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These studies y in the face of so many papers, articles and presentations that tout P3 projects as “the way to go”.

Notwithstanding these project failures, research indicates that there are many more P3 project successes than failures. P3

projects are often seen as a solution concerning major projects

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delivery method. This thinking is likely to be prevalent on projects of the kind that the public entity has never constructed. And, from the private sector perspective complex projects tend to offer contractors a greater ability to utilize innovative ways to deliver the project that, in turn, may increase potential project profitability.

- **P3 Agreements Tailored to Fit the Situation** – Since P3 projects are not “cookie cutter” projects, generally there is no standard set of contract documents commonly used on such projects in the U.S. In the authors’ experience every P3 project has a different, uniquely crafted, and negotiated contract. In a 2009 survey of P3 transportation projects the authors, Manju Chandrasekhar and Charles Nicholas recommended that each party should:

“...insist on the importance of recognizing the unique circumstances of each individual case when crafting a PPP agreement. Chandrasekhar declares that ‘there is no silver bullet or one size fits all approach’ for PPPs, while Nicholas expresses concern that new PPP practitioners fail to recognize how complex the process can be, where ‘every location, every jurisdiction, has its different political and legal problems.’¹⁹

The Navigant Construction Forum™ notes that some countries – such as the UK – have tried to standardize P3 agreements to help stakeholders become familiar with P3 agreements (e.g., Standardization of PFI contracts [“SOPC”]. The latest iteration is SOPC 4.)

- **Strong Public Support** – Perhaps due to the intense public scrutiny of large, complex projects, public sector owners tend to employ the P3 project delivery method only on those projects that have gained widespread public support. From the perspective of the private sector contractors, such public support is typically perceived as easing the project through all of the needed political approvals. A recent article concerning P3 projects in *Engineering News-Record* commented on this very point by highlighting the manner in which the Texas Department of Transportation (“TxDOT”) has taken a very proactive approach to P3 procurement, as follows:

“This approach provides the public with earlier access to corridor improvements that may have otherwise been delayed for decades. While some projects have not performed as financially projected, the public has still benefited from the availability

of infrastructure. As the program has evolved, both TxDOT and the private sector have moved to better manage the risks, and the public has benefited greatly from the new availability of infrastructure.”²⁰

- **Reliable Revenue Source(s)** – P3 projects tend to have reliable revenue sources (whether the project itself will produce new revenue or, as in a concession project, the municipality pays the P3 contractor from user fees as in a Lease, Develop and Operate project) – or at least, reliable revenue forecasts as these are necessary to show the project’s capacity to generate return on investment (“ROI”) sufficient to entice the private sector to participate in the P3 process.²¹ However, as noted earlier in this research perspective, the Navigant Construction Forum™ notes one study of some 20 P3 infrastructure projects documented that 6 of these projects were either in default of their financial obligations or were actually bankrupt.²² So, while there is a perception of a reliable revenue source at the outset of the project, that perception may not become a reality when the project is completed and put into operation.
- **Completed or Near Completed Environmental Process** – Most P3 projects typically have completed or are nearly complete with the required environmental process as this status gives the private sector some assurance that the project will, in fact, move ahead. Further, if the P3 project has completed the environmental process the private sector has further assurances of no project delays and no changes as a result of the environmental process. Thus, the completion of the environmental process prior to seeking a P3 contractor removes a good deal of the project risk up front.
- **Trust Based Governance Mechanisms** – The owner’s initial trust and the selection process seem to facilitate trust and increase the focus on project success as opposed to the more typical “us versus them” mentality on all too many projects. This mutual trust plays into the P3 contract responsibilities in that public owners specify exactly what they want when the project is completed (output specifications) and the P3 contractor focuses on delivering on that specification. Mutual cooperation and continual interactions between the owner and the contractor during the planning and design phase should help increase the level of trust between the project participants.
- **Reasonable to High Level of Risk Transferred to the Contractor** – P3 projects are most often characterized by a higher level of risk transfer from the public owner to the contractor than is typical on other forms of project delivery.

19. *Public-Private Partnership: Accelerating Transportation Infrastructure Investment*, SmartMarket Report, McGraw Hill Construction, Bedford, MA, 2009.

20. *P3 Progress Marks New Era*, *Engineering News-Record*, Vol. 276, No. 17, June 13, 2016.

