This is when it became readily apparent that including the construction management team in the process would add great insight and increase the likelihood of success.

*It became readily apparent that including the construction management team in the process would add great insight and increase the likelihood of success.*
DESIGN MEETS CONSTRUCTABILITY

Next on the itinerary was a multi-day walkthrough of the Naperville facility and grounds (figure 1) with COD team members. The entire planning team, including Bailey Edward’s in-house mechanical, electrical, and plumbing engineers and civil and structural engineering consultants and Pepper’s executive, project manager, and key subcontractors (electrical, mechanical, and plumbing), walked the building to gather data on its condition.

![Figure 1 Exterior of Naperville Center (Original)](image)

The COD team had worked through a preliminary plan regarding room locations and workflow. Because some of the existing spaces would remain—including two classrooms and the testing area—users identified where these spaces fell short, either from a technical or functional standpoint (from the teacher’s perspective). Facilities group members identified where the spaces fell short of the new main campus standards.

“Everyone wanted to make an appealing connection between the upper and lower levels so that students would feel comfortable taking the stairs down to their classrooms and not feel that they were going down to the basement boiler room,” said Vic Krasnopolsky, Bailey Edward’s lead designer (pers. comm.).

Of great importance to the COD team was maintaining the facility’s openness and visual connection to the outdoors. Ideally, the renovation would harvest even more natural daylight.

As noted, one benefit of this integrated process became apparent during this portion of the planning exercise: the designers and their subconsultants, the construction management team and its key subcontractors, and the facilities group members were able to walk through and freely discuss the systems with the people currently operating and maintaining the building. Bringing the practical and the visionary together facilitated rich discussion. As a result, many alternatives were discussed on site and the value of each quickly assessed.

Construction management team members and subs were on hand to open up ceilings and review equipment components. COD’s outside maintenance contractors came to review the sequence of the HVAC system’s operations and more fully understand preexisting issues. For example, the entire first floor was heated only by perimeter hot water baseboards. This system left the center area with no direct heating source and users unable to moderate or control their environment.
In a unique discovery, the team realized that the facility’s zoned cooling system was designed in opposition to common sense: the first floor was cooled by equipment located in the basement and the basement was cooled by a unit on the roof.

Focusing on technical issues, the team noted potential areas of poor thermal performance. Of special concern was the exterior wall, which featured an exposed structural frame that created thermal breaks, thereby transferring heat from the interior to the exterior. The design team performed thermographic mapping of the exterior wall, and, as predicted, the results showed extremely poor performance, driving the recladding of the building to the top of the planning team’s to-do list.

However, COD believed that solving this problem was beyond the budget and wanted to discuss an interior renovation only. This provided an opportunity for the planning team to take advantage of its composition of designers and constructors to challenge the college’s preconception.

**LOOKING TO THE BIG BROTHER**

Ultimately, the entire team went on a walkthrough of the main campus administrative and teaching spaces (figure 2) accompanied by administrators and educators.

“Seeing the COD students, faculty, and facilities in action helped the design team recognize that the pedagogy of their teaching methods and the level of technology being used were on par with the standards of Bailey Edward’s four-year institutional clients,” said Robin Whitehurst of Bailey Edward. “It was a walking tour of higher education best practices” (pers. comm.).

The planning team confirmed that everything was state of the art, from the auto shop to the active learning classrooms to the conference rooms. The presence of facilities and construction management team members made the discussion especially fruitful as subtle institutional preferences for technical conditions could be analyzed, such as where the instructor typically stood or sat so that power, data, and audio/visual (AV) systems were in reach.
TESTING THE DATA

With the data and information gathered from this three-part effort, the project proceeded to development and confirmation of priorities and scope of work. The COD working team slimmed down to an executive-level decision-making group with Shawn Maisch representing the administrative side and each of the department heads representing their educational divisions. This group vetted all program and design discussions before presenting them to President Breuder, who took a very hands-on approach that included having the final say on all items.

Bailey Edward identified the top priorities of the project, which were met with enthusiastic consensus. The overarching goal was to create a prototype for satellite campuses based on standards developed on the main campus. This prototype would be used to create a satellite that could

1. Respond to new teaching methodologies and provide flexibility for future changes in curriculum and technology
2. Create a student-focused study facility with a sense of community identity
3. Increase brand recognition
4. As the budget allows, create impactful sustainability responses

OUTCOMES

The scope of work was identified in detail through room data sheets for each area of concern. In review, it was confirmed that the standards were mutually understood and met.

Using COD’s preconceived plan, the program priorities, the room data sheets, and the existing condition information, the planning team began to flex its integrated muscle. Before the plan was presented to the executive committee, test-fit designs were developed by Bailey Edward using a 3-D model created after discussing with Pepper Construction which walls should or should not be moved due to the existence of costly in-place systems such as mechanical runs or electrical closets. It became a balancing game of efficiency (circulation) versus safety (code) versus program goals (informal and formal spaces).

