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**Testimony of
the
AMERICAN SOCIETY OF CIVIL ENGINEERS
on
Public Private Partnerships: Innovative Contracting
before the
Highways and Transit Subcommittee
Transportation and Infrastructure Committee
U.S. House of Representatives
April 17, 2007**

Mr. Chairman and Members of the Subcommittee:

Good morning. I am Maria Lehman. I am the Chief Operating Officer of the Chazen Companies. Chazen is a privately owned consulting engineering firm with more than 180 employees in the Hudson Valley. Its principal offices are in Poughkeepsie, Troy, Newburgh, and Glens Falls, New York.

I am pleased to appear before you today on behalf of the American Society of Civil Engineers (ASCE) to present our views on "**Public Private Partnerships: Innovative Contracting**" as the Subcommittee on Highways and Transit examines new and existing methods to deliver transportation projects.

It is important to remember the conditions of the nation's infrastructure when discussing the best way to deliver infrastructure projects. In 2005, ASCE released the Report Card for America's Infrastructure, which gave the nation's infrastructure a grade of "D" based on 15 categories. Roads received a grade of "D," bridges a "C," and transit a "D+." With so much progress to make, federal, state, and local governments need all the tools available to deliver quality infrastructure products.

A. Public-Private Partnerships

Public-private partnerships (PPPs) are contractual relationships between public and private sectors in infrastructure development. They have been defined as "a cooperative venture between the public and private sectors, built on the expertise of each partner that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards." PPPs have been practiced worldwide in both developed and developing countries with multiple

objectives including promoting infrastructure development, reducing costs, increasing construction and operation efficiencies, and improving service quality by incorporating private sector knowledge, expertise, and capital.¹

These PPPs span a spectrum of contractual models from straight contracting out to outright privatization, with increasing responsibilities and risks allocated to the private sector. However, no matter which PPP model is used, the regulatory control remains the responsibility of the public sector, which determines the kind of public works and services to be acquired and the quality and cost requirements on the delivery of such works and services, and takes necessary remedial actions for substandard performance.²

Innovation in public works contracting abounds. We see this across the continuum—from the traditional design-bid-build contract, where the client contracts sequentially with the designer and then with the contractor; to the design-build contract, where the client contracts with a single source to design and build a project; to the build-operate-transfer (BOT) contract in public-private partnerships, where the client contracts with the private-sector partner who is responsible for financing, designing, constructing, and operating during a concession period, and then transferring the built facilities to the client when the contract ends. No matter which contract type is chosen, the selection of the right source—designer, contractor, designer-builder, or concessionaire—is critical to the success of the acquisition. “Lowest price” based source selection is common in public and private contracts. But this approach may not necessarily provide the most economical end results or the desired best value.³

Nevertheless, our research has discovered a wide range of barriers to public-private partnerships in infrastructure development. These are broadly classified as to (1) social, political, and legal risk; (2) unfavorable economic and commercial conditions; (3) inefficient public procurement framework; (4) lack of mature financial engineering techniques; (5) problems related to the public sector; and (6) problems related to the private sector.⁴

B. Qualifications-Based Selection (Design-Bid-Build)

The federal government has been using innovative contracting methods for professional design services since 1972 when qualifications-based selection (QBS) became the procurement method for architectural and engineering work.

¹ Xueqing Zhang, M.ASCE, Factor Analysis of Public Clients’ Best-Value Objective in Public-Privately Partnered Infrastructure Projects, 132 ASCE J. CONSTR. ENG’G & MGMT 956 (2006).

² Id.

³ Zhang, Public Clients’ Best Value Perspectives of Public Private Partnerships in Infrastructure Development, 132 ASCE J. CONSTR. ENG’G & MGMT 107 (2006).

⁴ Zhang, Paving the Way for Public-Private Partnerships in Infrastructure Development, 131 ASCE J. CONSTR. ENG’G & MGMT 71 (2005).

Often an owner may believe that the pivotal issue in the selection of a professional engineer is the cost of the necessary services. Also, an owner may perceive that accepting the lowest bid to perform the work produces the project with the lowest total cost. In this case the owner is of the belief that the required engineering services are completely described and the qualifications of all engineers are equal.