21. The issue of a “reliable revenue source” depends upon which party to the agreement holds the demand/revenue risk. The end user may not pay, as it may be the government paying for the use of the asset on behalf of the public end user. In such a payment mechanism, potential P3 contractors must, at the very least, look for certainty of payment or government backing.

22. Kahlid Bekka, *Public-Private Partnerships for Infrastructure Development: Acquiring New Skills for a New Age*, HDR, Silver Spring, MD, and May 2012.

The level of risk transfer varies from project to project (as will be discussed further later in this research perspective). Risk is generally allocated to the contractor through incentives and disincentives (penalties) embodied in the P3 agreement. ²³

- Private Financing – P3 projects always involve private financing in the form of project specific debt and, generally, a small amount of equity. This business model is used to ensure that the risks transferred to the contractor are borne and managed by the contractor. This financing method is in juxtaposition to typical D-B-B contracts where the contractor is paid monthly on the basis of the percentage of work completed. The additional scrutiny or due diligence by lenders helps give the public sector reassurance of the commercial viability of the project and the investor.
- Financed by Project Specific Equity and Debt – As the private sector contractor has their own money invested in P3 projects, the contractor has a financial stake in the outcome of the project beyond that which is typical on most projects. Essentially, the contractor's equity in the P3 project is akin to having "skin in the game" which tends to increase the likelihood of project success. P3 contractor project financing means that debt and equity are raised at the project level and ring fenced. ²⁴ As such, there is limited recourse to the shareholders if the P3 project defaults.
- Long Term Contract Duration – Due primarily to the large costs of most P3 projects and payback schedules, most P3 projects generally have very long term contracts (often between 15 and 30 years). Concession contracts are frequently linked to the economic life of the asset. Such long term contracts tend to increase the level of financial involvement of the contractors. At the end of the contract, the public owner regains possession of the project and its assets and may, at

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comparing P3 projects with traditional projects found the following:

“In absolute terms, PPP cost advantage was found to be economically and statistically significant. On a contracted \$4.9 billion of PPP projects the net cost overrun was only \$58 million – not statistically different from zero. For \$4.5 billion of traditional procurement projects, the net cost overrun amounted to \$673 million.”²⁶

Given this study, P3 projects in some cases may be less costly for public owners when lower construction costs or faster project delivery are factored into the analysis.

- P3 Projects Are A Form Of Privatization – All too often critics contend that P3 projects are simply a way to privatize public facilities. This is either a misrepresentation or a simple net result of a simple

like. While it is probably not the goal of the majority of private contractors to make excessive returns at the public's expense, public owners that include too many restrictive contract clauses are likely to cause a P3 project to fail.

- P3 Projects Are Difficult And Expensive To Negotiate, Negating Their Benefits – There is a perception that P3 projects involve lengthy and very expensive negotiations. Some critics believe that the time and expense involved in starting up a P3 project more than outweighs any potential benefit that may be gained. While it is true that negotiating a P3 project takes longer and costs more than bidding a D-B-B project or going through the typical D/B process one survey of project owners who had completed a P3 project indicate that some 90% of these owners would be willing to pursue further P3 projects.³⁰ It appears that, based on the experience of public owners who have successfully executed P3 projects, that the difficulty and expense of negotiating a P3 project does not outweigh the benefits of the completed project. That is, on larger projects the higher cost of procuring through the P3 process can be justified. It also appears that with P3 projects the number of advantages increase with the size and complexity of the projects. Nevertheless, it is likely that there is a fine balance or at least some sort of curve beyond which the benefits of undertaking a P3 project may diminish. If a project is too big or too complicated (or both) it may be an uninvestable proposition or considered too risky, thereby causing increased bid prices.
- P3 Projects Are Simply A Mechanism To Outsource Public Services – Some critics contend that P3 projects simply outsource public services since P3 contractors often maintain and/or manage the P3 project for the duration of the contract. When this criticism is raised it is often presented as if public agencies never outsource their services. A cautious analysis of this argument leads the Navigant Construction ForumTM to conclude that this comparison overstates the situation. Public agencies frequently outsource many activities with the full knowledge of the public. With respect to construction projects, public agencies rely heavily on the private sector typically outsourcing planning, design, construction and construction management to private entities such as architects, engineers, construction managers and contractors.

