

The Construction Law Committee

of

The Association of the Bar

of

The City of New York

**21st Century Construction
20th Century Construction Law**

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Executive Summary

- The Construction Law Committee, like other Committees before it, believes that mandatory multiple prime contracting has no place in modern public construction and that the entire statutory scheme for public procurement must be overhauled to promote flexibility and innovation and reflect contemporary trends in service delivery methodology.
- This Committee, however, further believes the State must engage in a rigorous review of the entire statutory scheme for construction and its products, both publicly and privately financed, to bring New York's construction industry into the 21st century, unleashing its economic potential.
- In view of the changed political landscape, evidenced by the proposed amendments to the Wicks Law, the Construction Law Committee urges the State Legislature and the Governor to convene a multi-disciplinary, professionalized task force to study entire statutory scheme covering construction in New York with a view to proposing reforms to help make the industry more efficient for the benefit of the State and local economies.
- This report initially summarizes areas untouched by the proposed amendments to the Wicks Bill that create opportunities for reform and increased efficiencies. The objectives sought by New York's construction laws, many adopted long before the end of the last century, are valid and worthwhile. Well-intentioned provisions unexamined over time, however, can have unintended, and unaffordable, negative economic consequences.
- The following section describes the close relation of the construction industry to the economy and how the various roles of government give rise to opportunities for the State to increase the efficiency of the construction industry as one way to increase the efficiency of the State and local economies. The fragmented nature of the construction industry makes government action a necessary condition for significant improvement.
- Committee observations, both past and present, accompany descriptions of the provisions of the proposed Wicks Law reform in the third section. What was true in 1986, when the Municipal Law Committee noted that "[t]he construction industry has changed dramatically in the past sixty-five years," is truer still today, some 22 years later.
- The State of New York, in its economic policy role, should strive to permit the State *and* its local governments, in their role as owner and client, to have flexibility in deciding, like private owners, what service delivery method is

appropriate for their various capital projects. Public procurement law is not an efficient tool for regulating the economics of the industry, and the fourth section discusses possible public procurement reforms beyond the proposed reform of the Wicks Law. As a model for change in this area, the Construction Law Committee suggests review and consideration of the 2000 Update to the American Bar Association's Model Procurement Code.

- The construction industry is an important component of overall economic performance and competitiveness, and appropriate governmental intervention can help to increase its efficiency, as discussed in the final section. Achieving the greatest possible level of efficiency will require review and reform of all regulations affecting construction industry performance. To that end, the Construction Law Committee suggests consideration of the recent approach taken in Great Britain.

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Untapped Opportunities for Economic Growth Beyond Wicks Bill. The Governor's 2007 Program Bill 37 R-1, which initially sought to raise the threshold amount triggering the application of the Wicks Law,¹ was introduced in the Senate and the Assembly on April 26, 2007. On June 14, 2007, the Governor, the Assembly Speaker and the Senate Majority Leader announced an agreement to amend Wicks Law provisions (the "Wicks Bill").² While the Assembly passed the Wicks Bill, the Senate did not.³ Part of the Governor's 2008 program legislation, introduced in the Senate and the Assembly on January 22, 2008, repeats the elements the Wicks Bill and adds other provisions collectively aimed at facilitating "local government cost saving efforts by providing relief from certain State mandates."⁴ The State's multiple prime contractor requirement,⁵ a variation of the design-bid-build service delivery model, is one part of an overall set of procurement procedures for public construction projects that is old and inflexible, inefficient and costly, and that often fails to meet the needs of the construction projects themselves and their public owners. While most states permit multiple prime contractor bidding, New York State is one of a handful of states that mandate such bidding on public works.⁶

Public procurement accounts for such a large proportion of the total work of the construction industry⁷ that it is understandable to focus initially on reforming public procurement to fix what many think is wrong with the construction industry and unleash its potential economic activity and growth. As a reform of a small, but counterproductive, part of the public procurement process, the Wicks Bill represents advancement in the right direction.⁸ Within the context of public construction, however, the State must do more for itself and its localities to make public capital programs more efficient, especially when economic forecasts forecast lower revenues and recent infrastructure assessments forecast increased capital needs.⁹ Broader and deeper reform of the public procurement processes would enable the State and its localities to avoid future costs related to construction delays and inefficiencies now caused by such processes. They would thus be able to stretch available resources to meet capital needs and reduce pressure on long-term sources of revenue, such as real property taxes, used to pay the debt that finances project costs. The Wicks Bill is a good starting point for broader and deeper reform of the entire public procurement statutory scheme. As described in further detail in this report, the 2000 Update to Model Procurement Code¹⁰ provides an approach we suggest the Legislature and Governor review to deepen reform of the statutory scheme for public procurement of construction. A summary of the 2000 Update is included in Appendix A.

Without minimizing the impact of the State's antiquated public procurement scheme on the economy, there is, however, more to the statutory scheme for the construction industry than public procurement alone. The State and its local governments regulate construction industry participants and the products of construction for various public policy objectives including occupational and public safety concerns, environmental impacts, professional and trade standards and

licensing, business qualifications, and insurance requirements. In view of the close connection among the construction industry, its products and the economy, *all* laws and regulations—whether State or local—that govern both public and private construction participants and products present rich opportunities for the State to improve the productivity of the construction industry in New York to benefit the State's economy and competitive position, and those of the regions within it.¹¹ Per-worker productivity within the nation's construction industry has been declining since 1964, in contrast to the aggregate industrial productivity increase.¹² Government intervention may reduce or remove many suspected causes of this decrease in productivity. As described in further detail in this report, the British have been engaged in a multi-disciplinary review, which includes economic analysis, of the construction industry and its products. This experience provides an approach, as well as a treasure trove of analytical work, that we suggest the Legislature and Governor review to commence reform of the construction industry in New York.¹³ A summary of the British approach is included in Appendix B.

The political pragmatism reflected in the Wicks Bill suggests that the political landscape has changed sufficiently to support a long-needed high-level analysis of the economic potential of the construction industry locked within the statutory scheme that governs it. Having waited until now to undertake such a review may actually increase its chances of ultimate success in supporting reform of the entire statutory scheme to reflect 21st century realities. The Wicks Law has long been the poster child for inefficiency in public works procurement,¹⁴ generating such conflict among stakeholders that any discussion about such reform has precluded any discussion about broader reform. The agreement reached last summer may indicate a reduction in the level of conflict since 1994, the last time serious legislation on the Wicks Law was pending, which offers a good opportunity to achieve broader reform as stakeholders are more open to policy analysis and may be more willing to shift positions on the basis of analysis.¹⁵ In addition, moderate levels of agreement on analytical theory, technique and data since 1994 also increase the likelihood of generating feasible options grounded in quantitative analysis.¹⁶

New York State, in its various roles of "client, regulator, policy-maker and a sponsor of change,"¹⁷ has the opportunity, and obligation, to lead the nation by reforming its construction law. "[T]he sheer scale of the problems to be resolved" cannot be underestimated as another factor prohibiting a comprehensive review of the statutory scheme related to construction, despite its close connection to the economy.¹⁸ But what was true in 1986, when the Municipal Law Committee noted that "[t]he construction industry has changed dramatically in the past sixty-five years," is truer still today, some 22 years later. Regardless of whether the Wicks Bill provisions are adopted in 2008, we strongly recommend that the Governor and the Legislature establish a non-partisan professionalized task force¹⁹ to expand the scope of their initial inquiry beyond the Wicks Bill and use tools of economic analysis, among those of other disciplines, to reform the entire statutory scheme for construction and bring New York's construction industry into the 21st century, unleashing needed economic potential. The objectives sought by New York's construction laws, many adopted long

before the end of the last century,²⁰ are valid and worthwhile. Well-intentioned provisions unexamined over time, however, can have unintended, and unaffordable, negative economic consequences.

Construction and the Economy. The construction process, its inputs and its products are not solely the subject of legal analysis. The construction industry ". . . makes an important contribution to a country's economic, social and environmental well being," topics well suited to a broad analytical review, so that a prospective legislative framework can increase productive economic efficiency.²¹ Not only does the construction industry, however defined, directly contribute to the State's economy and its gross state product,²² but its processes, employees and products also provide an additional secondary economic impact. For a sense of magnitude, in 2006, according to the U.S. Bureau of Economic Analysis, the output of the construction industry represented approximately 3.1 percent of New York's gross state product. The secondary impact of construction activity on an economy, termed the "multiplier effect", is the positive increase in an economy's income due to the related increase in expenditure.²³ General economic conditions determine the demand for construction services,²⁴ and fluctuations in the performance of both the general economy and the construction industry share a similar pattern.²⁵ Thus, legislative changes affecting construction have the potential to impact positively, if thoughtfully analyzed, the future of the State's long-term economic condition and industrial competitiveness,²⁶ as well as those of its local governments, all of which are currently concerns of both the Governor and the Legislature.

As discussed in greater detail below, the various roles of State government give rise to many points of opportunity to increase the efficiency of the construction industry as one way to increase the efficiency of the State and local economies.²⁷ For example, to the extent the State's public construction laws limit the efficient provision of social goods through the State and local public works programs, government cannot use its own public capital funds efficiently. As a general matter, government leadership and intervention is necessary to unleash the economic potential within the construction industry due to its particular nature as a fragmented industry.²⁸ Similarly, to the extent that unexamined State and local government regulations create regulatory complexities that operate as inadvertent barriers to effective competition in an already fragmented construction market, they unnecessarily limit the positive impact of construction on the economy. Existing traditional health and safety regulations of the industry and its products present opportunities for government to calibrate regulations aimed at what economists term "externalities" while increasing economic efficiency. Recent developments in the way we understand environmental impacts of construction and its products, as well as the way we understand the impact of design quality on the built environment, provide additional opportunities.

The fragmented nature of the construction industry makes government sponsorship a necessary condition for significant improvement.²⁹ Since positive change is unlikely in the absence of government intervention, it is important to identify the most effective level of government to undertake this effort. In New York, the state level may be the

most appropriate and effective level of government to effect reform of the construction industry and its products to maximize economic effect. From a legal perspective, in states where municipal home rule is either not allowed or, as in the case of New York, not particularly effective, it is necessary for the State to act on behalf of its localities in certain areas, such as, in particular, reforming public procurement.³⁰ From an economic perspective, the span of government action should correlate with the physical or spatial dimensions of the positive and negative externalities emanating from the private activities it seeks to correct.³¹ And, as described in greater detail below, only the State can properly evaluate and mitigate the complexities generated by the various local regulations on the construction industry and products, especially those that contribute to the fragmentation of the industry itself.

