PRELIMINARY INVESTIGATION OF THE IMPACT OF PROJECT DELIVERY METHOD ON DISPUTE RESOLUTION METHOD CHOICE IN PUBLIC HIGHWAY PROJECTS

Ghada M. Gad¹, ⁴, Ayodeji K. Momoh¹, Behzad Esmaeili², and Douglas G. Gransberg³
¹ Bowling Green State University, Ohio, U.S.
² University of Nebraska–Lincoln, NE, U.S.
³ Iowa State University, IA, U.S.
⁴ gmgad@bgsu.edu

Abstract: The use of alternative project delivery methods (PDMs) is perceived to create collaborative environments that result in less adversarial relationships between construction parties, which consequently leads to less disputes. While many research studies investigated the alternative PDMs' impact on cost, schedule, quality, and sustainability, there is limited research to empirically investigate the impact of the PDM on the dispute resolution process choice. This aim of this paper is to conduct a preliminary investigation on how PDMs’ choice has affected Department of Transportation (DOTs) selection of the dispute resolution method (DRM). To achieve this objective, the researchers conducted content analysis of three State DOTs’ specification documents, both for Design-Bid-Build (DBB) and Design-Build (DB) PDMs. Results show that a stepped process is used in all three states with some form alternative DRM being used before resorting to litigation to provide opportunity for prevention and early resolution of disputes. In terms of PDM effect on the DRM, one state used an amicable dispute resolution process that fosters partnerships in DB and not in DBB projects, while another used partnering efforts regardless of the PDM employed. Also, the use of non-binding DRBs in another DOTs’ DB specifications before resorting to binding DRM provide opportunity for amicable ADR methods to be used before being escalated to litigation. This study serves as a preliminary investigation of how PDM choice could affect the way disputes are handled and results show that there is no consistent manner on which the dispute resolution process is selected based on PDM.

1 INTRODUCTION

Being a very complex and competitive industry in which participants with different expertise, talents, and levels of knowledge work together to achieve set objectives, conflicts become inevitable. If conflicts are not well managed and resolved in a timely manner, they quickly turn into disputes, which prevent the successful completion of the construction project (Cakmak & Cakmak, 2014). With 10 to 30 percent of construction projects having serious disputes and one in four construction projects having a claim, disputes can become very expensive. Transactional costs for dispute and claims resolution may total $4 - $12 billion per year. Such costs include lawyers and witnesses fees, employees’ salaries and overhead (who divert from productive profit-making work to litigation activities), in addition to construction process inefficiencies and delays, and ultimately the costs of hostile relationships that remove any opportunity for profits from repeat business (FFC 2007).
Acknowledging the fact that construction disputes will occur inevitably, the construction industry has made tremendous progress in developing more efficient and amicable methods for dispute prevention and resolution. Paradoxically, experts frequently refer to the construction industry as being on the innovative edge regarding dispute resolution (ENR 2000). One of the early decisions that prevents disputes on a project is selecting the most appropriate project delivery and management method (FFC 2006). It has been conceived that the use of traditional PDMs and low bid process often create adversarial relationships between the parties involved compared to alternative PDMs that are characterized by being highly collaborative intending to replace the individual parties’ success with overall project success. In line with the various contract conditions that reflect the collaborative-based approach of alternative PDMs, the dispute resolution process selected should portray the level of collaboration expected on the project, i.e., offer opportunity for using amicable dispute resolution process before resorting to hostile DRMs. However, to date, there has been little research conducted, especially on highway infrastructure projects, to investigate this notion and its implication on the project management. Therefore, this research aims to conduct a preliminary investigation on the impact of different PDMs on selection of the dispute resolution process by the State Departments of Transportation (DOTs). In essence, has the use of more collaborative forms of PDMs resulted in selecting less adversarial Dispute Resolution Methods (DRMs)? In order to achieve this objective, the paper first introduces the various forms of PDMs and DRMs used in the construction industry. Then, the result of a content analysis that was conducted to compare the current dispute resolution practices in various PDMs is presented.

