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THE INFLUENCE OF PUBLIC-PRIVATE PARTNERSHIPS ON DESIGN FLEXIBILITY AND DOWNSTREAM DESIGN FEEDBACK IN THE PRESIDIO PARKWAY

Eric I. Antillón[1], Amy Javernick-Will[2] and Keith R. Molenaar[3]
[1] Ph.D. Candidate, University of Colorado at Boulder, U.S.A.
[2] Assistant Professor, University of Colorado at Boulder, U.S.A.
[3] Professor, University of Colorado at Boulder, U.S.A.

Abstract: Public-Private Partnerships (P3s) offer the opportunity to improve integration among project stakeholders throughout a project's life cycle. Stakeholder integration, in turn, can enhance design decision-making process by focusing on the project's life cycle cost. The objective of this paper is to compare and contrast design decision-making in a P3 and design-bid-build (DBB) process to explore if life cycle considerations are better optimized under a P3 delivery method. To do this, we analyzed a project that included both P3 and DBB project delivery strategies—the Presidio Parkway. We collected data through 16 open-ended, semi-structured interviews with key project participants. We analyzed the data for design decision-making processes and found mixed evidence supporting the proposition that life cycle considerations can be better optimized under a P3 delivery method. Specifically, we found that the ability of the P3 contractor to influence project outcomes depends on the timing of the integration of the designer in a P3 and the degree of design criteria and flexibility allowed. In the case study analyzed, the P3 designer was able to influence downstream life cycle considerations, such as the operations and maintenance of the project; however, given the degree of definition of the design and the timing of integration of the P3 designer, it was not possible to influence the upstream design decisions. These findings allow researchers to better understand how P3s are being integrated from a design perspective and allow the public sector to realize how the timing and degree of definition of the design in P3s influences a concessionaire's ability to make life cycle design choices.

1 INTRODUCTION

The use of public-private partnerships (P3s) as an alternative project delivery method to deliver highway projects has become increasingly attractive over the past two decades. A P3 is defined as "a contractual agreement formed between a public agency and a private sector entity that allows for greater private sector participation in the delivery and financing of transportation projects" (FHWA 2013). P3s are a potential solution to close the increasing gap between transportation infrastructure costs and funding (Buxbaum and Ortiz 2009). Governments may use P3s to reduce pressure on government budgets, expedite financing, or facilitate innovation (AECOM Consult Team 2007), among others. Implementing P3s is commonly attributed to the improved services and better value for money achieved through appropriate risk transfer, encouraging innovation, greater asset utilization and integrated whole-of-life management (Fitzgerald 2004). Value for money is defined as the optimum combination of whole-of-life costs and quality (or fitness for purpose) of the good or service to meet the user's requirement (HM Treasury 2006). One of the reasons a better value for money is expected for P3 delivery is because of the ability of the private partner to implement cost-saving investments during the design and construction of a project that may lower the long-term life-cycle cost during the operations and maintenance (O&M) phase. The private partner is incentivized to use such strategies when the design and construction of a project is bundled with its O&M phase into a single contract (Blanc-Brude et al. 2009). Because stakeholders have the greatest ability to influence the long-term life cycle performance of a project during the design phase (Paulson 1976), 'life-cycle' decisions are expected to take place in the design phase. Of particular interest is how information from all project phases, including construction and O&M, is integrated and considered when making design decisions for the project. The flow of design information—specifically whether it flows as a sequential 'waterfall' from one phase to another, or whether the information is iterated back and forth in a 'whirlpool' fashion—is expected to greatly impact life cycle considerations.

While previous studies have focused on the comparison of P3 projects to traditionally procured projects by using initial cost and schedule performance metrics that do not extend beyond initial delivery or compare overall life cycle cost performance (Blanc-Brude et al. 2006, 2009; Chasey et al. 2012; NAO 2003; SAIC et al. 2006), this study will focus specifically on life cycle considerations in the design decision-making processes. Because most P3 projects are long-term arrangements that last between 30-99 years, the scarcity of projects available for analysis has made it difficult to draw life cycle conclusions (CBO 2012). However, by focusing on life cycle considerations in the design process, this paper can contribute to our understanding of the project characteristics or conditions that enable the enhancement of life cycle design decision-making processes. To do so, the research team analyzed the design decision-making processes in a single case study of a project that implemented both traditional DBB and P3 delivery.

