



ADOT Process Improvement Review Report

Design/Build

RH & Associates, Inc.
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ADOT Alternative Project Delivery Lessons Learned Final Report (Design/Build)

Introduction

In a continuing effort for ADOT to improve their internal processes related to Alternative Delivery projects, RH & Associates, Inc. under contract with Jacobs, has completed a review of the two past Design/Build projects, SR202 Santan Freeway and Loop 101, I-10 to Tatum Boulevard HOV, to look for opportunities to improve the current process as well as confirm elements of the process that are going well. Input was solicited from team members from both projects and included ADOT, the APDM consultants, and the design and construction leads of the design/builder teams. The following specific questions were asked of all of the participants:

- 1) What changes would be beneficial within the RFP documents, related to the success or impact to the project?
- 2) Provide any comments on how the panel selection worked and did it impact the project. Would you have any improvements that would help future selection panels?
- 3) How did the ATC process impact the project related to design and construction elements?
- 4) Were the design guidelines for plans and specifications appropriate for the project? Were there any challenges on the project that need to be addressed for future projects?
- 5) How was the design review process including comment reconciliation? What worked well and what improvements would you make?
- 6) How was third party involvement on the project? Were there challenges that impacted the project? Could their involvement be managed differently?
- 7) How was quality control on the project for the design documents?
- 8) How was project administration on the project? What changes can be made to make improvements for future projects?
- 9) How was the QA/QC process on the project? What lessons learned would we apply to future projects?
- 10) Were there any specific traffic control issues and what suggestions do you have for future D/B projects?
- 11) How did the role of the oversight consultant impact (help or hinder) the project?
- 12) What partnering did you do on the project? How effective was the approach? Would you do anything different?
- 13) Were executive sessions used on the project? If so, how effective were they and would you do something different?
- 14) Was there anything in the payment process that was challenging that needs to be changed?
- 15) What change orders occurred on the project? What was the cause of the change orders; design issues, unforeseen conditions, etc.?
- 16) Any other comments or suggestion might you have to improve future D/B projects?
- 17) What changes were made on the project to achieve better results?
- 18) How does flexibility within ADOT's D/B processes impact the successful delivery of a project?



From this information, the following suggestions, alternatives, and comments are provided to help ADOT to improve their current processes. Additionally, other recommendations are made based on additional information obtained from BMP's from other agencies, as appropriate.

This report is divided into the following categories:

- RFP and Selection Process
- Design
- Construction
- APDM Oversight
- Partnering
- Administrative
- Miscellaneous

Observations

When reviewing all of the comments from both projects and after several conversations with participants, there is an overriding theme that should be addressed. There seems to be a lack of consistency in process and approach for each project. The processes followed or allowed are dependent on the ADOT staff and APDM assigned to the project, not based on developed processes. This begins at the RFP stage through construction. There also seems to be a need for overall training for the D/B process for all involved; ADOT, design and construction; construction management firms working for ADOT; contractors; and designers. This is addressed in more detail within the Miscellaneous section of this report.

One of the benefits of D/B as a delivery method is project and team flexibility, however, consistent approaches and processes must be in place to ensure guidance and to achieve consistency as well as ensure that the D/B teams know what will be expected on each and every project. This will aid ADOT personnel, consultants and contractors in knowing what to expect during all phases of the process. ADOT's processes can be overwhelming to new staff and then with the D/B approach being added, creates even more opportunities for confusion or misunderstandings. Throughout the comments below, there are ideas and opportunities offered to aid in improving the process of D/B within ADOT. Please be aware that several opportunities may be offered. It is not suggested that ADOT must embrace all of the changes, but these changes provide an opportunity to improve the D/B overall approach. These recommendations are being offered by project team members and the consultant through previous experiences. Also, many of these items are overlapping and may be referenced in several locations within the report.

RFP and Selection Process

The overall process appears to be working well, except as noted below.