1.1 Project Delivery Methods

PDMs define the relationship, roles, and responsibilities of project team members and the sequence of activities required to provide a facility. The particular method through which a given construction project is designed and constructed is an important consideration prior to beginning a project, as it has a significant impact on cost, risk, and the overall schedule. Examples of PDMs used in the construction industry are the traditional design-bid-build (DBB), design-build (DB), construction manager at risk (CMR), integrated project delivery, and public-private-partnerships. This paper will mainly focus on DB and DBB PDMs.

In DBB, the traditional and most popular form of PDM, the owner hires an engineer to design the project in its entirety, creating both the plans and specifications that identify all the project parameters. The project is then put up for a competitive bid after which a separate firm is hired to serve as the general contractor. Project award is usually based on the lowest responsive bid. Some of the challenges with this system are the adversarial relationships among project participants and lack of contractor’s input during design leading to potential change orders. In case of DB PDM, the owner hires one entity to serve as both the contractor and the design professional. This set-up also allows contractor’s input during design, single point of responsibility for construction and design, and fast-track delivery. However, there is potential loss of owner’s control specifically loss of checks and balances. Over the past 15 years, use of DB has greatly increased in the U.S., making this delivery method one of the most significant methods in design and construction today (DBIA n.d.). Research has found that the DB PDM is more effective in large and complex projects (Koncher and Sanvido 1998). Other than contractual PDM method implementation, the U.S. Army Corps of Engineers developed the partnering process in the 1980s to fundamentally change the manner in which contractual parties relate to each other – creating a cooperative team approach rather than the more historically common adversarial approach. Partnering do not modify any existing contractual requirements; it is a voluntary process, and joint costs are typically shared by the parties. Partnering involves working together as a team, developing a common set of project goals, open communication and access to information, empowering participants to resolve issues at the lowest appropriate organizational level, reaching decisions and solving problems quickly and by consensus, and maintaining the relationship throughout the project (AAA 1996).

PDMs is a well-researched topic in construction research. Most studies conducted, in public highway projects, focused on comparing various PDM in terms of their performance (cost, schedule, sustainability, and quality). Warne (2005) conducted a performance assessment of DB contracting for highway projects in terms of schedule, cost, quality, and owner satisfaction, by gathering information on 21 DB highway projects ranging in size from $83 million to $1.3 billion. Shrestha et al. (2012) also focused on highway project investigating project performance metrics of 130 DB large highway projects in Texas. Results, in
both studies, showed that the selected projects were built faster using DB than they would have been with DBB (Warne 2005, Shrestha e al. 2012). As DB is more widely being implemented, studies whether on the national or state level are continuously being conducted to evaluate DB projects’ performance (FDOT 2004; FHWA 2006). In January 2006, FHWA published the results of a comprehensive national study conducted to evaluate DB contracting effectiveness, from different states that were taking the lead on DB implementation. Research studies were also conducted to evaluate quality such as the Arizona DB projects quality study (Emnzen and Feeney 2002), quality qualifications assessment in DB solicitation documents (Gransberg and Molenaar 2004) and a synthesis of how quality is handled in DB projects (Gransberg et. al. 2008). In another study, Minchin et al. (2013) compared time and cost performance of 60 projects from Florida DOT (FDOT) and found that DBB projects outperform DB projects in terms of cost. As can be seen, most research discussed earlier have considered cost, time, and quality but there hasn’t been any major work that directly addresses the relationship between PDM use and disputes/dispute resolution process, especially as related to highway projects.

1.2 Disputes and Claims

With all the PDMs discussed and different degrees of collaboration among parties involved, the complexities involved in construction projects and the magnitude of risks, it is still a fact that construction industry is characterized by being one of the most adversarial industries generating disputes and claims. Disputes occur on construction projects for many reasons such as schedule targets, acceleration, coordination, culture, differing goals, and delays conditions. Claims would generally occur if the contractor requests additional compensation for deviations from original contract or the owner seeks compensation for contractor’s failure to meet contractual requirements (FFC 2007). In Korea, Acharya and Lee (2006) identified six critical construction conflicts: site conditions, local people obstruction, errors and omission in design, double meaning in specification, excessive quantity of works, and difference in change order evaluation. Sigitas and Tomas (2013) hypothesize that the true cause of construction-related conflicts is unsuccessful communication among the construction project participants.

