

INSIDE NIELSEN™

A PUBLICATION OF NIELSEN BUILDERS WINTER 2010



WHAT IS THE
“NEW NORMAL”
FOR CONSTRUCTION?



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Since our company's founding by Joseph Nielsen in 1908, Nielsen Builders, Inc., has had a history of construction excellence throughout the Shenandoah Valley and western Virginia. We offer a wide range of services and project delivery systems to our clients, including program management, construction management, general contracting, design-build and consulting. In addition, we have a vast range of experience, having completed projects for clients in the fields of health care, education, adult care and churches, as well as numerous business and commercial buildings.

Our reputation for excellence is based upon our commitment to quality assurance, responsible craftsmanship, leadership, innovation, safety awareness and employee satisfaction. We are dedicated to continually setting higher standards for ourselves by guaranteeing a total quality product for each and every one of our clients.

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LETTER FROM THE PRESIDENT



Welcome to the winter 2010 issue of *Inside Nielsen*. The past few years have brought many changes to the construction industry. The economy has had a large impact on the way construction is procured and constructed. What is the “New Normal” for our industry? In the past 100 years, Nielsen has experienced many changes in construction, but no time has been as exciting and challenging as the present.

In addition to the economy, this issue explores the new innovations and green technologies transforming the construction industry. A new age of green building construction has begun. Although we have been using green building techniques for many years, there recently has been a new interest in conservation and energy savings. We are embracing the change and are routinely showing clients the benefits of “going green.”

Other technologies, such as building information modeling, or BIM, are improving the constructability of complex building projects. We have the ability to look inside a building, three-dimensionally, to proactively identify issues before the building begins.

This is the seventh edition of *Inside Nielsen*. We want to thank our advertisers and readers for their continued support of this publication.

We hope you enjoy learning about the newest construction technologies at Nielsen. These things and many more assist us in our ultimate goal to always deliver the best to our clients.

Tony E. Biller
President/CEO



NIELSEN

Corporate Mission Statement

Our Vision

Nielsen will be recognized as a premier construction organization with a commitment toward optimal performance in serving clients within the Commonwealth of Virginia. We will achieve this by consistently “striving for excellence” in providing professional building services.

Our Values

People

Nielsen recognizes that our people are the critical element in achieving our vision. We will support a team approach through open communication among all employees. We will promote the growth and empowerment of our people and commit to human resource practices based on standards of excellence, safety awareness, fair treatment and equal opportunity.

Total Client Satisfaction

Nielsen will build on our reputation and commit to exceed the expectations of our clients by maintaining the highest level of skill and responsibility in providing professional services. We will deliver a superior price/value relationship in providing quality construction services with a profit objective at a fair level.

Leadership

Nielsen is committed to being a leader in the construction industry through innovative construction techniques and product development. We will strive to be a caring corporate citizen in enhancing the community and environment in which we do business.

Quality Assurance

Nielsen Builders, Inc.'s commitment to quality assurance is based on responsible craftsmanship, leadership, innovation, safety awareness and employee satisfaction. Our guarantee to furnish our clients with a total quality product is the heart of our company's existence.

Equal Employment Opportunity Policy

It is the policy of Nielsen Builders, Inc. not to discriminate and to provide equal employment opportunity to all qualified persons regardless of race, color, sex, religion, national origin, disability, marital status, sexual orientation, gender identity or Vietnam era veteran status. This policy is applied to all employment actions including but not limited to recruitment, hiring, upgrading, promotion, transfer, demotion, layoff, recall, termination, rates of pay, or other forms of compensation and selection for training including apprenticeship.

Nielsen Builders, Inc. is committed to the principles of affirmative action and equal employment opportunity. In order to ensure its dissemination and implementation throughout all levels of the company, Jean Hieber has been selected as Equal Employment Officer for Nielsen Builders, Inc.

In furtherance of our policy of affirmative action and equal employment opportunity, Nielsen Builders, Inc. has developed a written Executive Order Affirmative Action Program, which contains specific and results-oriented procedures to which Nielsen Builders, Inc. is committed to apply every good faith effort. Procedures without efforts to make them work are meaningless and effort undirected by specific and meaningful procedures is inadequate. Such elements of Nielsen Builders, Inc.'s Executive Order Affirmative Action Program will enable applicants and employees to know and avail themselves of its benefits. The policy is available for review, upon request, during normal business hours.

Applicants for employment and all employees are invited to become aware of the benefits provided by the Affirmative Action Program.



6

Year Ahead for Construction: Far from a “Perfect 10”

Ken Simonson, Chief Economist, AGC of America, discusses the predicted growth in construction for 2010.

8

What Is Construction Management?

This article summarizes some types of construction delivery systems and outlines their strengths and weaknesses.

11

Building Green: A Commitment to Quality of Life

Gary McBride, LEED AP, explains the guiding principles of sustainable design and ways in which Nielsen has incorporated these components into their projects.

14

Improving Building Industry Results Through Integrated Project Delivery and Building Information Modeling

This article condenses an Autodesk whitepaper and offers an overview of the advantages Integrated Project Delivery (IPD) provides to clients and builders alike.

16

Tilt-Up Construction: Delivering a Positive, Lasting Impression

Kim Messer, CON/STEEL Sales/Marketing Coordinator, demonstrates that tilt-up construction delivers functional, durable and economical results.

18

TCA Achievement Award Winner

Nielsen receives TCA Achievement Award for the SRI project in Rockingham County, Virginia.

20

Job Portraits

Eight recent Nielsen projects demonstrate the company’s commitment to quality building.

24

Employee News

PUBLISHER

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FAR FROM A "PERFECT 10"

INDUSTRY WILL SEE ONLY MODEST GROWTH IN BUSINESS

Nonresidential construction had a rough year in 2009. Unfortunately, 2010 will provide modest relief at best.

