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Job Order Contracting: Shades of Green

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Sustainable Practices & Approaches for Existing Facilities

In its broadest sense, sustainability is a characteristic of a process or state that can be maintained at a certain level indefinitely. In recent years, it has been associated with the environment and the discussion of how long ecological systems can be expected to be productive. In the building industry, sustainability is most often used when referring to sustainable design, which is the practice of designing physical objects and the built environment to comply with the principles of economic, social and ecological sustainability. It is often referred to as “green design” or “green building.” The aim of sustainable design is to produce place, products and services in a way that reduces use of non-renewable resources, minimizes environmental impact and relates people with the natural environment.

Since the publication of the Leadership in Energy and Environment Design (LEED®) Green Building Rating System for New Construction and Major Renovations in 1999, we have seen a growing number of LEED® certified buildings being erected. In constructing these buildings, owners are recognizing the need to build in such a way that reduces the overall effect on our environment and creates healthier living and working conditions. They are visionaries, understanding over time, they will realize energy savings and other benefits. These cost savings not only include energy and maintenance, but decreased time in employee absence, and increased productivity and overall workplace satisfaction.

The rating system for New Construction includes six categories with over 60 different point qualifications that can be obtained to reach the various LEED® standards; Certified, Gold, Silver or Platinum. To obtain a specific level, owners must understand the various qualifications, decide which they want to obtain and then work with their architect and engineers to develop plans and specifications to meet their needs and budget. Albeit simplistic in nature, the premise being, with new construction an owner is typically starting with a clean slate; a vacant lot in which they desire to build a structure.

We now find ourselves in a time when the feeling of what is the right thing to do and what makes best business sense are coming together. Sustainable practices for facilities are no longer just “nice to have”; it is now the right path forward. The issue is no longer “to LEED or not to LEED” – but instead how best to integrate green and sustainable practices into existing environments and organizations. At what level can an organization start the process of applying these practices to existing facilities? As part of upgrades? Retrofits? Renovations? New construction?

Where to Start

Many public funded organizations have established goals or a mission statement that include some level of sustainability as part of their long term vision. The problem becomes how and where to start? Laws have been enacted that require Federal agencies to achieve 30% energy and water reductions by 2015 and zero use of fossil fuel by 2030. Schools and municipalities each have similar goals and mandates. There are billions of dollars allocated through the American Recovery & Reinvestment Act (ARRA) to fund this aggressive initiative.

It is important to put together a long term plan and direction to all these necessary activities. One of the first steps is to disconnect and map out what you know and what you are attempting to do. Many of the offerings, information and interactions out in the marketplace are focused on companies or individuals selling something, creating a sense that green thinking looks like the best path to a sale. If for example, someone is selling metering, than “green solutions” tend to appear like energy management and metering. For others it may be “green cleaning” chemicals and so everything takes the shape of “green” cleaning programs, and so on. You need to break from this pattern of thinking (there is a place for materials and services vendors but only after you as a facility leader have decided on a direction and plan forward).

What is needed is a process and approach to mapping out, at the highest level, how sustainability will be represented, prioritized and integrated into an organization. Similar to a business planning process that includes mission, vision and value statements; create a clear vision of how and where to include sustainable practices within the operations and support of existing facilities. To jump in and just “start doing it” and then over time create a map and plan of how it all comes together, is one way. Another more prudent way would be taking the time to break down the elements of how a facility and its team can support sustainable practices. Then the individuals that use it and those that fund it can gain alignment and clarity around sustainability and the commitment that will be made.

Breaking down the key elements of sustainability includes how an owner views sustainability within their facility’s organization, such as:

- The Mission Statement of Sustainability for Their Facility
- Vision Statement of Sustainability for Their Facility
- Goals for Sustainable Efforts at the Facility
- A Breakdown of Where Sustainable Practices will be Applied:
 - Design & Thinking
 - Renovation & Repair
 - Energy Enhancement & Improvement
 - Energy Creation & Augmentation
 - Air Quality
 - Natural Light
 - Water
 - Cleaning & Chemicals
 - Outdoor Environments & Surroundings
 - Etc.