2 BACKGROUND

2.1 Project Delivery Methods

A project delivery method (PDM) refers to the contract methodology used to acquire and deliver the basic elements of any infrastructure project (Miller et al. 2000). It is "a process by which a project is comprehensively designed and constructed for an owner and includes project scope definition (concept and feasibility); organization of designers, constructors and various consultants; sequencing of design and construction operations; execution of design and construction; and closeout and start-up. In some cases, the project delivery method may encompass operation and maintenance" (Touran et al. 2009 p. 4). The manner in which these PDM functional elements are structured determines the PDM strategy that the owner of the facility will implement (Miller and Gerber 2012).

PDM strategies may be broadly categorized by the bundling of the procurement of the services needed to initially *deliver* the facility, and to provide its intended service, the *usage* of facility. These two phases, the delivery and usage, can be referred to as the relative life cycle phase responsibility (Chasey and Agrawal 2013). Increasing the private involvement through allocating different responsibilities increases the amount of risk assumed by the private sector during the delivery of a facility. Note that the finance element of a project is something that occurs throughout the life of a project, and the degree of responsibility for financing might vary depending on the contract terms of a project. By assigning such key functional responsibilities, a *segmented* versus *combined* ('bundled') PDM strategy is determined to deliver a project, meaning the bundling of these key functional elements. P3s are typically considered to be in between this range of the traditional 'segmented' delivery strategies, and fully privatized 'combined' strategies (Miller et al. 2000).

2.2 Public-Private Partnerships

A public-private partnership (P3) does not constitute a single PDM, and there are many delivery methods depending on how a P3 is interpreted. The literature on the definition and types of P3s is also vast (Hodge and Greve 2007, 2009). A P3 has been defined as an agreement between the government and one or more private partners in which the private partners deliver the service in such a manner that "*the service delivery objectives of the government are aligned with the profit objectives of the private partners* and where the effectiveness of the alignment depends on a sufficient transfer of risk to the private partners" (OECD 2008, p.8). More strictly, using the appropriate terminology of PDMs discussed above, P3s for this study are classified as those whose functional life cycle phases are combined, the delivery and usage of the facility, and for which finance is also part of the risk transferred, primarily the Design-Build-Finance-Operate-Maintain (DBFOM) type of PDM.

To put into perspective the P3 environment in the US, one of the most recent published summaries from a major projects database (PW Financing 2014) indicates that there have been only 30 transportation P3s in the US, dated from 1993 through September 2014. Out of these 30 projects, 17 are currently under operation, and the rest under construction. Also, only 21 of these projects have been carried out under this described DBFOM delivery strategy, whereas the rest are leases (i.e. Chicago Skyway) (n=5) and build-own-operate (BOO) projects (n=4), which are not considered to be P3s per the definition established for this study. Furthermore, 8 of these DBFOM transactions have been structured under an availability-based payment mechanism (DBFOM-avail.) over the past few years, and the rest have been structured as direct-toll payment structures or similar (DBFOM-toll). The number of projects that would allow for the intended research on P3 projects to be conducted in this study is very limited.

2.3 Life-Cycle Design

Project stakeholders have the greatest ability to influence the long-term life cycle performance of a project during the design phase. The concept of how design decision-making influences the long-term cost performance of a project and how the level of control over those costs decreases as the project evolves has been long understood by many industries. Paulson's well-known "cost influence curve" (Paulson 1976), shows how the level of influence that decisions made in the earlier phases of a project's life cycle phase have a much greater influence on project outcomes, at a minimal fraction of the cost of the project's complete life cycle cost. By the time construction is completed the influence that any decision might have on the remaining life cycle of the project is minimal, if any, and might be a considerably large capital expense at that point.