RFP and Selection Process

- 1) **Ambiguities and conflicts** – There appears to be continuous problems within the RFP documents and plans provided during the bidding phase, including the lack of a clear hierarchical documentation of the documents. These are leading to challenges and conflicts between the D/B and ADOT during the design and construction phases. Additionally, some of these have led to change orders on the project. As an example, the ambiguities



or conflicts may appear between what is in the DCR versus what is being provided in the design/build bidding documents. Additionally, the RFP documents have been cut and pasted so many times, with very few edits, which has led to many problems within the documents. The D/B team makes a decision related to the documents that best suits their approach, and then if ADOT wants it different, ADOT is then required to accommodate the required change. Specific examples are provided within the Design Process section of this report.

Potential Opportunities for Improvement:

- a. A formal review process, 3rd party, should look at all of the documents for each project to ensure that they conform to one another and to eliminate conflicts. Clarity of the documents is critical to the overall success. This should include involvement from the various disciplines/divisions to insure that the appropriate input is included. This should also include input from stakeholders as needed.
- b. The D/B team should be required to specifically outline all assumptions made during the bid process in the RFP and these should be taken into account by the selection panel. These should also be used during the project to be able to define a “change” to the contract.
- c. ADOT may also want to consider putting verbiage in the RFP documents that better outline the definition of a “change” to the contract. This may help to eliminate some of the assumptions being made and clarifications not being sought during the bidding phase, thus eliminating some of the change orders.

- 2) Subcontractors** – There appears to be continued challenges with specialty work subcontractors and the traffic control subcontractors on the projects. Traffic control continues to have the most challenges on the project and appears to create the most discord throughout the construction process. This includes the selection of subcontractors who are qualified to perform the work as well as meet the specific needs of the project. Additional information can be found below in the Construction section of this report.

Potential Opportunities for Improvement:

- a. It is recommended that within the RFQ or RFP there be a qualification element for specialty subcontractor work and traffic control subcontractors. This would require ADOT to establish performance criteria and evaluation criteria specifically for the identified element of work, in lieu of only the qualifications of the design/builder. This may help alleviate some of the challenges that appear to be occurring during construction.

- 3) Performance versus prescriptive plans and specifications** – This continues to be a challenge for many agencies embracing the D/B process. There appears to be some challenges with making a decision as to what is “required or wanted” versus what is “desired, suggested or recommended”. This creates decision-making problems during the design review and potential increased costs due to change orders during construction. Staff may not understand their roles related to what is acceptable versus what is desired or “it’s just the way we do things”. The D/B teams cannot and will not provide proposals and bids meeting the greatest ADOT “wants” if there are other options available and those options still meet what is “allowable”. Additional information related to this issue is provided within this report under Design Manuals.



Potential Opportunities for Improvement:

- a. One very big impact appears to be with traffic control requirements. This continues to be a challenge related to notifications, special events, road restrictions, safety, set-up and tear down, etc.
 - i. It is recommended that the traffic control element of the project be as prescriptive as possible to ensure that the construction team has the information required to hold the D/B team accountable for the work.
 - ii. The definition of special events needs to be better defined in the RFP documents.
 - iii. The definition of “allowable” versus “approved” must be clarified within the documents.
 - iv. Define what the allowable physical lengths of closures can be within the documents.
 - v. Additional information related to this element during construction can be found in the discussion of the construction impacts within this report.
- b. There are decisions that need to be made internally within ADOT to answer the questions related to RFP documents that are performance versus prescriptive based. D/B is a process that, if used correctly, can provide innovation and creativity on any project, which can then lead to lower costs and a reduction in schedule through the use of performance specifications. However, there are times when specifications should be more prescriptive.
- c. One approach to review RFP documents prior to being released to the public is used by the USACE across the country. They conduct a formal value analysis workshop for each project prior to the RFP being released. This workshop brings together technical individuals to review the RFP documents for each project, including any additional existing documents that are a part of the contract documents. The workshop would include outside technical specialists, based on discipline and ADOT staff to identify the specifications that should be performance and those that should be prescriptive. Additionally, all of the documents involved in a project can be reviewed to alleviate some the challenges previously noted with ambiguities and conflicts. The cost for the workshop will greatly reduce the change orders required during construction, thus providing a good cost/benefit to the overall project.