Principles of Sustainable Design:

- Low-impact materials
- Energy efficiency
- Quality and durability
- Design for reuse and recycling
- Design impact measures
- Sustainable design standards
- “Biomimicry”
- Service substitution
- Renewability
- Healthy buildings

- How Sustainability will be Integrated into the Facility's Priority Setting & Planning
- How Sustainability will be Communicated, Promoted & Expressed
- How Sustainability will be Viewed by the Facility's Owners, Users, & Vendors
- How Sustainability will be Part of the Facility's Decision Making & Purchasing
- How will the Facility's Processes be Changed, Created or Eliminated to Allow Sustainable Efforts to Thrive

A Green JOC Program Allows For:

- Green Sustainable Efforts on Renovation & Repair Work
- Green Thinking & Dialogue
- Cooperative & Collaborative Development of Solutions
- Fast Response Using Best Practices in Sustainability
- Innovative Green Solutions, Ideas and Sharing
- Control on Budgets & Outcomes of Green Projects
- Client Desired Level of Green Focus
- Jointly Developed Green Project Scopes
- Ability to Work with Green Experienced Subcontractors
- Ability to Use Green Building Materials
- Green Thinking on Small, Medium & Larger Projects
- Can Focus On Recycle & Reuse Materials
- Can Include Energy Efficiency & Improvement

An organization is made up of many people and a key element of successfully implementing a sustainable approach at a facility is the communication of this vision and approach. There needs to be more than a “green statement” of dreams. Sustainability needs to be integrated and forefront in thinking, both in the tactical as well as the strategic views of a facility and the teams that live and support them.

Understanding the Current Greenscape

The September 2008 publication, LEED® for Existing Buildings: Operations & Maintenance, provides guidelines and a rating system for owners who wish to reduce existing operating costs and increase productivity in an environmentally safe way with a focus on a building's exteriors and site maintenance, efficient use of energy and water consumption, the procurement of environmentally preferred products, waste stream management and indoor environmental quality.

Both guidelines provide direction concerning what indicators must be met in order for an owner to reach each LEED® certification (although not directly specifying for typical repair, renovation or minor construction projects (renovation), but it lacks in identifying the mechanism(s) that an owner can utilize to help meet these requirements in the most cost effective manor.

As stewards of the buildings you are entrusted to maintain, you must consider the construction delivery method that provides the best overall value and quality of construction to help you reach your desired LEED® certification or merely include green building standards into your renovation project if not applying for a certification.

While constructing a new building provides the owner with the ability of a fresh start and ability to control the design and construction specifications from the beginning, a renovation project, small or large could leave many unanswered questions on the table prior to soliciting for a contractor. This could be especially true for older buildings that have had multiple alterations over the years and the original plans aren't available. How easy is it to prepare a solicitation package when there are many unknowns that may exist? Will your architect or engineer be able to cover them all? One thing is certain though, unknown conditions equal change orders, which in turn, equals increased costs to the owner.

In the September 28, 2008 article, ‘Contractors Concerned as Municipalities Go for the GREEN’, published in *Commonwealth Contractor* magazine,

Leslie Braunstein quotes Raymond Walsh and his concern that “What drives the cost increases for basic certification is complying with the varying requirements from each locality, flawed contract documents, outdated contracting methods and the actual fees associated with the third party seal of approval.”

