



YOUR SPACE: A²E



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ARCHITECTURE, ENGINEERING AND INTERIOR DESIGN SERVICES

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Change Orders: Causes and Preemption

BY RICHARD FANELLI, AIA, CFM, IFMA FELLOW



Recently we polled a group of general contractors specializing in commercial projects. Seventeen responded to the survey. Based on their thoughts, it was determined the most common causes of change orders were as follows:

- * 58% caused by client-initiated changes.
- * 17% due to errors and/or omissions in the drawings and/or specifications
- * 17% due to field conditions.
- * 9% due to any number of other situations, including permit or code compliance issues, differences between bid drawings vs. the final construction drawings and substitutions of materials due to lead time and value engineering.

Change orders are usually costly and can create delays in the construction completion schedule. Many can be avoided by focusing the entire project team in a singular goal: the client's satisfaction. Also, by establishing quality control procedures early in the process.

Here are some best practices that can be implemented:

1. Get the end users to sign off on space plans, finish selections and construction documents. Keep these on file, in case you have to refer to them at a later date. Inform the end-users that any changes or increases to the scope of work will be charged back to them and will affect the completion date. This includes A&E fees as well as construction costs. They may think twice before suggesting any changes!
2. Errors and omissions in A&E drawings can be drastically reduced by increasing the communication between the architectural and the engineering teams. Insist that the engineers get involved early in the design process so that they can have input in the design of the space. This can be done with a simple project kickoff meeting among the facility manager, the architect and the engineers. This should occur after the programming is completed and before the space planning is finalized. Just this step alone could save on construction costs. This ensures that the proper floor space is allocated for electrical and mechanical equipment. The A&E team should then have a follow-up meeting after the engineering design intent package is completed by the architects. Power and communications plans are released along with the lighting plan, the equipment plan and the plan indicating the placement of slab to slab partitions. A second A&E coordination meeting is advisable when the drawings are at 80% to 90% complete. The A&E team should "walk" the facility manager and their staff through the drawings. It helps to distribute the drawings a day or two before the review meeting, in this way a list of questions and concerns can be developed.
3. Most field condition problems are hard to avoid without exploratory demolition. The majority of facility managers do not want to disrupt the space prior to the overall demo phase. Never trust that as-builts as the final authority. Field verify overall measurements and measurements between fixed elements. Check above ceiling tiles to view obstructions that may keep you from achieving the required clearances. If the structure's original base building construction documents are available, review them carefully. It is amazing what field conditions can be easily uncovered with minimal research.
4. Permit and code issues can be avoided, in general, by conducting a preliminary code review of the space plan by conferring with the fire marshal. Prepare a meeting report documenting the resolution to the issues so that you can refer to it, should the need arise. Of course, the field inspector will always have the last word on how the A&E drawings address the code requirements. Take a hard look at issues that typically come up in the plan review process such as ADA compliance, egress and life safety upgrades.
5. Beware of general contractors' substitution of materials and equipment. Make sure that the alternate selected is of equal quality. If it is inferior to the original specification, and you are willing to accept it, make certain that you receive a fair credit. Value engineering doesn't necessarily have to mean "job cheapening."

People Page



Allyson DiPaolo has not wasted any time making her mark at WNA. She earned a passing score on the FE examination giving her the title of Engineer-in-Training (EIT). The exam consisted of 180 multiple-choice questions during two 4-hour sessions. This was a closed book exam with only reference material and a basic calculator allowed. Passing the FE exam is an important step towards professional licensure. After a certain number of years of experience, Allyson will be eligible to take the Professional Engineer test to become a licensed electrical engineer.

Awards

FASEB Project

The new facility designed for the Federation of American Societies for Experimental Biology (FASEB) in Bethesda, MD won the Associated Builders and Contractors Inc. (ABC) Award for commercial construction \$5 million to \$20 million category. The project was also the recipient of the NIAOP award for Best Build to Suit Corporate, for the \$5 million to \$20 million category.



Left to right: Danny George and Matt Shea of Hubert Construction; Barry Dunn of Barry Dunn & Associates; Tami Hemgen, Scott Hallam, and Robin Di Giuseppe of Hubert Construction; Jeff Yocum of FASEB; Pete Hanna of Hubert Construction; Richard Fanelli of Fanelli-McClain Design Studios; and J.J. McCarthy of Hubert Construction

Speaking of certification, **Rich Fanelli** added CFM to his continued growth as an expert in the Facilities Management field. His informative presentation entitled, "Designing Flexibility into Your Workplace," was heard by members of the Capital Chapter of IFMA's Facility Tools, Trends and Technologies (FT3) event at Gannett on June 1, 2005.