There are different methods to resolve disputes on construction projects. Litigation is the traditional method employed in courts, where all parties are subject to all of the forms of discovery, such as interrogatories, requests for admission, document production demands, and depositions. The parties then have a trial, which if they are dissatisfied by its results, they can appeal. Historically, litigation has had a reputation for being a long expensive process. In the public sector, there are often requirements that contractors must first file a government claim and go through an administrative hearing procedure before they can proceed to arbitrate or litigate their claims. This is known as Government Claims Procedure (Klinger 2009). According to the American bar, Alternative Dispute Resolution (ADR) methods are increasingly used in the construction industry in lieu of as a step preceding litigation, as they can handle disputes quicker and are relatively inexpensive. Some of these ADR could be binding to assure parties that they will not have to resort to outside litigation to settle disputes (Dettman and Harty 2008).

Commonly used ADR methods include: step negotiation, mediation, Dispute Review Boards (DRBs), and arbitration. Step Negotiation requires the individuals getting directly involved in dispute to seek resolution by direct negotiation. In the event of resolution not being reached within a certain period, the dispute is taken to the next level which could continue to senior level of each organization. According to Texas Civil Practice and remedies code 154.023, “mediation is a forum in which an impartial person, the mediator, facilitates communication between parties to promote reconciliation, settlement, or understanding among them.” Whether it is during the course of construction or after the project is complete, mediation is arguably the most satisfying DRM. It can occur as early in the process as the parties are able to organize a mediation and identify a mutually agreeable mediator (Klinger 2009). DRB, on the other side, involves three neutral experts who visit the site periodically and monitor progress and potential problems that might lead to disputes. Once a dispute occurs, it is brought to the board who conducts an informal hearing and issues an advisory opinion that could be either binding or non-binding. DRB cost is typically 0.15% of the total construction cost which is far less than using arbitration or litigation. Finally, arbitration is a non-judicial forum to settle disputes; its benefit emerges from the fact that construction disputes often require the decision-maker to be well versed in technical and industrial matters, in addition to legal issues (Yates and Smith 2007). However, in a survey conducted in the U.S., 31 out of 42 arbitrators reported
that “arbitration is becoming too much like court litigation and thereby losing its promise of providing an expedited and efficient means of resolving commercial disputes…” (AAA 2010, p.42).

Few papers address the topic of disputes occurrence and contracting strategy/PDM. The Federal Facilities Council (2007) compiled a report of presentations given by speakers who are experts in resolving construction disputes. Using the Pentagon renovation project, the report highlighted how projects transferring more risk to contractor and using a low-bid process are more prone to having claims. Contracts should portray realistic risk assignment to parties rather than convey the bargaining powers of the parties. In addition to inequitable risk allocation, the report addressed disputes’ causes that are attributable to the contracting/bidding strategy such as low bid process, poorly developed contracts, and lack of project management procedures (FFC 2007). Another interesting observation by Independent Project Analysis’s study conducted on projects of diverse types was that, in contrary to the perception that fewer claims are anticipated in shared risk contracts, no difference was seen between claims’ frequency on shared risk versus contractor-allocated risk contracts. This was attributed to inappropriate risk allocation strategies. The study also looked at DRM choice showing that arbitration encouraged inflated claim values while other forms such as DRBs and mediation did not affect claim frequency (FFC 2007). Two other studies, one in Malaysia and the other in UK reported that alternative PDMs reduced disputes frequency (Ndekugri and Turner 1994, Yusof et al. 2011). Mante et al. (2012) conducted a preliminary study on dispute resolution by analyzing DRM provisions in standard contract forms showing that regardless of the PDM, the same dispute resolution provisions were used. The paper also reinforced our literature review that the amount of research done related to PDM and dispute reduction/resolution is limited.