At the same time, the construction management team focused on developing the costs and schedule. Because the planning team felt that fixing the thermal performance and systems was of great importance, Pepper priced the project as an “all in” number so that this topic was kept at the forefront of everyone’s mind. After four rounds with the executive committee and Dr. Breuder, the plan was approved with a budget that allowed all of the priorities to be addressed. All that remained was to detail, document, and construct the design by December 2014 so that classes could begin the following month.

The following describes the solutions reached to meet each of the goals noted above:

RESPOND TO NEW TEACHING METHODOLOGIES AND PROVIDE FLEXIBILITY FOR FUTURE CHANGES IN CURRICULUM AND TECHNOLOGY

As a minimum standard, all classrooms and laboratories were provided with access to Wi-Fi; full audio/visual capabilities (e.g., projectors, drop-down screens, podium-based controls); and the maximum amount of white board possible. Different lighting set-ups in each classroom and lab provided flexibility for those rooms’ changing uses. Classrooms on the top floor had long glass expanses that allowed for partial lighting, which saved on energy costs as the daylight was often sufficient. All A/V-equipped rooms allowed for changing the lighting during projection mode to ensure that video would be as clear as possible.
The three vocational/science laboratory classrooms employed the same features as the general classrooms, but their greater focus on building hands-on skills created a greater demand for power capacity, work surfaces, and space for group work. Additional work counters and sinks were added for prep and clean-up. Ceiling-mounted power spools allow lab experiments to be performed wherever and however the moveable tables are configured. The lab classrooms enable the teaching of open anatomy and physiology classes in a similar setup and with the same teaching tools (physiology models) as found on the main campus to maintain a consistent level of education.

Given the dominance of computers in modern education, four types of computer labs were designed for the facility:

1. A general classroom lab that is more intimate in size and allows for a dual teaching mode with individual computer workstations and group working areas.
2. A general computer lab located in the basement with a more rigid and standard instructional setup in which every student has his or her own desk and computer.
3. An open computer lab in the learning commons that allows for individual and group quiet study and educational assistance with varied arrangements of chairs and tables.
4. Formal structured testing labs with cameras pointed on each workstation. The computers are set up to allow no visibility to neighboring workstations, and visual supervision is achieved through glass partitions. The glass also lets in natural light to be enjoyed by others in the learning commons.

By addressing such a wide variety of teaching modes, from individual to group to classroom, COD is able to offer a wide variety of classes that meet both general and specialized educational requirements. Students and faculty members can count on a high standard whether they are at the main campus or a regional center. The Naperville Center has become a recruiting tool, incorporating modern design and technology to appeal to a younger generation and demonstrate that the college is looking to the future.

CREATE A STUDENT-FOCUSED STUDY FACILITY

To create more opportunities for students to develop a sense of community, the designers prioritized student engagement, interaction, and relaxation. Three types of zones were identified as essential:

1. **Lingering zones** where students wait before class
2. **Help zones** where students can study or get assistance from staff and faculty
3. **Social zones** where students can eat, talk, and socialize

*Lingering zones* need to be close to class yet part of the action in a “see and be seen” environment like a contemporary quadrangle. In the Naperville Center design, the front lobby becomes the quad. It is the center of activity as almost everyone moves through it on their way to and from class.

Students can’t always go to the main campus for career and course counseling or to perform administrative functions such as registration. For this reason, *help zones* are an essential part of any good regional center. Located as centrally as possible for convenience, these help zones create formal and informal assistance areas.

The zone with the greatest influence on student perception is the **social zone**, which in this case is the student lounge. It was important to encourage the use of the lounge since it plays such a vital role in bringing students together outside of the classroom. Therefore, the designers placed it at the front of the building near the main entrance. Not only can students grab a meal during a break in their busy lives, but they can huddle together in work groups before and after class. A flexible environment where tables and chairs can be moved
into different arrangements helps students create a sense of ownership and place.

Furniture and fixtures are designed to reflect each zone’s purpose: heavy upholstered chairs in the lingering zone; work-like stations in the help zones; and lightweight furniture that can be moved in the social zone. The college experience is bundled up into one regional center with careful planning and attention.

To increase the focus of students who often must fit classes into their work schedules, the design team created an enlivened space using color. Bright colors keep students alert. Throughout the space, bright pops of color draw the eye and stimulate creative thinking. These colorful nodes are associated with collaboration spaces and destinations such as lounges. Even the landscaping was designed to use the same colors as the interiors to harmonize the design.

A skylight and light tubes that illuminate the interiors and stairways were used to make a connection between the upper and lower levels.

