

## **APPENDIX D**

### **Forms for Analytical Delivery Decision Approach (Tier 1)**

The first tier in the systematic approach developed in this guidebook is the Analytical Delivery Decision Approach discussed in Chapter 4. This appendix provides the reader with the forms and templates required to implement the analytical approach. Templates can be printed and used for the analysis.

## Project-Level Issues

### *Issue 1: Project Size/Complexity*

This issue concerns the airport project's dollar value and complexity based on the type of the project.

Design-Bid-Build (DBB)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> DBB has been shown to work on projects of all sizes and levels of complexity, but the research case studies found that airports tend to select DBB on smaller projects.</li> <li><input type="checkbox"/> As projects grow in size and complexity, the amount of owner staffing required to oversee DBB can become very large.</li> </ul>		

Construction Manager at Risk (CMR)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> CMR has been shown to work on projects of all sizes and levels of complexity, but the research case studies found that airports tend to select CMR on larger and more complex projects.</li> <li><input type="checkbox"/> On projects of large size and complexity, CMR can use multiple bid packages to optimize responses from proposers, but this approach results in more complexity in management.</li> </ul>		

(Issue 1: Project Size/complexity continued)

<b>Design-Build (DB)</b>		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> DB has been shown to work on projects of all sizes and levels of complexity, but the research case studies found that airports tend to select DB on larger and more complex projects.</li> <li><input type="checkbox"/> Some owners have noted that DB can facilitate better management of large projects due to the single source of responsibility.</li> <li><input type="checkbox"/> As projects grow in size and complexity, there can be large peaks in owner staffing requirements with DB (e.g., during RFP development, during design review, etc.).</li> <li><input type="checkbox"/> As projects grow in size and complexity, best-value procurement will require design-builders to assume more risk, and QBS procurement will make it more challenging to negotiate prices.</li> </ul>		

**Table D-1. Project size/complexity advantages/disadvantages summary.**

Issue	DBB	CMR	DB
1. Project Size/Complexity			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

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**Issue 2: Schedule Compression**

From the owner’s viewpoint, a delivery method can affect project schedule in two different ways: (1) shortening the schedule and (2) controlling schedule growth.

Design-Bid-Build (DBB)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> DBB is the base case and will take the longest of the three delivery methods.</li> <li><input type="checkbox"/> If an airport is willing to take on coordination responsibility, DBB projects can be awarded to multiple prime contractors to speed the process.</li> <li><input type="checkbox"/> Studies have shown that, <i>on average</i>, DBB is slower than CMR and DB.</li> </ul>		

Construction Manager at Risk (CMR)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> CMR can be used to facilitate fast-tracking or the ability to bid multiple design packages.</li> <li><input type="checkbox"/> There is a risk that overlapping design and construction packages may create delays if not properly coordinated.</li> <li><input type="checkbox"/> Fast-tracking schedules require owner effort in design and construction reviews and do not guarantee time savings.</li> <li><input type="checkbox"/> Studies have shown that, <i>on average</i>, CMR is faster than DBB, but slower than DB.</li> </ul>		

Design-Build (DB)		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Provides a single point of responsibility (DB contractor) for schedule compression.</li> <li><input type="checkbox"/> All case studies showed that airports selected DB with the primary goal of compressing the schedule.</li> <li><input type="checkbox"/> A compressed schedule will require airport effort in design and construction reviews.</li> <li><input type="checkbox"/> Studies have shown that, <i>on average</i>, DB is faster than both CMR and DBB.</li> <li><input type="checkbox"/> DB procurement methods do not significantly affect schedule compression.</li> </ul>		

**Table D-2. Schedule compression advantages/disadvantages summary.**

Issue	DBB	CMR	DB
2. Schedule Compression			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

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**Issue 3: Schedule Growth Control**

This issue concerns the ability of each delivery method to control and prevent growth in a project's schedule.

Design-Bid-Build (DBB)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Research on project delivery methods suggests that DBB is likely to yield the highest schedule growth due to change orders</li> <li><input type="checkbox"/> There is a lack of opportunity to compress a project schedule if problems occur due to the linear nature of DBB.</li> <li><input type="checkbox"/> Studies have shown that, <i>on average</i>, DBB has more schedule growth than CMR and DB.</li> </ul>		

Construction Manager at Risk (CMR)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> CMR facilitates fast-tracking, or the ability to bid multiple design packages, which can be helpful in limiting schedule growth if problems occur during project development.</li> <li><input type="checkbox"/> There are risks that overlapping design and construction packages may create schedule growth if not properly coordinated.</li> <li><input type="checkbox"/> Studies have shown that, <i>on average</i>, CMR has less schedule growth than DBB, but more than DB.</li> </ul>		

(Issue 3: Schedule Growth Control continued)

Design-Build (DB)		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Provides a single point of responsibility (DB contractor) to combat schedule growth.</li> <li><input type="checkbox"/> DB projects using a lump sum contract typically fix project end dates early in the project development process when compared to DBB or CMR.</li> <li><input type="checkbox"/> Unlike DBB and CMR, owners will be shielded from schedule-related change orders stemming from errors and omissions in plans.</li> <li><input type="checkbox"/> A compressed schedule will require airport effort in design and construction reviews.</li> <li><input type="checkbox"/> Studies have shown that, <i>on average</i>, DB has less schedule growth than both CMR and DBB.</li> <li><input type="checkbox"/> DB procurement methods do not significantly affect schedule growth control.</li> </ul>		



**Table D-3. Schedule growth control advantages/disadvantages summary.**

Issue	DBB	CMR	DB
3. Schedule Growth Control			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

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**Issue 4: Early Cost Precision**

Early and precise project cost estimation is always sought by airports. This issue concerns the effect of each delivery method on accurately predicting a cost estimate.

