

FMI/CMAA Eleventh Annual Survey of Owners



RISING FROM THE ASHES OF
RECENT ECONOMIC WOES



MANAGEMENT CONSULTING • INVESTMENT BANKING
for the ENGINEERING and CONSTRUCTION INDUSTRY



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EXECUTIVE SUMMARY

“The only man I know who behaves sensibly is my tailor; he takes my measurements anew each time he sees me. The rest go on with their old measurements and expect me to fit them.” — George Bernard Shaw

Certainly, the current economic climate is one in which the construction industry must take new measurements if it expects to quickly recover. It is often said that the only constant is change. But that does not count *talk* about change, which is at least as common and is often meaningless if not misleading. It is time to measure anew.

The *FMI/CMAA 11th Annual Owners Survey* has been conducted in an atmosphere of considerable disagreement over whether the national economy is recovering and if so, how quickly. A major federal infusion of stimulus funding in 2009–2010 was meant to soften the impact of the recession, as well as accelerate the recovery through investment in infrastructure and other resources. Fear of a double-dip recession exists while talk of further stimulus spending, specifically for infrastructure, is inciting optimism. We can assume the construction economy will recover eventually – perhaps this year, perhaps next. But what then? What fundamental things will have changed in our business that will not “get back to normal?”

Understanding the fundamental change is what the Owners Survey set out to measure. In general, survey questions fell into these broad areas:

- Degree of staffing change, document quality changes, service quality changes, and other disruptions.
- Timing of future rehiring and spending increases.
- Perceptions describing how owners have evolved in the last 24 months and what it means for the industry.
- Shifts in project delivery system and procurement.

Owner’s response to the economic conditions will profoundly affect their ability to plan, design, procure and manage projects effectively. Based upon the significant staffing reductions reported, owners will increasingly face a choice: Scale back their capital design and construction activities (at the risk of compromising mission), risk suboptimal outcomes as a result of staff overwork, or find additional resources outside of their organization. This last choice offers service providers who have aggressively positioned themselves, rather than waiting for a call for help, a unique opportunity to fill staff and expertise gaps for owners.

More than 300 owners responded to the survey and provided extensive qualitative comments on the trends and conditions they perceive in the construction industry. A sampling of these comments illustrates the most widely shared impressions about the industry as it emerges from recession:

- *“Owner organizations have downsized too much and cannot adequately staff significant project workloads.”*
- *“The industry is trying to do more with less.”*
- *“Downsizing has become the order of the day.”*
- *“All parties involved in capital projects, from owner to suppliers, have reduced workforce [size] and are short of resources.”*
- *“Large cuts in capital program spending by owners have resulted in significant purging of construction industry providers...”*
- *“Both design and CM firms have reduced staff.”*

How owners perceive the choices they are faced with and the path they choose to follow will continue to shape the practice of professional construction and program management long after the current economic downturn has passed. Indeed, these permanent changes in the business environment may be the recession’s most lasting and important legacy.

HIGHLIGHTS

- ↓ **Owners have taken drastic steps to reduce staff and expense.**
 - A variety of means were reported including attrition (38 percent), layoffs (32 percent), early retirements (19 percent) and mandated unpaid time off (11 percent).
- ↓ **More than 50 percent of owners dramatically cut their head count in the last two years.**
 - Eighteen percent reduced staff by more than 20 percent.
- ↓ **Owners' hiring plans are "frozen."**
 - Whether due to an official hiring freeze (30 percent) or a de facto freeze dictated by nonexistent funds (28 percent), a total of nearly 60 percent of responding owners say they are not hiring.
- ↓ **Hiring will not resume anytime soon.**
 - More than half of all owners say they expect to resume hiring either in 2012 (10 percent), 2013 or later (14 percent), or never (28 percent).
 - It's worth repeating: 28 percent of responding owners say they expect never to resume hiring. However, a significant minority do report plans to hire in 2010 (20 percent) or 2011 (22 percent). In the view of more than half of all owners, diminished staff resources are a permanent condition.
- ↓ **Overworked staffs result in more errors and document quality problems.**
 - Owners report that the quality of design documents worsened in the last two years (34 percent), as has the quality of construction documents (33 percent), external construction management (16 percent) and construction execution (18 percent).
 - However, to keep these responses in perspective, as long ago as the *5th Annual Survey of Owners* (2004), more than 70 percent of respondents complained of a decline in the quality of design documents. This trend has also been widely reported and discussed in the industry media, and may in fact be unrelated to the adequacy of owner design and construction management staff.
- **Design-bid-build continues to hold sway as the most used project delivery method.**
 - Some 55 percent of owners describe their approach to construction execution as "most like design-bid-build," while 24 percent said they took "a blended approach," and about 18 percent said their approach was "most like design-build." For large projects, however, the dominance of design-bid-build seems to be eroding, with only 47 percent of owners reporting using that method compared to 24 percent reporting a blended approach, and 21 percent saying their approach was most like design-build.
- ↑ **When hiring picks up again, it will take some new forms.**
 - Although 29 percent of owners expect their hiring practices in the future will be "normal," significant percentages have other expectations. Fifteen percent expect to fill their future staff needs by hiring from design, CM or construction firms. Ten percent expect to hire less expensive staff. Eight percent say they will hire retirees to work part time, and 7 percent say they will retain current staff beyond their expected retirement dates.
- ↑ **Use of program management has doubled since 2007 and accounts for 10 percent of reported capital spend.**
 - Despite reported shifts toward more traditional management approaches, program management use is rising, perhaps directly related to reported staffing changes.
- ↑ **Improvement in service provider quality reported.**
 - Twenty-eight percent report improvement in construction management service quality and 44 percent report improvement in construction execution quality.
- ↑ **Pockets of prosperity exist.**
 - Fifteen percent of owners have increased staff by more than 5 percent in the previous 24 months.
- ↑ **Staff augmentation through opportunities to hire higher quality or expertise abound.**
 - Many owners who have reduced staff will look for high quality A/E, CM and construction firms offering value-added services.
 - Hiring opportunities for highly experienced, premium staff exist around the U.S. but are less prevalent abroad.