ASCE believes that it is impossible to describe the required scope of engineering services in this manner. When construction operations and maintenance are considered, the lowest cost engineering services will generally not produce the lowest total project costs. Further, ASCE believes that the owner should have an established policy for designating individuals to serve on the selection committee. The selection committee should contain at least one professional engineer and others who are familiar with the project requirements.

ASCE believes that the selection of professional engineers as prime consultants and subcontractors should be based on the qualifications of the engineering firm. Qualifications—including training, experience, capabilities, personnel, and workloads—should be evaluated when selecting an engineering firm.

The cost of engineering services, while important and meriting careful negotiations, is related to the work to be performed, which often is not clearly defined at the time the engineer is selected. Therefore, selecting consultants based on cost is not recommended.

Accordingly, ASCE supports qualifications-based selection (QBS) procedures such as those specified by the Brooks Architect-Engineers Act of 1972, 40 U.S.C. §§ 1101-1104, and the American Bar Association's Model Procurement Code for State and Local Governments for the engagement of engineering services. ASCE recommends that the application of these procedures to the development of a scope of work and the selection, procurement and administration of contracts for engineering services be the responsibility of technically qualified staff of the project owner. This would include people with engineering or construction backgrounds.

Congress subsequently has clarified and extended the application of the QBS process to the awarding of architectural and engineering services contracts for:

- Aviation programs project grant application.
- Mass transportation contract requirements, management and architectural engineering.
- Military construction projects.
- Engineering services as competitive procedures for procurement purposes.
- River and harbor improvements.
- Surveying, mapping, charting and geodesy contracts of the National Imagery and Mapping Agency (NIMA).

The QBS procedure is characterized by three basic steps: (1) the owner selects the professional engineer believed best qualified to perform the required work without considering fee; (2) the owner and the selected professional engineer confer to determine and/or review the scope of work; and (3) a fee for engineering services is negotiated based upon the mutually developed scope of work.

Thus, cost is addressed at the appropriate time after the scope of services has been fully defined. Pre-contract communication between the owner and engineer to jointly develop a scope of work, as called for in step 2, is critical to the success of the project and ensures a mutual understanding of the owner's expectations for the work and the specific services the engineer will provide.

A poorly defined scope of required services can result in numerous change orders. Lacking specifics, each firm will, in order to be competitive, submit a price for the least amount of work reasonably envisioned. Detailed analysis of the problem and the search for innovative and lasting solutions, or even the comparison of the obvious alternatives is precluded. This approach is likely to result in minimal engineering work that will not properly evaluate the overall cost of construction, operation and maintenance of the project.

QBS procedures are most effective when administered by those who best understand the unique nature of the service being sought. The procurer's experience with engineering organizations and proposed services, coupled with appropriate training in procurement matters, provides the required knowledge, thereby enhancing the efficiency of the civil works process.

The QBS process has been so successful at the federal level that it is recommended by the American Bar Association in its model procurement code for state and local government. More than 40 states have enacted their own qualifications-based selection laws for architecture, engineering, surveying and mapping services. Others use it as a standard procedure. Today, no state has a specific law requiring bidding of architectural or engineering design services.

C. Design Build Project Delivery

The design-build project delivery system is one of several innovative project delivery systems available to government agencies and private businesses. Its implementation by the FHWA has been mismanaged, however.

Design-build project delivery—a client-driven innovation—initially was seen principally as a “fast track” solution to traditional delays in the construction of major public works projects. The methodology was thought initially to give less weight to cost and potentially allow many more contracts to be awarded outside the customary low-bid approach.⁵

Design-build is a method whereby an owner can focus design and construction responsibility through a single contract. However, this contracting method presents certain challenges that

⁵ Paradoxically, precisely the opposite has occurred. As a general matter, government clients seem to favor low-bid awards designed and built by highly qualified contractors under a design-build project, according to a recent study of 110 RFPs issued by 11 federal agencies (none of them FHWA) between 1999 and 2002. See Douglas Gransberg, P.E., M.ASCE, and Ronald Barton, Analysis of Federal Design-Build Request for Proposal Evaluation Criteria, 23 ASCE J. MGMT ENG'G 105 (2007).

must be addressed if quality is to be maintained. These issues are (1) procuring a highly qualified design-build team; (2) providing the contractual mechanism enabling the designer to fulfill its professional and ethical obligations to the owner as well as the public; and (3) providing the contractual mechanism which expresses the owner's requirements in the proposal and their fulfillment in the delivered project.