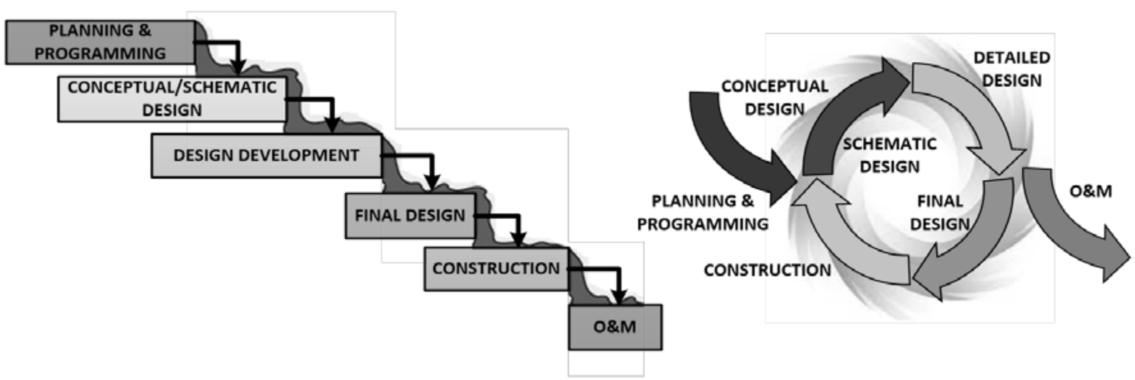

Figure 1: A Sequential 'Waterfall' (left) vs. an Iterative 'Whirlpool' Design Process (right)

The traditional DBB design process can be compared to a linear 'waterfall' approach in which, given the segmented approach of each functional element, each phase is optimized for personal benefit (Thomassen 2011). The concept of a waterfall design process has emerged from the discussion of software development processes (Royce 1970). The general idea of such processes is that it can be considered to be an extremely inflexible design process, where inflexibility is characterized by frozen outcomes and sequential processes (Weisert 2003). As shown in Figure 1, this suggests that ideas and feedback for design decisions only flow to downstream activities but may not be fed upstream; furthermore, the inability of starting later phases in which other project participants get involved and may provide valuable life cycle feedback to the design process, alters the design.

Alternative PDMs on the other hand, such as design-build, and even more so in what can be considered to be a fully 'combined' PDM strategy, such as P3s, control of the design is removed from the engineer and given to the entire team. As opposed to the waterfall model, working in a complete linear fashion, in a P3, the design process is considered to be iterative 'whirlpool' process, with significant "over-the-shoulder" design reviews by the contractor, financier, operator, and, to some extent, the owner (Hatem and Gary

2013). The ability of having input into the design by other project stakeholders involved in different phases of the project life-cycle, provides the opportunity to better optimize the functionality of the project to improve a project's overall life cycle performance.

3 RESEARCH METHODOLOGY

The research methodology for this study was an *embedded single-case study design* methodology (Yin 2009), as shown in Figure 2. The case study methodology was selected because the case study selected, the Presidio Parkway project discussed further below, was a *revelatory* case (Flyvbjerg 2006), meaning that it was a P3 project with a unique contextual setting that allowed for the opportunity to study the design process under special circumstances. Specifically, the case allowed for a side-by-side comparison of two delivery strategies—design-bid-build and P3—implemented to construct the Presidio Parkway Project in the US. This research analyzed the design decision-making processes within each of the two phases of this project, delivered under each respective PDM.

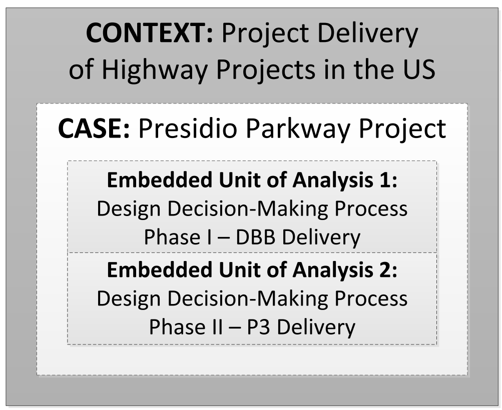

Figure 2: Embedded, Single-Case Study Design

3.1 Case Study Setting and Unit of Analysis

There have been limited transportation P3 projects in the US in the last 20 years, with only 21 existing projects delivered under a DBFOM-type of P3. To select the appropriate projects for this study, P3 projects whose design phase was on-going or recently finished were targeted. The Presidio Parkway Project, located in San Francisco, CA, was selected as the case for this study. This particular project was split into two phases delivered under different PDM strategies: Phase One was delivered as a traditional Design-Bid-Build (DBB), and Phase Two was continued as a P3 (DBFOM-type). The P3 developer for this project also assumes operations and maintenance for both phases after initial delivery of the project for a contract term of 30 years. This particular case became a project in which two design processes were considered under each respective delivery mode, and therefore the design processes were chosen for analysis to compare the influence of PDM strategy on design decision-making. Data was collected during the spring of 2014, when the design of the project was almost complete. *The design processes were treated as embedded units of analysis within a single case, given that they were part of the same project*.