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- Design, Build, Operate, Maintain (“DBOM”) – Under this P3 project structure the contractor is responsible for all four elements of the contract. Under this form of contract the P3 contractor is typically paid from the revenue gained through the operation of the constructed project.
- Design, Build, Finance, Operate (“DBFO”) – Like the DBO structure identified above the P3 contractor performs the three basic functions of the project (design, build and operate). However, unlike the simpler form of P3 project under this project delivery method the private contractor finances the project with their own funds. The contractor is paid over the life of the project from the revenue generated by the constructed asset.
- Design, Build, Finance, Operate, Maintain (“DBFOM”) – Under this form of P3 contract the contractor designs, builds, finances, operates and maintains the constructed project. Like the DBOM structure identified above, the P3 contractor performs all four functions plus provides the financing for the project using private funds. While the constructed facility is owned by the public owner, the contractor is paid over the life of the project from the revenue generated from the constructed asset.
- Design, Build, Finance, Operate, Maintain, Transfer (“DSBFOMT”) – In this project structure the private contractor performs all functions of the project, including financing the project. The contractor is paid through the revenue generated by the operation of the constructed asset. Unlike previous P3 structures identified, the contractor actually owns the constructed project for the term of the P3 contract. At the end of the contract term the contractor transfers ownership of the project, including all operation and maintenance responsibilities, to the public owner.
- Build, Operate, Transfer (“BOT”) – Under the BOT structure a public owner grants a private contractor the right to construct and operate a facility for a specified amount of time. The public owner owns the constructed facility and pays the contractor either from public funds or from revenues generated by the asset. Under this P3 structure, the P3 contractor may or may not contribute some of the project financing. At the end of the contract term the contractor transfers operations to the public owner. A difference between this P3 structure and the others identified above, as the public owner was involved in the design or even provided the design to the contractor, the owner remains liable for any design errors or omissions.
- Build, Transfer, Operate (“BTO”) – The BTO project delivery model is very similar to the BOT model discussed above but the O&M of the project is performed by the owner at the end of construction. Following construction the public owner and the private contractor enter into a separate agreement whereby the contractor operates the constructed project for a specified period of time.
- Build, Own, Operate, Transfer (“BOOT”) – The BOOT P3 structure is similar to the BOT discussed above. However, the P3 contractor owns the project for the term of the contract. And, like the BOT model, the private contractor may or may not provide some or all of the financing for the project.
- Build, Own Operate (“BOO”) – In this P3 delivery model the private contractor constructs, operates, and maintains the project for the term of the project. The public owner pays for the use of the project. At the end of the contract term the public owner may or may not purchase the project from the contractor. The owner is under no obligation to purchase the project.
- Lease, Develop and Operate (“LDO”) – Unlike the P3 models discussed above, under this model the private contractor leases the facility from the public owner and then, using its funds, modernizes or expands the facility and then operates and maintains the facility under a contract with the owner. The contractor is paid by the owner for the owner’s use of the facility.
- Concession – In this P3 project delivery model, the public owner sells the right to operate and maintain an existing asset to a private contractor. Typically, under concession model, the duration of the concession is for a very long duration. For example, the Chicago Skyway project was leased to a private P3 contractor for a term of 99 years³² while the Indiana Toll Road concession was inked for a 75 year term.³³ The P3 contractor is typically paid from the revenue earned on the project from tolls or user fees.

Based on the Navigant Construction Forum™’s literature review, there are thirteen P3 models, as outlined above. However, the literature indicates that there are only three basic ways to structure payments to the P3 contractor.

- Availability Based Payments – Under this fee arrangement, the P3 contractor starts receiving payments when the project is constructed and made available for use by the public. When this system is used the public owner bears the demand and collection risks in that the payments to the P3 contractor do not change even if the project is not used as anticipated. P3 projects therefore offer budgetary certainty. The public sector often pays a fixed sum to the P3 contractor without having to worry about the increasing costs of operation or the cost of renewals and disruption.

32. Chicago Skyway, FHWA Office of Innovative Program Delivery – Project Profiles, http://www.fhwa.dot.gov/opd/project_profiles.

33. Robert Puentes, The Indiana Toll Road: How Did a Good Deal Go Bad?, [Forbes, http://www.forbes.com/sites/realspin/2014/10/03](http://www.forbes.com/sites/realspin/2014/10/03).