- 4) Selection Panel** – The selection panels appear to have fewer and fewer people involved with D/B experience which can lead to a reduced understanding of the proposal elements, the contractor’s approaches, etc. This may not lead to the best team being selected for the project. Additionally, it was noted that on one of the projects the Resident Engineer did not get involved on the selection panel. This appeared to create some challenges later on in the project. Since the RE was not involved, there was a lack of understanding with the D/B team’s approach and what is included within the proposal.

It was also noted that having the consultant and the contractor on the panel provided some very good input during the selection process and this should be continued into the future.

Potential Opportunities for Improvement:

- a. There are a couple of opportunities for ADOT to consider. This might include increasing training for ADOT staff on the D/B process before each selection panel, or have the panel go through a specific training course about D/B, the selection criteria, etc. The other opportunity is to start including other types of panel members, not



ADOT staff. This however continues to limit ADOT's involvement which is not necessarily the best choice.

- b. The suggestion is to make sure the RE and the PM are a part of the review and voting process. This is critical to get them involved and get "buy in" to the team that will be completing their project. It helps to provide ownership. However there may be a downside to consider, having someone involved in the selection that will be working on the project may prove to be challenging, especially if the firm selected is not the firm that was the first choice of the RE. This may create more challenges on the project. ADOT may want to review their policies for selection panel members and then educate the internal staff as to their approach and the reason for the choices being made and make sure this is not taken personally.

5) Weighting Factors - Consideration should be given to the weighting factors applied to the schedule (+B criteria/magnitude and/or prescription of certain periods of time, e.g. mobilization/co-location, orientation period, design, etc.) in the scoring of Design-Build proposals. The observation is that schedule weighting factors often over-emphasize the time component of projects to the detriment of the cost and function of the team. Less emphasis on time will not automatically result in longer duration projects because of the need for teams to self-regulate the most cost-effective duration – essentially balance increased costs to accelerate vs. lesser cost to slow down but extend overhead costs.

6) ATC Process – This process appears to have quite a few challenges. If standards have been developed, they are not being followed or are randomly used, depending on who is involved with the process. ADOT needs to determine their intent of using an ATC process. The intent or use will clarify the needs and the process to be followed. Additionally, it was noted that a single meeting during the process does not accomplish the needs of the D/B to successfully implement the ATC process. Sample information from other states has been included at the end of this document for future reference.

Potential Opportunities for Improvement:

- a. This is a critical part of a D/B selection process. If there is a formal, written process that has been included in the RFP, the process, as written needs to be followed. However, after reviewing the current ATC process description, it needs to be expanded to include more detailed explanation and definition. The process should be reviewed to determine the intent of its use and the process steps that are included. Those that are involved with the process during the bidding phase should have a thorough understanding of the process and how it is to be implemented. There are many things that need to be stipulated in this process including; the intent of the ATC; what is required for an ATC (complete impacts identified that meet all design requirements), if not, what are the impacts/costs and where does the responsibility lie; ATC's and design exceptions; panel member make-up and authority; rejected ATC's; use of other proposers ATC's, etc.
 - i. If an ATC process is not used, we would recommend that ADOT adopt a value engineering process into their D/B process. Requiring that the D/B participate in a formal VE session upon completion of the bidding process. This would allow for open discussions between D/B, ADOT and others, to formulate opportunities and innovation and allow the D/B to question the RFP documents in lieu of making assumptions during the bidding phase. If there are ideas that are selected that change the bid price, a VECP is written and



the contract is changed, with a split savings between the D/B team and ADOT.

- ii. If not already included, ADOT may want to consider having the PM and RE involved with the ATC process to learn about options and opportunities and to provide input.
 - iii. As an example, if ADOT wants to gain from the process, the ATC process should be private, not a shared, process. This enables each team to be innovative and creative in their approach and that is what gives them the edge for their bid. It should be noted that all ATC's will be available to the successful bidder after the bid, if the bidding firm accepts the project stipend. ADOT can then review both the rejected ATC's as well as those of the other bidders that they would like considered by the successful bidder. The criticalness, however, is the timing of when this must occur. This is something that could be led by the APDM consultant to aid ADOT during the process.
- b. Other similar processes – There are other processes available for gaining input and clarifications during the bidding process, these include the typical Q&A process, pre-bid meetings, etc. which should be considered.