Commentary on Proposed 2007 Changes to the Wicks Law. After reviewing the Wicks Bill, this Construction Law Committee shares concerns similar to those expressed in the past by the 1986 Municipal Law Committee and the 1994 Construction Law Committee. The Wicks Bill minimizes some of the inefficiencies that come from the Wicks Law, one small part of the larger statutory scheme that covers construction in New York, but does not repeal the multiple prime contractor requirement. The Committee on Municipal Affairs, in 1986, supported the then governor's proposed legislation that would have largely, though not entirely, eliminated Wicks Law requirements. The title of its report, "The Wicks Law: Repeal it Now," suggests the preference of that Committee. In 1994, eight years later, three bills were pending in Albany, in the context of the statutory expiration of the New York City School Construction Authority's exemption from the Wicks Law, all of which fell short of complete repeal. The 1994 Construction Law Committee, as befitting its specialization, expressly identified, as the optimal legislative solution, in addition to repealing the Wicks Law, increasing the ability of public owners to match procurement or "service delivery" methods to actual project construction needs.³² The Committee noted "that no single superior procurement method exists, but rather several alternate techniques can be used . . . to optimize [the] chances of successfully obtaining new construction."³³

By 1994, if not before, multiple prime contracting had lost favor as tool within the building industry because the owner's need to coordinate the prime contractors significantly increases the risk to a project's schedule and, thus, budget. The risk is exacerbated on projects where the owner does not have internal capacity, or the extra funds to procure outside services, to manage such coordination. This is often the case for public works programs. In New York, the Wicks Law forces public owners to use the multiple prime tool, regardless of internal competencies and capacities, increasing the risk of delay and added costs, in a budget environment of limited resources and increasing needs "to provide and maintain the infrastructure necessary to sustain our economy and permit economic growth."³⁴

The Wicks Bill would "recalibrate" the threshold amounts that require public owners to bid public works to four separate or "prime" contractors for the following trades—

general construction, plumbing, electrical and heating, ventilation and air conditioning. The current threshold of \$50,000 applies to all State and local government contracts and was itself a recalibration from 1921, when the Wicks Law was first enacted. The proposed thresholds are: \$500,000 for all upstate counties, \$1,500,000 for Nassau, Suffolk and Westchester Counties and \$3,000,000 for New York City³⁵ and are intended to reflect changes in the economy since 1961 and 1964, when they were last adjusted. It is suggested that the lag in adjustment since the 1960s and rising costs of construction and real estate have subjected a larger proportion of projects to the Wicks Law requirements than had been the case when the law was originally adopted and over 40 years ago when it was last adjusted. The 1994 Construction Law Committee deemed raising the threshold via an automatic indexing process an improvement to the then current environment, but noted this provision did nothing to improve procurement efficiency.³⁶

In addition to increasing the proportion of public works automatically exempt from the multiple prime contractor requirement, the Wicks Bill would also create a process for public owners to remove a project, not automatically exempt, from the multiple prime contractor requirement.³⁷ The proposed legislation first would specifically authorize project labor agreements³⁸ and then would authorize a public owner to determine that its interest in achieving expressed standard public procurement objectives is best met by requiring a project labor agreement.³⁹ Following such determination, the public owner would then be able to craft a solicitation for a single general contractor in the context of a mandatory project labor agreement. Any project thus exempt from the multiple prime contractor requirement would be deemed a public works project and subject to prevailing wage requirements, among others. Any contract⁴⁰ between the public owner and general contractor for an exempt project would need to conform to additional statutory provisions, such as those related to the public owner's review and approval responsibility for project, design and construction standards, payment and performance bonds, standards for selection of contractors and subcontractors, and apprentice training programs.

The exemption of a project from Wicks Law, either via the threshold provision or the project labor provision, would also remove one of two statutory impediments to public owners' use of a variety of construction management techniques.⁴¹ For all projects exempt from the Wicks Law requirements, the Wicks Bill would add a listing requirement, similar to those in effect in several other states,⁴² to protect subcontractors from "bid shopping" and "bid negotiation"⁴³ by the general contractor. It would require a single prime contractor to submit a separate sealed list naming each subcontractor and related subcontract price with its bid. Upon award to a single prime, the corresponding sealed list would be made public and effective. The single contractor would need to obtain permission from the public owner to change a listed subcontractor or an approved subcontract price based upon showing a "legitimate construction need for such change" which would include, among other things, changes to projects specifications and changes in construction materials costs.⁴⁴ The 1994 Construction Law Committee had surveyed New York case law, revealing a view of the marketplace where bid shopping and bid negotiation are legitimate activities, within

certain constraints. Prime contractors use the competitive marketplace to test for best possible prices, which ultimately benefits owners, both private and public. Under New York law, public owners themselves can also use the competitive marketplace to test for best value under certain circumstances and within certain limits.⁴⁵ This view is at odds with that of other jurisdictions, and the 1994 Committee identified several states, which provided statutory protection for subcontractors within a single prime environment.⁴⁶ While the Committee reiterated a legitimate basis for bid shopping and bid negotiation by public owners—namely, “achieving the most efficient possible procurement of construction”—it also found that “concern for the fairness of the process would justify some protection for subcontractors against these practices.”⁴⁷

The Wicks Bill would also provide additional protection for all subcontractors by tightening up the existing prompt payment rule, similar to those in several other states, by reducing the number of days, from 15 to seven days after receipt of payment from the public owner, within which the general contractor must pay the subcontractors and materialmen.⁴⁸ In addition, the Commissioner of Labor would have the power to enforce compliance with the Wicks Law by issuing a stop bid order whenever he determines that a public owner subject to the multiple prime contractor requirement has failed to prepare separate specifications.⁴⁹

Finally, in a provision conceptually unrelated to reform of multiple prime contracting, the Wicks Bill would authorize a pre-qualification procedure for local governments, which currently lack general state authorization for pre-qualification of public works contractors.⁵⁰ The benefits of pre-qualifying contractors, within the traditional design-bid-build model, include permitting the owner to consider qualifications, experience and past performance, in addition to price, thus increasing the chance that selected contractors are capable of providing quality construction.⁵¹ This proposed change is consistent with a small number of states that either require or permit pre-qualification of contractors prior to bidding.⁵²

Public Procurement Law and Government as Owner and Client. When assessing the role of government as an owner and client, it is sometimes difficult to disentangle this role from its concurrent and unique roles of economic policy maker and regulator. Government is an owner and client of construction services that implement its capital program. The public works or capital programs of all levels of government are, in essence, work orders for facilities relating to “social” or “public” goods and to “mixed goods” that correct for negative and positive externalities.⁵³ In addition, by allocating capital fund resources to public goods and mixed social goods, a unique function of government, the State and its local governments can produce economic efficiencies to help to stabilize the State and regional economies.⁵⁴ Government performs an active management role in the economy when it increases capital spending or strategically targets existing levels; it can also perform such role, when decreases in capital funds are likely, by reforming the existing statutory scheme, at existing or lower funding levels to increase productivity and efficiency.⁵⁵ When exercising its unique policy and regulatory roles, however, government often enacts laws and

regulations at odds with its role as client and owner that can diminish its ability to efficiently exploit capital programs as economic tools.

New York, in its economic policy role, should strive to permit the State and its local governments, in their role as owner and client, to have flexibility in deciding, like private owners, what service delivery method is appropriate for its various capital projects. The procurement process is not the most effective way of achieving economic, or other, policy ends related to the construction industry.⁵⁶ In its role as client, government, like all owners, is concerned with budget, schedule, safety and quality, or value.⁵⁷ Government as client, like all owners, should be open to innovative ways to increase the chances of aligning its interests in budget, schedule, safety and quality with the interests of its agents in construction, especially since the construction milieu is the very definition of asymmetric information, which is "a situation where two parties to a transaction involving a good or service have unequal knowledge of the properties or risks involved in making that transaction."⁵⁸ Instead of increasing the alignment, however, government often establishes procurement schemes for itself that limit how it obtains construction related services due to other public policy concerns, such as transparency and fairness, which are of less concern to private owners. Examples of limits government imposes upon itself, that tend to make effective principal-agent alignment less likely, are public competitive bid requirements, awards to the lowest responsive bidder with little discretion to take other factors into account, requirements that bidding documents contain detailed plans and specifications prepared by professional designers and multiple prime bidding requirements, such as the Wicks Law.

While New York is among the few states with a mandatory multiple prime contractor requirement, it is in good company across the nation among states that limit state agencies and/or local governments to use only the traditional design-bid-build method of construction service delivery, primarily or exclusively via the open, publicly-noticed competitive bid process with award to the lowest responsible and responsive bidder.⁵⁹ Several states, however, many of which have adopted the 1979 Model Procurement Code, permit public owners procurement flexibility to match project needs, primarily because they permit competitive sealed proposals, or requests for proposals for construction services with an ability to negotiate with the bidders or to award based on best value.⁶⁰ A few other states, which have not adopted the 1979 Model Procurement Code, nonetheless permit public owners to exercise flexibility to match service delivery to project needs via a menu of options, much in the manner found in the recent 2000 Model Procurement Code. The various options include alternatives to the traditional design-bid-build delivery method, such as design-build, construction-manager-at-risk, and alternative methods with approval.⁶¹ The recent 2000 Model Procurement Code updates the 1979 Model Procurement Code primarily to encourage the use of "new forms of project delivery in public procurement, especially in the construction area."⁶² For a more detailed description of the 2000 Model Procurement Code provisions related to construction, please see Appendix A.

