

**You Want How Much for That Change Order!?**  
Managing Construction Costs in the Public Sector  
*by Mary Gauer and Lisa Cooley*

Job Order Contracting is an effective tool for identifying initial construction costs and for managing change orders as well. Based on competitively-procured unit prices, a Job Order Contract can help owners get a handle on costs by itemizing every component of work and giving them the ability to adjust the scope of work to match the available budget when necessary. Change Orders are priced with the same method, avoiding the potential for overcharging.

**What is JOC?**

As defined by the Center for Job Order Contracting Excellence, “A Job Order Contract is a long-term, indefinite delivery-indefinite quantity contract for construction services delivered on an on-call basis through firm, fixed price delivery orders based on pre-established unit prices.” Job Order Contracting (JOC) is a way for organizations to get numerous, commonly encountered construction projects done quickly and easily through multi-year contracts. JOC reduces unnecessary levels of engineering, design, and contract procurement time along with construction project procurement costs by awarding long term contracts for a wide variety of renovation, repair and construction projects.

JOC is a **program** not a project. It is an alternative delivery method to procure construction management services that emphasizes partnering and teamwork. This program provides the methodology to execute a wide variety of indefinite delivery, indefinite quantity, fixed-price, multiple simultaneous orders for renovation, rehabilitation and repair work for large facilities and infrastructures. Ideally, JOC contractors are selected based on qualifications and performance at a best value and not low price or low bid. JOC is about performance, reliability, dependability and quality. At the same time, JOC is about results and working within budget and time constraints. The contractor provides “on call” construction services from concept to close-out, based on competitive pricing

JOC contracts don't define actual, individual jobs, but normally award a potential maximum amount of work over a year. For example, a contract may have an annual maximum of \$5 million or more, with a minimum amount for individual work orders, such as a total of \$35,000 per work order. As a result, the JOC contractor is not guaranteed any level of revenue—driving it to generate the best performance possible. This relationship carries with it a strong motivation for the JOC contractor to provide outstanding service and quality work in order to receive additional work orders because the amount of work being assigned by the facility owner or manager is based on the JOC contractor's performance.

**JOC Helps Facility Managers Plan and Control Renovation Costs**

A JOC program provides facility owners several ways to foresee and control their costs of renovation and repair projects. JOC helps facility owners work within their budgets because it uses pre-established unit prices, found in a unit price book. When establishing a JOC program, the owner seeking a contractor for repair, renovation and minor construction projects cites a unit price book in its request for proposal (RFP). The contractor offers a price coefficient (sometimes called a factor or multiplier) that is applied to all line items in the book, establishing its competitiveness up front—without knowing quantities, schedules or timing. Once the JOC program is in place individual projects are managed through a defined process. The JOC contractor provides a Scope of Work document and detailed line item proposal. Facility owners have the ability to adjust the Scope of Work to fit within their budget. Every project's price is fixed once the proposal is accepted, so there are no budget surprises.

Research conducted by the Logistics Management Institute has shown that using JOC can result in cost savings of 9 to 21% when compared to traditional contracting methods. Much of these savings are in so-called “soft costs” or contingency savings. JOC cost savings can be gained in four areas of a project cycle:

1. Administration and procurement;
2. Design;
3. Construction; and
4. Change Orders and claims.

**Administration and Procurement** JOC allows more funds to be applied to construction work instead of the administration of RFPs. Without JOC, the owner must procure each project individually in the traditional design-bid-build procurement method. This adds costs—those of design, advertising, reviewing, potential re-bidding when a project comes in over budget, awarding and administering separate RFPs/solicitations for every project—for what are often smaller, repetitive construction projects. JOC allows owners to shift their attention from procurement processing to project execution. All the dollars saved on procurement can go toward additional construction efforts.