The previous sections show that, on one side, there are many DRMs, with varying degrees of hostility, that evolved to manage the numerous claims/disputes that occur on construction projects while on the other side, there are many forms of PDMs, some of which are assumed to create more collaborative environments less prone to disputes. Although there seems to be a strong link between PDM use and dispute process selected, there has not been any consolidated research conducted to investigate the effect of PDMs choice on selection of DRMs or process, especially as related to public highway projects.

2 METHODOLOGY

This aim of this paper is to conduct a preliminary investigation on how the choice of different PDMs has affected how DOTs are currently selecting the DRM used. To achieve this objective, the researchers conducted content analysis of three State DOTs’ specification documents, both for the traditional PDM and DB PDM. The aim of the content analysis was to develop valid inferences using a set of procedures from the documents studied (Neuendorf 2002). The three state DOTs studied were Florida DOT (FDOT), Ohio DOT (ODOT), and Colorado DOT (CDOT). These three State DOTs were selected because they have a well-established DB process. CDOT started using DB on a few projects in the 1990’s after obtaining FHWA Special Experimental Project Number 14 (SEP-14) – Innovative Contracting program approval, however, in 1999, the Colorado State Legislation was officially obtained allowing DB use. As for FDOT, DB has been permitted by all agencies for all types of design and construction since 1997. ODOT represents also one of the early participants in SEP-14 in 1990, to test and evaluate DB, among other PDMs, as a potential effective method to deliver highway projects (DBIA, n.d.). Over the past few decades, DB has been increasingly used by ODOT in projects of different characteristics.

Specification documents were retrieved from the DOTs’ websites (Table 1). In cases where it was not possible to locate the DB standard specification, DOT DB projects solicitation documents were studied to identify the dispute resolution process used. It was assumed that the specification document was for traditional PDM if no specific PDM was specified. Six state DOT specification/bid documents from the three DOTs, together with three FDOT solicitation documents, were analyzed to determine the process followed from the occurrence of the event giving rise to the claim until resolution of the claim using any form of DRM. The content analysis of the documents focused on three main aspects; 1) how DOTs define the word ‘claim’ and ‘dispute’, 2) the process that precedes resorting to the formal DRM, if stated, and 3) the formal DRM employed. After each State DOT specifications were analyzed, the traditional versus the
alternative PDM specification document was compared to infer the differences (if any) between the DRM and the process utilized to resolve in each of these State DOTs given different PDM.

Table 1: Standard Specification and Solicitation Documents Studied

<table>
<thead>
<tr>
<th>State DOT</th>
<th>Traditional project delivery</th>
<th>DB project delivery</th>
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<tbody>
<tr>
<td>Colorado</td>
<td>- Standard Specifications for Road and Bridge Construction – 2011</td>
<td>RFP documents (Book 1 DB Contract Provisions) for the following projects:</td>
</tr>
<tr>
<td></td>
<td>- Standard Special Provision revising CDOT’s Standard Specifications for Road &amp; Bridge Construction- 11/6/2014</td>
<td>- I-25/Cimarron Street (US 24) - 2014,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- I-25 North - 2012</td>
</tr>
<tr>
<td>Florida</td>
<td>- Standard Specifications for Road &amp; Bridge Construction - 01/2015</td>
<td>- Design-Build Specifications – 09/08/2014</td>
</tr>
<tr>
<td>Ohio</td>
<td>- Construction and Material Specifications – 01/01/2013</td>
<td>- Revisions to 2013 Construction &amp; Material Specifications for DB Projects–12/31/2012</td>
</tr>
</tbody>
</table>

3 RESULTS & ANALYSIS

3.1 Colorado DOT

Both CDOT 2011 Standard Specifications for Road and Bridge Construction (with no PDM specified), here in after called ‘2011 CDOT SS’, and the RFP documents (Book 1 DB Contract Provisions) define dispute as a “disagreement”. As per 2011 CDOT, dispute is a “…disagreement concerning contract price, time, interpretation of the Contract, or all three between the parties at the project level regarding or relating to the Contract”, or as the DB RFP documents, disputes could be disagreements “resulting from a change, delay, change order, another written order, or an oral order from the Project Director or his designee…” Claim on the other side, as per the DB project RFP documents (Book 1 Contract Provisions), is defined as “…a separate demand by the Contractor for: (i) a time extension which is disputed by CDOT, or (ii) payment of money or damages arising from work done by or on behalf of the Contractor in connection with the Contract which is disputed by CDOT. A claim will cease to be a Claim upon resolution thereof, including resolution by delivery of a Change Order or Contract amendment signed by all parties.” Thus, as per CDOT, the process starts with a dispute that is then elevated to a claim, if not resolved at the project level.