U.S. nonresidential construction spending put in place in the first half of 2009 was virtually unchanged from the amount in January through June 2008, the Census Bureau reported. Nonresidential construction employment tumbled 13.5 percent from July 2008 to July 2009, according to the Bureau of Labor Statistics. The unemployment rate for construction workers — residential and nonresidential combined — was a dismal 18.2 percent in July, not seasonally adjusted. That was the highest of any industry reported by BLS and nearly double the all-industry average.

A third measure of the state of construction activity is included in the quarterly estimates of gross domestic product from the Bureau of Economic Analysis. In the second quarter of 2009, real (net of inflation) investment in private nonresidential structures shrank by a seasonally adjusted annual rate of 15 percent, following an even steeper 43 percent contraction in the first quarter. "Seasonally adjusted" is a statistical technique to remove normal weather- or holiday-related fluctuations. "Annual rate" allows comparison of quarterly or monthly changes to full years.

In contrast, real government investment in structures soared 21 percent, after a 4.3 percent first-quarter decline.

What can the industry expect going forward? Nationally, the economy is showing signs of returning slowly to health. Real GDP — the sum of all purchases of goods and services by households, businesses, government and net exports — most likely grew in the third quarter and should get gradually stronger through 2010.

In particular, consumer spending and federal government purchases, fueled by stimulus legislation, are likely to contribute to rising real GDP. Business investment in inventories should resume once consumers begin buying again. But business investment in equipment and structures, state and local government purchases and net exports are likely to remain weak for several more quarters.

The implication for construction is that the best prospects are in single-family residential and stimulus-funded nonresidential work. The inventory of unsold new homes dropped to a multi-year low of 271,000 in July, seasonally adjusted, according to an August 26 Census Bureau report. That is one-third fewer homes on the market than in July 2008. Single-family new home sales in July were up for the fourth straight month, 30 percent above the low point in March.

These figures point to a rebound nationally in single-family construction. Indeed, permits, a very reliable indicator of homebuilders' near-term intentions, also rose steadily from March through July by a cumulative 27 percent, seasonally adjusted. Actual single-family starts climbed 37 percent during five consecutive months from a low in February. But multifamily construction remains stuck in low gear for the foreseeable future.

There appear to be two, and perhaps three, types of nonresidential construction that will do well in 2010: power, federally funded stimulus and military base-realignment projects and possibly private institutional work, such as hospitals and colleges.

Nationally, spending on private power construction grew 15 percent in the first

half of 2009 compared to the same months of 2008, according to the Census Bureau. In some states, this growth included wind farms, transmission lines and solar or other alternative-power sources. Incentives and mandates to clean up emissions and generate more power from renewable sources will keep this market growing.

The highway portion of the stimulus bill included \$27.5 billion, which was distributed to states and turned into contracts quite promptly. But most of the money has not been awarded yet. The full alphabet soup of federal agencies, ranging from the Environmental Protection Agency to the General Services Administration to the U.S. Army Corps of Engineers, will be doling out the money under a variety of programs.

AGC has pushed lagging agencies to step up the pace of project awards. Base-realignment work, which has been strong for the past year, will also continue at a high rate but will help only in limited geographic areas.

Until the simultaneous economic and financial market collapse a year ago, universities and hospitals were ordering lots of construction. Thanks to recent gains in the stock market and improved tax-exempt bond markets, these institutions may be able to resume their multi-year expansion and modernization programs in 2010.

But aside from these few potential bright spots, many contractors will find the going slow in 2010. Developers, manufacturers and state and local government-funded work will continue to diminish for several more quarters.

by Ken Simonson, Chief Economist, AGC of America, simonsonk@agc.org

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WHAT IS CONSTRUCTION MANAGEMENT?



Construction management is a professional management practice consisting of an array of services applied to construction projects and programs through the planning, design, construction and post-construction phases for the purpose of achieving project objectives, including the management of quality, cost, time and scope.

Construction management is a discipline and management system specifically created to promote the successful execution of capital projects for owners. These projects can be highly complex. Few owners maintain the staff resources necessary to pay close, continuing attention to every detail — yet these details can make or break a project.

A professional CM can augment the owner's staff with pre-planning, design, construction, engineering and management expertise that can ensure the best possible project outcome, no matter what type of project delivery method used.

“Agency” CM is a professional service that can be applied to all delivery systems where the CM acts as the owner's principal agent in the management of a construction project or program; where the CM is responsible to the owner for managing the planning, design, construction and post-construction phases; or portions thereof. The CM represents the interests of the project in its dealings with other construction professionals and with other private and public entities.

Comprehensive management of every stage of the project, beginning with the original concept and project definition, yields the greatest possible benefit to owners from construction management.

“At-risk” CM is a delivery method that entails a commitment by the construction manager to deliver the project within a guaranteed maximum price (GMP). The construction manager acts as consultant to the owner in the development and design phases but as the equivalent of a general contractor during the construction phase. When a construction manager is bound to a GMP, the most fundamental character of the relationship is changed. In addition to acting in the owner's interest, the construction manager also protects him/herself.

Courtesy of the Construction Management Association of America Web site

Design-build (or **design/build**, and abbreviated **D-B** or **D/B** accordingly) is a construction project delivery system

where, in contrast to “design-bid-build” (or “design-tender”), the design and construction aspects are contracted for with a single entity, known as the **design-builder** or **design-build contractor**. The design-builder is usually the general contractor, but, in many cases, it is also the design professional (architect or engineer). This system is used to minimize the project risk for an owner and to reduce the delivery schedule by overlapping the design phase and construction phase of a project. Where the design-builder is the contractor, the design professionals are typically retained directly by the contractor. The most efficient design-builder has design and construction professionals working directly for the same at-risk entity. This is one of the oldest forms of construction since developing from the “master builder” approach.

Design-build focuses on combining the design, permit and construction schedules in order to streamline the traditional design-bid-build environment. This does not shorten the time it takes to complete the individual tasks of creating construction documents (working drawings and specifications), acquiring building and other permits or actually constructing the building. Instead, a design-build firm will strive to bring together design and construction professionals in a collaborative environment to complete these tasks in an overlapping-like fashion — i.e., construction has begun while the building is still being designed.