- Shadow Toll Based Payments – This payment model is typically employed on transportation projects. The shadow tolls are the vehicle amounts paid to the P3 contractor by the owner not the users of the project. This payment method is typically used when it is not feasible for the public owner to employ toll facilities. Under this system the more the road is used, the more payments the owner owes the P3 contractor. In this system the owner and the contractor share the demand risk in the sense that if demand goes up, the owner owes more to the contractor and on the flip side, when the demand goes down, the contractor receives less from the owner.
- User Fee Payments – In this payment system the users of the facilities pay the P3 contractor for the use of the facility (i.e., tolls on a privatized toll road). Under this payment system, the P3 contractor bears the risk of demand and collection. ³⁴

One report employed a graphic to help understand the structure of P3 projects and identify the risks and activities assumed by P3 contractors. ³⁵

WHY DO PUBLIC OWNERS EMPLOY P3 PROJECTS?

In the public arena there are a number of perceived benefits to delivering projects utilizing the P3 process. One article enumerated the following five benefits of delivering projects in this manner. ³⁶

1. Cost savings – Cost savings of between 6% and 40% of the cost of construction are reported in this study and the

quality of service has to be maintained for the life of the P3 agreement, regardless of the cost to the contractor.

2. Project acceleration – This benefit is “...arguably the main benefit to the P3 model...” as the private contractor, left pretty much to their own devices can deliver projects faster than the typical public owner.
3. Better risk allocation – The authors state that “P3s allow risks to be allocated to the party best suited to manage the risk at the least cost and with the best available structure and skills.”
4. Innovation – Another perceived benefit is that the involvement of the private sector in the design and construction process results in a higher quality project.
5. Adequate facility pricing – Finally, it is noted that “GAO has listed efficient pricing as a key benefit to the P3 model as the private sector would be more likely to use efficient pricing concepts such as congestion pricing.” ³⁷

Another report concerning the P3 project delivery methodology summarized some twelve perceived benefits to the public owner through the employment of P3 projects, as follows: ³⁸

1. Risk Transfer – P3s allow public owners to transfer some or all of the project risk to the P3 contractor while still retaining a degree of control over the project. This results in transferring more risk to the P3 contractor than is typical in a conventional D-B-B project.
2. The Only Way the Project is Constructed at All – In some

- **Return on Investment – Contractors**, like all other businessmen, are in the business of generating profit. Thus, the initial consideration for a contractor considering whether they will propose on a P3 project is the potential ROI on the project. The ROI of a potential P3 project must be sufficiently large to attract the investment needed to fund the project. Profitability is of paramount concern to a potential P3 participant from the private sector. If the proposed P3 project is a revenue generating project (e.g., a toll road, a parking garage in an urban area, etc.) then the project is likely to draw more interest from the private sector. And, as potential proposers on P3 projects have to line up investors in order to provide sufficient equity and borrow enough money to construct the project, ROI will be a concern for such outside investors.³⁹ With P3 projects there is also greater transparency in pricing through the submission of detailed financial models which deal with the internal rate of return (“IRR”) of the project and equity pay outs to the shareholders.
- **Sensible Risk Transfer – Potential P3 contractors** understand full well that they will be required to accept more risk than is usual in typical D-B-B or D/B projects. All potential project risks should be identified and an appropriate allocation of risk should be contained in the P3 agreement. Thus, a P3 contractor considering their participation in a project will examine the proposed contractual arrangements carefully to ascertain whether the risk transfer in the agreement goes beyond their threshold for risk. For example, if demand risk is assigned to the P3 contractor; if all project design risk is laid on the P3 contractor even when the public owner and outside agencies have control over all or portions of the design; or if all force majeure risk is placed on the contractor the project may likely be considered too risky for many P3 contractors. In such an event, some of potential P3 contractors may simply walk away from the opportunity while others will propose higher costs in order to monetize and cover the additional risk.
- **Clear Legal And Institutional Framework – As noted earlier**, P3 contractors want clearly stated and enforceable “rules of the road” related to the project. The terms and conditions of the P3 contract must be clear and sensible. The P3 agreement must set forth the process by which decisions will be made and implemented as well as in what timeframe they will be made. The agreement must define the relationships between the parties to the agreement and various parties’ roles on the project. Project roles and responsibilities should also be assigned to specific entity representatives. If the proposed P3 contract fails to meet these standards, many P3 contractors will be reluctant to propose their involvement in the project.
- **High Level Commitment From Key Stakeholders – The stakeholders** in the context of a P3 contractor’s consideration

include primarily the public owner(s). However, the experienced P3 contractor will likely also consider the owner’s constituents – the taxpayers – as they are the intended users of the completed project. These stakeholders will impact, positively or negatively, the demand or usage of the completed project. Thus, the owner’s constituents may well be the ultimate determinant of whether the project succeeds, and the P3 contractor accomplishes their planned ROI, or the project fails, and the contractor does not recover their construction and/or O&M cost. P3 contractors also look for appropriate compensation on termination should the public owner cancel a P3 project.