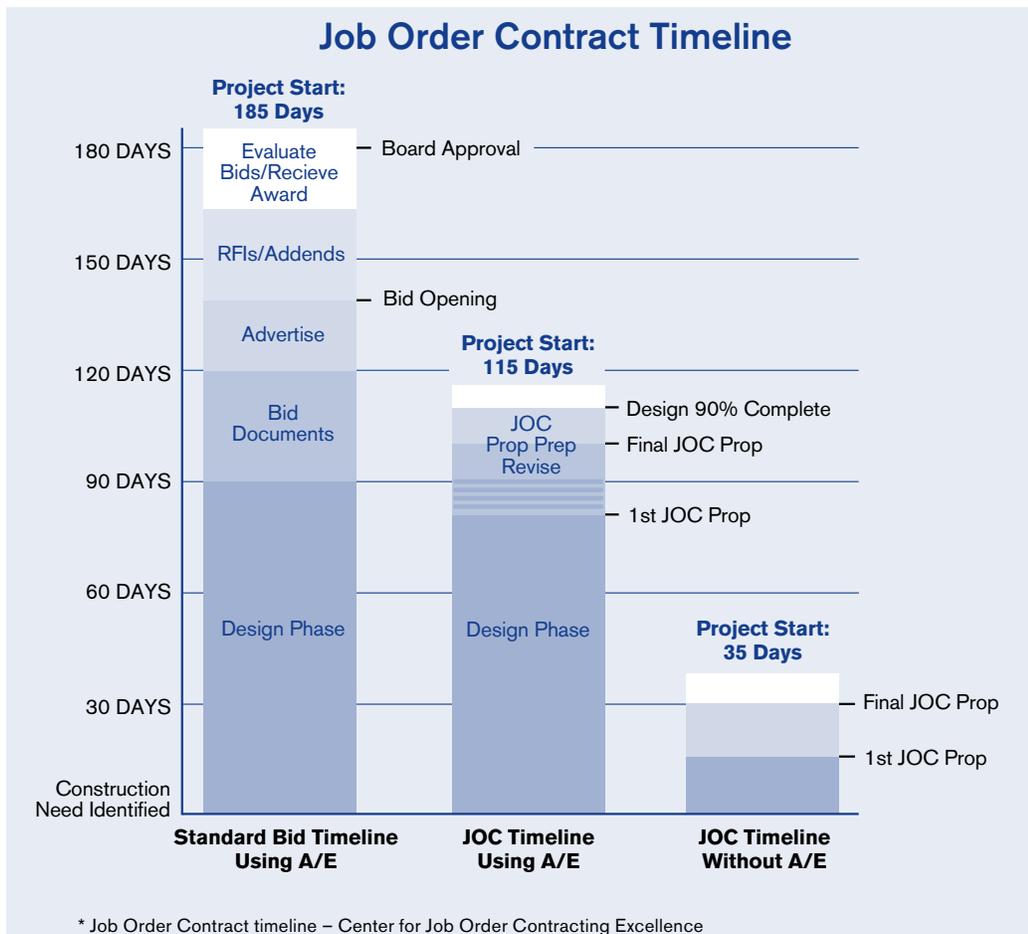
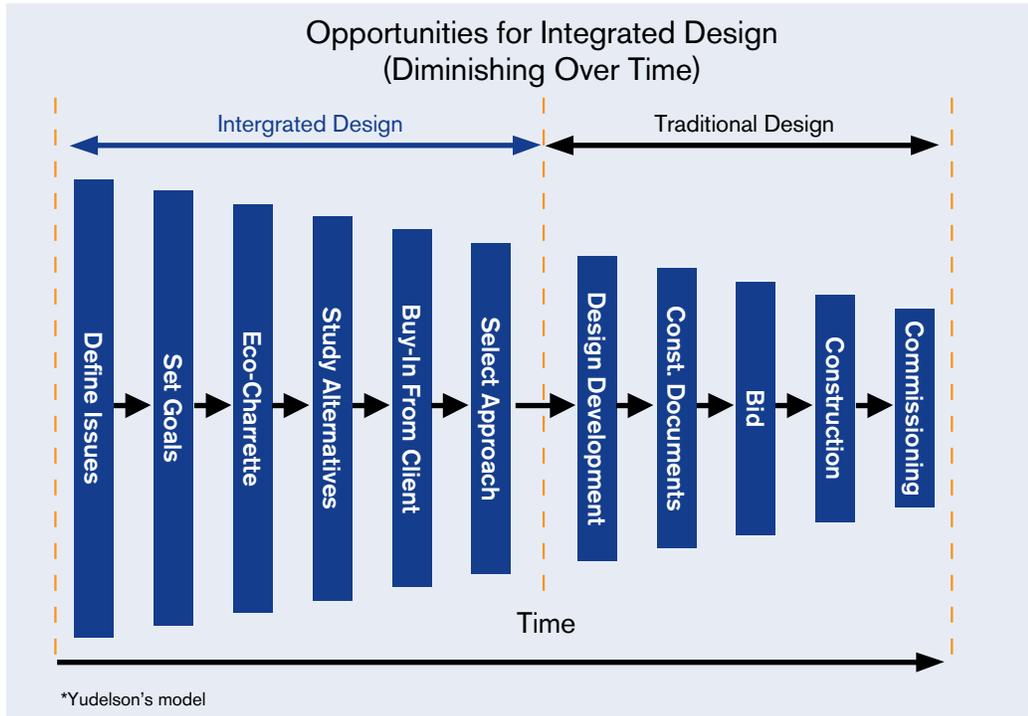
Albeit these concerns are directed toward new construction projects, a solution for many of these underlying worries for renovation projects is Job Order Contracting (JOC). Similar to Design Build, JOC is a method that allows an owner and contractor to work together, up-front, in order to develop the plans, specifications and requirements to complete a renovation, repair or minor construction project, on time and within the approved budget. If the owners’ goals are to renovate ‘green’, they are able to coordinate and discuss what is needed to reach each LEED® certification (if that is their goal), review current conditions, possible construction concerns and acceptable solutions and knowing up-front the firm fixed price for each delivery order, prior to issuing a notice to proceed. Additionally, if funding for capital projects decrease or there are restrictions on new construction, especially in congested urban areas, owners will be forced to look at their current aging infrastructure and how they can renovate the buildings to meet their needs and do it as green as possible.