Typically, the hallmark of a design/build project is that **one organization is responsible for both design and construction of the project**. If this organization is a contractor, the process is known as “*contractor-led design-build*.” If the organization is a design firm, the process is known as “*design-led design-build*.” In either case, the organization employed by the owner rarely handles both aspects of design and construction in-house. In fact, the organization often subcontracts with on-site personnel (if design-led) as well as architects and engineers (if contractor-led).

Courtesy of Wikipedia



Typically, the hallmark of a design/build project is that one organization is responsible for both design and construction of the project.



Design-bid-build (or **design/bid/build**, and abbreviated **D-B-B** or **D/B/B** accordingly), also known as **design-tender** (or “design/tender”), is a project delivery method in which the agency or owner contracts with separate entities for the design and construction of a project.

Design-bid-build is the traditional method for project delivery and differs in several substantial aspects from design-build.

There are three main sequential phases to the design-bid-build delivery method:

- The design phase
- The bidding (or tender) phase
- The construction phase

Potential Problems of Design-Bid-Build

- Failure of the design team to be current with construction costs, and any potential cost increases during the design phase could cause project delays if the construction documents must be redone to reduce costs
- Redesign expense can be disputed should the architect's contract not specifically address the issue of revisions required to reduce costs
- Development of a “cheaper-is-better” mentality among the general contractors bidding the project, so there is the tendency to seek out the lowest-cost subcontractors in a given market. In strong markets, general contractors will be able to be selective about which projects to bid, but in lean times, the desire for work usually forces the low bidder of each trade to be selected.

This usually results in increased risk (for the general contractor) but can also compromise the quality of construction. In the extreme, it can lead to serious disputes involving quality of the final product or bankruptcy of a subcontractor who was on the brink of insolvency desperate for work.

- As the general contractor is brought to the team post-design, there is little opportunity for input on effective alternates being presented
- Pressures may be exerted on the design and construction teams, which may lead to disputes between the architect and the general contractor

Benefits of Design-Bid-Build

- The design team is impartial and looks out for the interests of the owner
- The design team prepares documents on which all general contractors place bids. With this in mind, the “cheaper is better” argument is rendered invalid since the bids are based on complete documents. Incomplete, incorrect or missed items are usually discovered and addressed during the bid process.
- Ensures fairness to potential bidders and improves decision-making by the owner by providing a range of potential options. It also identifies new potential contractors.
- Assists the owner in establishing reasonable prices for the project
- Uses competition to improve the efficiency and quality for owners

Courtesy of Wikipedia



BUILDING GREEN

A COMMITMENT
TO QUALITY OF LIFE

FOR MORE THAN 100 YEARS, Nielsen Builders has been committed to increasing the quality of life in the communities in which we live and serve. We understand the relationship between the life we live on this planet and the impact we have on climate change, a problem that will have a real impact on future generations. At Nielsen, we are dedicated to the ideals of the Leadership in Energy and Environmental Design program. Our goal is to utilize sustainable construction techniques not only for LEED projects but also for all projects that we undertake. We understand the importance of meeting LEED criteria while maintaining a project's budget and schedule.

The built environment has a profound impact on our natural environment, economy, health and productivity. Buildings use a considerable amount of natural resources and energy and produce waste and greenhouse gases. Green building design and construction techniques incorporate the guiding principles of sustainable design while reducing the use of non-renewable resources and minimizing the impact on the environment.

Energy Conservation

Energy consumption is at the root of many environmental issues, including climate change, waste generation, habitat destruction and air, light and water pollution. At the Lylburn Downing Middle School project in Lexington, ground-source heat pumps are key to the heating and cooling strategy to provide energy conservation and operational cost savings. The Fluvanna County High School building is sited to allow more natural sun to light the interior in the



winter than in the summer. Adjustments to room temperatures within a 3-degree range can be made by the user and the building is zoned to avoid raising heat over an unnecessarily wide area. On the Brownsville Elementary School project, white reflective roofing material was installed to significantly reduce the cost of cooling the building.

Water Management

Similar to energy consumption, the use, quality and flow of water has significant environmental impacts that affect the health of waterways such as the Shenandoah River and the Chesapeake Bay. These efforts include installation of water-efficient

plumbing fixtures and equipment, rainwater harvesting and landscapes designed for minimal irrigation. One technique at the Brownsville E.S. project in Albemarle County is the use of rain tanks and rainwater harvesting to provide water for site irrigation use. Several Nielsen projects at James Madison University utilize advanced stormwater systems, including underground detention and filtration systems and biofiltration ponds. Current projects on campus using these techniques include the new Performing Arts Center, Shenandoah Residence Hall and the Softball/Baseball Complex. Other water-efficient efforts pursued include vegetated roofs, waterless urinals, use of recycled wastewater and wetland conservation.

Materials and Resources

Building material choices are important to sustainable design because of the extensive network of extraction, processing and transportation steps required to process them. These activities pollute the air and water, destroy habitats and deplete natural resources. Nielsen projects employ many tactics that minimize the negative impact on our environment. At the Brownsville E.S. and Fluvanna County H.S. projects, as much as 75 percent of waste from the construction site is being recycled and diverted from the landfill. On many Nielsen projects, construction materials are obtained from regional sources to minimize environmental impacts from product transportation. Materials are also being used that are comprised of recycled materials, thereby minimizing the need to harvest new resources.

Occupant Health and Well-Being

The quality of indoor air spaces inspires and nurtures the life of those who occupy the building. Abundant daylight and fresh air have an enormous impact on the health and productivity of building occupants. At the Shenandoah County Court Building project, low-VOC-emitting materials are being used to reduce contamination of indoor air quality for workers and occupants. The SRI International Research Facility in Rockingham County was designed to ensure that 90 percent of regularly occupied spaces receive daylight and have views to the exterior.