Rich will speak again, this time with Diane MacKnight and Jim Whittaker, at IFMA's World Workplace in Philadelphia in October. The presentation will discuss the methods of working effectively with consultants. Along with his continued series of articles appearing in the Washington Business Journal, Rich also contributed two chapters to the BOMI Institute's publication on Building Systems. The first chapter discussed a wide range of topics regarding walls and wall coverings. The second reviewed ceilings and floors. Rich is also providing voice overs for several of IFMA's on-line courses that will be launched this summer.

Washington Nationals



Our summer outing was at Pfitzner Stadium in Woodbridge, VA, to watch the Potomac Nationals. Everyone appreciated the sun, food, fireworks and company.



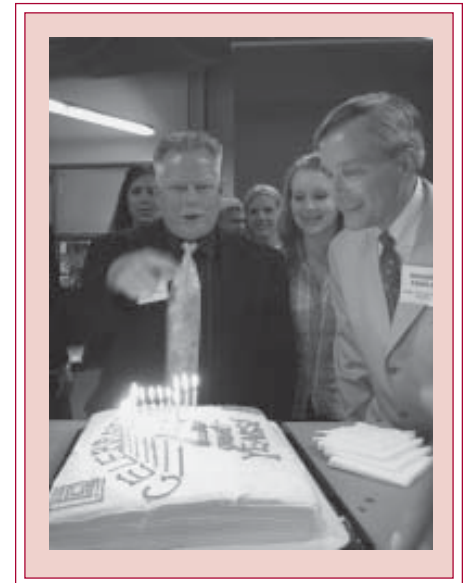
Renee Collins, Amy Smyth and Lisa Heidemann of The Washington Post enjoyed a winning day at RFK stadium.

Twentieth Anniversary

After twenty years of success in the architectural and design field, Fanelli McClain felt it was a perfect time to share our good fortune with many of those with whom we've worked. On April 28th we welcomed our current and former clients and those who have supported our firm to a party at our new office.



We enjoyed great music performed by *Bobbe Shore and First Call*, scrumptious food catered by *Windows* and of course the company of our special friends.



WNA's Report Card

By **ALLYSON DiPAOLO**

My one-year anniversary with Williams Notaro & Associates is just around the corner, so I thought it fitting that I should also give the company a yearly review from my perspective.

Before joining WNA, I worked for an electrical contractor and a utilities corporation. After just one year working at WNA, already I can see quite a difference in their methodology and attitude.

For one, Quality Control (QC) meetings are taken very seriously. Every Wednesday, members of each of the disciplines devote their lunch hour to improving in-house engineering standards that in return strengthen our designs. While sharing lunch, we cover several topics from critiquing a mechanical detail, to redesigning a lighting fixture schedule, to improving company-wide standards.

Another thing I noticed within weeks of joining WNA was that the team atmosphere is not stereotypical of engineers. Our open office design welcomes interaction and coordination between disciplines. The lead engineers are not just knowledgeable - they truly are accessible and willing to explain different design ideas even to a staff member outside their discipline. Unlike some larger engineering firms, WNA treats its employees as valued individuals.

But the most important characteristic that WNA emphasizes is client relations. Not just knowing who your clients are, but more importantly, knowing what your clients want, need and expect. I know this sounds elementary, but it's amazing how this factor can be overlooked in other firms. Before designing a project, each WNA engineer fully understands what the client wants, whether it's having a high-end space, to having only the basics. Additionally, we perform extensive site visits to avoid many costly and time-consuming problems that may arise during construction. We check with the client often during the design phase to verify we are conforming to their vision of the project. It's also a great asset to be able to regularly share ideas and information with the designers of Fanelli McClain.

Caring for their clients and employees is what really sets WNA apart from its competitors. They receive an "A!"

Events



ZAPPED!

Those of us daring enough for an afternoon of indoor lasertag met at Ultrazone in Sterling, Virginia, for a pizza lunch and then divided up into teams. We strapped on our vests which contained electronic sensors on the front, back and shoulders, grabbed our laser guns and stepped into a darkened maze for an afternoon of fun!

COMMUNITY OUTREACH

All of us enjoy participating in efforts to share with the great community. Fanelli McClain and WNA have collected over \$1,000 to donate to the Red Cross for the Hurricane Katrina Relief effort. Nelson Gault participated in a bike-a-thon for National Multiple Sclerosis Society. Allyson Di Paolo headed the joint drive to contribute Thanksgiving pies for those in need on behalf of Food and Friends.