Before moving forward you must decide: What is your ‘Standard’ for sustainability? Typically reduction in energy consumption, better air-quality and environmentally safe cleaning products are the initial goals for facility owners. These are probably the easiest steps to take and ones resulting in the quickest “Green or Sustainable” look for your organization, but other options do exist that bring far greater benefits to you and others on the planet. Have you considered sustainability goals for your renovation, repair and rehabilitation projects? What means do you have to meet these goals? What tools and mechanisms do you have available to help you reach a “Green” renovation, repair and rehabilitation environment?

Charlie Jahnigen wrote, “Green building requires thinking in new ways about space and budget allocations, design, site requirements and facility management. Rather than following a more traditional building and design process, teams follow an integrated approach and work toward a common goal.” (“The Green Team” American School & University September 1, 2006)

Further, Jerry Yudelson states in his book, ‘Marketing Green Building Services, Strategies for Success’, “... most developers and designers find that the process for creating green buildings requires an integrated design effort in which all key players work together from the beginning. Developers and owners have discovered a cost savings of one to three percent (of initial budgeted capital costs) in building design and construction through the use of integrated design approaches. There can also be time savings as well: considering all design elements up-front often prevents costly and time-consuming redesign after value engineering has jettisoned the first design in an effort to beat changes in costs, budgets or project requirements.” He further demonstrates that an integrated design process emphasizes more up-front investment.

Segueing his thoughts to the renovation process, owners will greatly benefit by involving the contractor (and possibly key subcontractors) during the design phase of the project. Not only does this bring additional view points and construction knowledge to the table it provides for a quicker construction time



frame, thus reducing costly material increases and allows for faster end user utilization which in turn reduces the owners' long term vacancy expenses.

A major difference from Yudelson's design process is the fact that through Job Order Contracting, the contractor is on board at the time of project design thus reducing further the timeline and need for additional construction and bid documentation needing to be prepared and distributed for solicitation. Additionally, the model does not provide for estimated days to completion of each process. Does the onus for sustainable construction fall solely on the contractor, the owner or the end user? Of course not. There must be a mutual understanding between all parties as to the desired outcome and how 'Green' they want to be. Can this understanding be thoroughly explained through the typical design-bid-build process? Possibly, but more than likely there will be many unanswered questions, that will lead to misunderstandings during the construction and ultimately lead to additional costs and aggravations.

Articles in the *Wall Street Journal*, 'Green Gap', November, 16, 2008 and *Construction Executive*, 'Six Steps for Building a Sustainable Development Program', July 2007, tout the benefits of sustainable building for the contractor. These benefits don't stop or start with the contractors, but spread throughout the community, from the end user, to the owner, to the building contractor. Everyone probably agrees that sustainable construction is in the best interest of all, in fact per the 'Six Steps' article 'the United Nations World Commission on Environment and Development says sustainable development "meets the needs of the present without compromising the ability of future generations to meet their own needs"'.

Keys to Crafting a Green & Sustainable Renovation Construction Strategy

1. Design and implement a sustainable green renovation, remodeling and construction policy through clear specifications and communication to contractors and staff. Decide how green you want to be and what this means to your construction efforts through both your internal and external resources.
2. Have in place, a contracting method that allows for collaboration, conversations and two-way thinking around green renovation efforts.
3. Establish goals and metrics to determining your success.

The contracting method and form are crucial to successfully develop and implement a green renovation sustainability plan for a university, K-12 district, municipality, or federal agency. At the core of sustainable green efforts is the need for collaboration between building owners, managers, construction providers, designers, etc. If these groups are unable to freely communicate, exchange ideas, change thinking and modify solutions as they work towards an end result, green efforts will be slow and marginalized.