The 2011 CDOT SS (traditional PDM) document subsections 105.22, 105.23, and 105.24 detail the dispute resolution process. It states that either party can initiate the resolution process when an issue arises that cannot be resolved between the parties. CDOT follows a stepped-process that starts at the project level and can be escalated all the way to litigation or arbitration (Figure 1). The process starts with the contractor providing a written notice of dispute to the project engineer about the failure of the parties to resolve the dispute. This notice is then followed by a request for equitable adjustment (REA) -within 15 days- which should include supporting documents such as nature of the circumstance which caused the dispute, statement explaining provision of the contract, and all evidences. Within 15 days of receiving the REA, the engineer meets with the contractor and in seven days issues a written decision on the merits of the dispute. The contractor does not accept the decision, the contractor provides notice to the resident engineer who meets with the contractor as well as the project engineer within 7 days of receiving the contractor’s written notice, on a weekly basis for a period up to 30 days, to discuss and resolve the dispute. If dispute remains unresolved, the project engineer directs it to DRB.

CDOT specifies two types of DRB in their provisions: “On Demand DRB” and “Standing DRB”. “On Demand DRB” is the default DRB to be used unless the project contract documents specify otherwise. On Demand DRBs constitute only one member, if the dispute value is less than $250,000, and three members in larger dispute values. However, Standing DRBs always have three members that are selected during the preconstruction stage and will meet regularly during the course of the project. Standing DRBs (as per the standard special provision dated November 6, 2014 that revises CDOT’s Standard Specifications for Road and Bridge Construction) are typically used in projects that are larger than $15 million, involving complex construction or structures or multiphase construction, with major traffic

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impacts, or other complicating factors that could lead to disputes. Standing DRB remain in effect all through the duration of the project and are in full force until all disputes are resolved.

Figure 1: Typical CDOT dispute resolution process

Whatever the DRB type selected, once the project engineer initiates the DRB process, parties will need to submit prehearing submittals that include all supporting documents/evidence. At the hearing, both parties present their positions. After the meeting has been closed, the DRB shall issue its recommendation and the DRB and parties shall agree on the time (maximum time being 30 days) for analysis and review of the issuance of the recommendation. DRB’s chairperson signs and sends the signed recommendation and all documents to the parties who will have 10 days to request clarifications. If the parties are not satisfied with the recommendations, other forms of nonbinding dispute resolution could be optionally used such as mediation or as CDOT specifications section “claim for unresolved disputes” states, the contractor can “file a claim” that starts by a written notice of intent to file a claim to the Region Transportation Director (RTD). Based on documents submitted, RTD issues a decision, which if not accepted by the contractor could be escalated to the Chief Engineer. If contractor is not in agreement with the Chief Engineer’s decision, the contractor can initiate litigation or binding arbitration (following American Arbitration Association’s Construction Industry Arbitration Rules) to finally resolve the claim. The standard special provision, dated November 6, 2014, that revises 2011 CDOT SS notes that the same process should be used in DB projects unless the Standards & Specifications Unit approves a SSP modified version.