Design Process

The over-the-shoulder design review process is a great success in the D/B process. This provides an opportunity for much more informal discussions leading to better designs, improved coordination, and quicker decision-making. The co-location of the team is also a very successful element of the process and should be continued. Additionally, the overall QA/QC process during design appears to be functioning well with only a few challenges as noted below.

- 1) Specifications versus Guidelines** – Once again, the question of performance versus prescriptive guidance becomes an issue during the design phase as well as during the bidding phase. There is always a range of interpretation within the extensive list of design guidelines (both ADOT and AASHTO, etc.). Many of the variations in “criteria” and/or “guidelines” have substantial ranges in cost that affect the bid price for the project. The design guidelines are appropriate for the project, but the range of interpretation needs to be mitigated for future projects. Additionally, the verbiage that is used in the documents can be very ambiguous, including the words “may”, “shall”, “should”, “requirement”, and “guideline”. These continue to lead to interpretation issues of what is and is not a requirement. One other area of concern is that a guideline is referred to in the documents, in lieu of it being added into the document. If it is not in the RFP, they choose not follow it. It creates more challenges. Specific areas identified include PCCP, traffic control, work windows, CRCP, survey requirements (AASHTO 93 or MEPDG), maintenance access, and DR440.

Potential Opportunities for Improvement:

- a. At a minimum, ADOT should include a definitions page within the documents that specifically defines the identified words to eliminate any confusion of requirements versus guidelines.
- b. It is also critical to educate ADOT reviewers as to these definitions so they are not asking for things that may be different than the RFP package, leading to additional costs to the project.



- 2) Design Manuals** – D/B allows the team to come up with a design and costs based on what is “allowable”. This has nothing to do with the requests of how ADOT actually “wants” it completed. The contractor will push for the “allowable” limit and want the designer to design to that level, even if the designer knows that this may or may not be accepted by ADOT. This puts the designer and then the D/B team in a precarious position and leads back to the issue of “preference” versus what is “allowed”.

Potential Opportunities for Improvement:

- a. This needs to be addressed with training and the actual RFP documents to ensure there is a firm understanding. This can become very difficult if the documents become too prescriptive as this may limit the innovations and opportunities of the D/B process and the proposals from the D/B teams.

2) Design Reviews

Over-the-Shoulder - As briefly discussed above, the over-the-shoulder approach is a critical element in the overall success of the process. However, it is noted that a couple of elements do need some improvement. ADOT should continue to promote the informal over-the-shoulder process to gain concurrence and make decisions in lieu of waiting until the formal submittals. The process used the APDM firms to review and make comments on the design plans. However, it was made very clear that they could not make decisions for ADOT and at times, ADOT was not present during the over-the-shoulder reviews. These meetings are to be used to gain consensus on approaches, not necessarily the actual designs, but decisions could not be made. The APDM had no authority to agree to anything, the final decision had to be ADOT. It is absolutely critical that the over-the-shoulder team must include the decision-makers on the project and they need to be engaged or these meetings become a waste of time.

- a. *Review Times* – Two separate comments were made regarding review times. One was that some of the review times appeared to be rather condensed which meant that they didn’t appear to be adequate. While the other comment was that during the D/B process, review times should be condensed and meet the needs of the project. This should be a discussion point during the design Scoping/Partnering session to establish adequate time lines.
- b. *Review Comments* – It appears that those providing review comments do not understand the relationship between the RFP document and the design. In addition, as noted above, understanding the definition between required versus guidelines.
- c. *Additional Reviews* – In one of the projects, an extra review was incorporated into the process before construction was allowed to begin on one of the projects. This was not scheduled or anticipated from the bid documents.
- d. *Discipline Team Meetings* – These were used on one of the projects and were very effective and afforded greatly improved communication. It is recommended that these continue on all D/B teams. This also limited the “emails” to more face to face communication. The goal was “no surprises” by the time the formal submittal was received.