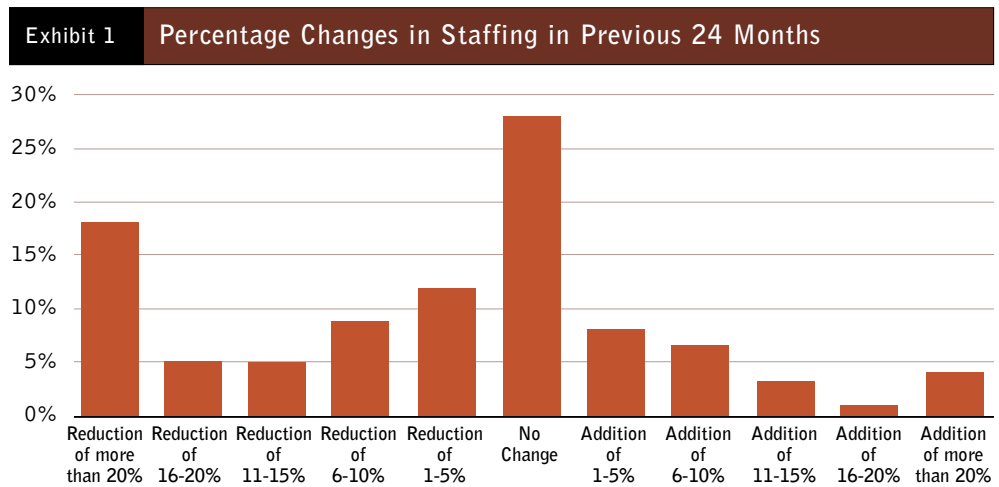
DISRUPTION

Readers of this report will recognize that the last two years have been highly disruptive to construction industry participants: owners, CM firms, contractors and vendors or suppliers of all types. This disruption has many faces, including job loss, importance of price, importance of scope management, project finance challenges, project delivery system shifts and the like. Relative to job loss in the U.S., construction industry statistics describing the shedding of 2 million construction jobs are well-known. What is less well-known is the impact on design and construction departments within large owners in North America and globally.

Changes in Owner Staffing

The responses to the 11th annual study show that more than 70 percent of owners experienced some level of significant staffing change in the previous 24 months. The degree of reduction in some instances is very troubling. In Exhibit 1, 18 percent of owners report reducing staff by greater than 20 percent, and an additional 31 percent of owners report staff reductions of between 1 percent

and 20 percent. Thirty-eight percent of owner staff reductions occur through attrition, 32 percent through layoffs, 19 percent through early retirement and 11 percent through mandated unpaid time off.



Restrictions in Hiring

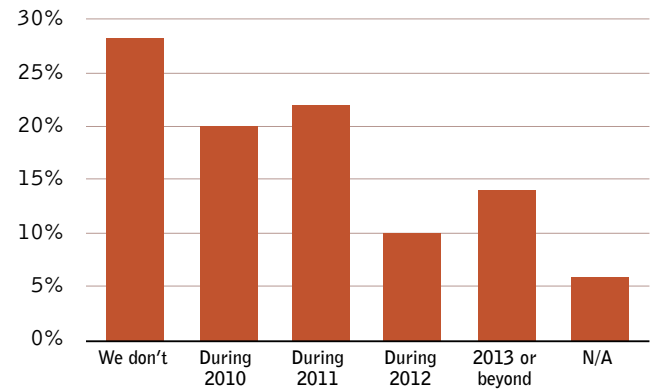
The degree of disruption to the construction industry will continue for some time and while there are many owners that would like to hire, multiple restrictions exist (Exhibit 2):

- 30 percent report a hiring freeze.
- 28 percent of owners report that no funds are available.
- 9 percent cannot find or are unable to attract what they consider qualified staff.
- 5 percent report other restrictions, ranging from pending mergers to government or regulatory mandates preventing hiring.
- 4 percent are priced out of the market due to uncompetitive salary and benefit offerings.



Typically, job creation is the harbinger of economic improvement, and so it will be with owners once they are prepared to either rehire internal staff or procure services externally. It does not appear that the construction industry can expect a revival, using owner's internal staff hiring as a yard stick, until beyond 2012. In Exhibit 3, owners were asked when they anticipate addressing the need for staffing. Twenty-eight percent state that they do not ever anticipate rehiring the employees released over the previous 24 months. Another 24 percent will wait until 2012 at the earliest to begin internal rehiring.