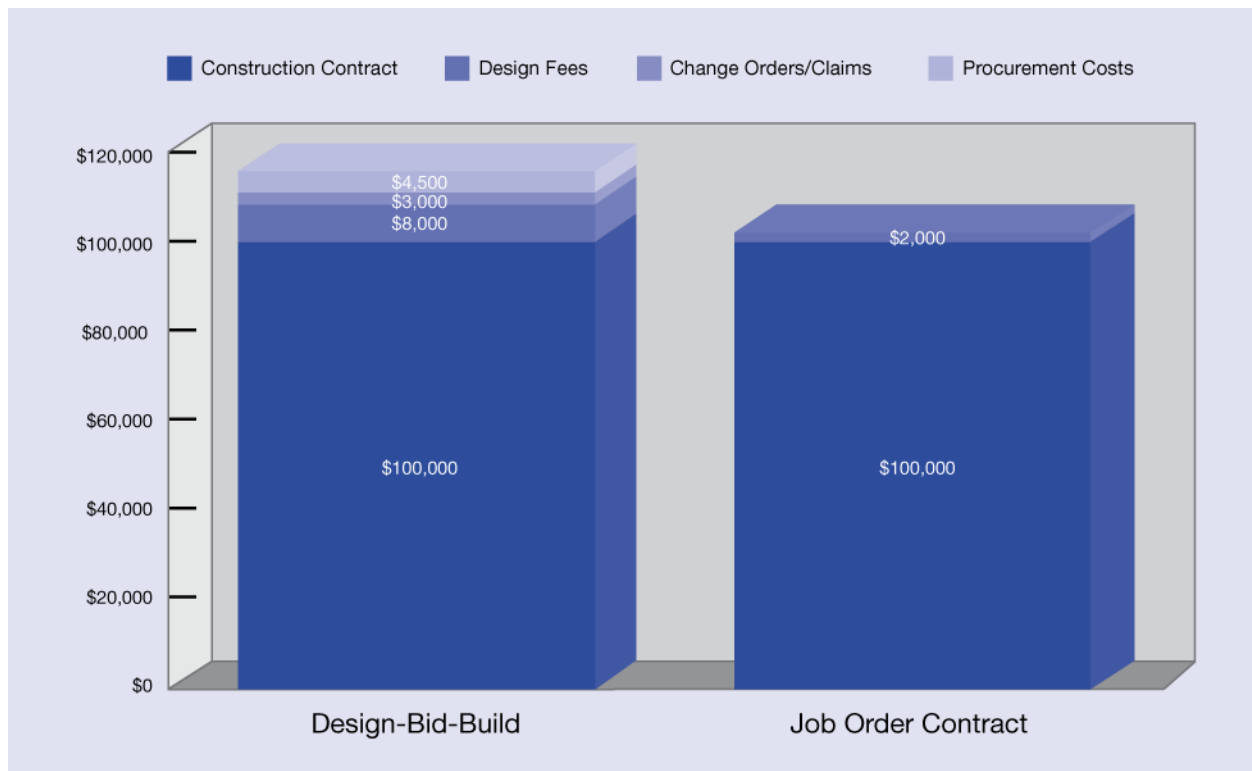
**Design** For every project, the technical specifications are already defined and included as part of the basic JOC contract. Design costs are reduced because a percentage of JOC projects can be planned and scoped without having to develop full design documents. In those cases where formal design is required, the design can be completed to the point of the work being priceable or permitable, without requiring full bid documents.

**Construction** With JOC, the construction of multiple small projects is more cost effective since the contractor is able to spread indirect costs over the entire Job Order Contract. With anticipation of total annual volume, a contractor is able to spread general conditions and overhead costs over multiple projects being performed simultaneously in close proximity. An economy of scale can be achieved that is not normally seen on smaller projects. An additional benefit is the organizational efficiency of working with a single contractor who comes to know and understand the owner’s facility needs and internal processes.