- e. *Electronic documents* – The use of electronic documents increased the value on one of the projects and allowed for greater success of reviewing documents. However, there were challenges with ADOT staff being allowed to access the consultant’s system and the construction staff did not have access to the electronic documents. Things had to be printed out, picked up in the office and then brought to the project site, which seemed to waste a lot of time, especially if they were not planning on going into the office before heading out to the site.

Potential Opportunities for Improvement:

- a. The decision-making process needs to be added into the over-the-shoulder review process so that the team is not waiting until the formal submittals to know what direction is being taken. The individuals with this authority should be the ones that are involved in the process to avoid misdirection or no direction to the D/B team. This however, can be an area of frustration to ADOT staff, complete information may not be known at the time of the informal over-the-shoulder meetings, which leads the reviewers to be reluctant to make decisions. A formal process might need to be established that identifies the roles and responsibilities as well as accountability of both the D/B and the reviewers for information/decisions provided during these meetings. If not a formal process, on a project by project basis, this process could be established during the initial scoping/partnering meeting between the D/B and ADOT. If this does not occur, the over-the-shoulder meetings are of little benefit to the project team.
- b. Additional training might be helpful for the reviewing staff to better understand the RFP documents and its relationship to the design being provided versus a “standard” ADOT approach to the design. There should be strong leadership from the ADOT PM to aid in this entire process.
- c. The overall design review approach may need to be evaluated to ensure that it fits with a D/B process and to ensure that ADOT is not trying to fit a standard design review process into the D/B process.
- d. ADOT may want to consider using the RFI process to post RFC’s, as it appears to be more effective than the FDC/NCS process.
- e. The over-the-shoulder meetings and approach should be a strong topic during the design scoping/partnering session that should occur at the beginning of the project.
- f. The electronic system that is being used on a project should be accessible by all team members. ADOT’s IT department will need to work on how to allow this for ADOT staff members for ease of transferring and reviewing documents.

3) Third Party Involvement During Design

Third parties can be a critical element to the success of the project, especially if they have a direct involvement in the project. Currently stakeholders are included in the partnering approach and this should continue. Additionally, their involvement in the selection panel should continue, as necessary. Some improvements can be made, as stated below:

Potential Opportunities for Improvement:

- a. It is important to better integrate stakeholder issues into the RFP documents. This is causing assumptions to be made by the D/B, which is leading to potential changes if the assumptions are wrong. If these are not adequately incorporated, they will continue to lead to required changes in the documents leading to potential change orders.



- i. The same challenges will need to be addressed related to performance or prescriptive based elements. If these are to be performance based, the stakeholder will need to be involved in establishing the performance measures required to meet their needs.
- ii. The third party's specific needs have to be addressed adequately in all RFP documents. There needs to be an understanding, with the third party stakeholders, of the consequences of not providing adequate information at the appropriate stage in a D/B project.
- iii. Stakeholders should also be included in the RFC process so that any issues related to their needs or requirements are addressed adequately to avoid the need for change during the process.
- iv. Commitments also need to be obtained from stakeholders involved in the process. This should include a single point of contact to be used throughout the project to eliminate challenges with decisions or commitments being made. ADOT might want to consider, if not already being used, specific project Memorandums of Understanding (MOU's) when this is a critical element on the project.

4) Design QA/QC Process – There appears to be no consistency in what is required by ADOT from the design team. This appears to be different from APDM to APDM and project to project. There was no real understanding of what was “expected” versus what was “required” for approval. Additionally, there was no understanding of what ADOT was going to review and what the APDM was going to review or the approval authority. This can lead to a much larger increase in cost for the D/B team and doesn't follow the standard ADOT design submittal requirements.

The internal quality control from the design teams worked well.

Potential Opportunities for Improvement:

- a. This process needs to be better vetted with the APDM and all projects should use the same process. Then this process and detailed requirements should be defined within the RFP document so that the costs associated can be accurately accounted for in the D/B team's proposal.
- b. One other suggestion that was recommended included using a common “naming” process for all documents to ensure clarity.