Commissioning

Commissioning is a quality-assurance process of verifying and documenting that a building and all of its systems and assemblies are installed, tested, operated and maintained to meet

the owner's requirements. It's one of the least valued and most necessary of all building processes to ensure that the building performs as designed. Detail-driven and documentation-rich, commissioning is the best way to accomplish higher energy and water efficiency, environmental health and financial return on investment. Several of Nielsen's current projects include building commissioning to ensure that the finished product meets design goals and the intended needs of the user.

Building Life Cycle

Nielsen builds buildings that last. Every building constructed by Nielsen since the founding of the company a century ago is fully functional and still serving the owner for its intended use. Examples of this durability can be found on the James Madison University campus, where buildings constructed by Nielsen decades ago have been renovated to meet the demands of this vibrant university campus. The durability of our buildings is their greatest contribution to sustainability. Through continued adaptation, in lieu of demolition and replacement, we are effectively conserving countless material resources, energy expense and landfill space.

Current LEED Projects

Brownsville Elementary School Addition and Renovations – LEED Silver
Albemarle County Public Schools

New Fluvanna County High School – LEED Silver
Fluvanna County Public Schools

Shenandoah County Human Services Building Renovation – LEED Silver
Shenandoah County Government

New Shenandoah County District Court Building – LEED Silver
Shenandoah County Government

Company Commitment

We recognize that sustainable construction begins with a knowledgeable staff. We have several LEED Accredited Professionals in our estimating and construction management group. Nielsen recognized several years ago that LEED would become a standard in the construction industry and had the foresight to educate its staff in sustainable practices, and we had LEED Accredited Professionals on staff even before the first LEED projects were being designed in Nielsen's operating area. Our personnel keep up to date on the progressive changes to the criteria of LEED by attending seminars, workshops and certification training.

Nielsen is committed to the success and increased adoption of sustainable construction practices in our industry. As part of our commitment to have a positive impact on the communities we serve, we have launched a broad-based program of initiatives to aggressively expand our capabilities and extend our leadership in the growing field.

by Gary McBride, LEED AP



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Within the building industry, there is a growing interest in integrated project delivery (IPD) and the role building information modeling (BIM) can play in promoting integration among building professionals and improving design outcomes. This whitepaper examines IPD and considers its impact on the building industry — and how BIM is central to process changes that IPD will bring.

Introduction to Integrated Project Delivery

The American Institute of Architects (AIA) defines IPD as “a project delivery approach that integrates people, systems, business structures and practices into a process that collaboratively harnesses the talents and insights of all participants to optimize project results, increase value to the owner, reduce waste, and maximize efficiency through all phases of design, fabrication and construction.”

Although the traditional design-bid-build delivery method is still the most widely used form of project delivery, alternate approaches such as design-build, or construction management at risk — driven in large part by owners seeking to break away from “low-bid” and “lowest-first-cost” limitations — are quickly gaining traction and moving the industry toward a more integrated approach for project delivery.

Challenges to Practice (Drivers for IPD)

What are the industry issues that are fueling the integrated project delivery trend? A convergence of forces seems to be moving the AEC industry in the direction of integration — based on economics, productivity and nature of current owner design requirements. These issues include:

- A shift toward globalized work processes
- The need for increased productivity and low margins
- The demand for sustainability
- The increasing complexity of buildings themselves