- **Reasonable Timeframes – There are two timeframes** a potential P3 contractor is concerned with when considering participation in a P3 project. The first schedule is duration of the planned design and construction of the project – that is, when is the project to be operational. The concern here is simply whether there is adequate time to design, build and commission the facility. Too short a time will decrease the time needed to design a successful project and will, in turn, likely increase the cost of construction due to the need for overtime work and/or additional labor and equipment. The other schedule concerns the operation and/or maintenance of the constructed facility. The longer this period the greater the potential for a profitable P3 project for the contractor.
- **Repeatable Projects – Beyond the immediate P3 project**, prospective proposers are highly likely to consider what other P3 projects may follow this one. P3 contractors will be more interested in participating in a P3 project if it appears likely that other public owners in the area (such as the State) are also considering the use of the P3 project delivery method.

PRINCIPLES OF RISK TRANSFER ON P3 PROJECTS

All construction projects carry and must plan for significant risks. These risks are often varied and P3 projects are no different in this regard. At their heart, they are still construction projects, albeit procured differently.

Whilst the contractual allocation of responsibilities and commercial structures de-risk the project as a whole, those risks still exist. However, what a P3 project structure seeks to do is allocate those risks to the party that can best manage those risks. It is also worth noting that these risks will still continue to exist across the whole infrastructure lifecycle of a P3 project, but if they are not identified, mitigated and, more importantly, allocated appropriately from the outset they can have far reaching implications on the future viability of the project at any stage of its lifecycle. If these risks materialize, they have the potential to

39. Lee A. Weintraub, Public-Private Partnerships: Is Your Company Ready?, CFMA Building Profits, May/June 2013, Construction Finance Management Association, Princeton, NJ.

Arguably, the above can be described as typical risk areas and not necessarily individual risks. Each of these can be potentially further split and analyzed. For example, title to land could also involve land acquisition and/or right of way risk. As with most things involving negotiation and appetite there is a spectrum

LEGAL RISK	FREQUENCY CITED BY STUDIES	% OF TIMES CITED
Change in tax regulation	5	38%
Corruption & lack of respect for law	5	38%
Legislation changes / inconsistencies	5	38%
Industrial regulatory change	4	31%
Import / export restrictions	1	8%
Rate of return restrictions	1	8%

ECONOMIC RISK	FREQUENCY CITED BY STUDIES	% OF TIMES CITED
Interest rate volatility	8	62%
Inflation rate volatility	7	54%
Foreign exchange & convertibility	6	46%
Poor financial market	3	23%

OPERATIONS RISK	FREQUENCY CITED BY STUDIES	% OF TIMES CITED
Operations cost overrun	7	54%
Residual value (after concession period)	5	38%
Maintenance cost higher than expected	4	31%
Operational financial risk	4	31%
Low operating productivity	3	23%
Risk regarding pricing of product / service	3	23%
Operator default	2	15%
Quality of operation	2	15%
Project / operation change	2	15%
Supporting facilities risk / necessary infrastructure risk	2	15%
Technology risk	2	15%
Waste of material	1	8%

MARKET RISK	FREQUENCY CITED BY STUDIES	% OF TIMES CITED
Tariff change	6	46%
Market demand	5	38%
Fluctuation of material cost (by government)	2	15%
Fluctuation of material cost (by private)	2	15%

PROJECT SELECTION RISK	FREQUENCY CITED BY STUDIES	% OF TIMES CITED
Public opposition to project	5	38%
Uncompetitive tender	4	31%
Level of demand for the project	3	23%
Competition risk	2	15%

RELATIONSHIP RISK	FREQUENCY CITED BY STUDIES	% OF TIMES CITED
Different work methods / know how between partners	6	46%
Inadequate experience in PPP projects	5	38%
Lack of commitment from public / private partner	4	31%
Organization & coordination risk	4	31%
Third party tort liability	4	31%
Inadequate distribution of responsibility & risk	3	23%
Inadequate negotiation period prior to initiation	2	15%
Strikes	2	15%
Cultural differences between main stakeholders	1	8%
Non-involvement of host community	1	8%