Exhibit 3 Future Timing of Additions to Staff



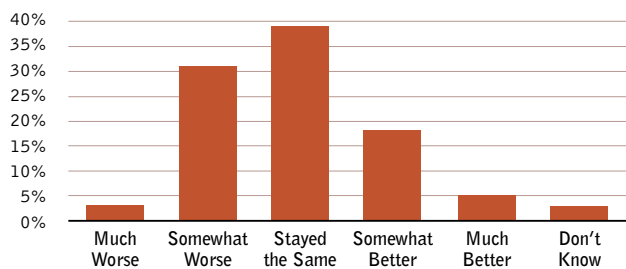
Changes in Document and Service Quality

Complaints and disruptions due to changes in quality of both documentation and services are widely reported. Going back to 2004, respondents to the owners study have reported a decline in document quality. The 11th annual study identifies four areas in which document and service quality are particularly problematic. Thirty-four percent of respondents report a reduction in design document quality, and 33 percent reported a reduction in construction drawing quality. In the delivery of services, 16 percent reported worsening performance of construction management services, and 18 percent reported worsening construction execution.

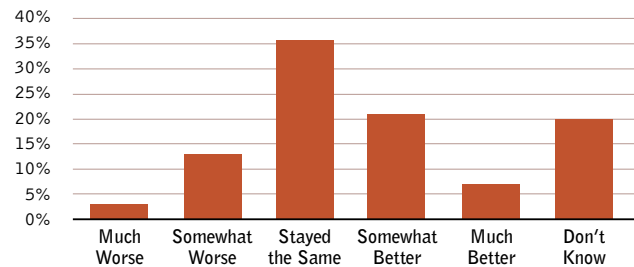
In spite of the degree of disruption experienced in the construction industry and reported through this survey, there is cause for optimism. Like a phoenix rising from the ashes, there are already signs of improvement.

Exhibit 4 Changes in Document & Service Quality

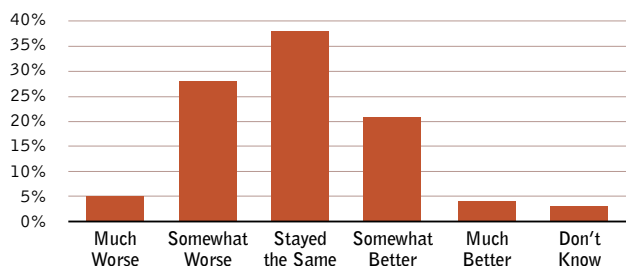
Quality of Design Documents



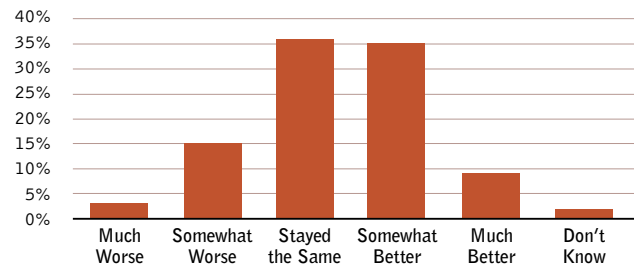
Quality of External Construction Management Services



Quality of Construction Documents



Quality of External Construction Execution



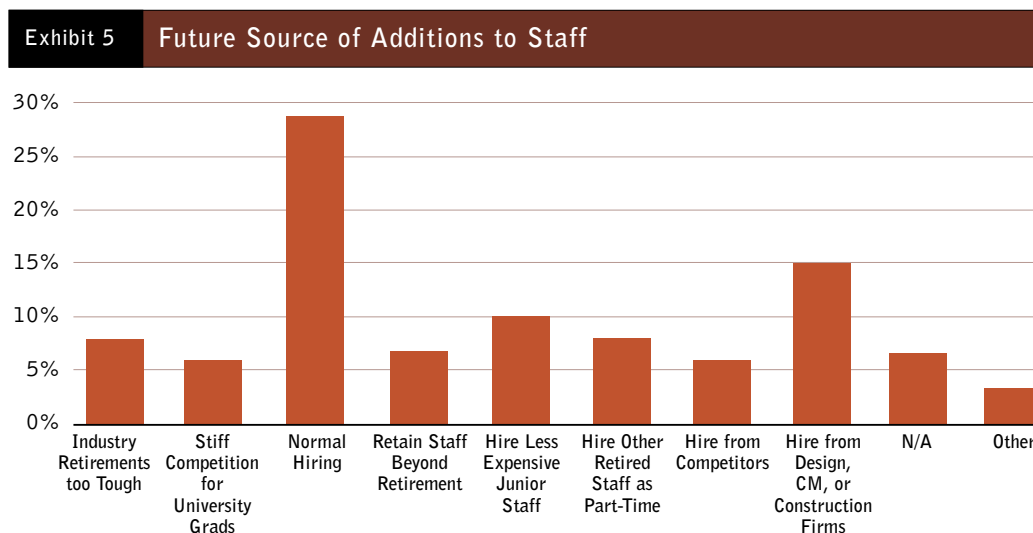
PHOENIX RISING

The story of the phoenix is one of rebirth. The construction industry, and more importantly, the owners or buyers of construction services that lead it, are already reporting some promising signs of improvement:

- Fifteen percent of owners have increased staff over the previous 24 months by more than 5 percent (**Exhibit 1**).
- Forty-two percent of owners began in 2010 or will start in 2011 to rehire staff lost in the previous 24 months (**Exhibit 3**).
- Staff augmentation options abound for the 28 percent of owners who report that they do not ever anticipate rehiring staff lost in the previous 24 months – they are still reporting significant capital spends and will need engineers, managers and the like to continue effective execution of their work (**Exhibit 3**).
- Twenty-three percent of respondents report an improvement in design document quality, and 25 percent reported an improvement in construction drawing quality (**Exhibit 4**).
- Twenty-eight percent report improvement in construction management services, and 44 percent report an improvement in construction execution (**Exhibit 4**).