Not only does the appropriate service delivery method vary with the project and the competencies of owner staff, but also the methods evolve with use over time. The best solution for the State and its local governments, especially as they are likely to enter a period of increasing budget constraints, is to permit them the flexibility to increase value in public works projects. Freedom to choose the appropriate service delivery method for projects, including the freedom to *choose multiple prime contracts when appropriate*, and the ability to innovate new service delivery methods in the future would give New York governments appropriate tools to increase public project value and make their capital programs as efficient as possible.⁶³

Government as Regulator and Promoter of Economic Efficiency. What has become, in Great Britain, a rich and broad endeavor, yielding, among other things, quantitative measures of design value and a process for using them, began with a simple economic proposition. The construction industry was too important to the economy for government to leave it alone.⁶⁴ With appropriate intervention to increase its efficiency and without increasing the level of resources committed to it, the industry could increase its productivity.⁶⁵ Given the proportion of government work within the construction industry, increasing the industry's efficiency requires reforming public procurement processes as described above. Achieving the greatest possible level of efficiency, however, requires review and reform of all regulations that affect the construction industry's performance on private and public projects. The relative costs and benefits of regulations change over time as the circumstances they cover change, and the State should periodically review them for opportunities to mitigate unnecessary or unintended drag on the economy. To make the construction industry more efficient in New York, the State should follow a multi-disciplinary approach to review and analysis, similar to the sustained approach taken in Great Britain since 1994, and also take advantage of, and build upon, conceptual and quantitative work produced as a result that work. Please see Appendix B for a more detailed description of the British experience.

Governmental legislation, directly regulating or indirectly affecting the industry, impacts both construction demand and supply, thus impacting the economy, due to the close connection between the economy and the construction industry.⁶⁶ Government regulates to correct for positive and negative externalities generated by the construction process and its products. For example, conventional regulation of construction seeks to reduce the incidence or scope of unsafe construction practices and products and to increase the incidence or scope of safer ones, at least to the extent the private marketplace produces socially unacceptable levels of either. Government also regulates the industry and its products with respect to its impact on the natural environment and on the built environment, both fields where understanding is changing rapidly.⁶⁷ There is always potential for the State to increase economic efficiencies by reviewing the more conventional examples of regulation of the construction industry, including occupational and public safety regulation, regulation of environmental impacts, professional and trade standards and licensing, business qualifications, and insurance requirements for both construction projects and participants.⁶⁸ Recent changing analyses on the long-term impacts of

construction and its products on the natural and built environments present additional opportunities for the State to further increase economic efficiencies.

To the extent that these unexamined State and local government regulations create regulatory complexity within fragmented markets, they may operate as inadvertent barriers to effective competition and may unnecessarily limit the positive impact of construction on the economy. It is the realistic possibility of competition from other markets that mitigates the negative impacts of these fragmented local markets.⁶⁹ In New York, only the highest level of government, the State, would have the interest, resources and authority for undertaking such review and for proposing changes, some of which might impact local practices. Statewide review of State and local regulations, *and* their interaction with each other and with the industry, may reveal unintended barriers to movement and entry among the fragmented markets. Reform of such regulations, thus, could increase economic efficiency and economic growth within the State.

The ABA 2000 Model Procurement Code

In 2000, the American Bar Association updated its 1979 Model Procurement Code (the "2000 Update"), among other reasons, to support "the new and different forms of project delivery for constructed facilities . . . , such as Design-Build, Design-Build-Operate, and Design-Build-Finance-Operate" made possible by the application, since 1979, of Computer Aided Design (CAD).⁷⁰ A specific goal of the 2000 Update was to encourage the use of "new forms of project delivery in public procurement, especially in the construction area."⁷¹ This Committee suggests the Governor and Legislature consider the 2000 Model Procurement Code's Article 5—Procurement of Infrastructure Facilities and Services—as the basis for modernizing New York's public construction law.

Article 5 authorizes and defines several methods of construction service delivery.⁷² All of these models depend upon "the prior establishment of functional requirements of a project."⁷³ These functional requirements, defined as "design requirements", must be included in the solicitation document⁷⁴ and include "features, functions, characteristics, qualities and properties that are required by the [State]; the anticipated schedule, including, as a minimum, start, duration, and completion; and estimated budgets (as applicable to the specific procurement) for design, construction, operation and maintenance."⁷⁵

The first method, design-bid-build, "is a proven, commonly used public procurement method throughout the United States that was previously authorized under the 1979 Code [and includes] a widely used variation known as construction management at risk."⁷⁶ The other methods consist of design-build, design-build-finance-operate-maintain and design-build-operate-maintain and are described further below. The traditional design-bid-build model, with its separation of design and construction, creates the potential for "disconnects" during the life of the project, a weakness that the alternative models address by requiring earlier integration of the work of design—architectural and engineering—with the realities of construction.⁷⁷ This arbitrary separation appears at odds with converging trends in the various and conceptually related design management techniques⁷⁸ that advocate the earliest possible application of techniques aimed at the fullest expression of project scope by the largest number of stakeholders in the most integrated possible manner.⁷⁹

Early integrated application of these techniques in a design-bid-built context can help to mitigate the "disconnects" arising from the separation between the designer and the constructor.⁸⁰ In the public sector, however, the arbitrary separation can become a legal one that precludes, or makes more difficult and costly, meaningful contractor involvement during the design phase to facilitate optimum project scoping and constructability analysis before construction. Early integration of design work with construction is required, however, in the following service delivery methods authorized in the 2000 Update described below:

- In *design-build*, the public owner "enters into a single contract for design and construction of an infrastructure facility," which "is a productive, competitive alternative to design-bid-build and construction management at risk when the government has established the functional requirements (design criteria) of a project."⁸¹
- In *design-build-finance-operate-maintain*, the public owner "enters into a single contract for design, construction, finance, maintenance and operation of an infrastructure facility over a contractually defined period."⁸² This model "is a proven delivery method in common use throughout the world and in American antiquity [that] integrates long-term operation and maintenance, as well as project finance, into a single competition."⁸³ The entire competitive bid, including the financing component, must assume there will be no government appropriations during the life of the contract, so that both the government and the private bidders must be assured the project can generate sufficient revenues to pay any debt issued to finance the project as well as the operation and maintenance expenses during the contract term, in addition to the design and construction costs.⁸⁴
- Like the others, a single contract marks the *design-build-operate-maintain* model, this time for design, construction, operation and management of the facility over the contract term.⁸⁵ Unlike design-build-finance-operate-maintain, however, the government may, through appropriations or fees, pay or secure the payment for all or a portion of the funds necessary for the contractor's services.⁸⁶

In a critical departure from the past statutory preference, which has favored publicly-noticed competitive sealed bidding for construction services awarded to the lowest responsible and responsive bidder, the 2000 Update specifically authorizes and requires that the design-build, design-build-finance-operate-maintain and design-build-operate-maintain methods described above use competitive sealed proposals instead.⁸⁷ While the kind of procurement flexibility provided above would be a necessary step in the right direction, a simple comparison of the traditional design-bid-build with the design-build service delivery models illustrates the trade-offs between the two methods, and suggests that, even with procurement flexibility permitted by statute, public owners may tend toward using the traditional design-bid-build method. Please see Appendix A-1 for a comparison of design-bid-build and design-build service delivery models.

The categories established in Article 5 and summarized above represent one way of classifying project delivery methods, among many others. There are, at present, no standard and generally accepted definitions of project delivery methods.⁸⁸ The American Institute of Architects (AIA) and the Associated General Contractors of America (AGC), in their jointly produced and issued *Primer on Project Delivery*, noting this lack, also noted that

. . . many groups, organizations, and individuals have developed their own. In doing so, they have often used different characteristics to define the delivery methods. The result has been a multiplicity of definitions, none of which is either entirely right or entirely wrong.⁸⁹

For example, the AIA and AGC classify "three primary delivery methods" as "design-bid-build, design build and construction management at risk."⁹⁰ They also make a distinction between project delivery, defined as "the method for assigning responsibility to an organization or an individual for providing design and construction services," and project management, defined as "the means for coordinating the process of design and construction (planning, staffing, organizing, budgeting, scheduling, monitoring."⁹¹ The legal authority to bind the owner differentiates the service delivery models from the models of project management, while the assignment of contractual responsibilities for project delivery becomes the basis for differentiating among the service delivery models.⁹² Any task force looking at creating flexibility in public procurement of construction would do well to review alternative classifications of service delivery models, and their underlying rationales, in addition to those put forth in Article 5.

The 2000 Update also provides alternative language to permit quality-based selection process for design-builder selection.⁹³ As noted earlier, the request for proposal, or solicitation document, must include design requirements and may, under certain circumstances, permit prequalification through a request for qualifications before the request for proposals, creating a short list of responsible bidders to engage in discussions and evaluations or pay stipends to the unsuccessful bidders.⁹⁴ Not only does the 2000 Update expressly eliminate an earlier expressed statutory preference for competitive sealed bidding, which remains as a default source selection method, but it also specifically authorizes multi-step sealed bidding within the competitive sealed bid context in order to "provide additional flexibility in meeting the designated public need."⁹⁵ These changes make it possible for public owners to focus on construction quality even within the competitive design-bid-build model.

Other features of the 2000 Update that help public owners increase the quality and, thus, value of public construction include a revised definition of architectural and engineering services and the requirement that bidders for certain design-build, design-build-finance-operate-maintain and design-build-operate-maintain contracts include the services of an independent peer reviewer "whose competence and qualifications to provide such services shall be an additional evaluation factor in the award of the contract."⁹⁶ A revised definition of "architectural and engineering services" conforms to the federal definition in order to "[promote] closer integration of project feasibility and evaluation services with the evaluation of design and project alternatives" which "reflects a growing need for public owners to assess the effects of alternative designs, technologies, projects, schedules and finance methods on initial and life-cycle quality, costs, and time of delivery of entire collections of infrastructure facilities."⁹⁷ The requirement of an independent peer reviewer is

intended "to provide the government with independent professional advice and assurance that key design elements of the project are consistent with the function description in the Request for Proposals and with the common law standard of professional care."⁹⁸

*Comparison of Design-Bid-Build and Design-Build*⁹⁹

Design-Bid-Build. In the traditional design-bid-build model, the owner hires a designer, first, to design project, including the preparation of construction drawings, specifications and contract documents, and then submits the design package to general contractors who bid for work on the basis of sealed lump sum, unit-price or cost-plus.¹⁰⁰ The winning contractor is responsible for constructing project as designed, subcontracting, as needed, with various contractors for specific tasks.¹⁰¹ During the construction phase, the interaction of the designer with the contractor can vary from limited oversight, responding to questions about design on behalf of owner to administering construction contract on behalf of owner. The virtues of this traditional method derive from its wide applicability and understanding, due to the well-established and clearly defined roles, as well as a level of cost certainty because bids are based on a complete design, with plans and specifications. The drawbacks to this method, however, derive from the same qualities and include a longer schedule,¹⁰² since the design must be substantially complete before bidding, thus prohibiting overlapping phases to compress the schedule, and a higher potential for an adversarial relationship among owner, designer and contractor. The temporal separation between the designer and the contractor impedes a joint understanding about constructability, schedule and cost implications of the design, the specified materials, the means of construction and costs. The legal relationships, such as the owner's liability for design, create exposure to contractor claims over design and constructability issues, and the least-cost approach requires increased owner oversight and quality review. These drawbacks contribute to increasing the potential for schedule uncertainty, which can lead to increased costs.