Why Job Order Contracting is Well Suited for Green Initiatives

Job order contracting allows for sustainable thinking and is well suited for sustainable building. It allows you to look at all the shades of green, from a comprehensive program to simple steps that help you move in the right direction. A job order contracting program allows for an organization to decide what

5 Major Components of Sustainability are:

- Energy efficiency
- Water conservation
- Indoor air and environmental
- Quality, materials and construction
- Site sustainability

level of effort they want to apply, whether on a single project or across all projects impacting the whole program. JOC is a contracting method focused on construction services based on a contractor's performance and ability to deliver results. This type of procurement creates a partnership relationship between an owner and contractor because potential barriers like profitability, schedule, scope and services are agreed to before construction begins. This includes a scope or focus of support around green initiatives.

Developing this kind of partnership is essential in any successful construction venture, but is particularly important when an owner is trying to incorporate sustainability goals into their project.

With the various categories and unique requirements needing to be met in order for a project to achieve LEED® Certification, such as job site management, water efficiency, energy and atmospheric controls, materials, resources, indoor environmental quality, innovation and design process, only true collaboration between an owner, designer and contractor can produce the kind of careful coordination, documentation, procurement and construction demanded for such specific requirements.

Critics of green buildings claim they are more expensive to build because of numerous standards involved, expensive construction materials and methodologies required. Job order contracting focuses on achieving the best value for the construction dollars, as opposed to the typical design-bid-build method, because it requires a lower overhead cost of construction procurement and delivery. It further helps reduce the change order philosophy, and thus, reduces potential litigation and legal fees. By allowing joint scoping of projects within a team environment, JOC cultivates a “best thinking” environment prior to construction beginning. Since scopes are developed to the budget, there are no surprises at project completion. With JOC in particular, standard pricing and specification, utilizing a published unit price book (UPB), results in efficient and effective estimating, design and fixed-price construction.

With JOC, the contractor becomes an extension of the owner's team and the goals of the owner become those of the JOC contractor. A JOC program's processes allow the owner/client to craft and direct at what level green and sustainable planning, development and execution should and can be applied to any project—from simple energy savings approaches (motion sensors on/off switches) to complete buildings.

A JOC Program Allows for Green Subcontractors

When implementing green renovation strategies at any public funded facility it is important to tap into green knowledgeable and experienced subcontractors. The ability to install a green roof, or to trade out poor performing lighting and replace with high efficiency ones, requires past performance and experience. A job order contracting program focused on green and sustainable renovation allows your professional JOC contractor to build a database and resource pool of subcontractors with the right backgrounds and abilities to execute the sustainable work. Experience with green materials, sustainable practices in energy management are important elements of implementing a green project strategy.

“Green” Renovation Has Been a Mainstay for Some Time

Military Case Study I

A real “hot button” with members of the green world, especially institutional owners and the Department of Defense, is the management of deconstruction waste and the ability to incorporate recycled materials into the construction process. Job order contracting allows for a focused or a general approach to this solution.

In 2004, Sentinel Contractors (a Centennial joint venture) was tasked with deconstructing a 2-story, 174,000 square-foot building at Wright Patterson Air Force Base. Through joint scoping, up-front and constant discussion with the owner, 40 tons of ceiling tiles was recycled, 15 tons of wooden doors and 1,852 cubic yards of fiber glass insulation were donated to Habitat for Humanity and 1,200 light fixtures were salvaged to be reused later by the client. Additionally, 136 tons of ferrous and 48 tons of non-ferrous metals, five tons of clean copper and two tons of chalkboards were either sent to recycling centers or non-profit organizations for reuse; 376 door knobs, locks and hardware were salvaged; 1,200 carpet squares given away; and 3,233 tons of asphalt and 11,100 tons of concrete were recycled. These numbers speak highly of the end results, but the tool and mechanism use to reach this end is better expressed by the owner:

“It was the partnering relationship between the Air Force, the Army Corps of Engineers, and Sentinel Contractors [that] enabled on-site personnel to achieve reuse and recycling efforts that far exceeded contract requirements, exceeded every expectation, served as valuable lessons, and were without additional costs. The sum of all of this recycling and reuse exceeded every contract requirement. Over 60% of the materials on the project were diverted from the waste stream, far over the Air Force goal of 40%. This resulted in Base Environmental Management nominating the project for the ‘Closing the Circle Award’.