Sources of Future Staff

Perhaps the best indicators of industry health are willingness, budget and approach to support hiring. Fourteen percent of owners anticipate challenges in finding new staff, either due to retirements or competition, while 29 percent expect normal staffing challenges and opportunities (**Exhibit 5**). A total of 56 percent anticipate being forced to use an alternative approach to hiring, including retentions beyond retirement, hiring junior staff, use of part-time staff and hiring from competitors, designers, CM firms or construction service providers.



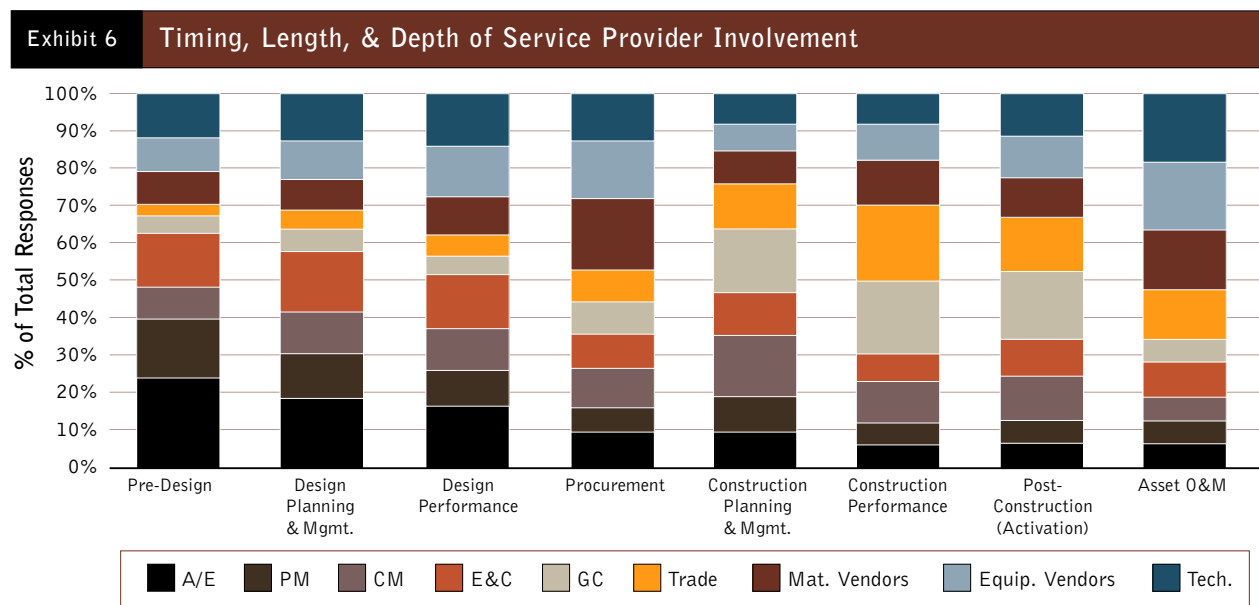
Collaboration and Degree of Integration

FMI and CMAA are true believers that both collaboration and integration yield significant improvements in capital construction performance. In the 2006 owners study, this performance improvement ranged from 3-6 percent across the management cost of the total capital spend.¹ One way to measure the degree of collaboration and integration is to establish the point at which a service provider or owner's internal staff is actively involved. Exhibit 6 shows the timing, length and depth of involvement of various types of service providers. The earliest phases of a capital construction program are dominated by involvement from

¹ FMI Corporation, "FMI/CMAA Seventh Annual Survey of Owners, C2+2C=LC, The Solution to Low Cost Capital Programs," Fall 2006, pg. 3.

A/E firms, program management firms and engineering & construction firms (E&C firms are reported as primarily performing in an engineer, procure, construct or EPC approach). CM firms tend to have only modest involvement early in the process, beginning with pre-design and accelerating through construction planning and management, where they become critical, as demonstrated by their larger portion of the colored column in Exhibit 6. In contrast, trade contractors do not really begin to play a significant role until construction performance and activation, where they are essential.

Opportunities exist for more dramatic involvement by all types of service providers earlier in the process. The reported reduction in staffing and difficulty finding future staff create a host of prospects for visionary service providers to step in and fill this void as the construction industry rises from the ashes. The increasing use of Building Information Modeling (BIM) and other solutions that require integration are likely to force this issue forward. Service providers on the front end of this trend will benefit by establishing deeper and broader relationships with owners today.