On the other side, CDOT DB Manual (dated April 15, 2006 and revised on June 11, 2014) states that the DB Request for Proposals (RFP) follows a structure that includes Book 1 (Contract terms and conditions component) and Books 2 through 5 (Technical components). Depending on the DB type (a Streamlined DB or a standard DB), 2011 CDOT SS could remain as an integral part of the contract requirements or could be completely replaced by Book 1. The authors could not locate Book 1 template so three DB projects RFPs were reviewed to identify the DRM process followed; I-25/Cimarron Street (US 24) Project issued 2014, I-25 North Project issued 2012, and SH 285 Reconstruction – Wadsworth to Federal Project issued 2008. The significant difference in the DB projects compared to the process described in the 2011 CDOT SS are the steps preceding the dispute resolution process initiation. Under Article 19 entitled “partnering”, the RFP documents state that the dispute resolution process described shall not apply until “…the normal CDOT-Contractor issue resolution efforts through partnering are not successful...” The RFPs of the projects studied either then refer to dispute resolution section of the 2011 CDOT SS as being an integral part of the contract document or completely replace it by a similar stepped process that concludes with the Engineer’s decision followed by litigation. As for the DRB type, one of the DB projects used standing DRB while the other used on-Demand DRB, which makes DRB type project-specific (following the requirements explained earlier) rather than related to the PDM used.

3.2 Florida DOT

FDOT Standard Specification for Road and Bridge Construction dated January 2015 (with no PDM specified), here in after referred to as 2015 FDOT SS, defines Contract Claim as a “…written demand submitted to the Department by the Contractor … seeking additional monetary compensation, time, or other adjustments to the Contract, the entitlement or impact of which is disputed by the Department.” p. 3. No definition was found in 2015 FDOT SS documents for the word “dispute”. 2015 FDOT SS Article 5.12
entitled “preservation, presentation and resolution of the claim” details the claim resolution process including time frames and submittals required. The process must start with “submission of timely notice of intent to file a claim, preliminary time extension request, time extension request, and the certified written claim…” to the Engineer before contractor can seek any formal claim resolution process including litigation. Claims by contractors cannot also be filed to litigation or arbitration before FDOT grants the contractor final acceptance of all the work. The Engineer, after submittal of all required documents, will have 90 or 180 calendar days depending on the contract amount to respond to the contractor. It is interesting though to note that 2015 FDOT SS contains a paragraph in multiple sections stating that ultimately “Statewide Disputes Review Board in effect for this Contract will resolve any and all disputes that may arise involving administration and enforcement of this Specification...the determinations of the Statewide Disputes Review Board for disputes... will be binding on both the Responsible Party and the Department, with no right of appeal by either party.” p.297. Accordingly, some of the disputes could be escalated to the binding DRB, while the 2015 FDOT SS was not specific about the other forms to be used in other types of works where Statewide DRB was not specifically listed.

On the other side, FDOT’s DB specifications document dated September 8, 2014 added two entire sections to the procedures followed in conducting DRBs that discusses both DRB and Statewide DRBs and details the choice of the members, schedule, responsibility of each party, and basis of payment in each. DRBs are used essentially when normal dispute or claim resolution is unsuccessful and by either the choice of the DOT or the Contractor. The steps involved in dispute resolution start with the contractor filing a written protest with the Engineer within 15 days after the event and states its reasons for objection. The Engineer then responds to the written protest within 15 days of receiving it and in its response furnish the contractor with its decision. This decision is final unless the contractor files a written appeal to the Engineer within 15 days. In this case, the issue is referred to the DRB by the parties involved. The DRB then fixes a date to conduct the hearing. All evidence to the claim or disputes must be submitted to the board within 15 days before the date set by the board. The owner/contractor would provide a position paper that outlines the dispute/claim nature and scope together with the basis for entitlement. During the hearing, all parties shall be given the opportunity to be heard and provide their evidences. Within 15 days of completing the hearing, the board shall give recommendations of the dispute or claim to the parties involved. Also, within 15 days of receiving the board’s recommendations, the parties involved shall respond whether or not they accept the recommendations. It is noted that in the Section regarding DRBs “both the Department and the Contractor should place great weight on the Board’s recommendation, it is not binding” (Article 8.3.7.4) while in the section regarding the Statewide DRBs “recommendations of the Board will be binding on both the Department and the Contractor.” (Article 8.3.8.1). Thus, DRB hearings of any unresolved disputes/claims needs to supersede any initiation of arbitration or to filing a lawsuit, while in Statewide DRBs, DRB decisions are final and binding. Figure 2 shows the stepped process used in FDOT.