**Change Orders and Claims** Finally, JOC helps owners eliminate contractor driven change orders and legal claims. There are three reasons for this. First is the potential for single-source accountability on JOC projects. When a JOC contractor prepares the Scope of Work and drawings—either in-house or through an A/E partner, it takes full responsibility for errors and omissions and execution of the design. The proactive JOC scoping process ensures that the best thinking of the prime contractor and subcontractors inform the final project scope. Even when an owner maintains the contractual relationship with the A/E, the JOC process allows for early contractor involvement and collaboration, ensuring that the A/E’s design is realistic, in terms of budget and constructability. Second, the unit price book tool ensures consistent pricing for each and every line item, whether the work is part of the original scope of work or is scope added during the construction process, either by owner prerogative or hidden site conditions. This eliminates any price-gouging by a low-bid contractor intent on making up profit with change orders, and ultimately discourages frivolous change orders. Finally, the performance-based nature of JOC means that additional work is dependent upon a satisfied owner. A good JOC contractor will not hesitate to ask for fair compensation for added scope of work, but will have little motivation to play the “Change Order game” that characterizes so much public procurement.

**So is JOC Cheaper?** There are cost savings to be realized from JOC, but it is not always cheaper than going out for competitive bid. Rather, JOC provides added value and cost control. It is often difficult to make an “apples to apples” comparison of JOC and low-bid contracting. The JOC process provides early contractor involvement and a detailed scoping process that are impossible to acquire in the low-bid market for smaller projects. JOC allows an owner to de-scope and up-scope projects at will, to better

cope with fluctuations in construction pricing or project funding. JOC provides higher quality construction and a partnering mindset. JOC provides a consistent pricing structure so that changed worked is assured at a fair price.



### JOC at the University of New Mexico

The University of New Mexico (UNM) initiated its first Job Order Contract in 2002. The University began its JOC program with a low-bid selection process that qualified multiple contractors. In 2006, the University decided to issue a best-value RFP for a single contractor, in an effort to drive better performance and achieve greater economies of scale and efficiency. UNM's JOC was established by The Gordian Group, a nationwide consultant which offers a turnkey JOC system based on a unit price book customized for the local market, proprietary software, consulting services and ongoing program support. The current JOC contractor is Centennial Contractors Enterprises, Inc. The contract is for a one-year base period, with (3), one-year extension periods, which either party may decline. There is a guaranteed annual minimum contract volume of \$25,000 and a maximum annual contract volume of \$6 million. There are four distinct coefficients to the unit price book, which encompass projects performed during regular working hours or after-hours, and projects that include professional A/E services and those that do not. These coefficients were weighted in the selection process according to anticipated use. The technical qualifications and weighting considered in the Best Value selection process included:

1. Past performance on JOC contracts and key personnel (10 of 100 points);
2. Project management plan (40 of 100 points); and
3. Price (50 of 100 points).

The contract pricing is adjusted annually by increasing the coefficient based on the ENR Construction Cost Index which tracks industry inflation. The unit prices used remain the same.

From UNM's perspective, the key advantages of JOC are trouble-free contracting through use of pre-qualified on-call contactors, the ability to take a Design-Build approach on smaller projects within a state-regulated procurement system, and control of project costs and any associated changes. UNM reserves the right to qualify the architect for a Design-Build project, but the risk still resides with the contractor for performance. This in and of itself is extremely valuable since management of Errors and Omissions on design drawings now falls within the contractor's responsibility rather than the owner's. With a standard state-mandated procurement process, the time between completion of construction documents and start of construction can reach three to four months for issuance of an RFP, bidding, negotiations and contract signature. Rapid mobilization of a contractor is a great advantage under JOC since they can provide pricing immediately upon completion of construction documents, pull the permit and begin work. This has worked to UNM's advantage on many occasions, not only for emergency repairs/construction, but for projects which have critical client due dates.