ASCE strongly supports the use of the two-phase competitive source-selection process required by the Federal Acquisition Reform Act (FARA) of 1996, 41 U.S.C. § 253m, for design-build contracts awarded by government agencies. The design-build team must be selected using the modified QBS criteria specified by the Act. The owner must provide sufficient architectural and engineering services to prepare the design-build request for proposal (RFP) to identify the disciplines needed in the design-build team, and to evaluate, manage and assess the owner's requirements throughout the project.

The contract between the design-build team and the owner must establish the means for direct communication between the owner and the designer as well as other team members. On complex projects, the owner must provide predetermined reimbursement for the firms selected to make complete design-build proposals.

The qualifications of the design-build team must be the primary consideration of selection. Team selection should be accomplished through a qualifications-based process that precedes evaluation of all other considerations. In order for the delivered project to meet owner requirements, the team's designer, as designer of record, must be allowed to fulfill its professional and ethical obligations to the owner as well as the public. The communication link between the designer and the owner must be firmly established at project inception.

Because of the high cost of preparing design-build proposals for complex projects, the owner must provide reasonable reimbursement to the firms selected to submit proposals.

D. Design Build in TEA-21 and SAFETEA-LU

Section 1307 of the Transportation Equity Act for the 21st Century (TEA-21), 23 U.S.C. 112(b) (3), gave state transportation departments the discretion to award a design-build contract for federal-aid highway "qualified projects." Section 1307(c) of TEA-21 defined "qualified projects" as projects whose total costs are estimated to exceed (1) \$5 million for intelligent transportation system projects and (2) \$50 million for any other project.

The Act also required the Federal Highway Administration (FHWA) to issue a rule no later than June 9, 2001, regulating the awarding of design-build contracts by the state transportation departments. The final rule was issued by the FHWA on December 10, 2002. See federal Highway Administration, Final Rule, Design-Build Contracting, 67 Fed. Reg. 75,902 (Dec. 10, 2002). The rule took effect on January 9, 2003.

The FHWA regulation departed significantly from the objective of section 1307 by authorizing the use of a "single-phase selection process," which is defined as "a procurement process where price and/or technical proposals are submitted in response to [a request for proposals]. Short-listing is not used. *Id.* at 75,928 (emphasis added). Short-listing is critical to the success of the

design-build process. Additionally, such a “single-phase” process is not authorized in TEA-21 and is contrary to the statute.

The final rule declined to extend the use of the two-phase source-selection procedures required of federal agencies under FARA. According to the agency:

The Federal Acquisition Reform Act of 1996 does not apply to the federal-aid highway program. The FHWA is encouraging the use of two-phase selection procedures in 23 C.F.R. 636, Subpart B; however, it is not requiring the use of two-phase selection procedures.

Id. at 75,903 (emphasis added).

The FHWA went on to emphasize its opposition to the congressional intent on the use of design-build project delivery contracts.

“The FHWA does not believe it is appropriate to mandate the use of two-phase selection procedures in the federal-aid highway program. While the federal Government has elected to do so for federal contracting, we do not believe that this is appropriate for the transportation industry. We strongly encourage contracting agencies to utilize two-phase selection procedures, however, the use of two-phase procedures remains optional.

Id. at 75,918.

The regulation cited above clearly departs from the expressed intent of Congress in FARA and TEA-21. Congress has the sole constitutional authority to authorize and build federal-aid highways and must set the FHWA on the proper course.

Indeed, Congress itself fared no better in 2005 when it sought to address the design-build issue in SAFETEA-LU. The 2005 changes frankly missed the mark. Section 1503 of SAFETEA-LU, 23 U.S.C. § 112(b)(3), merely codifies the FHWA’s misunderstanding of the expressed intent of Congress in FARA and TEA-21, which clearly stated the negotiation requirements for these project delivery contracts for federal-aid highway projects.