The project's condition can be considered to be a 'hybrid' project, meaning that it is not a brownfield nor a complete greenfield project since it is adding a significant amount of structures as well as the replacement of most of the existing facility. The project is approximately a 1.5 mile long road with a significant amount of structures, with four cut-and-cover tunnels, six bridges, and three interchanges split between the two phases. Furthermore, the P3 delivery of the project was structured as an availability-based payment mechanism, as opposed to a toll-revenue P3 mechanism.

3.2 Data Sources

This research collected data from project participants by conducting semi-structured interviews. This research analyzes the data collected from the interviews, which were the most in-depth source of data. A total of 16 on-site interviews were conducted, with 20 different participants. The interviewees were targeted to represent a broad spectrum of all stakeholders involved in the project, particularly those that could have the knowledge to discuss design issues experienced in this project. Table 1 lists the organizational role and project role for each of the participants.

Table 1: Description of Case Study Project Interviewees

Pseudonym(s)	***Project Phase***	***Organization***	***Project Role***
Waller & Clayton	Phase I & II	Public	Project Sponsor CM
Octavia	Phase I & II	Private	Project Sponsor Consultant
McAllister	Phase II	Private	Project Sponsor Consultant
Shrader	Phase I & II	Public	Project Sponsor PM
Eddy	Phase II	Private	P3 O&M Provider
Valencia	N/A	Public	External Organization
Lombard	Phase I & II	Public	Project Sponsor PM
Polk	Phase I	Public	Project Sponsor Engineer
Larkin	Phase II	Private	P3 Developer Management
Ellis	Phase II	Private	P3 DBJV Manager
Green	Phase I & II	Private	Project Sponsor Consultant
Sutter & Geary	Phase I & II	Public	Project Sponsor Engineers
O'Farrell & Hayes	Phase I	Public	Project Sponsor Engineers
Hyde	N/A	Public	External Organization
Jackson & Scott	Phase II	Private	P3 Engineering-Designer
Vallejo	Phase I & II	Public	Project Sponsor PM

The research team conducted exploratory, semi-structured, in-depth interviews. The format employed was meant to develop ideas and research hypotheses rather than to gather facts or statistics. Determining the number of interviews to conduct was dependent on reaching theoretical saturation, when new information was no longer mentioned. As a result, quality was preferred over quantity (Oppenheim 1992). As Oppenheim (1992, p. 67), explains, “the job of the depth interviewer is thus *not* that of data collection but *ideas* collection.” Using this approach, interviewees were asked about the design decision-making process on each phase of the project and conditions that may have enhanced or constrained life cycle considerations in the design. The semi-structured interviews began by asking directly how the choice of project delivery method had influenced the life cycle design decision-making process, particularly, characteristics of life cycle design were explored, including the integration of life cycle functional properties (Design, Construction, O&M, Reconstruction and/or End-of-Life properties).

3.3 Data Analysis

The research team used QSR Nvivo software to organize and analyze the data. The interviews were audio-recorded, transcribed into text, and imported into the software. Over 17 hours of recorded audio time for the interviews shown in Table 1 resulted in over 215 pages of text, after all audio files were transcribed word-by-word. The data was systematically coded to identify significant patterns following the coding process described by Miles et al. (2013). The coding process was primarily driven by two ‘cycles’ that allowed the researchers to draw conclusions from the interviews regarding the life cycle design decision-making process as experienced in this case. The first cycle of coding was an organizational, or structural approach to sort appropriate data into macro-categories for further analysis. Following this process, a more explicit identification of the content in the interviews allowed for more a ‘substantive’ and ‘theoretical’ description of the data to be analyzed more in line with the research objectives. For example, one of the interviewees, when discussing the life-cycle design considerations in phase two: *“I think this project has not had as much leeway for innovation as what I think of is a typical P3, or a typical design-build project might,* *because we have been more confined by what was done in phase one of the project with respect to the design. So in some ways I sort of feel like there has been a little bit less innovation on this project than I would have expected."* This section of the interview was coded to themes of 'innovation' and 'design flexibility'.