New Staff

In July, WNA welcomed **Raul Gomez, PE** as a senior mechanical engineer. Graduating Cum Laude from the New York Institute of Technology with a B.S. in Mechanical Engineering, Raul also holds his Professional Engineer license in the states of Virginia, Maryland, Florida and the District of Columbia. With over twenty years of cumulative design and project management experience, Raul will manage the Inter-American Development Bank, DARPA and Piper Motor Sport projects. Others will be added later.



Earning a B.S. in Mechanical Engineering from Virginia Tech, recent graduate **Mike Nguyen** joins WNA as Mechanical Engineer. Maintaining an overall 3.0 GPA and placing on the Academic Dean's List in 2003 and



2002, Mike also found time to complete a one-year Co-Op at Micron Technologies, Inc., during which he worked primarily on the design of the mechanical systems in a cleanroom manufacturing facility and contributed to many critical projects which supported the facilities and production.

Brian Soskey is a senior in Mechanical Engineering at Virginia Tech. Interning with WNA as an Engineering Assistant, Brian has been providing assistance in CAD layout and assembling of mechanical, electrical, and plumbing construction documents. His past experience includes



working two summers as an intern at **Becton Dickinson Diagnostic Systems**, where he was required

to model parts and draft drawings using I-DEAS.

This past June, Fanelli McClain welcomed **Ben Wolferman** to the team as our summer intern. He will be entering his final year in **Virginia Tech's**



Architecture program this Fall. Ben has been gaining hands-on experience in the field and in front of the computer. Past experiences for Ben include interning at Sprocket Design-Build in Denver, Colorado, where he was responsible for drafting construction documents and model building.

Defining a good structure is key to successful projects

By **Richard Fanelli, AIA, CFM, IFMA Fellow**

When you are responsible for starting a new project, the tasks ahead of you can be overwhelming unless you develop a structure to deal with it.

All projects should have a structure developed before their execution. The two broad categories of a project structure are the planning stages and the implementation stages.

Based on the type of project that you are managing, the detailed breakdown of the structure will vary.

Project planning phases. You should begin by defining the project's goals and objectives, which will identify the desired end result and the major steps that will need to be accomplished in order to meet it. The project objectives should be SMART: specific, measurable, assignable, realistic and time-related.

In the process of defining the project goals, you should also determine the project's success criteria--the success criteria --the metric by which the level of success is measured. Success criteria may include issues such as profitability, meeting the project budget and schedule, improving productivity, increasing quality or satisfying the end users. In the defining phase, you must also determine the resources that have already been allocated for the project or develop a schematic, "back-of-the-envelope" idea of the resources needed. Resources are not just money--they can also be equipment, internal personnel, and outsourced services. The actual resources required will not be determined until you get further into the planning process.

The last issue that should be defined in the initial planning phase are the project assumptions and risks. Assumptions may include availability of financing, resources and personnel or issues involving schedule adherence. Risks may include how the project might

be affected by unexpected budget overruns or schedule delays. All of the above project criteria should be documented in a brief project overview.

Project planning process. This step involves the detailed planning of the project. This is where you must think through the project phases and steps. It may be helpful to get the input from other team members or outsourced experts.

Create an expanded outline, or work breakdown structure, broken down by project phases with subtasks below each major phase. Each task that you list should have a definable beginning and end.

Think in chronological order and think about how each task is connected to the task that follows.

Also, on your project spreadsheet, create a column with possible project team assignments showing who might be responsible for each task. I find it helpful to start outlining project phases and tasks using a project scheduling software program, such as Microsoft Project. You can plug in the initial time frame for each task and assign the predecessor link to the previous task, which will help you to visualize the project's critical path as well as the rolled-up time duration of the project phase. With most project management software programs there is a column where you can list assigned personnel or services responsible for each task.

The project planning phase should also include the development of a preliminary project budget that will be more detailed than the initial project budget previously prepared. Several methods of developing a preliminary budget will be discussed in my next column.



Richard Fanelli is president of Fanelli-McClain Design Studios in Fairfax, which provides interior commercial and base building architecture with in-house engineering. E-mail: rfanelli@fmstudios.com Phone: 703/563-0380, Ext. 121.

On the Boards

New Clients

Fanelli McClain's and Williams Notaro's strategic alliance has been awarded contracts by **Fannie Mae** and the **Inter-American Development Bank (IDB)** for long term A&E work. **Fannie Mae** is the largest non-bank financial services company in the world and Fanelli McClain has been hired to provide construction documents for its headquarters on Wisconsin Avenue in Washington, DC and its Reston, VA facility. **IDB** is the oldest and largest regional development bank dedicated to multilateral financing for economic, social and institutional development projects and trade and regional integration programs in Latin America and the Caribbean. Fanelli McClain's first projects at **IDB** will be the redesigning of its bookstore, a building facade renovation and the expansion of its fitness center, while Williams Notaro will provide the MEP services.