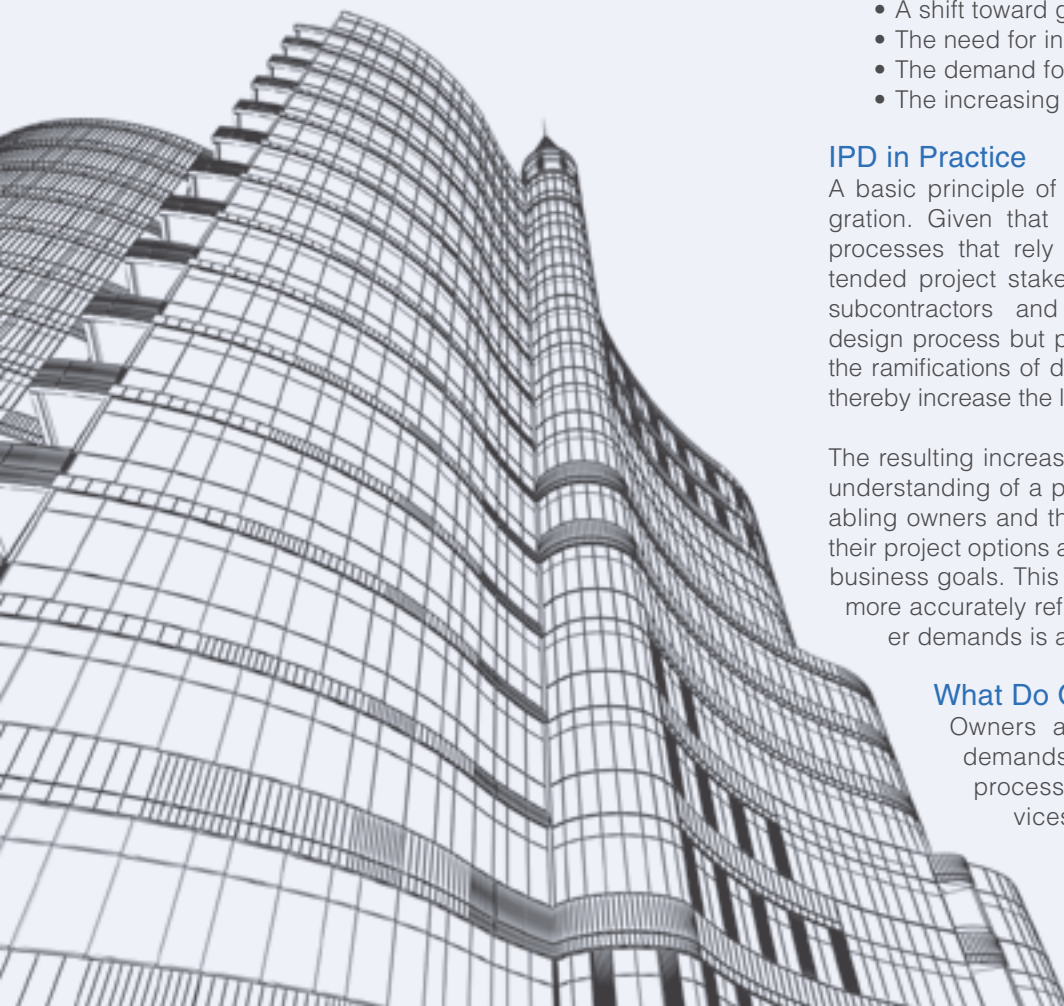
IPD in Practice

A basic principle of IPD is the reliance on knowledge integration. Given that IPD encompasses highly collaborative processes that rely on the collective expertise of the extended project stakeholders (including designers, builders, subcontractors and owners) contributed throughout the design process but particularly in the early stages of design, the ramifications of design decisions can be understood and thereby increase the likelihood of project success.

The resulting increase in project knowledge creates a better understanding of a project earlier in the design process, enabling owners and their IPD team to more effectively assess their project options and consider how to align them with their business goals. This should, in theory, result in a project that more accurately reflects their requirements. Satisfying owner demands is at the heart of the IPD process.

What Do Owners Want?

Owners are becoming more definitive in their demands for more reliable results in the AEC process. Articulated by the U.S. General Services Administration (the largest owner of



commercial space in the country) and by organizations such as the Construction Users Roundtable (CURT), owners are looking to the building industry for changes in these areas:

- Improved decision-making
- Improved contract documentation
- Improved preconstruction estimating
- Improved procurement and scheduling
- Improved coordination
- Improved cost-efficiency
- Improved closeout documents

How Do Architects, Engineers and Builders Respond?

Embracing internal change: Increasingly, AEC firms are transitioning to collaborative processes built on the use of digital models to inform and progress the project design and to aid construction. These processes are characterized by increased involvement of project planning, communication, and risk management in a comprehensive and open manner during design and construction.



Creating collaborative partnerships: New partnerships (including proactive, timely owner engagement) that rely on collaborative digital models to facilitate decision-making are creating a new breed of construction/lifecycle-minded designers and design-minded builders who together are managing the project with process and outcome metrics — and putting increased emphasis on the considerations of value and cost.

Leveraging new technologies: New tools and technologies are key enablers of the integration of design practice and construction. These include:

- BIM design tools — providing platforms for integrated processes built on coordinated reliable information and

resulting in enhanced coordination, fewer RFIs and change orders, and less rework

- 3D and 4D visualization — enhancing scope definition, stakeholder engagement and decision-making
- Model-based analysis — using BIM-based data and digital analytical tools to understand project energy consumption, structural performance, cost estimates and other inferential reasoning from the design while it is underway
- 4D modeling — coordinating construction and increasing the reliability of schedules
- Fabrication from 3D models — resulting in elimination of shop drawings; better tolerance, lead time, and safety; and faster field assembly

Summary

Integrated project delivery is upon us — already in use in some form on many projects and the source of intense discussion for everyone in the building industry. BIM solutions enable IPD and can deliver dramatic advances in building technology, but the full potential of BIM will not be achieved without adopting structural changes to existing project delivery methods. Key issues regarding compensation, contractual relationships, risk allocation, and so forth can be overcome.

Greater awareness, owner mandates and industry initiatives are critical to the widespread adoption of new delivery methods. Autodesk, in its ongoing commitment to improve our built environment, is committed to bringing about the necessary changes — in technology and outlook — to help make integrated project delivery a reality for the building industry.

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To read this Autodesk whitepaper in its entirety, please visit http://images.autodesk.com/adsk/files/bim_and_ipd_whitepaper.pdf.



Harrisonburg Combined Middle/Elementary School Gymnasium

TILT-UP CONSTRUCTION: DELIVERING A POSITIVE, LASTING IMPRESSION

From energy-efficient light bulbs to hybrid cars to LEED-certified buildings, it is clear that “green” will be a way of life in American society, as well as in the building industry, into the foreseeable future. As the “green” trend continues to permeate many aspects of life, we consider the impact of our work and the legacy we will leave for future generations. The buildings we create leave a lasting impression on both the environment and the people they affect. Why not provide the most sustainable facility possible?

The best of all worlds can be achieved when building owners, designers and contractors work together to develop sustainable projects. Long before sustainability became an industry buzzword, tilt-up construction was delivering advanced thermal efficiency and decreased life-cycle cost — two major elements of sustainability. Today, building owners receive all the well-known benefits of tilt-up — speed, cost containment, durability, architectural freedom, safety and more — as well as the newly named benefit of sustainability.

The primary expenditures associated with a building are upfront costs for construction and financing and ongoing costs for energy, maintenance and alternations. As explained below, tilt-up construction has a positive impact on each cost element, which saves the building owner money throughout the life of a building.

Because concrete is cast on-site with the tilt-up construction method, tilt-up projects can proceed quickly and efficiently, all while offering enhanced sustainability. All the significant components for a tilt-up structure can be provided through local sources. And, since wall panels are formed on-site, less fuel is required to haul products to the job site.

Since tilt-up construction uses locally-produced materials, buildings can typically be completed five to six weeks ahead of conventional construction, and sometimes sooner. And, because panels are poured and cured on-site, many stages of construction can occur simultaneously, allowing tilt-up projects to meet aggressive schedules.



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Sustainable projects also need building envelope performance to play an important role in reducing energy consumption and costs. Long before sustainable design became a motivation, quality concrete tilt-up projects were known for delivering building envelopes that minimize dynamic changes in temperature. Concrete's natural ability to absorb and store energy — the thermal mass effect — can also be combined with optimum insulation options to deliver maximized thermal performance. Tilt-up buildings also have a tighter structure and less air infiltration compared with many competing systems.