Following the initial coding, the data was then further analyzed. During this process, we focused on explanation building (Yin 2009). Specifically, we focused on how the theoretical proposition of this study was either supported or challenged from the data collected. The theoretical proposition was: *Design information in a segmented PDM strategy flows one-way, downstream in a sequential design process in which no downstream design feedback may be incorporated into upstream design activities. In a combined PDM strategy, an iterative overlapping design process allows for a two-way information exchange between upstream and downstream design activities, thereby allowing for life cycle design to be better optimized.* This paper describes and explains what has happened in this single case, regarding the stated proposition. This includes interpreting and mapping the results from the case study to this proposition in order to understand it from this single case (Eisenhardt 1989).

4 FINDINGS

The Presidio Parkway had a significant amount of overlap between phase one (DBB) and phase two (P3). As a result, while the project provided an ideal laboratory setting for analyzing two different delivery methods under similar settings, the overlapping sequence of processes also created constraints for attributing differences and similarities solely to one PDM strategy employed. However, the researchers were able to identify project characteristics that influence life cycle design decisions under a P3. These characteristics are explained as the timing of implementing a P3 in a project during its development, and the design flexibility of the project. Furthermore, as part of using this case study to explain the life-cycle design decision-making process under a P3 delivery strategy, examples of downstream design feedback are also discussed. These examples are related to the design feedback that benefited constructability and the O&M phase of this project.

4.1 Timing of P3 Implementation

When the interviewees were asked about design decisions, all participants indicated that the unique phasing of the delivery methods limited the ability of the P3 designer to influence the design and consider life cycle aspects. In this case study, the P3 developer entered the project after many design decisions had been made. As Hayes shared, *"just because phase one was already built, a lot of ground work was done for the P3 group, the developer, and in the contract we have some language that phase two has to be similar to phase one. So pretty much it takes the innovation out of the developer."* Other interviewees indicated that, if a P3 project is to benefit from the private sector's innovations, the P3 developer has to have the ability to alter the design and be able to provide value engineering input. As a result, the definition of the design requirements and its implications for design flexibility must be given thoughtful consideration upfront by the public sponsors. A recent report (Parsons Brinckerhoff et al. 2013) indicated that the private sector may be able to best define and incorporate design alternatives based upon life cycle considerations in a highway project prior to the conclusion of the environmental clearance process. On the other hand, a 'post-environmental clearance' P3 procurement may reduce the ability of the P3 developer to propose alternative technical concepts (ATCs) that will influence life cycle design optimization decisions significantly.

4.2 Design Flexibility

Interviewees' also indicated that contract specifications limited the design flexibility of the project. These contract specifications are the contract documents in which the owner communicates a project's requirements and how conformance with those requirements will be measured, as thus, determine the amount of flexibility allowed in the design (Loulakis 2013). The degree of specifications varies from performance-based specifications (PBS) that describe the final product based upon operational characteristics, and thus offer the P3 contractor a greater degree of flexibility in how to achieve the final product; to 'prescriptive' specifications that explicitly describe the final product in terms of component materials, dimensions, tolerances, weights, and even required construction means and methods, thus giving the owner maximum control of the project (FHWA 2004). For this project, the P3 design process was considered to be relatively prescriptive. As McAllister indicated, *"I think it [this project] is rather prescriptive for a P3 project because it is supposed to mimic the look of the other side so there isn't really a lot of flexibility… innovation is probably coming from the means and methods, but in terms of appearance there isn't really a lot you can play with."*

Because the P3 delivery finished a project half-built under a DBB, the design specifications had to be prescriptive for this project: *"You don't want to be too prescriptive, in fact you don't want to be prescriptive at all; however, in this situation there has to be some prescription… using these contract documents is a challenge. You don't want to restrict things too much but then, at the same time, you want to make sure what they are going to build is a mirror image of what is already there."* From a life cycle design perspective, the ideal setting for a P3 is when 'degrees of freedom' are given to the P3 designer to meet a functional need without limiting the design parameters that the designer might propose. Overall, the timing of the P3 and the contractual specifications of the project greatly affected the P3 developer's design flexibility. One interviewee, Green, indicated that the limitations inherent in brownfield projects may always limit design flexibility and that the optimal conditions for considering lifecycle within the design are Greenfield projects: *"Maybe the most beneficial application of a P3 is where you have more of a Greenfield project where there is a lot of flexibility, so as what the franchise can do meeting a fundamental need, but flexibility to kind of start from scratch as to what it is they can do and innovate more"*.

4.3 Downstream Design Feedback

The timing of P3 implementation and the design requirements for this project limited the ability of the P3 developer to alter the early, upstream design. However, downstream from the design phase, particularly constructability issues and O&M processes benefitted from the life cycle considerations used by the P3 team.