A partnering relationship is a relationship built on trust, dedication to a common goal, and an understanding of each other’s individual expectations and goals. In a construction contract, all parties share several goals. These include the goal to complete the project on time, within budget, to the quality specified, and safely. Completing the project on time means that the Owner gets the finished product when it was expected and allows the contractors to free up bonding capacity and move on to the next project. Staying within budget means that no one is spending more than expected. The contractor benefits from a quality job by establishing a reputation for good work, and pride in the work. The Owner gets what was expected. And safe completion is in everyone’s interest.

One advantage of a partnering relationship is good communication. Although the goal of recycling might seem to conflict with the idea of completing on time and within budget, discussions revealed that there was no conflict.

Specifications can be written to require recycling. But specifications are merely written goals and expectations. Without the respect for goals and expectations that partnering brings, there would be a struggle to accomplish any goal, no matter how well stated. With the respect that partnering brings, goals come within grasp, and accomplishments strengthen the goals. ”

- Mr. Gary Stevens, U.S. Army Corps of Engineers

Military Case Study II

A major component of green renovation is planning and coordination. Located in Washington State, Fort Lewis is at the forefront of sustainability for the U.S. Army. In conjunction with Centennial's long-standing job order contract and to help meet its sustainability goals, it coordinated with the fort's public works inspector and developed a Task Order Waste Management Plan Worksheet which identifies recyclable and recoverable material. The plan identifies waste that will be disposed of at the installation or at an off-site facility. As work is completed on each construction delivery order, the debris is removed to a central location and sorted by component, wood, metal, glass, concrete aggregate, further identifying what can be reused in the project. At the conclusion of each project, Centennial provides a report identifying the quantity and types of waste diverted from the landfill and the volume of material reused or sent to recycling centers. Through this and other efforts, Fort Lewis is credited with being the first military installation to have an internationally certified environmental management system in place.

Joint Federal/Municipal Case Study

Utilizing a contract with the U.S. Army Corps of Engineers, Centennial completed a restoration project for the City of Chicago at the Cuneo Press Site, a former abandoned industrial site. Featured in the U.S. Green Building Council LEED™ Training manual, the project highlighted Chicago as a pioneer in restoring "brownfield sites." Managing and delivering permits coordinated through 28 city agencies, Centennial successfully installed 525 of sheet piling with a batter pile anchorage system as well as installed "fish lunkers" to promote a fish habitat in the Chicago River. Once completed, the reclaimed area was developed into a city park.

K-12 School District Case Study I

Working with Paradise Valley Unified Schools District, AZ in 2007, Centennial completed at 10,000 lamp retrofit at their 400,000 square-foot Shadow Mountain High School, that is estimated to save the school district \$44,000.00 per year in energy costs in addition the district received a \$54,000.00 rebate from their electric utility service provider.

K-12 School District Case Study II

Facing time constraints and the need to relocate its Special Education Department to the district's Education Center, the Clear Creek Independent School District, TX, issued a delivery order to Centennial to design, renovate and transform an outdated gymnasium at the center into administrative offices. After several communication sessions with the owner, Centennial value engineered the original design and developed a scope of work that best utilized existing materials which helped reduce the overall cost of the project.

“The conversion of the Clear View gymnasium was considerably less expensive than the construction of a new building or building addition to house the Special Education Department”.

- Mr. Russell Wallace, Clear Creek ISD Director of Facilities and Planning.

Municipality Case Study

In an effort to help conserve water, Centennial was tasked by the City of Chandler Arizona to work with their Parks Department to design and construct an irrigation system that would provide reclaimed wastewater to the city's 70-acre Snedigar Sports Complex. The project included the installation of an automated pump that was controlled via a remote monitoring system.

Conclusion

As an integrated project delivery unifies and assists in a seamless and consistent delivery of design and engineering, so does job order contracting to the improvement (or enhancement) of the built environment, allowing the teams to apply LEED® and sustainability standards (including self defined ones) to renovation, remodeling and repair.

Job order contracting allows for a holistic approach of expediting sustainability into an on going construction program. Think of it as a tool or value-added process to meet guidelines and goals—rather than a tactical use. Nothing gets “lost in translation” when working as a unified team. A professional JOC program allows for the integration of sustainable short term objectives to meet long-term regeneration goals.

Resources:

American School & University magazine, The Green Team, September 1, 2006

Center for Job Order Contracting Excellence – www.jocexcellence.org

Commonwealth Contractor magazine, September 28, 2008

Construction Executive magazine, Six Steps for Building a Sustainable Development Program, July 2007

Marketing Green Building Services, Strategies for Success – Jerry Yudelson, 2008

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