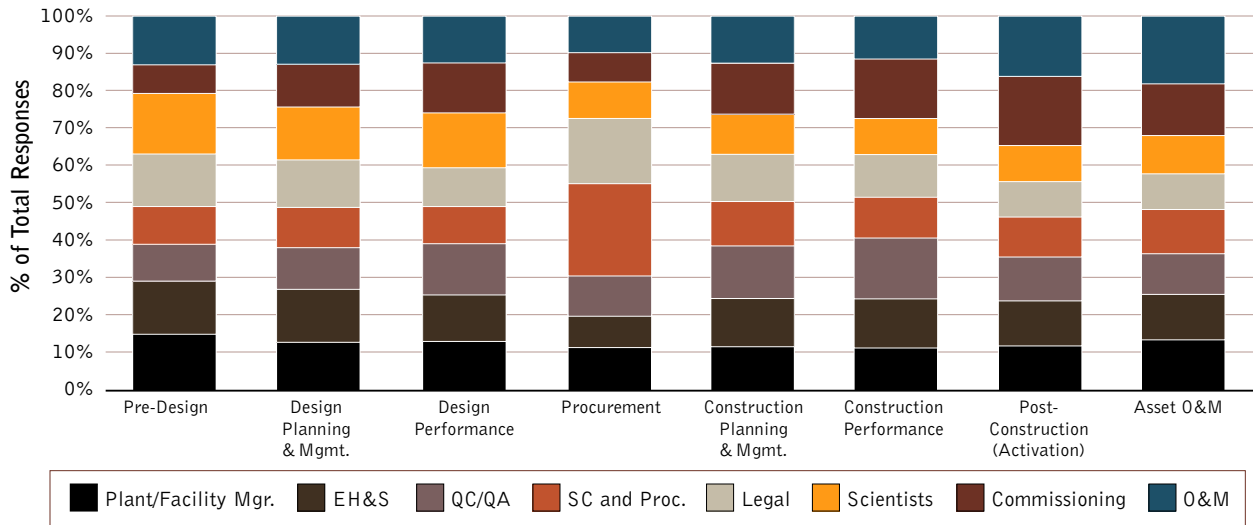


In contrast to the variable involvement of external service providers, the timing, length and depth of involvement of various internal staff are relatively consistent, with a couple of notable exceptions. During the procurement phase, both supply chain and legal departments dramatically increase their involvement. In addition, the post-construction activation and O&M phases see a dramatic ramp-up in the involvement of O&M staff and staff involved in commissioning (Exhibit 7).

Service providers who have aggressively positioned themselves, rather than waiting for a call for help, have a unique opportunity to fill staff and expertise gaps for owners with early and rapidly growing construction programs.

A related nuance that progressive service providers will leverage is the understanding of how owners place perceptions of importance on the various types of services and service providers with whom they execute their capital construction programs. In Exhibit 8, owners were asked to rate the importance of various types of service providers to the execution of their capital construction program. A scale of 1 to 10 was used and, on average, engineering firms were rated as most critical. Segregating for different types of owners and construction yielded some differences of note. As an example, federal owners rate CM firms fourth most important, only behind architects, engineers and E&C firms, all of whom are providing extensive upfront services in the earliest phases of planning and design (Exhibit 8).

Exhibit 7 Timing, Length, & Depth of Internal Staff Involvement



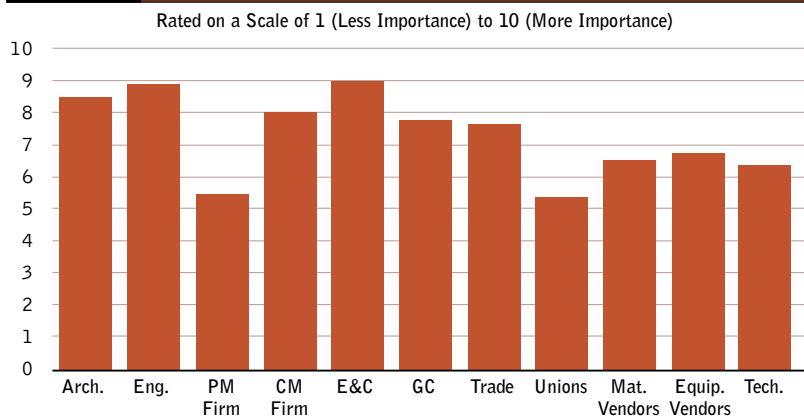
Lean Construction Techniques

Lean construction techniques, six sigma efforts, Total Process Reliability² and continuous improvement exercises are gaining traction with construction owners who are attempting to eliminate waste from their capital construction process and accomplish more with fewer resources. The hiring challenges faced by owners for 2010 and anticipated in 2011, based upon their feedback, will create fertile ground for service providers who can bring this type of capability to the table.

Exhibit 9 describes owners' perspectives on eight forms of waste and where they reside within the capital construction chain.