Design-Build. In the design/build method,¹⁰³ the owner contracts with a team that is responsible for both project design and construction, often a joint venture of a general contractor and a designer, after owner has approved the preliminary project scope or design. The owner and team negotiate, early in the process, a contract with a fixed price for which the team agrees to perform all functions from post preliminary design to construction and to coordinate the design and construction interface that is often problematic with the design-bid-build model. The method internalizes, within the team, some of the conflicts among the owner, designer and builder, providing the owner with single point of responsibility, as well as providing the opportunity to begin construction earlier, before design is complete, and thus provide the potential to reduce the overall project delivery period. The ability to integrate design and construction professionals earlier in the process permits both professions to benefit each other, increasing the period of design freedom informed by constructability. The ability to overlap phases to decrease construction duration requires the owner's control of the site and rights of way, which public owners often do not have in the early stages of a project. Further, the advantages come at the cost of a significant loss of the owner's control and involvement. In order to verify best value as well as the adequacy of the preliminary plans on which price is based, the owner is well

advised to hire additional consultant to perform the traditional designer function. Conventional wisdom concludes that this model is best for conventional project types, with defined requirements and widely available expertise such as vertical and above ground projects.¹⁰⁴ Since successful implementation of this model also requires a proper balance of design expertise, financial capability, construction experience and experience with this particular model, procurement of the design/build team requires great care, something the public procurement methods may make difficult.

The British Experience and Increasing the Value of Public Works Programs

Beginning in the 1990s and sustained as of this date, the British government sponsored an initial collaboration between government and the construction industry to improve the performance of the construction industry and its product. This initial effort eventually expanded to generate quantitatively-based analyses and data on the relation among construction, the economy and the quality of life within a built environment. "A particular strength of [the British approach] was that they did not try to prescribe what should be done but invited innovation while offering a context in which it can take place, be evaluated and shared."¹⁰⁵ This effort received its impetus due to significant planned increases in public capital spending in the face of a universal consensus that much of already-built environment, much of it publicly financed, and the process by which it was achieved were unsatisfactory in almost every way. During the course of this public-private journey:

. . . a succession of government reports investigating the problems of the industry . . . have highlighted the inefficiency caused by the sheer scale and complexity of the construction industry. A recurring recommendation is the need for the construction process to be viewed in a holistic way by a multidisciplinary team. This reflects the fact that construction draws knowledge from many areas, and an important and undervalued area is economics.¹⁰⁶

Were the Governor and Legislature to consider looking at the economic impact of construction upon the State and regional economies, as a prelude to revising New York's statutory scheme governing construction, they might do well first to look at this British experience, as well as the quantitative work produced as a result of it.

The initial round of independent analysis of the construction industry, conducted in 1994 by a group "commissioned by the British government and the construction industry with the support of client bodies,"¹⁰⁷ focused primarily "on the business process of construction rather than its products and their impact."¹⁰⁸ The conclusion, summarized in the report, "Constructing the Team," was that "the industry's traditional methods of procurement and contract management and its adversarial culture caused inefficiency and ineffectiveness."¹⁰⁹ In the words of the author of the report, "[t]he central message of "Constructing the Team" in 1994 was that the client should be at the core of the construction process."¹¹⁰

Four years later, in 1998, a Construction Task Force "was set up to advise the Deputy Prime Minister from the client's perspective on the opportunities to improve the efficiency and quality of delivery of construction, to reinforce the impetus for change and to make industry more responsive to customer needs."¹¹¹ The resulting report, "Rethinking Construction,"¹¹² introduced the lean production and continuous improvement concepts,¹¹³ while continuing to focus on the customer as a "driver of

change,"¹¹⁴ although the absence of a "debate on the attributes of the product" continued.¹¹⁵ This report projected a ten percent increase in productivity without changing the level of resources dedicated to construction as a result of proposals to increase efficiency including reducing restraints on supply.¹¹⁶

While "Rethinking Construction" did not focus directly on the impact of design on the economy, its implementing entity, the Movement for Innovation (M4I), did. Architects, by virtue of their place in the construction supply chain, have an "overview of the entire project" and are well placed to "synthesize lean construction" and its objectives.¹¹⁷ A focus on methodologies to quantify intangible externalities emerged in 2000 from the Royal Institute for British Architects (RIBA), which concluded that "the value of design can be, and has to be, measured and demonstrated."¹¹⁸ Without quantitative measures of design value, "there is a possibility that the success of construction projects will be measured by the process alone."¹¹⁹ RIBA announced its partnership with the Construction Industry Council to devise Design Quality Indicators (DQI) and the process for using them,¹²⁰ which has been in use in Great Britain since mid-2002. As an indication of the soundness of DQI and the analysis behind it, the "Green Book", an official publication of the British Treasury, includes design quality as one of the many issues relevant to appraisal and evaluation of new or replacement capital projects or procurement of works from the private sector suppliers.¹²¹

In 2002, the British government commissioned another task force to study the government's research and development policies and practices. "Rethinking Construction Innovation and Research"¹²² picked up a thread from the Egan Report which suggested a focused research and development program would be necessary to make many of the earlier recommendations and estimated benefits possible.¹²³ While the Fairclough Report concluded that the "strategic framework for R&D should be owned and managed by industry," the fragmented nature of the industry requires government sponsorship and funding to produce socially useful amounts of research and development and to structure a mechanism to capture innovations from institutional learning for future projects across markets and regions.¹²⁴

As a result of all this activity, there has been a resurgence of interest in identifying and quantifying the value of the seeming intangible externalities generated by the products of construction.¹²⁵ In 2001, the Commission on the Built Environment released a seminal report—The Value of Urban Design—that catalogued the state of capacity to quantify intangible externalities of design in the built environment. While there are difficulties in quantifying intangible externalities arising from construction,¹²⁶ they conceptually fit the definition, although it may be necessary to evaluate impacts and costs over a longer period of time than is typical in the investment decision horizon which covers the initial period of construction but not long-term operation.¹²⁷ For example, negative consequences of poor design and construction include avoidable maintenance, energy and security expenses, as well as, within the built environment, avoidable costs for "rectifying urban design mistakes."¹²⁸ Positive consequences of design and construction excellence include

'life giving' mixed-use environments, urban regeneration, increased marketing opportunities, increased investment opportunities, increased confidence in investment opportunities, better connected, inclusive and accessible urban places, sensitivity to context, enhanced public safety and security, increased energy efficiency.¹²⁹ This recent work can inform a review and revision or elimination of existing regulations, as well as provide a foundation for proposing new ones.

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ENDNOTES

¹ The Wicks Law, named after State Senator Alfred H. Wicks, is a collective reference to three separate laws requiring multiple prime contracting. The multiple prime contractor requirement first became effective for the State in 1909, and, after an interim repeal, it was re-enacted in 1921. (State Finance Law, Section 135) The multiple prime contractor requirement was applied to public housing projects in 1946, and to municipalities and other political subdivisions in 1953. (Public Housing Law, Section 151-a; General Municipal Law, Section 101) The Committee on Municipal Affairs, *The Wicks Law: Repeal it Now*, (New York: The Association of the Bar of the City of New York, 1986), pp. 2-3.

² The following discussion of the Wicks Bill is derived from the 2007 negotiated version, which has been incorporated in its entirety into the Governor's 2008 program legislation. Unless otherwise noted, the source for the following discussion of the particulars of the Wicks Bill is the memorandum accompanying the program legislation.

³ Assembly Bill 9204 (2007).

⁴ Senate Bill 6808/Assembly Bill 9806, Public Protection and General Government, Part Q ("2008 Proposal"), §§ 1-19; Memorandum in Support. The Governor established the Commission on Local Government Efficiency and Competitiveness in April 2007 to "make recommendations on the measures we much adopt to facilitate and expedite partnership among State and local governments to improve the effectiveness and efficiency of local governments." (From Governor's letter, dated April 23, 2007, to local government officials.)

Other provisions of the 2008 Proposal would raise, from \$10,000 to \$50,000, the threshold requiring that awards for public works contracts be made to the lowest responsible bidder after advertisement for sealed bids; as well as raise from \$10,000 to \$20,000, the threshold requiring the same for purchase contracts. (§ 21)

The 2008 Proposal would also permit, for purchase contracts but not for construction, local governments to make an award based on best value instead of lowest responsible price, taking other factors such as quality and efficiency into account. (§ 22; see State Finance Law, § 163). A few other states, however, permit awards for construction based on some conception of value that is broader than price. Kansas permits the state, for competitively bid construction projects, to consider cost factors other than the initial purchase price when determining the lowest bidder and may consider a "cost-value" model that includes factors such as compatibility, capability, growth and contractor support. Minnesota permits the state to award construction contracts on the basis of best value, taking into account, among other factors, such as environmental considerations, quality and vendor performance, in addition to price. And, Texas permits the state and some local governments to use best value to determine which of several available service delivery methods/procurement methods to use for construction projects. (Source: Love, Michael K. and Douglas L. Patin, editors. *State Public Construction Law Source Book*. (Chicago: CCH Incorporated, 2002)). The survey of the 50 states in this report was limited to review of this volume, published in 2002; thus, any discussion, in this report, of construction law outside New York does not reflect any changes in law since 2002. To the extent there are changes elsewhere in the nation, one can reasonably assume they are in the direction of increased flexibility, leaving New York among a smaller number of jurisdictions subject to the least flexible laws.