Figures 3 through 8 depict the variety of student-focused spaces within the three zones:

Figure 3 Main Entry
Figure 5 Lounge

Figure 6 Collaboration Spaces
Figure 7 *Stairwell*
INCREASE BRAND RECOGNITION

Originally a drab glass and steel building, the renovation, with its exterior metal grid and bright colors, instantly advertises the Naperville Center as a lively place. To attract attention to the facility, the colorful interiors were purposefully made visible through glass walls; further, interior lighting attracts the attention of those driving past day and night.

Schools increasingly are using logos on buildings to create brand recognition and a sense of community identity. On par with this trend, Bailey Edward created a back-lit three-dimensional logo sign standing nearly 15 feet tall that serves as a beacon to those driving by. Dr. Breuder was especially enamored with this design solution, and it is featured on COD’s web page for the Naperville Center. The sign's steel cage actually creates a moiré effect for passerby whether on foot or in a car, an effect meant to capture people's interest (figure 9).

Julie Carey, the COD project manager, had this to say regarding the sign installation: “I was on site yesterday and saw this installed. Very cool! I’ve completed hundreds of signage projects on this campus and this is one of the best!” (pers. comm.).

1 A moiré effect is a visual perception that occurs when viewing a set of lines or dots that is superimposed on another set of lines or dots. It sometimes makes a surface pattern appear to be in motion.

Figure 8 Landscaping
CREATE IMPACTFUL SUSTAINABILITY RESPONSES

The 1990s was not a good decade for energy-efficient architectural design. The thermal image from the thermography testing made it clear that the existing exterior cladding of the Naperville Center needed to be replaced in order to improve energy performance (figures 10 and 11). Subsequently, the entire building was re-clad. While improving the energy performance of the building did not demand breaking boundaries, the need to refine the appearance of the wall system provided the opportunity to be innovative.
Figure 10 Thermography Before

Note: Temperature scale is to the side; the red area is leaking heat or showing a higher temperature at both the window, which generally transmits a larger amount of heat, and at the building envelope, which should be insulated enough to transfer less heat.

Figure 11 Thermography After

Note: The building envelope temperature is now significantly lower than the window temperature because it is insulated; the difference in the scale numbers from the before and after images is a result of the season in which the analysis was performed, winter or fall.
Envisioning a rain screen and solar shading as the final layer of the wall system, the design team seized the chance to have its material emphasize the sense of learning and its path of discovery by making it a metaphorical veil that students walk through to find the bright revelatory colors of knowledge. The Bailey Edward team wanted the veil to be transformative in appearance, creating a sense of motion with a person’s movement.

The team turned to a material used as lightweight flooring for catwalks: aluminum grating. Aluminum is a finish that can evolve and oxidize without the addition of other finishes or the risk of corrosion. This off-the-shelf system allowed for experimentation with spacing, opening sizes, and shapes to create movement while also providing solar-shading benefits that other options did not (figure 12). More than 10 options of size, spacing, or repeat were explored.

Figure 12 Exterior Metal Grate

To add vibrancy to the learning environment, Bailey Edward designers focused on bringing in as much natural daylight as possible and creating views to the outside. Because of the building’s layout, most windows ran along its length. Wherever possible, rooms that would benefit most from the views—including public and learning commons areas—were placed along that length. The interior walls of these rooms were often made of floor-to-ceiling glass to share the view and natural light.
Additionally, the abundance of natural landscaping echoed the main campus’s commitment to a greener and more sustainable environment. Low maintenance and native plants were used in the design to bring the exterior into the interior while providing color to the facades throughout the year (figure 13).

Figure 13 *Exterior (Renovated) with Moiré Effect and Landscaping*

Disappointingly, LEED Certified was the highest level achievable for the project because of certain challenges, such as getting public transportation credits. The project is half a mile short of getting the mass transit credit. COD is working with PACE, the regional bus authority, to facilitate better access to bus routes for both the Naperville Center and the main campus.

Bruce Schmiedl, COD’s director of facilities planning and development, noted, “The renovation that Bailey Edward designed for our Naperville Center was truly transformative. The building’s former appearance was austere and did not create a welcoming presence for our students, community, and staff. The revitalized facility, with its welcoming exterior, brighter colors, and open entry and reception area, immediately invites students in to engage with our team.
members. The reconfigured circulation, improved classroom spaces, and student gathering areas promote collaboration and learning in a comfortable, invigorating environment” (pers. comm.).

As a result of increased daylighting and views to the outside; greater visibility to the learning commons; improved sightlines, aesthetics, and flow between spaces; and the addition of more community gathering spaces more students are spending time on the satellite campus and there is greater collaboration and cooperation among students and teachers.