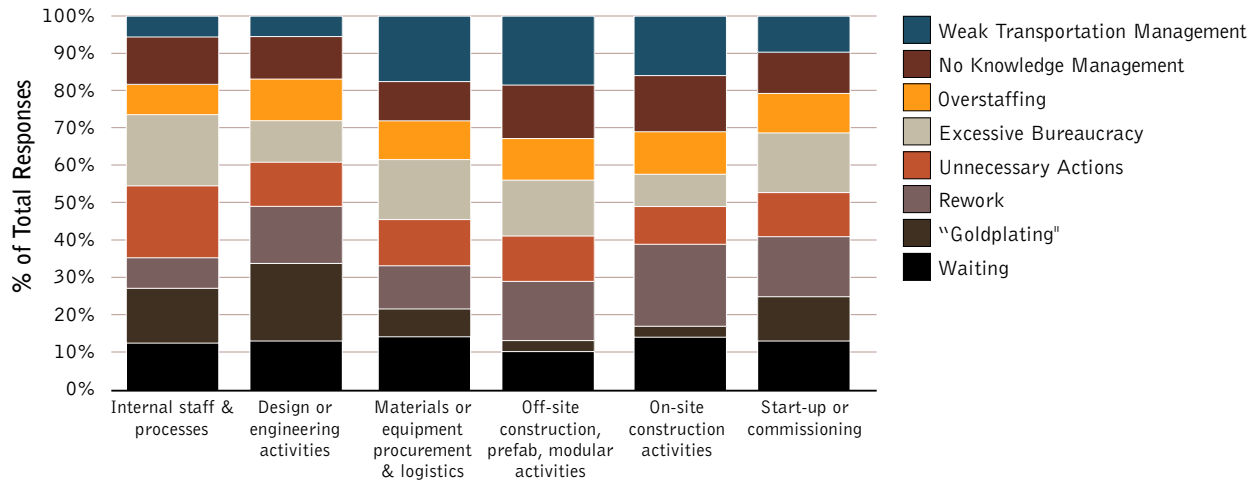
- **Waiting** is seen as most problematic with materials or equipment orders.
- **“Goldplating”** is viewed as most problematic during design activities.
- **Rework** is seen as most frequently occurring in on-site construction and commissioning.
- **Unnecessary Actions and Excessive Bureaucracy** are seen as most frequent with internal staff and processes.
- **Overstaffing** is viewed as occurring with the least frequency and when it is observed, occurs during design and engineering activities
- **No Knowledge Management** is also observed with low frequency and when it is observed, it is most frequently connected with internal staff and processes, off-site construction/modularization and on-site construction.
- **Weak Transportation Management** is observed primarily with materials or equipment orders, off-site construction/modularization and on-site construction.

Exhibit 8 Service Provider Importance to Federal Agencies



² Total Process Reliability is a technique derived from the Japanese concept of Total Productive Maintenance and combines elements of LEAN and six sigma. It is specifically designed for owners with critical equipment operating in their facility, owners that have critical QA/QC or safety demands, or owners that require significant heavy construction equipment to execute their capital construction. Equipment intensive contractors that perform heavy civil or underground construction can also apply these techniques to significant effect. More information is available on this technique and its benefits at www.tbr-strategies.com.

Exhibit 9 Owner's Perspectives on Waste



General Questions and Responses

The survey's general comments section also shed light on how owners may change the delivery of professional CM services. For example, a number of respondents called attention to the fact that CM service providers are assigning more senior, seasoned people to projects than would have been the case in the past.

"We are seeing CM and A/E firms assigning multiple senior staff members to our projects in an effort to keep those key players on board...By reassigning seasoned/valued staff to lower positions, they avoid having to lay them off. Our General Conditions fees have not increased, so the firms are taking a hit to keep their top people."

Another owner had this view:

"Both design and CM firms have reduced staff. In most cases, this has provided for more and better qualified personnel on projects. However, some of the more nitty-gritty work (work typically performed by more junior staff) has taken longer to accomplish...It's kind of an odd Catch-22...in that there is a higher quality product on the week-to-week decisions and requirements, but a lag and/or lower quality product on the day-to-day project needs."

A number of owners also commented on the trend among CM firms to retain their senior people beyond "normal" retirement and the risk that a serious shortage of qualified CMs may be looming in the future. Shortages and disruptions are directly observed in project delivery system choices, and the industry is experiencing a shift, albeit short-term in FMI's opinion, back to more traditional methods with pricing increasing in importance to select service providers.

PROJECT DELIVERY SYSTEMS

Given the disruption over the previous two years and the belief that 2009 will be viewed as an inflection point for the construction industry, it is appropriate to look at early changes in project delivery system approaches. The selection of a project delivery system is one of the most critical decisions an owner will make since its implications for construction performance are so far-reaching. Both FMI and CMAA believe there are three tactical factors to consider when determining and evaluating a project delivery approach for architectural/engineering/construction services. The first area to consider is the delivery method that will be used to construct the job, which ranges from design-bid-build to design-build. FMI defines “pure” design-build as any situation in which an owner contracts with a single entity or a joint venture entity for both design and construction management. The second area of consideration is the process used to manage or oversee design and construction activities. Owner options range from acting as the general contractor and managing internal crews or subcontractors directly (multi-prime management) to using a program manager to outsource management of the entire effort. The final tactical question involves how to contract with the service providers. Opportunities range from a public bid opening, to pre-qualification of a small, select group of firms from which bids are solicited, to a negotiated balancing of risk between the parties.

Survey participants responded to three separate questions:

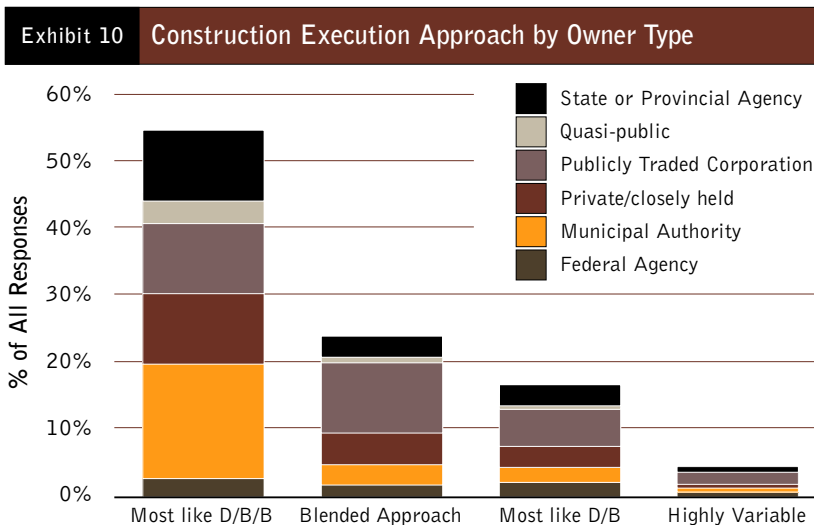
- On the majority of your capital construction projects undertaken in the past 12 months, use the 1 to 10 scale provided to portray your approach to construction execution³, ranging from design-bid-build to design-build.
- Estimate the frequency with which you used the methods or services below to manage the process of construction on individual projects in the last 12 months:
 - a) Acting as your own construction manager
 - b) Hiring a general contractor to manage a project
 - c) Hiring a firm in a CM-at-risk capacity
 - d) Hiring a firm in a CM-agency capacity
 - e) Hiring a program manager (over multiple projects or entire program)
- Estimate the frequency with which you used these selection methods to procure capital construction services in the last 12 months:
 - a) Low-bid (provider selected solely based on price or total construction cost)
 - b) Select-bid (pre-qualified firms with selection based upon price or fee)
 - c) Negotiated (qualification-based with negotiation of risk placement and final price)

Construction Execution Tactics

Exhibit 10 presents an assessment of owners’ construction execution method. The ratings between 1 and 3 were grouped as “most like design-bid-build.” Ratings from 4 to 7, in the middle of the spectrum, were grouped and referred to as “blended” construction methods. Those responses ranging from 8 to 10 were grouped and described as “most like design-build.” Another answer option, referred to as “highly variable,” was selected by owners not consistently using just one approach. Fifty-five percent of owners indicated that they use design-bid-build as the predominant construction method, which is highly consistent with the 2007 results for the same question⁴.

³ For the purposes of this question, FMI requested respondents rate on a 1 to 10 scale the degree that their projects’ approach to construction resembled design-bid-build or design-build. Definitions were provided to set the endpoints of the scale and help respondents describe their response. The definitions included the following: “design-bid-build: 100 percent construction drawings prepared in advance with no expectation for change orders or unforeseen conditions,” and “design-build: conceptual or low percentage design drawings with expectation of more detailed design and construction drawings only slightly preceding construction phases.”

⁴ FMI Corporation, “FMI/CMAA Eighth Annual Survey of Owners, Perfect Storm – Construction Style,” Fall 2007, pg. 10.



An additional 24 percent of owner respondents use a blended approach, while 16 percent use a design-build approach. Only 5 percent of owners use a highly variable approach. Again, all three results are highly comparable to the results of this question in 2007. When similar questions were posed in 2005, 66 percent of the respondents stated they primarily use design-bid-build.⁵ Also, in this 2005 survey owners responded they use design-build less than 10 percent of the time.⁶ Over the subsequent five years, the findings show an observed shift in owners' selection of various project delivery tactics with greater use of nontraditional approaches. State and municipal agencies are still the most likely to use design-bid-build approaches, while publicly traded firms and private firms have seen an increase in design-bid-build use over the last two years, primarily due to economic conditions, in FMI's opinion.

It is notable that state and municipal agencies are now using design-build at a slightly higher rate than in 2005, indicating continued loosening of legislation, which allows greater use of alternative delivery systems. Transportation agencies and organizations, office and professional facility owners, and education owners are the most frequent users of design-bid-build. Interestingly, transportation agencies and organizations, energy firms and manufacturing firms are the largest users of design-build.

In the 2010 survey, owners were asked to segregate their perspectives on construction approach based upon size of projects. The results demonstrate that the smallest projects are more likely to use design-bid-build, while the largest projects are more likely to use design-build.

⁵ FMI Corporation, "FMI/CMAA Sixth Annual Survey of Owners," Fall 2005, pg. 2.

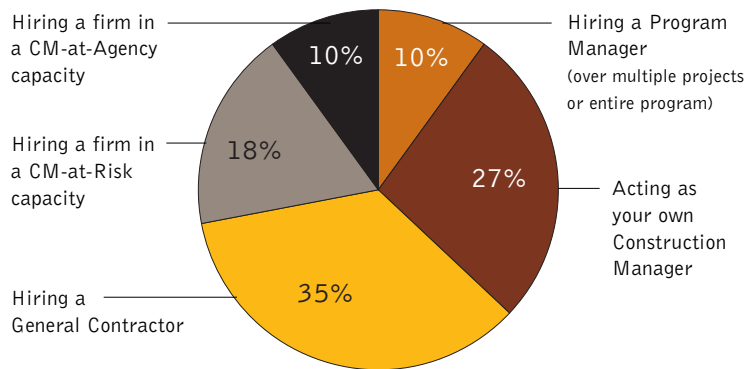
⁶ Ibid pg. 8.

Management Process of Construction Tactics

Owners describing the management process for design and construction indicated the vast majority (73 percent) are hiring a firm to provide services and support, while 27 percent report acting as their own construction manager. In 2007 most of the firms acting as their own construction manager were very large organizations with highly sophisticated internal staff. Today the practice is much more widespread and the frequency of owners acting as their own construction manager is up 6 percent from 2007, likely due to economic conditions.