New York State expresses public procurement of construction services in terms of "contracts for public works." (See General Municipal Law, § 103) This particular expression linked to the requirement of lowest price reduces the construction of infrastructure or a structure to a standard commodity or good, the price of which is the only meaningful distinguishing feature. The reality behind this view of construction was much truer when these provisions were adopted than they are today. When building technology was much simpler than it is now, it was more likely that final detailed plans and drawings

upon which the bids were made were sufficiently complete and accurate to render unnecessary any further application of discretion, skill and professional judgment on the part of the contractor. Modern building technology has made final specifications, upon which the bids are made, relatively less final and complete, exposing the contractor to the risk of having to apply professional skills and make judgments for which it is not compensated in the lowest price procurement model. Further, it should be noted that protecting the public fisc over the period of time a project is constructed *and* operating requires an evaluation of costs, in addition to the initial construction costs, that are directly related to the *quality* of design and construction.

⁵ Multiple prime contracting is a variation on the design-bid-build model of construction service delivery, in which the owner holds separate contracts with specialized contractors and has the responsibility of managing, or hiring someone to manage the project schedule and budget. Benefits of multiple prime contracting can include facilitating "fast-tracking" and flexibility because contracts can be awarded as soon as respective aspect of design is complete, giving the owner more control over project schedule because owner can set bidding schedule and avoiding contractor mark up because the owner can directly procure major material items. The disadvantages, in the multiple prime arrangement, flow from the general contractor's lack of contractual responsibility to coordinate work among trades, which often impacts the schedule, generating delay; in addition, the final project cost cannot known until last prime contract is awarded. (Source: AECOM materials on Program Management Overview, November 30, 2005, and the Construction Management Association of America (CMAA) website (<http://www.cmaanet.org>) *Choosing the Best Delivery Method for Your Project.*)

⁶ Nevada, North Dakota, Ohio and Pennsylvania mandate multiple prime contracts for public works in a manner similar to that of New York. Most states have no statutes on the issue and thus expressly neither authorize nor prohibit multiple prime contracting. Delaware allows it where appropriate, and recent state authorization of alternatives to competitive bidding is thought to permit it in Maine. New Jersey and North Carolina expressly authorize multiple prime contracting as an option. Illinois authorizes it, but the supervening principle of competitive bidding requires that multiple awards not be made when it is clear that a single award would fully serve state needs. In Kansas, which also authorizes multiple prime contracting, one of the multiple primes must be designated the prime contractor who is responsible for coordinating all the work. (Source: Love and Patin)

⁷ Myers, Danny. *Construction Economics: A New Approach* (London: Spon Press, 2004), p. 191. For a sense of magnitude, public construction accounted for approximately 48 percent of construction activity in New York City in 2006, and is projected to account for approximately 47 percent in 2007, 46 percent in 2008 and 43 percent in 2009. New York Building Congress, *Construction Outlook 2007-2009: Construction Remains White Hot*, p. 1 (from website: <http://www.buildingcongress.com>). The corollary to the magnitude of the public works portion of the construction industry's work is that "the largest single beneficiary of a radically improved construction industry would be the public sector." See also Fairclough, Sir John, *Rethinking Construction Innovation and Research: A Review of Government R&D Policies and Practices*. (London: Department of Trade and Industry, 2002), p. 28.

⁸ In the related press release, dated June 14, 2007, the Governor noted that the Wicks Bill was "a positive step forward in addressing the underlying structural problems that have negatively impacted our state's competitiveness." The Governor claimed that this recalibration would automatically exempt "more than 70 percent public works projects" in the State.

⁹ See Governor's 2008-2009 Executive Budget, Financial Plan Overview; see also Patton, Zach, "Unreconstructed," *Governing* (Washington, D.C.: Washington Quarterly, Inc., November 2007) Volume 21, No. 2, pp. 63-69.

¹⁰ American Bar Association (ABA). *The 2000 Model Procurement Code for State and Local Governments*. (ABA, 2000) ("2000 Update").

¹¹ Construction projects are, from an economic perspective, products of the construction industry. The products of construction consist of structures, ranging from private residential and commercial buildings to public building of all kinds, and infrastructure, ranging from private and public utility facilities to roads and highways. The intuitive sense that constructed projects can have a positive impact on the related economy underlies economic development programs and law. Yet, there has been less quantitative analysis of the relationship between the products of construction and the economy than of the relationship between the construction sector and the economy, which is fairly well understood. As a result of the change initiatives sponsored by the British government described in this report, however, the quantity of such analysis has increased.

¹² Patton, *op. cit.*, p. 66. "American industries have, in aggregate, increased the productivity of each worker by about 250 percent since 1964, according to the U.S. Bureau of Labor Statistics. But in the same time period, per-worker productivity in the construction industry dropped by 22 percent." *Idem*

¹³ Present use by the New York City's Department of Design and Construction (DDC) of Design Quality Indicators, quality metrics developed in Great Britain, in DDC's Design + Construction Excellence program, indicates the transferability of concepts and quantitative data from the British experience for New York State purposes.

¹⁴ Beginning in 1981, while the City was in a "control period" under the Financial Emergency Act and subject to rigorous external oversight, the City began to define its construction problem as a Wicks Law problem, in *Wicks Law Reform and Effective Management of Public Construction*, which was followed in 1984 by *Wicks Law Repeal: A Public Construction Necessity*. These reports were accompanied by quantitative data. In 1986, the year the City emerged from a control period to a sunset period under the Act, with lower levels of external oversight, the City released *Wick\$ Waste\$*. During these years and beyond, reform of the Wicks Law was quantified and inserted into the City's budget, as a significant part of the City's Program to Eliminate the Gap and a standard bearer in the City's legislative agenda with the State. The City's success in defining the Wicks Law as the sole cause of its problems in executing its capital program was matched by increased levels of conflict among stakeholders on this issue, rendering resolution not then possible.

¹⁵ Jenkins-Smith, Hank C. *Democratic Politics and Policy Analysis* (Pacific Grove: Brooks/Cole, 1990), p. 103.

¹⁶ Jenkins-Smith, *op. cit.*, p. 103. For example, analytical work emerging from Great Britain that has begun to quantify intangible benefits to owners and the public of the products of construction, such as added value from excellence in design, has been matched by work here, especially in New York. See Sallette, Marc A. The Economic Value of Investing in Architecture and Design, University of Chicago Graduate School of Business unpublished paper, March 19, 2003, p. 2; also, Macmillan, Sebastian. "Added Value of Good Design," *Building Research & Information* (2006), pp. 258-259, citing Pearce, David. The Social and Economic Value of the Built Environment, Construction Research and Innovation Strategy Panel (2003). See also Schwartz, Amy Ellen, Ingrid Gould Ellen, Michael H. Schill and Ioan Voicu, "The External Effects of Place-Based Subsidized Housing" (New York: Furman Center for Real Estate & Urban Policy (NYU) 2006) and Been, Vicki and Ioan Voicu, "The Effect of Community Gardens on Neighboring Property" (New York: Furman Center for Real Estate & Urban Policy (NYU) 2007).

¹⁷ Myers, *op. cit.*, p. 15.

¹⁸ *Ibid.*, p. 159.

¹⁹ A policy forum initially limited to participants on the basis of professional or technical competence increases the chance that policy recommendations will be feasible and informed by credible policy analysis because they share common bases to assess analytical claims. Jenkins-Smith, *op. cit.*, p. 103.

The British government has used the professionalized task force approach in this area to great effect, as described in greater detail throughout this report.

"A recurring recommendation is the need for the construction process to be viewed in a holistic way by a multidisciplinary team. This reflects the fact that construction draws knowledge from many areas, and an important but undervalued area is economics." Myers, *op. cit.*, p. 7. See also LePatner, Barry B., "Our Dysfunctional Construction Industry: How Did It Ever Get to This," *LePatner Report*, Volume 26, No. 1 (Spring 2006), p. 2 (from website: <http://www.lepatner.com>). Members of the design professions, by virtue of their place in the construction supply chain, have an "overview of the entire project," a perspective that would be critical to any such review. Royal Institute of British Architects (RIBA), "Architects and the Changing Construction Industry," p. 3 (leaflet enclosed in July 2000 issue of the RIBA Journal).

While many in New York politics might decry the task force approach as a time-honored way to avoid change, commencing a change effort in the construction industry with a professionalized task force has had some proven success in Great Britain as a way of promoting innovation in this area. "A particular strength of [the British approach] was that they did not try to prescribe what should be done but invited innovation while offering a context in which it can take place, be evaluated and shared." *Ibid.*, p. 3.

Another successful example, closer to home, of the professional task force approach to reform a complex area via analytically-based consensus, has been the New York City Department of Building's approach to reforming the recently adopted New York City Building Codes. A construction industry task force in New York could support ongoing work of the Commission on Local Government Efficiency and Competitiveness because much of the existing public procurement process operate as unfunded mandates, as well as the newly proposed property tax commission because, to the extent that the existing public procurement process generates debt service, paid with property taxes, at higher levels, it puts pressure on the local property tax rates. The Memorandum of Support of the 2008 Proposal noted the relation of public procurement reform to debt service savings. Finally, such a task force would complement any existing and planned economic development activities around the State by increasing its ability to efficiently exploit its capital program as an economic tool.

²⁰ The State imposed, on itself, the traditional service delivery model and associated constraints in 1940. (State Finance Law, Section 135) The State generally imposed, on its local governments, the service delivery model and similar constraints in 1953. (General Municipal Law, Section 103)

²¹ Myers, *op. cit.*, p. 7.

²² These official statistics use the North American Industry Classification System (NAICS) which defines construction as establishments primarily engaged in the construction of buildings or engineering projects, the preparation of sites for new construction and subdividing land for sale as building. The NAICS definition may include new work, additions, alterations or maintenance and repairs. (From U.S. Department of Labor, Bureau of Labor Statistics) To the extent these official statistics do not include related off-site construction activities including those within the supply-chain, they may understate the output of what could be considered the construction industry, especially as the construction industry over time more fully embraces the application of modern manufacturing techniques including off-site fabrication of building components. The traditional view of the industry as made up by suppliers to a construction project, from the architect and designers to the various construction contractors and subcontractors is narrower than one could devise that would include the various construction activities and entities within the supply-chain. Further, the nature of built urban areas in mature economies may further understate construction activity because repair and maintenance activities, which increase in mature economies while new construction occurs at declining rates, may not be fully included in the official statistics. Myers, *op. cit.*, pp. 1, 10, 17, 71, 193, 197-198; Fairclough, *op. cit.*, p. 11; LePatner, *op. cit.*, p. 2.