4.3.1 Constructability

Within the P3 delivery strategy, the developer subcontracted the design and construction of the project. As previous studies have shown (SAIC et al. 2006), constructability reviews are typically incorporated into the design phase on P3 projects, thus enhancing the construction phase of projects. Within this project, we compared the approaches taken to construct the piles for the project's viaducts. In phase one, under the DBB approach, the project sponsors were 'conservative'—they did not want to take any risks in having the piles fail and therefore 'over designed' the piles. One of the project sponsors, Waller, explained their approach in phase one for this particular example: *"we designed it a full depth casing because [the department] didn't want to take a risk, if we had historic buildings next to our new bridge, we couldn't do any pile driving because we would collapse the building, so we said 'let's drill down a full depth casing…' we took an extremely conservative route plus we didn't want to have a 12 foot diameter hole collapse on us."* Under this phase the sponsors did not try to optimize or make the design and construction process more efficient, from an economical perspective. In comparison, under the P3 delivery, phase two, the contractors chose a different design to eliminate the need for casings, as Ellis indicated: *"we didn't have the permanent case because our designers didn't think that we needed that, we added rebar, and we did something to eliminate the need for permanent casings."*

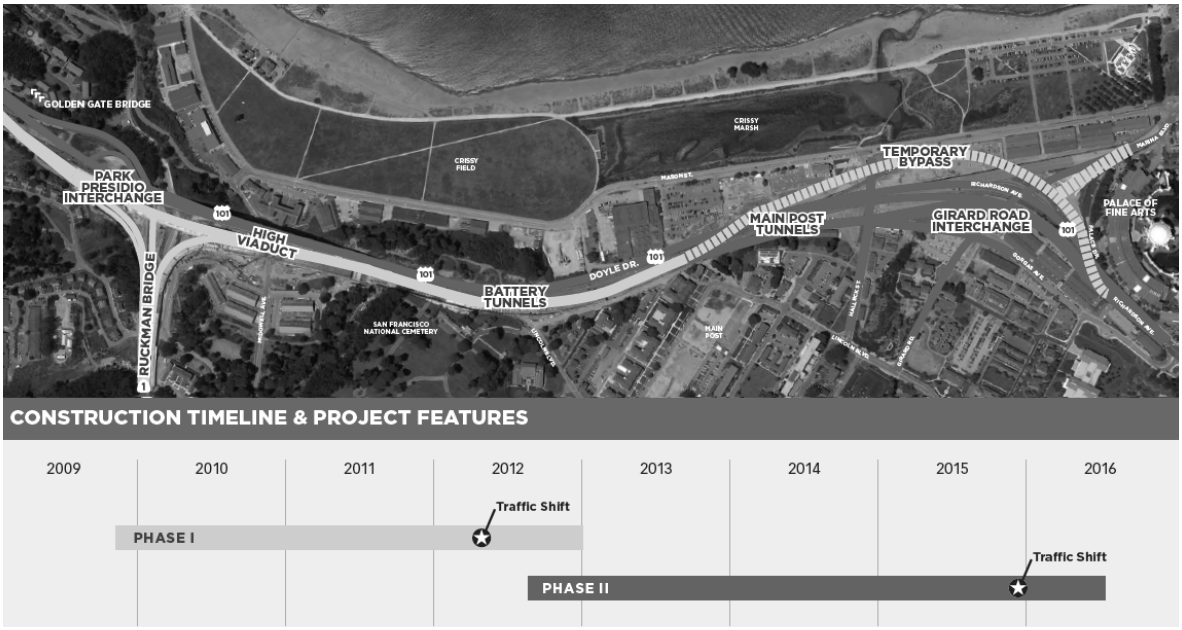

Figure 3: Presidio Parkway Construction Overview (Source: www.presidioparkway.org)