E. Contracting Out

Government agencies should maintain staffs of experienced and highly qualified engineers to properly plan, develop and maintain public works and environmental programs; to perform in-house engineering functions, tasks and projects; to manage and oversee work contracted out to private engineering firms and to maintain the mission and services legislatively mandated for the government agency. Long-range programs are unique to each agency and require continuity of agency engineers. This staff must develop and maintain technical expertise in order to obtain and maintain professional registration.

Consideration of the public interest, cost-efficiency and effectiveness is of foremost importance in decisions regarding the use of in-house government or private engineering firms. The history

of the civil engineering profession has clearly shown that the public is best served, the public trust maintained, and the mission of the government agency achieved by an effective blending of engineering services performed by in-house government engineers and private engineering firms.

During the process of authorizing, funding and administering government engineering tasks and projects, concerns often arise regarding:

- the appropriate levels of in-house engineering staff for the government agencies;
- the need for government engineers to develop and maintain technical engineering skills;
- the need of the profession for government engineers to be registered professional engineers;
- the optimum level of involvement by private engineering firms in government engineering projects; and,
- whether executive, administrative or legislative controls or guidelines should be established setting a fixed percentage of an agency's work to be contracted out to private engineering firms.

ASCE believes it is proper and desirable that civil engineers employed both in the public and private sectors are allowed to perform engineering functions and tasks for government agencies. It is in the best public interest for federal, state and local government agencies performing engineering to maintain expertise within their organizations by employing civil engineers and providing for their professional development.

It is also in the best public interest for publicly supported institutions and agencies not to compete with engineers in private practice. Public sector engineering projects that can be accomplished more efficiently by private engineering firms should be contracted out with proper oversight by the public agency. The resulting ratio of in-house to contracted engineering services should be based upon the agency's on-going project and policy requirements rather than rigid rules or percentages fixed by legislation or regulation.

F. Procurement Workforce

Over the past decade or more, the federal government's capability to do its own architectural and engineering work has been compromised. Retirements, attrition, recruitment and, shifting priorities have all contributed to changes in the federal personnel structure that has resulted in fewer federal employees trained, qualified and actually engaged in evaluating, awarding and managing federal A/E contracts. Notwithstanding this workforce reduction, the federal government's demand and expenditures for A/E services has remained steady or in some cases increased.

The loss of an A/E acquisition workforce has caused a number of undesirable trends in A/E procurement. federal contracts for A/E services have become larger in dollar value, longer in duration, bundled with other services, and less competitive. The advantages of QBS are being diminished. Moreover, given that the private A/E market is overwhelmingly comprised of small businesses, the trend has resulted in the creation of a virtual oligopoly.

There are now fewer A/E contracts. They are now for longer time periods, with some potentially lasting 15 years when options are exercised. The use of design-build procedures, once reserved for rare and unique projects, has become more common. And the advent of GSA Federal Supply Schedules for services has resulted in rampant abuse of such schedule contracts in violation of the QBS law. None of these trends favor the government, and the taxpayer, and they certainly put small business A/E firms at a disadvantage.

The reason for this trend is simple—supply and demand—within the federal government. Fewer government A/E professionals experienced in acquisition are responsible for awarding more work. The Office of Personnel Management (OPM) *does not* recognize the achievement of a Professional Engineering license as an appropriate event and additional credential of value to the government to merit additional compensation. In fact, many federal agencies do not distinguish between licensed and non-licensed engineers.

The Office of Federal Procurement Policy (OFPP) should work with OPM to overhaul its hiring and promotion system for A/Es, and remove barriers for promotion and job advancement for A/Es, while encouraging licensure.

The Defense Authorization Act for FY 2002, 5 U.S.C. § 5757, allows agencies to use appropriated funds or funds otherwise available to the agency to pay for expenses for employees to obtain professional credentials, including expenses for professional accreditation.