²³ Lipsey, Richard G. and Peter O. Steiner, *Economics, 4/e* (New York: Harper & Row, 1975), p. 559. "The change in expenditure might come, for example, from an increase in private investment, from

new government spending, or from additional household consumption expenditure accompanied by a decline in household savings." *Idem* Again, for a sense of magnitude, a private industry estimate of the construction industry's multiplier effects in New York suggests it could be 1.63 in the State and 1.40 in New York City.

²⁴ Construction demand is considered a derived demand, ". . . in as much as the goods are not necessarily demanded in their own right but for what they can add to the final good or service being produced." Myers, *op. cit.*, p. 60. Known as "investment goods", these include both private sector commercial and residential projects, as well as public sector infrastructure and structure projects. State and local governments procure construction as part of effecting their public works—or public goods—programs, generating a significant portion of the construction industry's work. Thus, the capital programs of all State and local government entities function as a demand management tool for the State. *Ibid.*, pp. 191, 193, 201-203.

²⁵ *Ibid.*, pp. 7, 190. The performance of the construction industry is conceptualized as a building cycle, and it is thought that studying building cycles, in view of the strong relationship between the building and business cycles, ". . . may contribute to a better understanding of business fluctuations." *Ibid.*, p. 190. At the same time, however, changes in the building cycle—both expansion and contraction—are thus more volatile than those in the general business cycle, giving statutory changes the potential for great economic impact in both directions. *Ibid.*, pp. 190-191.

²⁶ Fairclough, *op. cit.*, p. 11; Musgrave, Richard A. and Peggy B. Musgrave. *Public Finance in Theory and Practice*, 5/e (New York: McGraw-Hill Book Company, 1989), p. 6; Myers, *op. cit.*, p. 181.

²⁷ Myers, *op. cit.*, p. 15.

²⁸ Fairclough, *op. cit.*, p. 14.

²⁹ Fairclough, *op. cit.*, p. 14-15. The construction industry "is dominated by a large number of relatively small firms, spread over a vast geographical area." Myers, p. 7. The construction industry within any jurisdiction ". . . is concerned with producing and maintaining a wide variety of durable buildings and structures, and as a consequence, [contains] many construction markets." Myers, p. 10. Further, as a highly fragmented market dominated by small firms, "[t]he type of construction—particularly in terms of its size and complexity, its geographical location, and the nature of the client—will define the market in each case." Myers, *op. cit.*, p. 10, citing Drew and Skitmore (1997: 470).

³⁰ See Cole, James D. "Constitutional Home Rule in New York: The Ghost of Home Rule", *St. John's Law Review*, 1985, Vol. 59, pp. 713-749. For example, were a New York local government, even a large one such as New York, interested in improving its local economy by making its capital program more efficient and effective, existing State law governing public procurement precludes most local legislation on the topic, thus limiting the scope or effectiveness of such local efforts. Thus, it would be necessary in New York for the State to reform the public construction law for its local governments, as well as for itself.

³¹ Musgrave and Musgrave, *op. cit.*, pp. 7-9, 54, 446. As an illustrative example of these public economic concepts, optimal levels of research and development in the construction industry are unlikely to occur without government sponsorship because private funders of research and development cannot exclude others from the benefits of resulting research. But, similar to the private sector that cannot contain the benefits of their funded research and development, local government cannot contain such benefits within its jurisdictional boundaries any better and is unlikely to provide for research and development. Thus, a higher level of government, like the State, is a more likely and appropriate level of government to engage in such activity. The State, concerned with quality and improving the value and economic potential of projects and the built environment, can invest in related construction research and development that would benefit not only its own projects and those

of all local governments, but also those of the private sector. As important, investments in research and development among appropriate educational institutions around the State would have further positive economic effects within the related communities. Fairclough, *op.cit.*, pp. 14, 19. See also, LePatner, Barry B., "Construction Technology: Adoption is slow, but hope remains," *LePatner Report*, Vol. 26, No. 4 (Winter + Spring 2007), pp. 1-2 (from website: <http://www.lepatner.com>)

³² Construction Law Committee, *Wicks Law Report* (New York: The Association of the Bar of the City of New York, March 1994), pp. 1-2.

³³ *Ibid.*, p. 2, quoting from R. Nash and M. Love, "Innovations in Federal Construction Contracting," 45 *Geo. Wash. L. Rev.* 309, 416 (1977).

³⁴ *Ibid.*, p. 5.

³⁵ Wicks Bill, Sections 1 and 2, amending the General Municipal Law; § 3, amending the State Finance Law; § 4, amending the Public Housing Law; §§ 5 and 6, amending the Education Law; §§ 7 and 8, amending the Public Authorities Law relating to the New York City Water Finance Authority; § 9, amending the Public Authorities Law relating to Westchester County Health Care Corporation; § 10, amending the Public Authorities Law relating to Nassau Health Care Corporation; § 11, amending the Public Authorities Law relating to Clifton-Fine Health Care Corporation; § 12, amending the Public Authorities Law relating to Erie County; § 13, amending Chapter 560 of the Laws of 1980 relating to New York City's solid waste management plans; and, § 14, amending the Public Authorities Law relating to the Dormitory Authority of the State of New York.

³⁶ Construction Law Committee, *op. cit.*, pp. 7-8.

³⁷ Wicks Bill, § 18.

³⁸ There is currently no statutory authorization for project labor agreements in New York. The court, in *New York State Chapter, Inc. v. New York State Thruway Authority*, 88 N.Y.2d 56 (1996), held that existing public procurement law did not prohibit project labor agreements, but that such law required public owners to demonstrate that a project labor agreement satisfy the expressed public purposes underlying such statutes; namely, fiscal prudence and prevention of favoritism, improvidence, fraud and corruption. Other decisions have elaborated on various issues related to the consonance of a particular project labor agreement and the expressed public purposes of existing public procurement law.

³⁹ In a project labor agreement (PLA), the project owner (public or private) or the contractor and the various trades for required for the project, represented by the relevant unions, agree to various working terms and conditions in advance of bidding for the project. The terms and conditions cover working conditions, including wages and work rules. They also include dispute resolution procedures because they typically include a promise by the unions not to strike. The terms and conditions would apply to all winning bidders for the project regardless of whether their workers are unionized. U.S. Office of Management and Budget, "Statement of John Koskinen, Deputy Director for Management, Before the Committee on Labor and Human Resources, U.S. Senate," April 30, 1997.

⁴⁰ Contract would include subcontract, lease, grant, bond, covenant, or other agreement for a project undertaken pursuant to the exemption-from-Wicks process.

⁴¹ The other statutory impediment is the requirement for public bidding and award to the lowest price. (General Municipal Law, Section 103(1))

⁴² Wicks Bill, § 2 with respect to local governments. Many states have some form of sub-contractor listing requirements: Alaska, Arkansas, California, Connecticut, Delaware, Hawaii, Idaho, Nevada, New

Jersey, New Mexico, North Carolina, Rhode Island, South Carolina, Utah, Washington and West Virginia. Maine has a subcontractor bid depository system and Massachusetts has a filed sub-bid requirement. (Source: Love and Patin)

⁴³ Bid shopping occurs when a general contractor seeks "bids from subcontractors other than the one whose bid amount the general contractor used in calculating its own bid, and often involves the general's informing the other subcontractor of the amount of the low bid and inviting them to undercut it." Bid negotiation occurs when the general contractor attempts "to negotiate a lower price than that bid from the subcontractor whose bid figure the general employed in calculating its own bid, frequently by threatening to subcontract the work to a third-party." Construction Law Committee, *op. cit.*, p. 9.

⁴⁴ This requirement would be similar to that of the New York City School Construction Authority (SCA), except that it would provide a process for changing listed subcontractors while the SCA listing requirement does not. (Public Authorities Law, Section 1735(3))

⁴⁵ Construction Law Committee, *op. cit.*, pp. 8-14.

⁴⁶ *Idem* This report summarized New York case law supporting a "Catch 22"-like situation for the subcontractor that is neither correctable under present case law nor subject to collective practices. Subcontractors may be held to their bid and prices quoted in bid to the general contractor under principles of promissory estoppel, but promissory estoppel principles do not bind the general contractor to use the subcontractor who provided the quotes or the quoted figures themselves. One reason for the historical resistance to Wicks reform is that the Wicks Law, while not an economically-based solution to this situation, *does* provide protection to those contractors subject to its provisions. While subcontractor listing requirements are the typical solution to this situation, decisions in Arizona, Connecticut, Florida and North Carolina have been more sensitive to this "Catch 22"-like situation. (Source: Love and Patin)

⁴⁷ Construction Law Committee, *op. cit.*, p. 14. The existence of an economic justification for the practices of bid shopping and bid negotiation suggests an opportunity for economic analysis to evaluate and compare the costs and benefits of the existing situation with those of the proposed change.

⁴⁸ Wicks Bill, §§ 15 and 16, respectively amending General Municipal Law and State Finance Law. Of the majority of states that enumerate the number of days within which the general contractor must pay the subcontractors, ten states require payment within seven or fewer days from receipt by the owner—Arizona, Colorado, Maine, Montana, New Mexico, North Carolina, South Carolina, Texas, Vermont, Virginia and Wisconsin. (Source: Love and Patin) The Wicks Bill would eliminate New York City's current exemption from the State law prompt payment provision because other New York public owners subject to the Wicks Bill would be following the practice now required of the City.

⁴⁹ Wicks Bill, § 19.

⁵⁰ Wicks Bill, § 1-a, amending the General Municipal Law.