PROJECT FINANCE RISK	FREQUENCY CITED BY STUDIES	% OF TIMES CITED
Financial attraction of project to investors	5	38%
High finance cost	4	31%
Lack of credit worthiness	3	23%
High bidding costs	2	15%
Delay in financial closure	2	15%
Inability to service debt	1	8%
Lack of government guarantees	1	8%
Delay in payment of annuity	1	8%
Financiers unwilling to take high risk	1	8%

NATURAL RISK	FREQUENCY CITED BY STUDIES	% OF TIMES CITED
Force Majeure	8	62%
Environment	6	46%
Weather	5	38%

The Navigant Construction Forum™ believes that this list of project risks is fairly comprehensive. However, the Navigant Construction Forum™ is cognizant that some specialized P3 projects may have additional risks not contained in the above list. The Navigant Construction Forum™ cautions readers not to rely exclusively on this research perspective when identifying and analyzing risk concerning future P3 projects.

TYPICAL RISK ALLOCATION ON P3 PROJECTS

As noted above P3 projects tend to allocate many more risks than typical D-B-B or D/B projects. However, the basic risk management and allocation process remains fundamentally the same. This process generally follows the steps outlined below:

1. Identify – All risks the project may encounter should be identified.
2. Analyze – Each identified risk should be analyzed to determine the probability of the risk occurring on the project.
3. Assess – Each risk should be assessed to determine the potential impact on the project, both cost and time, should the risk arise on the project.
4. Determine – For each risk determine whether to:
 - a. Accept – Some risks may be accepted via the terms of the contract. For example, the risk of diering or latent site conditions are frequently accepted by owners through

inclusion of a Diering Site Conditions clause in the contract.

- b. Avoid – Contractors can avoid some risks by hiring specialty subcontractors. As an example, a P3 contractor may hire a hazardous waste subcontractor to deal with any asbestos encountered on the project.
 - c. Reduce – Owners and D/B contractors can reduce risk by changing the project design, means and methods, etc.
 - d. Transfer – Owners and contractors can transfer some risks by purchasing insurance or bonds to cover certain risk events.
5. Manage and Mitigate – Owners and contractors should prepare a risk register for each project that includes all identified risks on the project. Owners and contractors should prepare specific risk management plans for each specific risk that has a high potential risk for occurrence and/or a potentially large impact (time and/or cost) on the project.
 6. Monitor – Finally, the project risk register should be routinely reviewed and reassessed as the P3 project moves from one phase to another – design, construction, commissioning, and operation and/or management.

One article that examined how risk is reflected in infrastructure contracts classified project risk into three categories – production, commercial and context – and then ranked the importance of major risks in each category.⁴² The results of this article are summarized in the table below:

Classification Importance of Major Risks

PRODUCTION	COMMERCIAL	CONTEXT
Planning ***	Demand (Consumption) ****	Financing ****
Design ****	Collection **	Integration **
Expropriation *	Capacity ***	Legal **
Construction *****	Competition *	Regulation ***
Environmental ***		Unilateral Changes ****
Maintenance & Repairs **		Public Contestation **
Operation ***		Force Majeure **
Technological **		
Performance ***		

Low Risk = *

High risk = *****

42. Rui Cunha Marques and Sanford V. Berg, *Risks, Contracts and Private Sector Participation in Infrastructure*, *Journal of Construction Engineering and Management*, Vol. 137, Issue 11, American Society of Civil Engineers, Reston, VA, November 2011.

As another study pointed out:

“Effective risk transfer is one of the keys to achieving high VfM under PPP contracts. Although the base cost of financing is often higher when using private funds, risk allocation is one of the primary areas where those costs are recovered and, often, real cost savings is realized ... decision makers should seek to

Another study located by the Navigant Construction Forum™ was based on a survey sent to 285 professionals all with interest in and/or experience with P3 projects. The author of the study received 45 detailed responses for a response rate of approximately 16%. This survey identified 47 risk factors found