UNM's experience is that the JOC system works extremely well in the \$50,000-\$1,000,000 range although individual contracts can be issued for larger or smaller projects. As projects get larger, pricing is sometimes better in the RFP/Bid market but the risk of out of control change orders is ever present in this system and can be troubling when construction documents contain errors or omissions or when there is a high likelihood of unforeseen conditions or owner-driven changes to the Scope of Work. With experience, a project manager becomes adept at evaluating the type and size of project, the owner's risk versus the pricing advantage of going "out on the street," and deciding where JOC is the best delivery method.

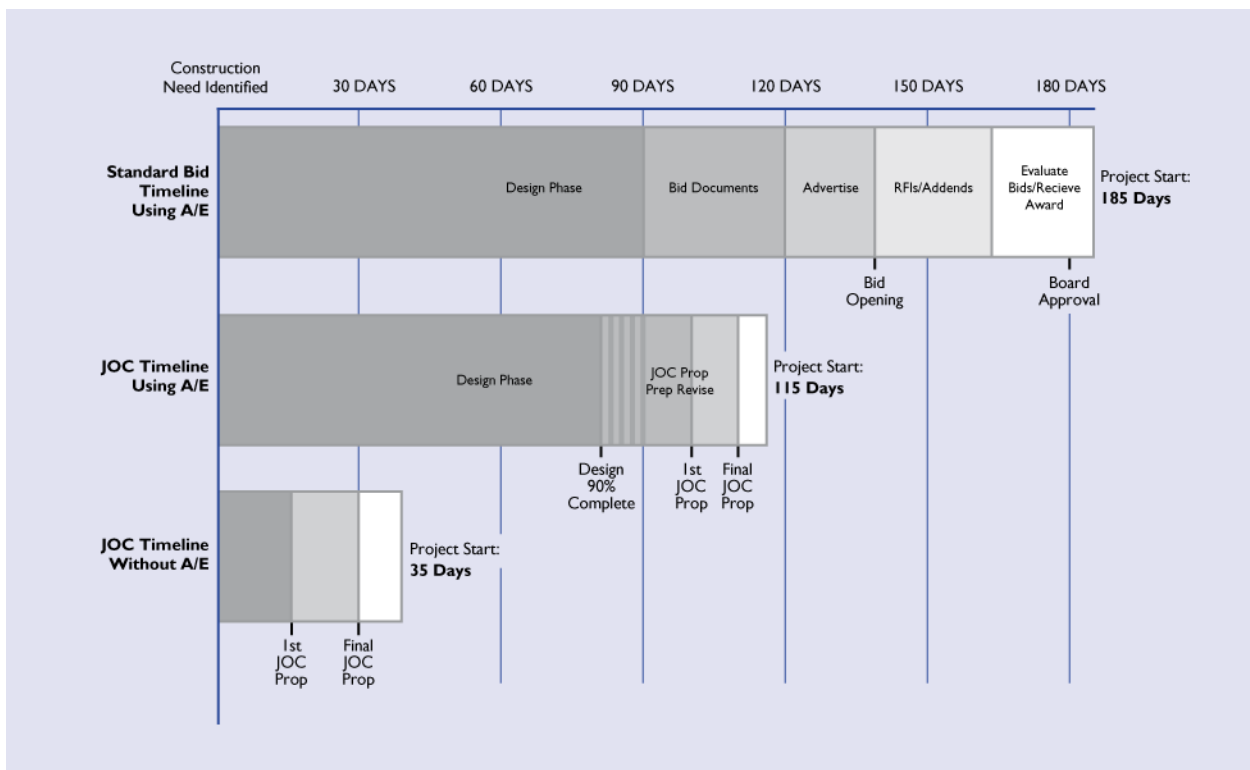


*New maintenance building, University of New Mexico*

At UNM, facilities construction and maintenance is handled by both the Office of Capital Projects (OCP) and the Physical Plant Department (PPD). Though the focus of OCP is new construction and major building renewal, and that of PPD is ongoing operations and maintenance, the reality is that there is much overlap in the types of projects tackled by each. PPD's Remodel Group instituted JOC and has used it for seven years on over 100 projects. OCP's primary mission is to ensure that all projects meet the needs of customers and are constructed in accordance with New Mexico and UNM standards for quality, durability,