![Figure 2: Typical FDOT dispute resolution process](image)

### 3.3 Ohio DOT

ODOT Construction and Material Specifications dated January 1, 2013 (with no PDM specified), here in after referred to as 2013 ODOT SS, defines claims as “Disputes that are not settled through Steps 1 and 2 [discussed below] of the Dispute Resolution and Administrative Claim Process. The Dispute becomes a Claim when the Contractor submits a Notice of Intent to File a Claim.” p. 6. Disputes, on the other side, are defined as “Disagreements, matters in question and differences of opinion between the Department’s personnel and the Contractor.” p.7. So in essence, disputes are escalated to claims.
ODOT’s introduces the dispute resolution process under Section 108.02 ‘Partnering’ where ODOT sets partnering as the “proactive effort and spirit of trust, respect, and cooperation among all stakeholders in a project...” p.46. Figure 3 shows ODOT’s dispute resolution process, which is a stepped approach to be followed in sequence. The contractor should first provide immediate oral notification to the Engineer once a circumstance that might result in changes evolves. Both the contractor and engineer should discuss various mitigation efforts such as re-sequecing activities and acceleration, and the engineer should try to resolve the issue expeditiously. If the engineer does not resolve the issue in 2 working days from oral receipt of notice, contractor should provide a written notice. If these mitigation steps do not resolve the issue under consideration, the contractor should escalate the issue to the ‘Dispute Resolution and Administrative Claims Process’ that should be totally exhausted before filing a claim in the Ohio Court of Claims. Figure 3 shows the stepped process followed by ODOT:

- **Step 1: On-Site Determination**: Engineer meets the contractor’s representative within two days of Contractor Written Early Notice receipt in an attempt to reach a resolution. The Engineer then issues a Step 1 written decision within 14 days. If no resolution is reached, dispute is escalated to next level.
- **Step 2: District Dispute Resolution Committee (DDRC)**: Each District establishes a DDRC for deciding disputes that escalate to Step 2. Within 7 days of receipt of Step 1 decision, a written notice is submitted to the District Construction Administrator (DCA), followed by all the dispute documentation required (such as additional compensation requested and narrative of disputed work) in 14 days. After which, in 14 days, the DDRC meets with the contractor and issues a decision.
- **Step 3: Director’s Claims Board Hearing (Board) or ADR**: Within 14 days, if contractor is not in agreement with the decision reached in Step 2, a written notice of intent to claim filing is to be submitted to the Dispute Resolution Coordinator that requests either a Board hearing or an acceptable ADR method. This is the point in time where the ‘dispute’ becomes a ‘claim’. In case of a Board hearing, the Board hears the claim on behalf of the Director and submits a written recommendation to the Director who takes the final decision which is considered the final step of the Dispute Resolution Process within ODOT. In case of ADR choice, binding arbitration or mediation could be selected and agreed upon by the parties. The neutral third party will now have complete control of the claim.

![Figure 3: Typical ODOT dispute resolution process](image)

Looking through ODOT document “Revisions to 2013 C&Ms for DB Projects” dated December 31, 2012, the same dispute resolution process is followed on DB projects, as this section was not amended.

4 **DISCUSSION**

Figure 4 shows a comparison between the three DOTs’ dispute resolution processes moving from a dispute to be resolved on the project level to a formal claim involving third party control. Both CDOT and ODOT define claim as the level succeeding the failure to resolve a dispute. Based on the documents analyzed, all states have some sort of stepped resolution process whether on DB or DBB method. The use of the stepped process provides an opportunity for the parties to resolve disputes at the job site level in a more efficient manner before resorting to lengthy and costly DRMs such as arbitration or litigation. CDOT had the maximum number of steps, followed by ODOT, then FDOT. Different forms of ADR were used in the three states with DRB (in its various forms) being used in all three. CDOT used either standing (specific for the project) or on-demand DRBs based on the characteristics of the project in both PDMs. FDOT used standing non-binding DRBs generally and State wide binding DRBs in specific designated work types of the project. The binding nature of the Statewide DRB in FDOT’s process raises
the concern that once the parties are unable to resolve the dispute at the project engineer level, the process is rapidly escalated to a costly adversarial process involving lawyers. ODOT, on the other side, formed a DDRC that is similar to FDOT’s Statewide DRBs yet issues non-binding decisions that could be further elevated to other forms of ADR.