Construction Process

This includes elements such as QA/QC process, paperwork, pay applications, traffic control, and ADOT staff selection.

1) Change Orders and Force Account – The process for managing these two elements appears to be a challenge. It is taking an inordinate amount of time to process and pay for these items of work.



Potential Opportunities for Improvement:

- a. ADOT should review the current process and determine where the impacts may be. A specific process related to the D/B approach may need to be developed. Additionally, if some of the time challenges are impacted due to the D/B firm, the specific process requirements should be addressed in the contract documents to ensure both parties are doing what is required to ensure a successful process.

- 2) **QA/QC Process** – Many of the challenges appear to lie with non-compliant work and the ability to require the D/B to perform as stipulated in the documents. This also includes, what appears to be the most challenging, which is traffic control issues. One other area is related to documentation of changes in the field with the design documents. This process needs to be established and agreed upon for each project or a standard process developed.

Potential Opportunities for Improvement:

- a. There appears to be a challenge with being able to penalize non-compliant work within the D/B process. It is recommended that ADOT develop a process, or ensure there is an existing process, that will ensure that ADOT continues to get the quality as specified and expected on each project. Quality should not be compromised and in fact should be improved on D/B projects.
 - b. Traffic control items seemed to be the largest impact on the projects. As mentioned in the design process section, traffic control items may want to be more prescriptive rather than performance-based.
 - i. In addition to having them more prescriptive, tools must be provided to the construction staff to enable them to assess penalties related to times requested versus what is “allowable” versus what is actually “approved”. This item was described in more detail in the RFP process review section.
 - ii. The traffic control plan provided by the subcontractor should include specific items of work that can be reviewed and penalized as needed on a job. This might include their ability to keep the job tight and following MUTCD requirements, traffic control set-ups and tear-downs, and the amount of work that should be completed during closures. The other option would be to have these items very prescriptive in the RFP and to provide a summary of potential penalties tied to these items.
 - c. One successful approach for documentation of changes was to ensure that a new plan sheet was developed for the change and it worked as a redline for the documents.
 - d. The issue of how to document and track changes needs to be a discussion item during the construction partnering session to agree upon a process, if a standard process is not developed.
- 3) **ADOT Staff Selection** – It is still important, especially with new staff members, to ensure that the owner’s staff has experience with the D/B process and have the ability to be flexible and open to working differently.
 - a. It is recommended that some small, focused workshops on D/B be held to continue to train ADOT and consultant staff on the D/B process and specific process changes related to how ADOT does business in the D/B arena.



APDM Oversight

There was overwhelming feedback from almost all interviewees that the oversight and help provided by the APDM consultant during the design process was very beneficial. It created a quicker turnaround of issues and concerns and getting problems solved in a timely manner. The APDMs' followed up and tracked down answers to technical issues. There were some challenges, as previously stated related to roles, responsibilities and authorities. Also, the discussion of preference and policy became issues where differences were a challenge. The challenge with the preference decisions, which usually came from ADOT is that some led to change orders. One area that was identified was the need for ADOT to make "policy" decisions, but it wasn't clear what the definition of "policy" is.

One other area of concern is related to payment of the APDM firm during the project. Currently, the PM is not involved with reviewing the pay applications.

One last identified challenge was hiring an out of state APDM consultant created some challenges on the project related to getting paperwork completed in a timely manner.

There was no real impact during the construction process.

Potential Opportunities for Improvement:

- a. The roles, responsibilities and authorities of ADOT and the consultant need to be identified at the beginning of each project. This can be accomplished in the scoping/partnering workshop and should include all parties, including the D/B team, so that everyone understands each other's roles.
- b. The current process of paying the APDM should be changed and the PM should review the pay applications prior to being submitted to Julio Alvarado for payment.

Partnering

Both of the teams identified the need for Partnering and the Executive Sessions seemed to have the greatest impact on the project. Partnering should continue in a formal manner.

- 1) There should be a consistency between the team Partnering session and the Executive Session. There were two different facilitators.