Tilt-up construction also offers a cost-competitive option for building owners. The economies of tilt-up are not only evident during the construction phase but are also manifest in the long-term value that tilt-up buildings provide. Concrete buildings are a preferred investment in the eyes of lending institutions and insurance companies, as the rugged durability of concrete offers a solid deterrent to vandalism and illegal entry, in addition to creating a natural barrier to the destructive forces of fire.

These structures not only stand the test of time but ALSO do so with a very low maintenance profile, keeping costs and product consumptions low. The environmental impacts of decreasing maintenance are often overlooked but contribute significantly to a building's overall sustainability.

The flexibility of concrete is an additional benefit that allows for virtually unlimited design freedom and flexibility. The durability of concrete makes it possible for wall panels to be reused in the case of building expansion. And, since concrete arrives at the job site in liquid form, many unique designs can be made, including circular wall panels. Various natural aggregates and a real fired-brick product are also available to create a variety of organic textures and appearances for the exterior of tilt-up buildings.

When creating a new building, you want it to be functional, attractive, durable, efficient to operate and economical to build. And tilt-up construction delivers in every way. Tilt-up allows building projects to achieve the coveted fastest and most cost-effective way without sacrificing the best quality or environmental impact.

by Kim Messer, CON/STEEL

TCA ACHIEVEMENT AWARD WINNER

SRI AT ROCKINGHAM

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SPECIAL FEATURES

The Center for Advanced Drug Research (CADRE) is SRI International's primary research facility in the Mid-Atlantic area. The facility has two occupied floors totaling 40,000 square feet and an additional enclosed penthouse level. The building consists of a laboratory wing with BSL-2 and BSL-3 lab areas linked to an entry wing with offices, conference and support facilities. Site improvements consist of landscaping, plazas, seating areas, a jogging trail and approximately 80 to 100 paved parking spaces, with an additional 40 gravel/temporary parking spaces.

The center was developed by Rockingham County specifically to meet the need of technology-driven companies seeking their own corporate campus and identity with the context of a headquarters-quality office park. The site selected for the project has the best views from its highest point toward the rear of the parcel. The master plan includes two future buildings, providing an additional 60,000 square feet. The three buildings could become one unified campus for a single corporation or be divided among two, three or more separate tenants with individual identities.

The first building, with its long elevations, faces north and south. Both directions afford expansive views over fields, woods and farms. The scenic Massanutten Mountain lies immediately to the southeast and the more distant Appalachian

ridges to the north and west. The building is planned so that all of the labs and most of the office areas will enjoy natural light from one of these views. These spectacular views were created through large window openings that stretched the structural capabilities of the tilt-up concrete panels. The tilt-up concrete panels were complemented with a combination of silver composite metal panels and pewter ribbed metal panels, which aided in creating the building's dynamic recesses and form. Also, the use of sunshade devices and a two-story curtainwall system provided depth to the façade while framing these stunning views outward.

The Tilt-up Concrete Association was founded in 1986 by a dedicated group of contractors, professionals and manufacturers with the interest of improving the quality and acceptance of Tilt-up construction. The mission of the Tilt-up Concrete Association is to expand and improve the use of Tilt-up as the preferred method by providing education and resources that enhance quality and performance.

Client: SRI

Location: Harrisonburg, Virginia

Architect: HOK

Contract: \$16.7 million

Finish Date: August 2009

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JOB PORTRAITS



THIRD BARRACKS – VIRGINIA MILITARY INSTITUTE

Client: Virginia Military Institute

Location: Lexington, Virginia

Architect: Clark-Nexsen

Contract: \$30.2 million

Finish Date: November 2008

SPECIAL FEATURES

The first phase included the building and site demolition associated with the existing Lejeune Hall structure and the modifications to select spaces in the New Barracks to allow for the construction of the Third Barracks.

The demolition of Lejeune Hall included asbestos and lead paint abatement. Additional items associated with the first phase included nose-in parking, utility relocations and modifications to pedestrian access points to the North Post facilities.

The second phase included the construction of the Third Barracks and the connection to the New Barracks, including all site work improvements and utility connections indicated. The building is 121,712 gross square feet and includes cadet rooms, foodservice and dining areas, a bookstore, a visitor center, storage rooms, utility rooms, elevators, toilet and shower rooms and open balconies that look out onto an open courtyard. The building is seven stories high from the lowest level to the highest level.

BRIDGEWATER RETIREMENT COMMUNITY

Client: Bridgewater Retirement Community

Location: Bridgewater, Virginia

Architect: CSD

Contract: \$3.8 million

Finish Date: March 2009



SPECIAL FEATURES

This project is an exceptional combination of a thoughtfully designed building and a well-planned activity-based program that has resulted in a remarkable improvement in the quality of life for the residents with mild to moderate dementia who will live there.

The 12,000-square-foot building features 14 private rooms around the outside of the unit, opening into a large common area that is filled with natural light from the cupola skylights.

The large country kitchen has a family-style dining area for meals with residents, families and staff members. The living room features a hearth area complete with an electric fireplace

to provide a comfortable, friendly environment for residents to gather for activities, to socialize or just to relax.

There is a den that offers a more private setting for residents and families who prefer a quieter place to visit. A bright garden room will provide access to a safe and secure outdoor wandering garden.

This construction-manager-at-risk project allowed Nielsen to assist with constructability reviews and preliminary budgeting. Our input led to value-added design for the foundations and roof structure. The final project was completed on time, including a \$28,000 construction cost savings.

JAMES MADISON UNIVERSITY – SHENANDOAH HALL

Client: James Madison University
Location: Harrisonburg, Virginia
Architect: Clark Nexsen
Contract: \$23.7 million
Finish Date: March 2009



SPECIAL FEATURES

The first phase of construction for the new residence hall, which is a design/build project, consisted of two five-story dormitory towers, a partial basement and a two-story connector pavilion. A future second phase is planned that calls for the construction of a third dormitory tower with connector pavilion.

Provisions have been made in the design of the south tower to accommodate the future connector pavilion that will ultimately lead to a third dormitory tower.