⁵¹ AECOM, *op. cit.*; CMAA, *op. cit.* This pre-qualification authorization would be permissive in a manner similar to that of the SCA; and, there is substantial overlap between the two sets of criteria for evaluation of contractors for pre-qualification. The Wick's Bill qualification criteria, however, would place additional emphasis on compliance with equal employment opportunity requirements and health and safety experience, in a manner similar to that of the Coordinated Construction Act for Lower Manhattan. (Unconsolidated Laws of New York, 2004 Regular Session, Chapter 24, § 4)

⁵² Prequalification is required to some degree, most often for highway projects, in many states. Alabama, Colorado, Connecticut, Indiana, Maine, Massachusetts and Washington mandate it in various circumstances, while Kansas permits it. (Source: Love and Patin)

⁵³ *Op. cit.*, Musgrave and Musgrave, pp. 5-9, 41-58, 446-453; *op. cit.*, Myers, pp. 39-40, 147-159, 184-186, 191. Public welfare economics deems government to be the appropriate actor to correct for market failures in efficiently producing—or allocating resources for the production of—the politically desired levels of pure social goods and services as well as correcting for negative and positive externalities with mixed social goods and services. One only has to review the State and local governments' capital budgets to easily identify physical manifestations of pure and mixed social goods. The practical inability to exclude consumers from the benefits of certain goods or services and the inefficiency of such exclusion because consumption by one does not appreciably diminish others' ability to consume, renders certain goods and services, such as national defense, public safety, roads, highways and light houses, "social" or "public" goods. The market also fails to provide the efficient amount of certain mixed public and private goods and services due to the problem of "externalities." "Externalities" is a term economists use to describe instances, either in a negative context or a positive context, where the market fails to provide the socially desired amount of certain mixed public and private goods and services because the market's pricing mechanism is inadequate. When the market does not include the cost of negative consequences to private transactions, such as pollution or unsafe construction practices, it produces too much of the item generating "negative externalities." Conversely, the private market often produces too little of an item generating "positive externalities" for society, such as education, health care or sustainable buildings. State and local governments have varying abilities to intervene in the economy to correct for market failures. Of the three categories of fiscal, monetary and direct policy intervention, state and local governments are able to participate in two in varying degrees—direct policy intervention, through legislation, and fiscal intervention, through expenditures in the budget, as well as taxes and subsidies.

⁵⁴ Government, even as approximated at lower state and local levels, performs a macroeconomic stabilization function when it uses budget policy, including the capital budget, "as a means of maintaining high employment, a reasonable degree of price level stability, and an appropriate rate of economic growth. . .". Musgrave and Musgrave, *op. cit.*, pp. 113-129; Myers, *op. cit.*, pp. 181-192.

⁵⁵ While economic efficiencies are distinct from budget efficiencies, both could come from similar activities. With respect to the budget, to the extent current statutory and regulatory schemes for construction embed unnecessary delays into any part of the process from project inception to completion, they embed unnecessary and avoidable costs that could be unleashed for additional projects or alternative expenditures.

The idea that government regulation reform aimed at both private and public projects can increase economic efficiency is consistent with findings from the seminal 1988 RAND report that studied the outcomes, including cost outcomes, of 52 civilian projects, consisting of government-owned and industry-owned projects, as well as jointly-owned projects. One of the primary findings of this RAND report was that "[c]ost growth and schedule slippage for projects in the megaproject database are driven primarily by conflicts between the projects and the host governments, i.e., institutional problems relating to environmental regulations and opposition, health and safety rules and regulations, and labor practices and procurement controls." Many recommendations from this report focused on practical, but often forgotten, techniques of project risk management. But echoing the sentiment of "we have met the enemy and he is us", the RAND study pointed out that while government process is the most significant driver of costs for mega projects, the "host government makes the rules; the host government can change the rules." Merrow, Edward W. "Understanding the Outcomes of Megaprojects: A Quantitative Analysis of Very Large Civilian Projects" (Santa Monica: The RAND Corporation, 1988), pp. iv, 5, 62. See also, Kelly, Walt. Pogo comic strip.

⁵⁶ It is not unusual for government to use the public procurement scheme to effect policies aimed at externalities that are often unrelated to procurement *qua* procurement. At a basic level, the object of public procurement laws is to authorize government to purchase goods and services with public funds to accomplish its various functions. As these authorizations are typically expressed as a process or set of processes, one public policy objective directly related to procurement *qua* procurement is that these public processes be fair and open. Since public funds pay for these goods and services, another direct public policy is to establish criteria related to price or value. Finally, procurement law often justifies process rules and price or value criteria as explicit ways of avoiding fraud and abuse, the potential for which exists in all areas of government.

Open competitive bidding for items or services awarded to the lowest bidder can satisfy these procurement-related public policies much of the time, and for many public procurement laws it is an exclusive option, if not the default option. The Model Procurement Code establishes other appropriate mechanisms to satisfy these procurement-related public policies. To the extent the open competitive bidding requirement is a mechanism to approximate best value, it relates to procurement *qua* procurement and one can debate whether it serves as an appropriate proxy for value in all instances. Open competitive bidding can also be one way to demonstrate a fair process. To the extent an open competitive bidding requirement is thought, however, as a mechanism to assure a competitive construction market in an economic sense, it may fall quite short, in view of the realities of the fragmented construction industry. Other unrelated policy objectives, such as initiatives designed to encourage small or minority business development or sustainability, appended to the procurement scheme, may be economically ineffective or inefficient if enacted at the local government level.

⁵⁷ Joint Committee of The American Institute of Architects (AIA) and The Associated General Contractors of America (AGC), *Primer on Project Delivery* (Washington, D.C.:AIA and AGC, 2004), p. 1.

⁵⁸ Myers, *op. cit.*, pp. 149-150, 251. See also Stiglitz, Joseph E. "Principal and Agent, *The New Palgrave: A Dictionary of Economics*, Vol. 3 (London: Macmillan, 1987), pp. 966-71; Myers,

⁵⁹ With New York, 26 states tend to limit capital procurement to the traditional design bid build method awarded to the lowest responsive and responsible bidder include: Alabama, Arkansas, California, Delaware, Georgia, Indiana, Iowa, Kansas, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Jersey, Ohio, Oklahoma, Pennsylvania, South Dakota, Washington, Wisconsin and Wyoming. For some of these states, such as California, Delaware, Indiana, Kansas, Louisiana and Wyoming, the requirement that full plans and specifications be prepared prohibits service delivery methods such as design build. For others, such as Kansas, Montana, Nebraska and South Dakota, licensing requirements for architects and engineers prohibits design build. (Source: Love and Patin)

⁶⁰ These states include Alaska, Florida, Hawaii, Illinois, Kentucky, Maryland, New Mexico, North Carolina, Rhode Island, South Carolina, Tennessee and Texas. Of these states, the following have adopted the 1979 Model Code: Alaska (1988), Arizona (1985), Kentucky (1979), Maryland (1981), New Mexico (1984), Rhode Island (1989) and South Carolina (1981). (Sources: Love and Patin) See also, ABA. "Analytical Summary of State Enactments," *Annotations to the Model Procurement Code for State and Local Governments*, 3rd ed. (ABA, 1996).

⁶¹ These include Arizona, North Carolina and Texas. (Source: Love and Patin)

⁶² ABA 2000 Update, *op. cit.*, p. v.

⁶³ Value is created by the interplay between a project's functions—use and aesthetics, primary and secondary—and the costs of such functions. The interplay is bounded by what the client/user wants and what the client/user is able and/or willing to pay. Lawrence D. Miles, Lawrence D. *Techniques of Value Analysis and Engineering*, 3rd ed. (Washington, D.C.: Lawrence D. Miles Value Foundation, 1989), pp. 3-5, 12, 14, 17, 25-29.

⁶⁴ Egan, Sir John. *Rethinking Construction*. (London: Department of Trade and Industry, 1998), p. 6

⁶⁵ Myers, *op. cit.*, p. 5. This is an example of increasing the efficiency of resource use along the existing production possibility curve. *Idem*

⁶⁶ Myers, *op. cit.*, pp. 60, 70-71.

⁶⁷ "Good examples of direct policy within the area of construction economics include building and planning regulations to protect the environment, and specific initiatives such as the Rethinking Construction movement (the Egan Report) and the sustainable construction agenda introduced to change cultural attitudes towards productivity, safety, and the environment. These initiatives are aimed at stimulating growth, stability and environmental performance within the sector." Myers, *op. cit.*, p. 186.

⁶⁸ For an excellent example of how a rigorous review of various regulations that individually and cumulatively have a negative impact on a particular segment of the construction industry—affordable housing—yielding many opportunities for targeted reform to improve related functions on the margin, see Salama, Jerry J., Michael H. Schill and Jonathan D. Springer, *Reducing the Cost of New Housing Construction in New York City: 2005 Update*, (New York: Furman Center for Real Estate and Urban Policy (NYU) 2005).

⁶⁹ Myers, *op. cit.*, pp. 121-126.

⁷⁰ ABA 2000 Update, *op. cit.*, p. v. The earlier Model Procurement Code was promulgated in 1979.

⁷¹ *Ibid.*, p. iv.

⁷² *Ibid.*, Sections 5-201 and 5-101(2)-(5), pp. 40-44.

⁷³ *Ibid.*, Sections 5-101(4) and 5-101(5) and related commentary, pp. 40-41.

⁷⁴ *Ibid.*, Section 5-204(2).

⁷⁵ *Ibid.*, Section 5-101(6), subparagraph numbering removed, and related commentary, p. 41.

⁷⁶ *Ibid.*, Section 5-101(2) and related commentary, p. 40.

⁷⁷ MacCollum, David V. "Teamwork Can Tame Construction Hazards," *Engineering News-Record* (New York: McGraw Hill, November 12, 2007), p. 34.

⁷⁸ The techniques range from functional analysis conceptual design (a variant of value engineering) and multi-disciplinary design optimization to total quality management and lean manufacturing.

⁷⁹ Stocks, Samuel and Amarjit Singh, "Studies on the Impact of Functional Analysis Concept Design on Reduction in Change Orders," *Construction Management and Economics*, Vol. 17, Issue 3 (London: Taylor and Francis, May 1999), pp. 251-267. Moser, Cliff, "Using Active Value Engineering for Quality Management" and "Beyond Redlines: Creating a Practice-Based Quality Management Program," *AIA Practice Management Digest*, (website <http://www.aia.org/pm>) Summer 2006. McConahey, Erin, Philip Haves and Time Christ, "The Integration of Engineering and Architecture: A Perspective on Natural Ventilation for the New San Francisco Federal Building," (May 2002) presented at the American Council for an Energy Efficient Economy 2002 Summer Study on Energy Efficiency in Buildings, August 18-23, 2002. American Institute of Aeronautics and Astronautics, Inc. (AIAA), Technical Committee on Multidisciplinary Design Optimization, "White Paper on Current State of the Art," January 15, 1991.