Potential Opportunities for Improvement:

- a. *Facilitation* – It is recommend that the facilitator be the same to provide consistency, however it was recommended that the Executive Sessions should have a 3rd party facilitator and not from CC&P. This means, both sessions should be facilitated by an outside facilitator and should be the same for both sessions. It was identified that there was not a large commitment by the executives to attend the quarterly meetings on both sides. Additionally, a final close-out workshop was not held.
- b. *Workshops* - The sessions need to occur earlier in the design process, the session happened way too late.
 - i. D/B projects can often prove to be very challenging because of the newness of the process to many if not all stakeholders involved. This includes owners, designers, construction managers, stakeholders and contractors. The first workshop (scoping/partnering) should be held as soon as all of the players are on board at the very beginning of design, as this is a team approach. The purpose of the workshop is to help open up critical lines of communication by understanding many of the process elements that can be frustrating since the



D/B methods are different from the normal design/bid/build process. At a minimum, the following elements should be discussed:

1. D/B process expectations
 2. Elements of communication – includes a communication plan and identifying the roles, responsibilities and authorities of all involved
 3. Project Goals – bigger picture and not construction related
 4. Issue Resolution - this is important to identify early on to ensure that the team and the project can continue moving forward in a positive manner. There will be times when there are disagreements between the various players and a process on how to work through the issues is important. The real challenge is also that we need to be responsive to one another, we have to provide information in specific ways, and we need to be flexible. So what happens when team members, during design, are not working this way? Thus, the need to develop an issue resolution plan. This is very different than a conflict management plan for construction, so it is important that the team establish the rules by which the plan will be used. There cannot be a standard set of rules, it is critical for the team to develop them during the workshop. This ensures a comfort level for all team members that escalation can and will happen as needed, without anyone taking issues or escalation personally.
 5. General Administration Project Elements – this includes Design Reviews/Meetings/Comment Reconciliation, QA/QC, Change Process, and Project Meetings
 6. Community/Public involvement during design
 7. Value Engineering/Constructability Expectations
 8. Risk Analysis and Management
 9. Team Maintenance and Follow-up, including scheduling the design close-out/lessons learned workshop
- ii. A second construction workshop should be held focusing on the typical construction elements and include all of the subcontractors and inspection crews.
 - iii. One project had “How are we doing” meetings every two weeks and it seemed to be very valuable in helping to reduce potential friction points on the project and where the team might improve. This was more of an issue resolution type meeting. These were very beneficial and it is suggested that it might be something to integrate into the formal partnering approach.
 - iv. It is recommended that a new specification be written for partnering for Alternative Delivery projects and include all of the expected commitments to partnering and to the various identified workshops; design, construction, executive and close-out (lessons’ learned) to ensure attendance and involvement by the key individuals from both ADOT, stakeholders and the D/B team.
 - v. A lessons’ learned workshop should be completed for design and construction, separately for each project. The scheduling of the design lessons learned is critical at the completion of design, not waiting until the completion of construction.



- vi. Quarterly executive sessions are very effective and helped to keep things running smoothly. Commitments by all executives are required.

Administrative

Administrative elements discussed include the payment process and change orders.

1) Payment Process

Construction Progress Payments - There appear to be challenges with the existing process related to being able to estimate work complete for progress payments. The contract is done by very large lump sum items, however, construction staff is being asked to estimate work complete and the quantitative data is not available. This is not a contractual requirement but seems to add quite a bit of work for staff.

Potential Opportunities for Improvement:

- a. If lump sum is going to be used, is it possible to use percentage of completion versus detailed quantitative data to reduce the amount of work required every month. If this is a process improvement, this should be included as part of the training process.
- a. Based on the lump sum approach, it is very difficult for the RE to withhold monies for needed corrective work. A process should be developed that allows for a disincentive/penalty item that monies can be held until the work is complete. This would not need to be done on every item, but just those items where quality of work traditionally becomes an issue. This may however, require more detailed/specific bid tabs, versus a lump sum approach.

Design Progress Payments - The current process to pay for the design portion of the project does not work very well.

Potential Opportunities for Improvement:

- a. It is recommended that a basis for payment be established to accommodate the payment of this as a work item.