The design provides 422 beds for the students at JMU, with the north residence tower containing 211 beds and the south residence tower providing 209 beds. In addition, each of the dorm towers contains a live-in staff apartment, which brings the total number of beds for the Phase III residence hall to 422.

The total planned area for the Phase III residence hall is 131,788 gross square feet. The north residence tower is 59,941 gross square feet in size. The south residence tower is 62,585 gross square feet. The two-story connector pavilion contains 9,262 gross square feet.



MUHLENBERG LUTHERAN CHURCH

Client: Muhlenberg Lutheran Church
Location: Harrisonburg, Virginia
Architect: Sease & Associates, P.C.
Contract: \$2.1 million
Finish Date: August 2009

SPECIAL FEATURES

This project consists of an 8,000-square-foot addition, which includes a gathering area with a classroom underneath it. The \$2.2 million project took approximately 12 months to complete. The church worked with Nielsen through a negotiated contract arrangement.

The renovation was planned because the congregation has grown, and it is aging. The building was not very accessible, and it needed to be upgraded. The steps were narrow

and difficult to use, and the handicapped ramp was out of the way.

The addition includes an elevator, which provides easy access. The new entrance includes lots of glass and presents a very welcoming environment. Additionally, the project added three classrooms in the basement and converted the existing nursery to office space. The exterior of the addition was constructed of synthetic stone, which was manufactured to match the existing native limestone.



OLD TRAIL TOWN CENTER

Client: Old Trail Town Center
Location: Crozet, Virginia
Architect: Jones & Jones
Contract: \$6.2 million
Finish Date: December 2008

SPECIAL FEATURES

This 79,000-square-foot, multi-purpose facility includes 10 commercial spaces and 39 one-, two- and three-bedroom luxury apartments. There are eight multi-level apartments with handcrafted stairwells and luxury light fixtures. The exterior of the building includes two different brick types, EIFS and concrete siding.

There are three different types of roofing installed: shingled, metal and EPDM flat roofing. Cast stone accents and an elaborate wood trim system highlight the exterior.

Nielsen used its own crane to lift and place the two-ton copper plated clock tower cupola. Technologically advanced sprinkler, fire alarm and access-card entry systems are some of the sophisticated life safety systems installed at Old Trail.

Old Trail has a three-stop elevator to serve the residential units. High-quality carpet, tile, interior wood trim and kitchen cabinetry were installed to complete the elegance of this scenic town center. The clock tower, with its copper cupola and its pair of six-foot-diameter diameter clocks, can be seen from miles away.

DOGWOOD VILLAGE OF ORANGE COUNTY

Client: Orange County Nursing Home
Location: Orange, Virginia
Architect: SFCS
Contract: \$16.7 million
Finish Date: June 2009



SPECIAL FEATURES

This new 66-bed assisted-living facility is the next step in developing a senior living campus adjacent to the original 168-bed nursing home. The name was officially changed from Orange County Nursing Home and Home for Adults to Dogwood Village of Orange County.

The new facility doubles the nursing home's current assisted living capacity, while opening up additional nursing home beds.

The 90,000-square-foot, four-story facility is joined to the existing nursing home facility on the west end. It occupies about three of the site's remaining six and a half acres.

The building has a beauty salon, a billiards room, a card room, a library, a large multi-purpose room, an activities room, a fitness room and its own kitchen with a dining facility. Each resident room is equipped with a small micro-fridge unit and sink. The basement will contain resident storage rooms and lockers as well as the main mechanical spaces.

The HVAC system is comprised of a water-source heat-pump system with individual units for each resident room. The building is equipped with a cooling tower and a generator.

PAGE COUNTY AND LURAY HIGH SCHOOLS

Client: Page County, Luray High Schools
Location: Luray, Virginia
Architect: Fanning/Howey Associates, Inc.
Contract: \$53 million
Finish Date: June 2009



SPECIAL FEATURES

This project included the construction of identical 750-student high schools for grades nine through 12.

Each 131,000-square-foot masonry and steel facility features a 500-seat auditorium, 1,150-seat gymnasiums and cafeteria/foodservice facilities that will accommodate an immediate enrollment of 750 as well as future expansions to 900 students.

The 9,500-square-foot auditorium/stage features many distinct architectural features such as brick, split-faced block, drywall, cast-stone accents, structural steel, pre-fabricated spiral stairs, aluminum handrails with oak inserts, acoustical panels, ceramic tile and solid red oak trim. A key feature of the cafeteria/commons area is the 33-foot-high barrel and acoustic ceilings.

Throughout the building, there are nine different floor finishes including carpet, vinyl floor tile, linoleum roll goods, terrazzo flooring, wood gymnasium flooring, resinous epoxy flooring, urethane flooring, rubber tile athletic flooring and sealed pigmented concrete flooring.

The mechanical system includes four mechanical rooms, two 250-ton air cooled chillers, five 2.1 million BTU boilers and a 75,000-gallon water tank for fire protection.

Other educational spaces include a 2,200-square-foot band room, 2,800 square feet of computer labs and 5,000 square feet of science labs.



BROWNSVILLE ELEMENTARY SCHOOL

Client: Albemarle County Public Schools
Location: Crozet, Virginia
Architect: VMDO Architects
Contract: \$6.7 million
Finish Date: August 2009

SPECIAL FEATURES

The original school was constructed in 1965 with additions made to the building in 1996 and 2004.

The 31,950-square-foot project is comprised of a 9,000-square-foot pre-engineered metal building gymnasium; an approximately 1,900-square-foot cafeteria addition; 12 additional classrooms, a resource room and teacher workroom. There will be a courtyard between a portion of the existing building and the southern classroom addition.

Renovation of the existing kitchen, including new kitchen equipment and air conditioning, is to take place along with expansion of the existing cafeteria.