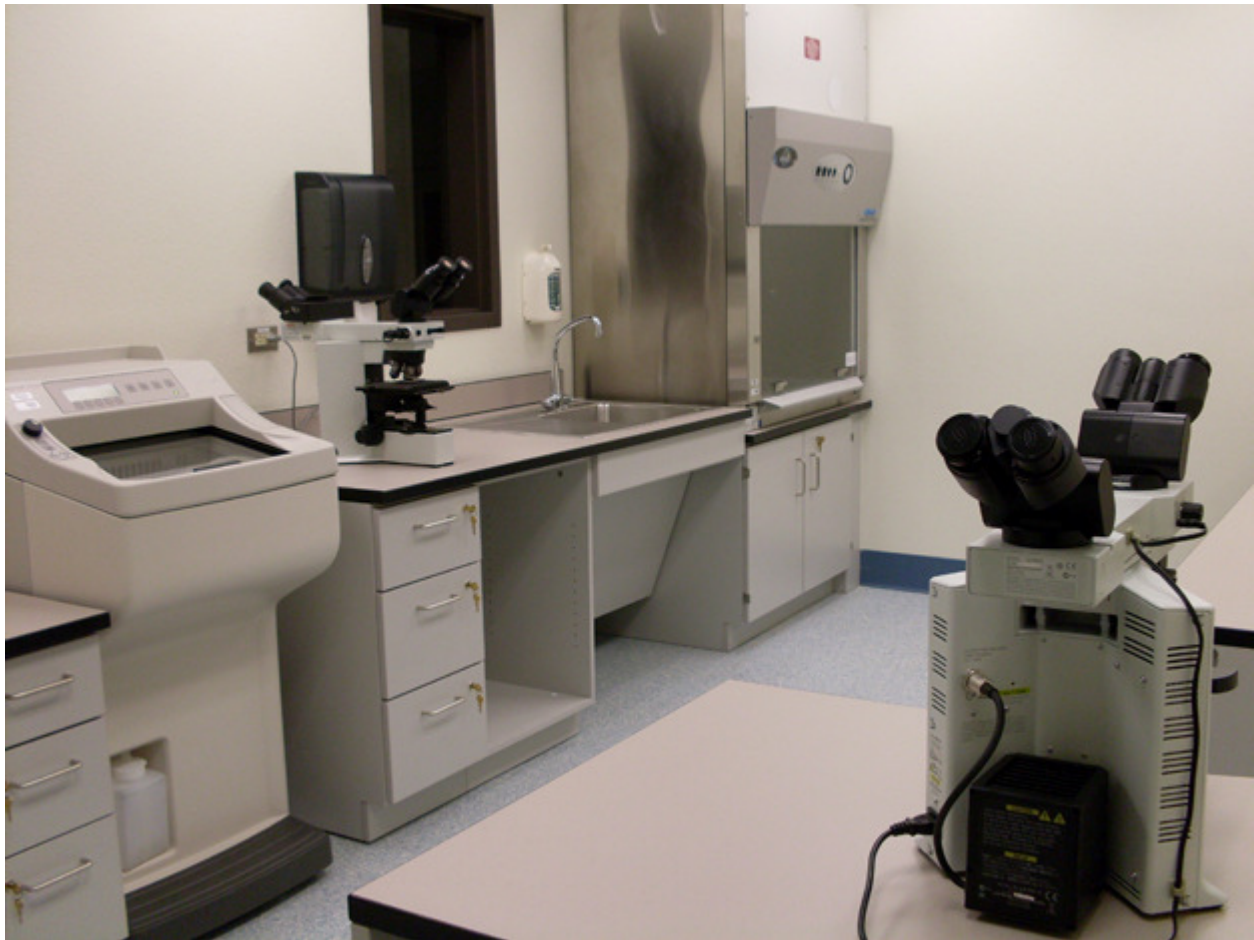
livability, safety, sustainability, and economic operation. OCP began successfully using JOC contracts in 2007.