The provision applies to all federal agencies, not just to the Defense Department, and establishes statutory authority for agency payment of licensing fees through appropriated funds. This is a valuable recruitment and retention tool for engineers in the federal government and encourages the federal A/E to seek and obtain his or her license. No regulations implementing this provision of law have been implemented. OFPP should work with OPM to more forcefully implement this provision with regard to licensure of federal A/Es.

G. Warranties and Guaranties

The inclusion of warranty or guarantee clauses in contracts for engineering services has been proposed as a way to enhance facility design and longevity. In reviewing this proposal, the following existing facts are considered.

- Most engineering is done by firms with limited financial resources. These firms depend heavily upon engineers' professional liability insurance to provide protection against catastrophic claims and maintain the firm's financial stability.
- Typical engineers' professional liability insurance contains an exclusion to the effect that the carrier "will not defend or pay under this policy for claim and claim expenses arising out of ... express warranties or guarantes".
- Warranty and guarantee clauses create an absolute liability on the part of the warrantor or guarantor and obligate the engineer with regard to matters beyond their control, such as pre-existing construction in rehabilitation projects and post-construction maintenance and enforcement of facility use restrictions.

- Facility owners currently are protected from substandard engineering services by the existing body of contract and negligence law, and such liability is insured by existing engineers' professional liability insurance.

ASCE opposes the inclusion of warranty or guarantee clauses in contracts for engineering services. ASCE believes that alternative and more effective ways of ensuring public safety and efficient construction and maintenance of such structures exist such as:

- Emphasis in the design process of life-cycle costing which optimizes cost and quality.
- Greater consideration to funding a higher degree of maintenance.
- Implementation procedures to reduce delays in planning, right-of-way acquisition, design and construction.
- Encouragement of innovations in technology and management.
- At the start of a project, proper allocation of a project's risk among the parties involved.
- Enhancement and simplification of minimum design standards to provide more cost effective results.
- Provision of greater latitude to owners to utilize design standards which exceed the minimum.

Inclusion of warranty or guarantee clauses will increase the cost of the constructed project, will decrease opportunities for engineering businesses generally and will detract from the public interest.

H. Life Cycle Cost & Surface Transportation Design

The use of Life-Cycle Cost Analysis (LCCA) principles will raise the awareness of clients of the total cost of projects and promote quality engineering. Short-term design cost savings which lead to high future costs will be exposed as a result of the analysis. In the short-term the cost of projects will increase; however, the useful life of a project will increase, and there may be cost savings in operations and maintenance over the long term.

When the cost of a project is estimated only for design and construction, the long-term costs associated with maintenance, operation, and retiring a project, as well as the cost to the public due to delays, inconvenience and lost commerce are overlooked. The increasing use of bidding to select the design team has resulted in a pattern of reducing engineering effort to remain competitive, with the result of higher construction and life cycle costs.

ASCE encourages the use of Life-Cycle Cost Analysis (LCCA) principles in the design process to evaluate the total cost of projects. The analysis should include initial construction, operation, maintenance, environmental, safety and all other costs reasonably anticipated during the life of the project, whether borne by the project owner or those otherwise affected.

I. Conclusion

The lack of adequate investment in America's infrastructure has left us with a vast backlog of deteriorated facilities that no longer meet our nation's increasing demands.

To remedy America's current and looming problem, ASCE estimated in 2005 a \$ 1.6 trillion investment in all categories of infrastructure over the next five years and called for a renewed partnership among citizens, local, state and federal governments, and the private sector.

To accomplish the goal of rebuilding the nation's crumbling infrastructure engineers, architects, contractors, and governmental agencies need to expand the tools available to them to deliver quality infrastructure projects. ASCE appreciates the Committee's willingness to address this important issue.

Mr. Chairman, that concludes my testimony. I would be pleased to answer any questions the subcommittee may have.

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ASCE was founded in 1852 and is the country's oldest national civil engineering organization. It represents more than 140,000 civil engineers individually in private practice, government, industry, and academia who are dedicated to the advancement of the science and profession of civil engineering. ASCE is a non-profit educational and professional society organized under Part 1.501(c) (3) of the Internal Revenue Code.