The architect has incorporated teaching gardens where the site allowed, along with natural lighting provided by Solartubes and clerestory windows in the classroom and hallways. The building has several canopies to shield the classroom windows from direct sunlight on the south side of the new addition. The site work includes an improved student drop-off area, bus canopy and relocated and expanded play areas.

This project is seeking LEED Silver certification.



Nielsen Employee Dan Hylton LEED-Accredited

Dan Hylton, estimator for Nielsen Builders, Inc., recently passed the Leadership in Energy and Environmental Design (LEED) exam to become LEED-accredited. LEED Professional Accreditation indicates that individuals have detailed knowledge of LEED project certification requirements

and processes and an understanding of integrated design principles. Construction industry practitioners earn LEED accreditation when they successfully demonstrate these proficiencies on a comprehensive exam.

Dan is responsible for soliciting subcontractors and suppliers for the budgets and bid proposals on upcoming projects, compiling and managing bids, project estimates and budgets, preparing takeoff and estimates for self-performed work, and maintaining and developing the estimating database. He also assists Director of Estimating Jeff Deavers with the evaluation of project estimates during and after completion of all phases of the project. He has been with Nielsen since 2002.

Dan earned a bachelor of science from Virginia Tech. His experience includes Page and Luray County high schools, the JMU CISAT Residence Hall and Wilson and Stuarts Draft high schools.

The U.S. Green Building Council (USGBC) is a coalition of building industry leaders working to promote buildings that are environmentally responsible, profitable, and healthy places to live and work. The USGBC strongly supports the LEED program. Its Green Building Rating System™ is the nationally accepted benchmark for the design, construction and operation of green buildings. LEED rates buildings in five key areas: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.



Kathy Baxter Named SWAM Coordinator

Kathy Baxter, estimator, has been named SWAM coordinator. In this new role as SWAM coordinator, she is responsible for soliciting subcontractors and suppliers for the budgets and bid proposals on upcoming projects; compiling and managing bids, project estimates and budgets;

and preparing takeoff and estimates for self-performed work. In her SWAM role, she maintains the small-, woman- and minority-owned subcontractor database; identifies and

registers current and future contractors who qualify as small, woman-owned, or minority-owned businesses; and assists in identifying SWAM contractors to contact for initial or follow-up meetings. Kathy also assists in developing initiatives to enhance the Nielsen SWAM program.

Kathy has been with Nielsen since 2006. She has a bachelor of science degree from North Carolina State University. Her experience includes Generations Crossing and UVA Clark Hall Lab renovations.



Nielsen Employee Scott Baxter LEED-Accredited

Scott Baxter, senior project manager for Nielsen Builders, Inc., recently passed the Leadership in Energy and Environmental Design (LEED) exam to become LEED-accredited. LEED Professional Accreditation indicates that individuals have detailed knowledge of LEED project certification

requirements and processes and an understanding of integrated design principles. Construction industry practitioners earn LEED accreditation when they successfully demonstrate these proficiencies on a comprehensive exam.

Scott is responsible for the management of all construction activities to ensure that a project is built in accordance with the design and that the finished product meets our client's expectations. He provides oversight of the entire project management team and maintains communication with the design and client teams. Scott ensures the proper allocation of staffing and resources to maintain the schedule and keep the project on budget. In addition, he is responsible for project budget development, value-engineering analysis, schedule review and the development of performance objectives.

Scott is currently the project manager for the JMU Performing Arts Building on Main Street and recently completed the New Library on the JMU CISAT campus.

The U.S. Green Building Council (USGBC) is a coalition of building industry leaders working to promote buildings that are environmentally responsible, profitable and healthy places to live and work. The USGBC strongly supports the LEED program. Its Green Building Rating System™ is the nationally accepted benchmark for the design, construction, and operation of green buildings. LEED rates buildings in five key areas: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.



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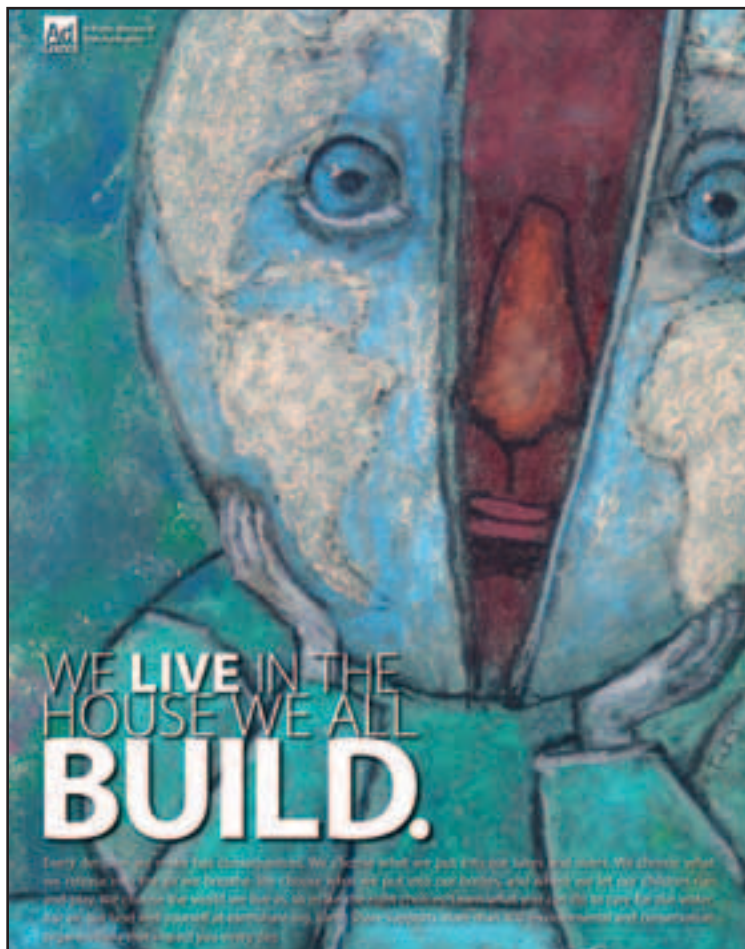
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