The Tiffany Building, 360 Post Street, San Francisco, California

Williams Notaro is the prime consultant for a major renovation of the HVAC system in the Tiffany Building at 360 Post Street in San Francisco, California. **Real Estate Capital Partners** has enlisted Williams Notaro to completely replace and modernize the cooling and heating system which will continue to operate in a fully occupied facility. The initial phase, currently under design, is the replacement of the entire central plant, as well as the domestic water booster pump system. Emphasis on energy efficiency and high quality equipment makes this a challenging and unique project. Fanelli McClain will provide architectural support for this mostly MEP project.

Recently Completed

Another ongoing collaboration is **The Washington Post's** 8th and 9th floor project, which is nearing completion and, like the other Post projects, involves the full design services of both firms.. The 8th floor was designed to conform to The Post's building standards with some upgraded finishes, while the 9th floor was designed to stand out as the executive floor featuring several upgrades. Such special features include large architectural curves flowing throughout, natural lighting from its new central skylight, custom designed curved wood administrative workstations, a high tech boardroom, upgraded bathrooms and access to a new outdoor garden court designed by Fanelli McClain.

Fanelli McClain and Williams Notaro will begin working together on **The Washington Post's** latest project involving its 40,000 SF 4th floor. As you step out of the elevator and look directly into the newsroom and TV studio through the glass wall. However, the main focal point is actually the stairs, which were designed to look as if 'floating', yet serving a very important purpose by connecting the 4th and 5th floor newsrooms.



The Washington Post Executive Offices



National Community Reinvestment Coalition offices and conference facility at 727 15th Street, NW

The concept behind the design development of the offices for **NCRC** (photo below left) was based on the great diversity of the organization's employees. The colors and textures were selected to create the dynamics of a vital community. Each of the spaces is vibrant and highlights this energetic association's variety of activities. **NCRC** (National Community Reinvestment Coalition) is a national trade association representing community-based organizations by working to increase fair access to credit, capital and banking services. They recently purchased a 47,000 sq. ft. a building near the White House, for its own use and to lease to related non-profit groups



British Broadcasting Corporation, Washington, DC

The British Broadcasting Corporation in Washington, DC, combines the Newsgathering, World Service and Information Broadcasting facilities in its new 13,000 SF facility. A main focal point of this project is the television studio, which is designed to be the center of the space plan. The office also consists of radio cubicles with adjacent radio studios, multiple edit suites and a large newsroom. Flexibility was built into the newsroom design to accommodate an overflow of additional staff, when key events occur. Gantries hang from the ceiling to provide views of the televisions for all the staff and visitors.

To save demolition costs and provide a unique gathering place, the pantry has been elevated over existing steel beams that were originally used to support a battery back-up system. The walls surrounding the pantry are lowered with countertops, to create a view into the newsroom. Networked cafe tables are in the center of the pantry giving staff an alternate place to work.



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Capabilities

Are you aware that Fanelli McClain can offer the following services?

- STRATEGIC FACILITIES PLANNING
- CAFM DATABASE DEVELOPMENT AND MAINTENANCE
- SQUARE FOOTAGE CHARGEBACK ANALYSIS
- BASE BUILDING ARCHITECTURAL DESIGN
- PROJECT BUDGET AND SCHEDULE DEVELOPMENT
- ASSET INVENTORIES
- WEB-BASED PROJECT COLLABORATION
- PRE-MOVE AND POST-MOVE OCCUPANCY SURVEYS
- PROJECT CLOSE-OUT METRICS ANALYSIS
- ADA COMPLIANCE SURVEYS

WNA's experienced staff can provide:

- DUE DILLIGENCE STUDIES AND EVALUATIONS
- CLEAN MAILROOM PROCESSING FACILITY DESIGN
- CONSTRUCTION ADMINISTRATIVE SERVICES
- BUILDING MEP DESIGN UPGRADES

Under Construction



Acterna is the world's largest provider of communications test solutions for telecommunications and cable network operators. WNA was retained to perform an evaluation to determine the feasibility of modifying Acterna's manufacturing facility's existing air distribution system to support an open office environment. Our recommendations were approved and design closely followed.

The design's primary considerations were to separate the manufacturing facility from the offices, add offices, revise the space plan and improve air distribution, while maintaining occupancy during construction and minimizing construction costs. With the elevated cost of sheet metal, fabric air distribution systems have been found to be a cost effective means to condition open space environments.

New Innovations



**Be sure to visit our
websites:
FMSTUDIOS.COM
and
WNAINC.COM**