This specific example shows how a project component was approached differently under different PDM strategies. The following excerpt from one of the interviews with the public sponsors, Clayton, highlights how this difference is reflected by their 'motivations': *"We were under pressures, but different pressures, so it is kind of interesting because, okay, this is Doyle drive, this is kind of a high profile job in the Bay Area in the State of California so we were both under pressure but for different reasons. We want to get to seismic safety, we didn't want to delay the P3, it costs us money to delay plus we don't get the seismic safety traffic switch which is important for public safety. They had different reasons, they want to get done, they have a banker, their financier's saying 'hey when are you going to get done, pay us back?' So that is kind of interesting, we have pressures but for different reasons."* Looking at this comparison, the motivations that drive these particular design decisions can be appreciated. In one phase, 'safety' drove the decision to build the piles with a permanent casing. Phase one's more 'conservative' design approach can be argued to be driven by an underlying motivation to reduce all risk of potential failure which may delay the achievement of seismic safety, given the importance of this particular arterial road in the region for public safety. In phase two, the decision to eliminate permanent casings can be argued to be driven by an underlying motivation that resulted in a more economically efficient design, and that significantly reduced the time to construct the second high viaduct, given the financial pressure that the P3 team experienced.

4.3.2 Operations & Maintenance

During the construction of phase two, the O&M provider began operations for the scope of work delivered in phase one. As a result, there was in-depth integration of the O&M service provider with the P3 design-build team in phase two, allowing the O&M team to provide significant feedback to the designer as they began the operations of the complex facility. As discussed, the overlapping of the project phases (phase one and phase two) allowed for the O&M phase to begin during the construction of phase two. *"In most projects you don't normally get that and [the P3 designer] would tell us all day long, 'we never really get to talk to the end user and how they want it configured, how they want it to function, you know, do you want it to do this? or do you want it to do this?' And those are all the conversations that we have on a weekly basis"* commented one of the O&M contractors, Eddy.*"So those are the things that we are pushing for and we are getting on this project, but those things may not have been thought of in phase one, because hey guess what? In most cases, in most typical delivery, you never really talk to the end user, and say 'I like your design, but me getting out there to access or do what I need to do out there could be done in a little different way, it isn't going to cost more money, it's just a little different way to do it and you can take into account what my needs are at the end of the day.'"*

This particular response has been provided to show the type of conversations that the O&M provider is having with the P3 designers in order to benefit the O&M phase of the project for both phase one and phase two scopes of work. Phase one might have not considered the operability as in-depth, including the systems that were installed for traffic management in one of the tunnels, as much as phase two was able to incorporate. The 'systems' of this project, considering the fact that this project is more a 'tunnel' project than it is a road project, were a very important component. Having four tunnels that the O&M contractor is responsible for, which carry over 100,000 vehicles, average daily traffic, and this being the main artery connecting the North Bay to the San Francisco through the Golden Gate Bridge shows the importance of the systems in this project. This same interviewee, Eddy, commented: *"a lot of times I think phase one was built as a roadway project and not necessarily a tunnel project which has a lot of more intricacies in terms of how traffic is managed, how the systems in the tunnel are managed, everything from the lights system to the fire alarms to the CCTV cameras and how that all talks and communicates together… but I think the real benefits are in the systems and devices and how that is used and that is I think something that is kind of in the back, that a lot of people don't understand. That is where your bang is, your bang for your buck is there. In terms of the systems and how they operate, how they all intercommunicate together and how we get things off the roadway."*

This second example shows the O&M phase, being a downstream phase from a life-cycle perspective, being enhanced by the P3 strategy in this project. Having the O&M operator being closely aligned with the P3 designer, specific design input regarding the systems of the tunnels, for example, were design feedback that was incorporated to improve the operability of the project. This in turn, enhances the long-term performance of the project overall from an operations perspective.

5 CONCLUSIONS AND FUTURE WORK

This study explored and presented initial findings from how life cycle design decision-making processes are influenced by project delivery methods in the embedded case study of the Presidio Parkway project. P3s are considered to be the most integrative and 'combined' project delivery strategies to deliver infrastructure projects. Through the analysis of interviews conducted with project participants we found that the timing of P3 implementation, the degree of design flexibility, and the degree of overlap between the O&M and design-build team influences the ability to consider life cycle perspectives and private sector innovations during the design.

These initial findings are limited to the single case study of this project. Ongoing work will extend these findings by analyzing life cycle considerations in the design phase on two additional P3 transportation projects in the US, and by conducting a cross case comparative analysis. To conduct this analysis, we will select projects to analyze based upon characteristics such as the technical complexity of the project (i.e. structure-heavy project vs. a road project), the DBFOM payment mechanism (i.e. direct tolls vs. availability payment), the project condition (i.e. greenfield vs. brownfield), and the organizational structure of the project (i.e. a fragmented vs. integrated structure, and financial leverage).

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