Construction Cost Overrun	Private	Private	Private	Private
Construction Time Delay	Private	Private	Private	Private
Material/Labor Availability	Private	Private	Private	Private
Late Design Changes	Private	Private	Private	Private
Poor Quality Workmanship	Private	Private	Private	Private
Excessive Contract Variations	Private	Private	Private	Shared
Insolvency/Default of Subcontractors or Suppliers	Private	Private	Private	Private
Operation Cost Overrun	Private	Private	Private	Private
Operational Revenues Below Expectation	Private	Shared	Private	Private
Low Operating Productivity	Private	Private	Private	Private
Maintenance Costs Higher Than Expected	Private	Private	Private	Private
Maintenance More Frequent Than Anticipated	Private	Private	Private	Private
Organization & Coordination Risk	Private	Private	Private	Private
Inadequate Experience in PPP/PFI	Shared	Private	Private	Shared
Inadequate Distribution of Responsibilities & Risks	Shared	Shared	Public	Private
Inadequate Distribution of Authority in Partnership	Shared	Public	Private	Private
Differences in Working Method & Know How Between Partners	Private	Private	Shared	Private
Lack of Commitment from Either Partner	Shared	Shared	Private	Shared
Third Party Tort Liability	Private	Private	Shared	Private
Staff Crises	Private	Private	Private	Private

The author points out that 27 of the 46 risk factors (59%) in this survey were allocated to the P3 contractor including the following:

1. Poor financial market
2. Lack of tradition of private provision of public services
3. Geotechnical conditions
4. Weather
5. Level of demand for project
6. Availability of finance
7. Financial attraction of project to investors
8. High finance costs
9. Residual risks
10. Design deficiency
11. Unproven engineering techniques
12. Construction cost overrun
13. Construction time delay
14. Material/labor availability
15. Late design changes
16. Poor quality workmanship
17. Excessive contract variations
18. Insolvency/default of subcontractors or suppliers
19. Operation cost overrun
20. Operational revenues below expectation
21. Low operating productivity
22. Maintenance costs higher than expected
23. Maintenance more frequent than expected

Likewise, the risk transfer of demand risk or the risk of “usership” to the P3 contractor will likely cause a sharp increase in the cost of the project or may cause potential P3 contractors to decline to bid. With respect to demand risk, one study stated the following:

“Engel et al. (2010) for instance shows that with financing considerations, it is optimal to transfer demand risk to the government. They argue that since PPPs involve large upfront investments, exogenous demand risk is an important concern of lenders when use fees are the main revenue source, so by assigning it to the government, the risk and therefore the interest rates charged to the project fall.”

project or concludes that the concession fees are too high or unaffordable, then revenue will decline and render the project a failure.

KEYS TO SUCCESSFULLY MANAGING P3 PROJECTS

Two published papers summarized what their authors believed are the keys to P3 project success as noted below.

A summary of the factors The National Council for Public-Private Partnerships believes will lead to a successful P3 project include the following:⁴⁹

1. **Public Sector Champions** – Strong political commitment is imperative. Recognized public figures should be the advocates for the P3 project. A recently published article on P3 projects put forth exactly this point in the following manner: “Government relations becomes critical for P3 projects. Consultants may be required to help local regulators and legislators continue to understand the value of the P3 and to maintain the political will for the project over time – particularly if and when administrations change.”⁵⁰
2. **Statutory Environment** – There needs to be a clear legal structure in place that includes transparency and a competitive proposal process to create an effective enabling environment.
3. **Public Sector’s Organized Structure** – The public owner should have a team dedicated to the P3 project and this team must be involved from the initial project planning phase through the completion of the project and beginning of operations, and perhaps longer.
4. **Detailed Contract and Business Plan** – The contract should include the responsibilities, risks and benefits for both the public owner and the P3 contractor.
5. **Clearly Defined Revenue Stream** – Even though the P3 contractor will provide funding for the project, an identifiable “...revenue stream sufficient to retire this investment and provide an acceptable rate of return over the term of the partnership...” must be included.
6. **Stakeholder Support** – Stakeholders include more than just the public owner and the P3 contractor and their financial backers. Other groups may include the owner’s employees, the public users, other interest groups and the press. It is important that the public owner reach out to all such groups and gain their support for the project.
7. **Pick Your Partner Carefully** – The report points out that “The ‘best value’ (not always the lowest price) in a partnership is critical in maintaining the long term relationship that is central to a successful partnership.” The P3 contractor’s experience in delivering P3 projects and their financial capacity are also critical factors in picking the right partner.