According to Shawn Maisch, COD Naperville Center manager, “Increased numbers of students are ‘hanging out’ on campus and more instructors are arriving early to do their class preparation at the facility, increasing student-to-faculty face time” (pers. comm.).

**CHALLENGES/LIMITATIONS**

The project did not progress without a few hiccups. For example, as noted, the construction management team provided advice throughout the process regarding the best utilities and systems, the availability of materials from a schedule or lead-time standpoint, and the durability of the materials selected. As the team finalized construction documents, Pepper brought in a constructability expert with expertise in exterior envelope construction to perform a quality review and identify issues and concerns.

A constructability expert bridges the knowledge gap that typically exists between the innovative materials, techniques, and construction approaches specified by the architects and engineers and the current knowledge of the contractors who are doing the work in order to ensure proper execution. The cost of this expert’s salary is easily made up for by the cost discounts companies receive from their insurance carriers. However, bringing this expert in at the 11th hour caused major disruptions in the process, begging the question, is the team truly integrated if all of the players aren’t involved from beginning to end?

Even though there were special walkthroughs at the programming stage and continual conversation during the design, COD’s facility and construction standards changed at 100 percent Issue for Construction. Given the current language in American Institute of Architects standard contracts, the architect and engineering team had limited options and was forced to change the drawings and specifications.

In a construction management model, the construction management team is provided feedback and also provides feedback based on experience. Final or “real” bids aren’t provided until the bid phase. Therefore, it wasn’t until the bid phase that the construction manager received bid numbers that finally confirmed that the HVAC system could be overhauled to include one air handling unit on the rooftop connected to variable air volume units in the interior. Addendums including the subsequent changes needed to be developed quickly so as not to delay the project.

Because the construction management superintendent did not join the team until construction, he did not understand the “why” of the project. He therefore did not benefit from the team planning knowledge and took an adversarial approach to the relationship between the design professionals and contractors.

**SUMMARY/CONCLUSIONS AND RECOMMENDATIONS**

Ultimately, the only weakness in the process was that not all team members heard the “why” and were not there throughout the development of the “what.” This demonstrates the value of engaging the construction management constructability expert and superintendent sooner to truly ensure an integrated team from start to finish.
While the current construction management project delivery process works for COD, it could be improved. COD’s construction management selection process is a mix in which the construction manager is selected based on quality and the trades are competitively bid. In other words, the planning process is new and improved but the buying system is antiquated. If representatives of all key trades were part of the integrated planning team, last-minute changes to scope and documents could be avoided.

All in all, the project was very successful (figure 14). Shawn Maisch provided the following observations about what the campus is now experiencing:

» Operating costs are lower.
» There has been a 37 percent increase in student enrollment from 2014 to 2015.
» Semester student surveys show that students are happier with the center:
  » “Really like the renovation, much more inviting and organized.”
» “Great renovation, like the colors! Great place to expand student knowledge.”
» “Close proximity to home, clean, spacious, and great new building.”
» “Building looks nice, wish to stay here forever.”
» “Love the smartly constructed facility.”
» “Smart use of space.”
» “Renovation looks amazing. COD isn’t even an art university, but could pass for one.”
» “Very nice aesthetics in and out.”
» With more general education classroom spaces, students are taking back-to-back classes in greater numbers.
» Faculty members note that the classrooms are more appropriately sized and feature better equipment.
» Other campus administrators are using the facility.

Figure 14 Exterior of Naperville Center (Renovated)
Aspects of the prototype are now being applied to the Westmont location. The learning commons there will provide collaboration spaces and help create a sense of community within the regional campus.

With strong teamwork, the planning team was able to meet all of the client’s goals including increasing the facility’s energy performance and earning a LEED Certified certificate.

Ultimately, COD Naperville Center has developed its own campus identity, much as a child may resemble a parent but develop an individual personality. From top-notch technology to student-centered zones to pops of light and bright color, the Naperville Center has morphed from simply a vocational school to a top-flight education center that acts as a second home for many students, thus demonstrating that when the whole team knows the “why” behind the planning and design process, a better “what” can be achieved.

REFERENCES


AUTHOR BIOGRAPHIES

ELLEN BAILEY DICKSON, FAIA, is founding principal of Bailey Edward Design, Inc., where she acts as principal-in-charge, project manager, and senior designer. She holds a master of architecture degree from the University of Illinois at Urbana-Champaign, studied at the Ecole d’Architecture et d’Urbanisme in Versailles, France, and has been named one of the Top 100 Women Making a Difference by Today’s Chicago Woman.

ROBIN WHITEHURST, AIA, is technical principal for Bailey Edward Design, Inc., where he serves as principal-in-charge, project manager, and senior designer. He holds a bachelor of architecture degree from Iowa State University and has been recognized by the American Institute of Architects Chicago Chapter as Young Architect of the Year.