The first OCP project to utilize JOC was programmed as a standalone facilities maintenance building and a woodshop classroom addition to replace a trailer that was being used for that purpose on a remote branch campus. When the budget proved woefully inadequate and site logistics for an addition challenging, the JOC contractor and its A/E partner developed plans for a 1,700 square-foot dual-use facility that not only saved construction dollars, but provided added value by allowing the maintenance staff to utilize the woodshop facilities for its operations. The project due date was critical because of a reversion date for State funding and the Design-Build approach within the JOC contracting vehicle was one of the few options to meet the target date. When the tight wedge of a site proposed for the project was revealed to sit over a primary city water line easement, the JOC contractor was able to work collaboratively with the architect and the city utilities division to redesign the building to ensure appropriate access for potential waterline repairs by siting the garage bays over the easement with operable roll-up doors on both sides. The Maximum Allowable Construction Cost (MACC) for the project was \$302,000 and the final costs under the JOC delivery method were \$345,182. There were several owner driven change orders on the project, but the costs were controlled based on the JOC contractual unit pricing. Under a low bid contract, it is likely that UNM would have paid much more for the final construction cost.



The second OCP project was the UNM Hospital/School of Medicine Dermatology Clinic Remodel, which included construction of a MOHS Lab and Minor Procedure Room in pre-existing shell space, replacement of the HVAC systems serving the original 1974 building and insulation of the existing roof deck and walls to save energy costs and increase patient comfort. Added to the original scope during the design development phase was the demolition of two existing unused restrooms and an office so a new exam room and soiled room could be constructed for the clinic; construction of a new custodial room on the west side of the existing structure with interior access; and installation of a dropped ceiling and new

lighting in the old library. As is so often the case, the budget never increased though the scope did, so there was a need to control construction costs before the first hammer was swung. The clinic also had to deal with loss of revenue during the construction period so completion time was of the essence.



*University of New Mexico Dermatology Clinic*

The initial unit-price proposal from the JOC contractor was 89 pages in length and totaled \$379,189, which was well over the targeted \$303,500 for the MACC. The owner, contractor, and architect worked together to perform a detailed review of the estimate, with an eye to reducing costs and ensuring that the Scope of Work was comprehensive. The team identified some mistakes in excavation quantities for the new janitorial room, and the contractor promptly agreed to correct these errors which reduced the proposal. Such a quantity bust could never have been identified in a lump sum bidding format. The team utilized the detailed line-item proposal to remove the expensive rubber flooring from the proposal, which allowed the \$17,000 of the project cost to be transferred to the School of Medicine operating budget. The contractor was also able to separate line item categories for an additive alternate for custom casework so the client could assess the benefit of custom versus manufactured cabinetry, ultimately saving \$12,000. The client also self funded a PUVA light which reduced the overall project budget by \$18,000. During the review, the contractor requested clarification on work items that were not shown on the plans, but that it believed were necessary for a complete installation. Needed work items were added during the revision process as well, preventing change orders and associated delays once work was in progress. The revised unit-price line item proposal was 86 pages in length and totaled \$353,543. With these proposal

modifications facilitated by the unit-price structure, the project was able to move forward with additional funding from the School of Medicine.

Initiating the type of budget analysis described above in an open RFP/Bid condition would have been nearly impossible. Major categories for pricing appear, but not details and repricing for analysis with subs can take extended amounts of time. With the JOC contract in place, OCP was able to turn around the bid assessment and repricing within six business days and move forward with a purchase order. This allowed both budget and schedule control.



*New procedure room at the University of New Mexico Dermatology Clinic*

The final project budget including soft costs was \$490,295 with a construction contingency of 5%, or \$18,000. Errors and Omissions in construction documents, particularly Mechanical/Electrical/Plumbing, were excessive and the ability to control Change Order amounts was paramount. OCP worked with the contractor through all the details and with unit costs mandated by the JOC contract, contained field changes within the contingency. The consistent unit pricing under JOC ensured that there was no inflation of change order pricing.