Likewise the Urban Land Institute published a study that identified ten principles necessary to successfully deliver a P3 project.⁵¹ These principles are summarized below:

1. **Prepare Properly for Public/Private Partnerships** – Both public owners and P3 contractors have to prepare in advance of entering into a P3 agreement. Both parties need to assess their own internal capabilities and, if found lacking, fill necessary gaps. Public owners must create and transmit a public vision for a P3 project and create or make certain there is an appropriate legal structure. (It may be appropriate for public owners to identify “pilot projects” that are small and easily understood that align with contractor appetite and pave the path for further and increasingly complex projects.) Public owners need to identify and capitalize on all public and non-profit funds to support the project and have all necessary land acquisitions and rights of way in place. P3 contractors must establish the project feasibility and arrange their financial backing accordingly. P3 contractors must arrange the right team for the project. A recent article included the following concerning this point: “There needs to be a comfort in asking questions and not a presumption of understanding. Everyone needs to operate from a greater level of understanding.”⁵²
2. **Create a Shared Vision** – The owner / P3 contractor team must create and maintain a shared vision of the project. The shared vision is the framework for the project and forms the benchmark for measuring and accomplishing project goals. P3 projects are long term and relatively inflexible structures so it is important to get it right from the outset. This report notes that the public owner and the P3 contractor must become partners to be successful in delivering a P3 project.
3. **Understanding Your Partners and Key Players** – The report notes the following. “The beginning point of any successful partnership is for all prospective partners to invest the time and effort necessary to gain a full appreciation of, and respect for, their counterparts in a deal – their background, reputation, experience, needs, financial strength, motivations, expectations, and goals. Choose wisely, because you want partners who will work with you, not against you. Everyone

49. [Testing Tradition: Assessing the Added Value of Public-Private Partnerships](#), The National Council for Public-Private Partnerships, Arlington, VA, 2012.

50. [P3 Progress Marks New Era](#), *Engineering News-Record*, Vol. 276, No. 17, June 13, 2016.

51. Mary Beth Corrigan, Jack Hambene, William Hudnut III, Rachelle L. Levitt, John Stainback, Richard Ward and Nicole Witenstein, [Ten Principles for Successful Public/Private Partnerships](#), ULI-The Urban Land Institute, Washington, D.C., 2005.

52. [P3 Progress Marks New Era](#), *Engineering News-Record*, Vol. 276, No. 17, June 13, 2016.

is not in the deal for the same reasons, and without such

for a successful project outcome and lasting public/private

partnership. The Navigant Construction (also known as

readers of the adage “Bad news delivered early is useful

in business. Bad news delivered late is a disaster!”

9. Negotiate a Fair Deal Structure – The P3 contract is the deal! Public owners and P3 contractors understand and acknowledge this. However, circumstances may change. In such circumstances fairness may be difficult to accomplish. Some general rules for achieving a “fair deal structure” as outlined in this report include the following.

- Spend sufficient time preparing and reviewing a detailed term sheet.
- Do not let legal counsel or the documentation process drive the outcome. Only the principals from the public owner and the P3 contractor have a shared vision for the project.
- Build in objective measures of the expected outcomes that can be used to determine the ultimate fairness of the transaction.
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procurement methods such as D-B-B or D/B. The Navigant Construction Forum™ believes that P3 projects will perform well when the risks are appropriately transferred and a thorough risk management plan is implemented. Public owners need to recognize that P3 agreements will not allow for total risk transfer and that while P3 agreements are one tool in the project delivery method toolkit, P3 projects are not the answer every time.

Public owners also need to recognize that appropriate risk transfer is not the only thing that helps to deliver a successful P3 project. P3 agreements are complex contractual arrangements and public owners must start by choosing the right project(s). The public owner must draft and negotiate realistic and thorough output specifications that encourage innovation with financial performance linked directly to achievement of these outputs. Public owners and P3 contractors must negotiate and settle on well drafted contracts with clear incentives – for both parties. Finally, public owners and P3 contractors must look beyond contract execution to the design, construction, operation and/or maintenance plans and even beyond to what happens when the term of the P3 agreement is reached.

Provided that all of this is done correctly by both the public owner and the P3 contractor the Navigant Construction Forum™ believes that P3 projects can be successfully delivered for the benefit of the public owner, the P3 contractor and all other project stakeholders. The Navigant Construction Forum™ trusts that this research perspective will aid those considering their involvement in P3 projects and those already participating in this project delivery method.

NAVIGANT CONSTRUCTION FORUM™

Navigant (NYSE: NCI) established the Navigant Construction Forum™ in September 2010. The mission of the Navigant Construction Forum™ is to be the industry's resource for thought leadership and best practices on avoidance and resolution of construction project disputes globally. Building on lessons learned in global construction dispute avoidance and resolution, the Navigant Construction Forum™ issues papers and research perspectives; publishes a quarterly e-journal (Insight from

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