<table>
<thead>
<tr>
<th>CDOT</th>
<th>FDOT</th>
<th>ODOT</th>
</tr>
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<tbody>
<tr>
<td><strong>Partnering Efforts</strong> (in case of DB projects)</td>
<td><strong>Project level Negotiations</strong></td>
<td><strong>Mitigation Steps w/ Engineer</strong> (oral &amp; written notification)</td>
</tr>
<tr>
<td>Project Engineer</td>
<td>Project Engineer</td>
<td>Step 1: On-site Determination of Engineer</td>
</tr>
<tr>
<td>Resident Engineer</td>
<td>DRB (Standing non-binding and/or Statewide Binding)</td>
<td>Step 2: District Dispute Resolution Committee</td>
</tr>
<tr>
<td><strong>DRB</strong> (Standing or on-demand)</td>
<td>Mediation (optional)</td>
<td>Step 3: Board or ADR (mediation OR binding arbitration)</td>
</tr>
<tr>
<td>Region Transportation Director</td>
<td>Arbitration or Litigation (in case non-binding DRB preceding)</td>
<td></td>
</tr>
<tr>
<td>Chief Engineer</td>
<td></td>
<td>Litigation (in case mediation preceding)</td>
</tr>
</tbody>
</table>

Figure 4: State DOTs dispute resolution process comparison reflecting both DB and DBB processes

Both ODOT and CDOT mandate the use some form of partnering/mitigation process before initiating a dispute resolution process and move through a stepped process passing through DRB, as well as in some cases a mediation process and in all cases ends up with arbitration or litigation. In CDOT specification documents, it was interesting to see how partnering was listed as an integral process in DB projects but not in DBB projects. As for FDOT, the main difference observed between DBB and DB specification standards was how in DBB projects - other than Statewide to be used under specific work disputes- there were no mention of the DRM method to be employed if the contractor is not in agreement with the engineer’s decision. In DB specifications, however, non-binding DRB was added as an option to be used generally. Finally, ODOT did not amend the dispute resolution section in its DB specification.

5 CONCLUSIONS

Results of this preliminary investigation show the some states (e.g. CDOT) must be realizing that alternative PDMs necessitate the use of a dispute resolution process that is more amicable and fosters partnerships while others are using mitigation/partnering efforts (ODOT) regardless of the PDM. A stepped process in general is preferred in all states with some form ADR (DRB mostly and mediation sometimes) being used before resorting to litigation. It is anticipated that early resolution of disputes through transparent procedures in an environment that fosters understanding, communication, and cooperation will ultimately result in less disputes escalating to claims. While, the contribution of the study is significant, there are several limitations that need to be addressed in future studies. First, the external validity of study is limited to three states DOTs (Colorado, Florida, and Ohio); therefore, other studies should be conducted to explore DRM being followed in the remaining DOTs not only in the standard specification but also as pertinent to the project specifics. Second, this study was limited to conducting content analysis on current documents and lacks empirical support; future studies should be conducted to collect empirical data from completed projects and analyze the impact of various project delivery methods and dispute resolution process on disputes occurrence and resolution. Third, this study just looked at the DRMs provided by owners and does not provide any insight towards the behavior of stakeholders in a project. There is a common belief that more integrated PDMs provide a more collaborative environment and as a result reduce potential of disputes in a project. Future studies should be conducted to test this hypothesis statistically. Finally, a study should be conducted to understand how the choice of a stepped
process versus the other affect the numbers of claim that evolve and the number of claims that move to litigation and how, if any, the stepped process help reduce the number of claims in these DOTs compared to others. Despite of these limitations, this study addresses an important knowledge gap and paves the way for future in-depth studies regarding dispute prevention and minimization and alternative PDMs.

References