2) Change Orders – It appears that several change orders have occurred on both projects due to several items. This has included unsuitable subgrade, increases in project scope, conflicting or inconsistent specifications and project documents, as-built differences from existing field conditions (this is becoming more and more of a problem), and existing conditions not identified in the scope of work.

Potential Opportunities for Improvement:

- a. The challenge with change orders is responsibility in a D/B contract. As discussed in the first section, it would be beneficial for ADOT to define a change to the contract within the RFP documents. Realizing that the more risk is transferred (or shared) with the D/B, the higher the costs will be, however, it would be understood at the beginning of the project.
- b. The more detail that is included in the contract documents, the more of a chance you have for a change in the field, if information was omitted. This also deals with the discussion of performance versus prescriptive specifications and documents. Has ADOT adequately identified the risks associated with the project and where the risks



should be managed. This will help to better define the RFP and contract documents.

Miscellaneous

- 1) All information from the proposal stage; the winning proposal, assumptions, etc. should be transferred to the construction team to understand accepted design concepts, ATC approvals, etc. before construction begins. It is recommended that a special meeting be held or this information should be a part of the scoping/partnering session to discuss.
- 2) If ADOT wants the successful bidder to review the other technical proposals for opportunities, including ATC's, an established timeline needs to be established for this including review and approval by both the D/B team and ADOT. Currently, ADOT is waiting too long and there is no time to incorporate the ideas. If this process is incorporated into the pre-contract process, so that these can be considered prior to the final contract, this would ensure that the costs are incorporated into the overall project costs. A formal process should be completed and added into the D/B manual.
- 3) *Fast tracking* (proposal stage) – trying to do this during the project is not a benefit. It is recommended that ADOT not eliminate the interviews and not limit the ATC process. Eliminating these increases the “risk” factor; didn't get real answers, got a lot of maybe's, there was an inability to present approach during the interview and ask questions, too many assumptions are made when the proposal is just read versus an interactive process.
- 4) *Project Changes and Flexibility* – As was noted by a team member, changes became “best practices” for the individual project. However, this required a commitment and consensus from the entire team along with open and honest communication. Ultimately this will rely on the team and the management in the lead of the project. Training is critical to ensure that team members selected to work on D/B projects have the ability to adapt to this process. Examples of best practices used that were successful included the following:
 - a. Using spreadsheets in lieu of tabular plan sheets
 - b. Using electronic submittals to speed up submissions and to improve the quality
 - c. Concurrent reviews between owner, D/B, other disciplines, stakeholders and constructability
 - d. Condensed review times for smaller packages
 - e. The RFI process included providing suggested answers when submitted by the D/B team
 - f. Approval of plans with the elimination of specific sheets
 - g. Additional time commitments to submittal tracking to ensure a confidence in the plan set in the field (required a dedicated individual)
- 5) *Training* – Once processes have been established, it is recommended that formal training sessions be held to provide guidance and understanding for all involved in the process. It is important to mentor staff members to become the “right” team members for D/B projects. This will only occur with adequate training and the willingness to be flexible and reach out to work differently than the traditional ADOT design/bid/build process. This should include ADOT, Construction Management, Contractors and Designers and it is recommended that this be joint training with all. The training should address, at a minimum, the following:
 - a. Understanding the D/B approach and expectations
 - b. Introduction to all process developed related to D/B
 - i. Review panels and the D/B process



- ii. ATC process
 - iii. Integrating proposals with the designs
 - iv. Decision-making related to preferences – minimizing change orders (design and construction)
 - v. Design review approaches – over-the-shoulder, co-location
 - vi. Design submittal requirements
 - vii. Construction requirements related to D/B approaches – integrating ADOT standards with D/B
 - viii. Partnering for Alternative Delivery
 - ix. Payment process
- 6) *FHWA full oversight* – A formal process should be established to integrate FHWA into the process. One project used a 2-step process with changes. A list of changes was given to FHWA during the design phase to review and the final change order was initiated through construction.
- 7) *D/B Manual* – It is recommended that the manual be updated and included as part of the training.