Geyer, Phillip and Klaus Rueckert, "Conceptions for MDO in Structural Design of Buildings," 6th Congress of Structural and Multidisciplinary Optimization, May-June, 2005; Deremaux, Yann, Karen Willcox and Robert Haimes, "Physically-Based, Real-Time Visualization and Constrain Analysis in MDO, AIAA Paper 2003-3876. See also RIBA, *op. cit.*

⁸⁰ The earlier application of integrated design management tools illustrates a paradox of control—by embracing and integrating these tools and sharing, if not relinquishing, "power" with the other disciplines and stakeholders during the phase traditionally thought to be the domain of the designer, the designer increases his control over the design until the project's completion, while increasing the chances the project remains within original budget and schedule parameters. Better integration of these techniques from the beginning will increase the time in conceptual and preliminary design to "capture more knowledge" and "retain more design freedom later in the process in order to act on the new knowledge gained by analysis, experimentation and human reason." Deremaux, *op. cit.*, p. 1.

⁸¹ ABA 2000 Update, *op. cit.*, Section 5-101(3) and related commentary, p. 40. The 2000 Update defines functional requirements and design criteria as "design requirements". *Ibid.*, Section 5-101(6), p. 41.

⁸² ABA 2000 Update, *op. cit.*, Section 5-101(4), p. 40.

⁸³ *Ibid.*, commentary to Section 5-101(4), p. 40.

⁸⁴ *Idem* New York State has often authorized this model in the context of tax-exempt state created construction and financing authorities.

⁸⁵ *Ibid.*, Section 5-101(5), pp. 40-41.

⁸⁶ *Ibid.*, commentary to Section 5-101(5), p. 41.

⁸⁷ *Ibid.*, Section 5-202(3)-(6), pp. 44-45; Section 3-203(3), p. 26.

⁸⁸ AIA and AGC, *op. cit.*, p. 1.

⁸⁹ *Idem*

⁹⁰ *Idem*

⁹¹ *Ibid.*, p. 2.

⁹² *Idem*

⁹³ *Ibid.*, commentary to Section 5-202(4), p. 45.

⁹⁴ *Ibid.*, 5-204(2), pp. 46-47. The 2000 Update's approach to pre-qualification is not dissimilar to that of the Wick's Bill.

⁹⁵ *Ibid.*, p. viii; Section 3-202 (8) and related commentary, pp. 25-26.

⁹⁶ *Ibid.*, Sections 5-101(1) and 5-204(3)(b), pp. 39, 47-48.

⁹⁷ *Ibid.*, Section 5-101(1) and related commentary, p. 39.

⁹⁸ *Ibid.*, commentary to Section 5-204, p. 48.

⁹⁹ AECOM, *op. cit.*; CMAA, *op. cit.*; see also AIA and AGC, *op. cit.*

¹⁰⁰ In the public sector, the selection of the winning bid is often required by law to be made to the lowest responsive bid. In addition, statutory requirements that bid packages contain detailed plans and specifications prepared by professional architects and engineers have been interpreted to preclude alternative methods of service delivery, such as design-build. (Source: Love and Patin)

¹⁰¹ In the public sector, multiple prime contracting may be required.

¹⁰² As distinct from schedule uncertainty.

¹⁰³ Other variations include design/build/operate and design/build/operate/finance.

¹⁰⁴ The product of construction differs from the products of other manufacturing products in critical ways. They are physically "large, heavy and expensive" objects that are tied to their sites and contexts, facts which limit the ability to replicate them and achieve manufacturing economies. Further, in contrast to the typical manufacturing process where price can be known before fabrication, the construction process ". . . is complicated further by the fact that for most construction work a price needs to be stated before the activity commences—when all the costs are not yet known." This atypical pricing feature is further complicated by the typical method of competitive procurement, which ". . . , in turn, makes it difficult for potential contractors supplying their services to take advantage of the market . . .". Myers, *op. cit.*, p. 65; see also Chicago Architects Oral History Project, Interview of Carol Ross Barney by Deborah A. Burkhart, The Art Institute of Chicago, 2007, p. 8. The 2000 Update provides a menu of procurement vehicles as alternatives to competitive bid, which bring the designer and contractor closer in practical proximity, increasing understanding of the constructability of the design as well as reducing pricing risks.

¹⁰⁵ RIBA, *op. cit.*, p. 3. Present use by the New York City's Department of Design and Construction (DDC) of Design Quality Indicators, quality metrics developed in Great Britain, in DDC's Design + Construction Excellence program, indicates the transferability of concepts, measures and quantitative data from the British experience for New York State purposes.

¹⁰⁶ Myers, *op. cit.*, p. 7.

¹⁰⁷ National Audit Office (UK), "Modernising Construction," Report by the Comptroller and Auditor General, HC 87, Session 2000-2001, January 11, 2001, p. 1. (<http://www.nao.org.uk>) This report discusses the work of the Commission headed by Sir Michael Latham, as documented in "Constructing the Team," also referred to as the "Latham Report."

¹⁰⁸ Macmillan, Sebastian, "Added Value of Good Design," *Building Research & Information* (2006), pp. 258-259.

¹⁰⁹ National Audit Office, *op. cit.*, p. 19.

¹¹⁰ *Ibid.*, p. 1.

¹¹¹ *Ibid.*, p. 19.

¹¹² Egan, *op. cit.*

¹¹³ The methodology of Lean Thinking forces an industry to "change itself by rethinking the fundamentals of its delivery processes." RIBA, *op. cit.*, p. 3.

¹¹⁴ Egan, *op. cit.*, p. 3. In the follow up to the Egan Report, the Strategic Forum for Construction, published its report, "Accelerating Change" in 2002 and reiterated its commitment to industry integration and a "culture of continuous improvement based on performance measurement." Strategic Forum for Construction, *Accelerating Change* (London: Construction Industry Council, 2002), pp. 5, 10-11.

¹¹⁵ Macmillan, *op. cit.*, p. 259.

¹¹⁶ Myers, *op. cit.*, p. 5. "Several common sets of problem were identified as the root cause of this inefficiency. First, the industry demonstrated a poor safety record and an inability to recruit good staff. Second, there appeared to be no real culture of learning from previous projects, and no organised career structure to develop supervisory and management grades. Third, concern was expressed about the poor level of investment into research and development that restricted the industry's ability to innovate. The fourth, and possibly most worrying, problem that both reports observed was the fact that technology was not used widely enough across the construction sector." *Idem*

¹¹⁷ RIBA, *op. cit.*, p. 3. The State Office of General Services practices Total Quality Management principles, another design management technique related to lean manufacturing, as a result of adopting the International Standard Organization (ISO) Quality Management System. Like DDC, OGS Design and Construction Group (D&C) ". . . provides a full range of architectural, engineering and construction management services to state agencies for approximately \$650 million in design and construction projects a year. OGS D&C places a strong focus on the ISO Quality Management System for customer satisfaction, continuous improvement and cost effectiveness. It is the OGS D&C's policy to establish and maintain a documented Quality System. The Quality System conforms to the sections of ISO standards 9001:2000, which allows the group to obtain and maintain certification and contribute toward the D&C mission. The Quality Systems objectives are: to manage all project requirements in a timely, efficient, responsive and cost effective manner; to continually improve methods used to deliver professional services; and to seek ways to increase clients' satisfaction with OGS D&C's performance." New York State Office of General Services press release, "NYS OGS Design & Construction Receives ISO Certification: Only State Agency to Receive International Organization for Standardization Certification," dated October 10, 2006.

¹¹⁸ RIBA, *op. cit.*, p. 7.

¹¹⁹ *Idem*

¹²⁰ RIBA embraced industrial design techniques such as Lean Manufacturing to help them measure and demonstrate the value of design so that measures of a project's success would include the value contributed by design, as well as standard process measures such as budget, schedule and safety. RIBA acknowledged the importance of performance measurement to improving the construction process, *including* design process, which is the traditional domain of the architect, and the products of construction. DQI covers a spectrum of design quality measures related to a project's function, its build quality and its impact upon users and the surrounding community. The indicators cover those aspects that are fundamental, those that add value and those that represent excellence (collectively known as FAVE). DQI forms the basis of a structured dialogue among stakeholders at various points in the project process, as well as provide data for later project assessments and analysis. Early in the project, stakeholders engage in a FAVE session to assign project priorities for DQI, performing the critical function of project scoping. The initial collective project scope provides the baseline against which the team can conduct additional FAVE evaluations to measure success during design and at completion. RIBA, *op. cit.*; see also, Sallette, Marc A. "Design Values," *Urban Land* (Washington, D.C.: Urban Land Institute, November/December 2005), pp. 74-80.

¹²¹ HM Treasury, *The Green Book: Appraisal and Evaluation in Central Government*, (London), pp. 2, 10.

¹²² Fairclough, *op. cit.*

¹²³ *Ibid.*, p. 6.

¹²⁴ *Ibid.*, pp. 6, 14.

¹²⁵ Marc A. Sallette, "The Economic Value of Investing in Architecture and Design", University of Chicago Graduate School of Business, unpublished paper, March 19, 2003, p. 2; Macmillan, *op. cit.*, pp. 258-259, citing David Pearce, *The Social and Economic Value of the Built Environment*, Construction Research and Innovation Strategy Panel (2003).

¹²⁶ With respect to the benefits of excellence in design and construction, "[a] widely acknowledged difficulty with many of the benefits associated with good design is that they are hard to measure, or intangible, and this makes it difficult for those who procure buildings to assess how much it is worth investing in design and in construction." Macmillan, *op. cit.*, p. 264. This recent resurgence of interest builds upon the approach, if not the work, of an earlier architectural determinism sub-discipline from the last century. *Ibid.*, p. 258. As the Commission for Architecture and the Built Environment has stated, "Good design is not just about the aesthetic improvement of our environment, it is as much about improved quality of life, equality of opportunity and economic growth." *Ibid.*, p. 260. See Footnote 2.

¹²⁷ Myers, *op. cit.*, pp. 133-145, 161-176.

¹²⁸ Commission for Architecture and the Built Environment. *The Value of Urban Design* (Kent: Thomas Telford, 2001), p. 8. (<http://www.cabe.org.uk>)

¹²⁹ *Idem*