The extraordinary value of the JOC system was again demonstrated when the Authority Having Jurisdiction (AHJ) determined near construction completion that a full fire alarm system was required for the facility. This was listed as a Life Safety requirement with the New Mexico Department of Health (DOH) for this type of facility, but was missed by the architect who argued that a Class B occupancy didn't require this. The most stringent code always applies and in this case OCP was mandated to install the system on the eve of the clinic's scheduled reopening. The contractor was able to provide Design-Build

services for the system, get drawings approved, and complete the work in three weeks. Costs again were contained to the contractual unit price structure. Given the inflexible target opening date for this revenue-generating facility, the value of this quick turnaround is apparent, but hard to quantify.

Final changes to the older portion of the facility were also mandated by DOH during inspections which were not identified during plan review, again requiring the JOC contractor to provide detailed pricing and speed through the permit and construction process. The performance-based nature of JOC motivated the contractor to succeed on behalf of the client. Ultimately the architect's omissions on the project resulted in \$90,000 in additional costs which were born by UNM Hospital, the beneficiary of the improvements. These eleventh-hour changes clearly illustrate the value that taking a more Design-Build approach within the JOC contract would have benefitted the owner.

The most recent project in which OCP is engaged with JOC is for a classroom modernization/expansion for the School of Nursing. The MACC is small at only \$35,000, but again with a tight budget and schedule, the value is high. The submitted quote allowed for thorough review, line item by line item for electrical, lighting, mechanical, framing, ceiling and flooring work and came in less than the budget. This allowed the owner-requested increased Scope of Work to move forward at the 75% CD stage, and a five-day turnaround on the line item proposal for the added scope confirmed that it could be added without increasing the owner's budget. Thus OCP was able to maximize value within the project budget for the end user without delay to the project.

Another project which was considered an ideal candidate for JOC further demonstrates the value of this delivery method. OCP turned to the JOC contractor for preconstruction consultations and review on a 5,120 square-foot renovation to the Orthopaedics Department at UNM Hospital. The project was cancelled at 95% construction drawings when the department discovered that their replacement facility would be ready in two years instead of five. There was no cost to OCP for the contractor's preconstruction involvement, since these services are "built in" to the unit price structure. Indeed, there is no commitment on the part of the owner until they accept the fixed-price line item proposal. While an owner must be cognizant of not taking advantage of a contractor by requiring consultations and detailed proposals on projects that will likely not happen, these pre-construction services provide added value to the owner and end user.

UNM perceived the value of Job Order Contracting nine years ago as a tool to expedite projects, control pricing and maintain quality while still meeting state procurement regulations. From the perspective of OCP the system does work in every aspect. UNM has worked with performing and non-performing JOC contractors but the performance-based nature of the delivery method makes it self-selecting. Underperforming contractors get less work. A project manager can use JOC as a tool for successful budget and schedule control and feel confident in achieving the desired results for internal clients. There will always be unforeseen conditions and owner requested change orders in the field, but the ability to work closely with the contractor and client to make informed pricing decisions with confidence is an exceptional value.

*Lisa Cooley is Senior Manager of Market Development for Centennial Contractor Enterprises, Inc. She has experience managing federal IDIQ and Design-Build contracts for the federal government (GSA and Air Force) and has run her own general contracting firm. She sits on the local chapter boards of IFMA, Associated General Contractors of America, and Council for Educational Facility Planners International. She can be reached at lcooley@cce-inc.com or 505-239-3446.*

*Mary Gauer, CFM, IFMA Fellow, is a Senior Project Manager with the University of New Mexico Office of Capital Projects. Her background includes over 33 years of Facility Management experience for Fortune 500 companies with a recent change to the public sector. She sits on the board of the NM Chapter of IFMA and contributes on the international level through involvement in committees and task forces.*