Additional shifts in management approach show 18 percent of owners hiring a construction manager in a CM-at-risk capacity – down from 21 percent in 2007. In FMI’s opinion, this is primarily a result of owners using internal staff in this CM capacity rather than hiring a firm. The current result is similar to that reported in 2005.⁷ Owners use both CM-agency and program management for 10 percent of their spending. Program management use has doubled since 2007 – likely due to the economic climate and staff reductions (Exhibit 11).

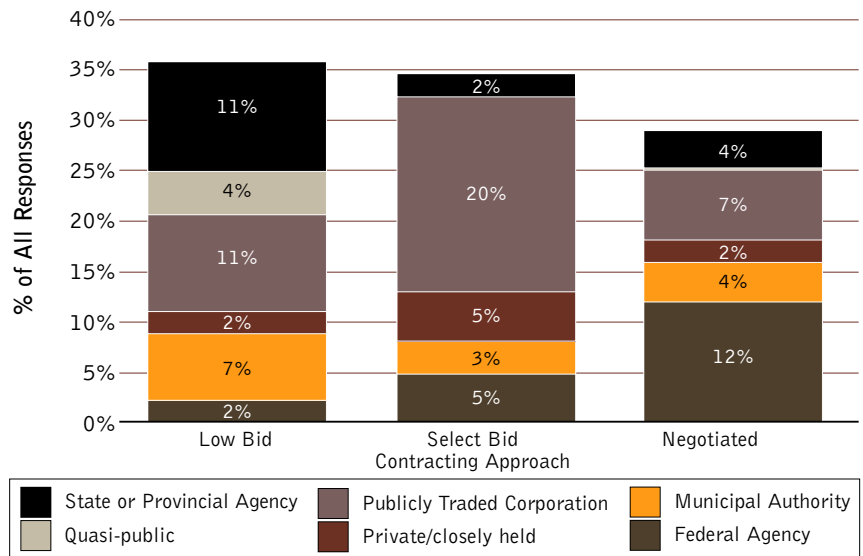
Exhibit 11 Managing Process of Construction by Spending



Contracting and Pricing Method Tactics

Exhibit 12 details the contracting approaches most frequently implemented by owners. The results demonstrate that the majority of owner spending is contracted using either a low-bid or select-bid approach. In 2007 the select-bid approach was utilized 7 percent more frequently and low-bid was used less frequently by a similar percentage. Economic conditions are a driver for the increased use in low-bid in FMI’s opinion. Negotiated techniques (28 percent) have not changed since 2007. All owner types show increased use of low-bid as a selection method.

Exhibit 12 Contracting Approach by Spend and Owner Type



⁷ Ibid pg. 8.

DEMOGRAPHICS

The *FMI/CMAA 11th Annual Survey of Owners* included more than 300 international participants representing every type of owner, construction industry sector and geography around the globe. Governmental entities at the federal or national, state or provincial, or municipal level make up 50 percent of the respondents with the remaining 50 percent comprised of publicly traded stock corporations and privately/closely held organizations.

Energy (including power, utility and petrochemical transportation), along with education construction were the two most frequent types of construction cited by the respondents. The remaining 15 types of construction individually made up 10 percent or less of the responses. Fifty respondents reported capital programs greater than \$1 billion, and an additional 156 respondents reported programs greater than \$100 million annually. FMI made a concentrated effort to increase the amount of international participation in the owners study, in order to contrast U.S. and North American trends with those worldwide. Only 17 of the 50 respondents with programs greater than \$1 billion reported figures exclusively in North America. The remainder are scattered around the globe, with China and the remainder of Asia, along with the Middle East, making up the largest reported spends outside of North America. The number of firms reporting 26 or more annual project starts fell from both 2009 and 2008 figures; raising the frequency of “mega” type projects as a larger percentage of total capital spend. Publicly traded stock corporations are most frequently reporting both these “mega” projects and the largest programs, while governmental agencies of all types are reporting smaller numbers of project starts across the board when compared to 2007, 2008 or 2009.

Overall, the survey sample represents a significant cross section of both North American and international capital construction spending.

CONCLUSIONS

The *FMI/CMAA 11th Survey of Owners* reveals some of the most important ways in which construction program owners have reacted to a prolonged economic downturn. Like a phoenix rising, the reactions will both drive change and create opportunity. Among other changes, owners have increased their exploration of alternate project delivery methods, their use of program management, and re-evaluated their approach to contracting and procurement.

One recession consequence with critically important long-term impact has been the diminution of owners’ Construction and Program Management staffs. How this significant disruption will play out is largely unknown but it will drive change. We have not seen this magnitude of job loss or disruption in the construction industry since the mid-eighties, over a generation ago. Given the staffing changes experienced by owners, eliminating waste and leveraging the existing low resource levels to their fullest extent is likely the order of business for the next two years.

As financing became ever more difficult and projects were deferred or cancelled, many owners opted to let job vacancies go unfilled (attrition) or to reduce their workforces more actively by layoffs, early retirements and similar processes. As long as the flow of projects remains depressed by economic conditions, the rough balance of resources and demand has been maintained. In the future, however, owners by and large do not anticipate returning to their full pre-recession staffing levels; in fact, many do not expect to hire at all within the next two to three years.

This trend threatens to leave owners inadequately equipped to deal with any significant number of new project launches. Faced with more work than in-house staff can handle, and with little prospect of expanding that staff, owners will need to identify additional resources to help them fulfill their organization’s business objectives.

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ABOUT FMI

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- Strategy Development
- Market Research and Business Development
- Leadership and Talent Development
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