Design-Bid-Build (DBB)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Construction costs are not fixed (or locked in) until design is 100% complete, but costs are known at bid time, before construction begins.</li> <li><input type="checkbox"/> Constructability advice and contractor innovations are not available to save cost until post bid.</li> <li><input type="checkbox"/> The DBB process is prone to change orders and cost growth after award.</li> </ul>		

Construction Manager at Risk (CMR)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> CMR can be used in conjunction with a GMP pricing structure, which can be useful in negotiating and controlling costs.</li> <li><input type="checkbox"/> Costs will be known earlier than with DBB, but perhaps not as early as with DB.</li> <li><input type="checkbox"/> CMRs generally have experienced estimating and construction staff that can help to develop reliable estimates earlier in the process.</li> <li><input type="checkbox"/> If a GMP pricing structure is used, owners should have experience in estimating and negotiating prices.</li> <li><input type="checkbox"/> If the airport/funding agency requires that the subcontractors be selected through low-bid procurement, the construction manager may be unwilling to agree to GMP before all subcontractors' bids have been received.</li> </ul>		

(Issue 4: Early Cost Precision continued)

<b>Design-Build (DB)</b>		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Costs will be known earlier in the project delivery process when compared to DBB or CMR.</li> <li><input type="checkbox"/> If a lump sum pricing structure is used, costs will be fixed early in the project development process, but constructors must develop prices before plans are 100% complete and therefore must assume some risk in pricing.</li> <li><input type="checkbox"/> If a GMP pricing structure is used, owners should have experience in estimating and negotiating prices.</li> <li><input type="checkbox"/> If the airport/funding agency requires that the subcontractors be selected through low-bid procurement, the construction manager may be unwilling to agree to GMP before all subcontractors' bids have been received.</li> </ul>		

**Table D-4. Early cost precision advantages/disadvantages summary.**

Issue	DBB	CMR	DB
4. Early Cost Precision			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

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**Issue 5: Cost Control**

Cost control is a project performance criterion and can drive owners to select a particular delivery method according to its ability to (1) reduce total project costs and (2) minimize project cost overruns.

Design-Bid-Build (DBB)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> With the exception of change orders, costs are known at bid time, before construction begins.</li> <li><input type="checkbox"/> Research suggests that, on average, DBB is likely to yield the highest cost growth due to change orders.</li> </ul>		

Construction Manager at Risk (CMR)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> CMR can be used in conjunction with a GMP pricing structure, which can be useful in negotiating and controlling costs.</li> <li><input type="checkbox"/> If open book pricing can be used, all costs will be known by the owner.</li> <li><input type="checkbox"/> If multiple bid packages are used, the overall project cost could grow if later bid packages cost more than estimated.</li> <li><input type="checkbox"/> Early constructor involvement or construction advice can lead to cost savings through value engineering and constructability reviews.</li> <li><input type="checkbox"/> If a GMP pricing structure is used, owners should have experience in estimating and negotiating prices.</li> </ul>		

(Issue 5: Cost Control continued)

Design-Build (DB)		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Studies have shown that, <i>on average</i>, DB has been shown to have lower average cost growth than DBB or CMR.</li> <li><input type="checkbox"/> Unlike DBB and CMR, owners will be shielded from cost-related change orders stemming from errors and omissions in plans.</li> <li><input type="checkbox"/> If open book pricing can be used, all costs will be known by the owner.</li> <li><input type="checkbox"/> The integrated nature of DB teams can lead to cost savings through inherent value engineering and constructability reviews.</li> <li><input type="checkbox"/> If a GMP pricing structure is used, owners should have experience in estimating and negotiating prices.</li> </ul>		

Table D-5. Cost control advantages/disadvantages summary.

Issue	DBB	CMR	DB
5. Cost Control			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - ✕ Not applicable (discontinue evaluation of this method)

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***Issue 6: Risk Management/Allocation***

This issue concerns methods for coping with the uncertainties that are inherent in each project delivery method. The overarching goal should be to select the project delivery method that does the best job of allocating project risks to the parties in the best position to manage them.

<b>Design-Bid-Build (DBB)</b>		
<b>Issue Statements</b>	<b>Advantage</b>	<b>Disadvantage</b>
<ul style="list-style-type: none"> <li><input type="checkbox"/> DBB provides historically well-defined and well-understood risk allocation.</li> <li><input type="checkbox"/> Prescriptive designs and specifications allow for greater detail in risk allocation.</li> <li><input type="checkbox"/> Constructor cannot participate in risk management or risk allocation decisions during design.</li> <li><input type="checkbox"/> Conflicts can exist in risk allocation between separate design and construction contracts.</li> <li><input type="checkbox"/> Constructor's ability to manage risk is constrained by low-bid procurement.</li> </ul>		

<b>Construction Manager at Risk (CMR)</b>		
<b>Issue Statements</b>	<b>Advantage</b>	<b>Disadvantage</b>
<ul style="list-style-type: none"> <li><input type="checkbox"/> Construction manager understands and participates in risk allocation and the management process during design.</li> <li><input type="checkbox"/> Prescriptive designs and specifications allow for greater detail in risk allocation.</li> <li><input type="checkbox"/> Risk management process can be more complex due to separate design, construction, and construction management contracts.</li> <li><input type="checkbox"/> Risks for costs can be shared by the construction manager and the airport through the use of a GMP structure.</li> </ul>		



(Issue 6: Risk Management/Allocation continued)

<b>Design-Build (DB)</b>		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Single point of responsibility for risk management in design and construction.</li> <li><input type="checkbox"/> Design-builder owns risk for design errors and omissions.</li> <li><input type="checkbox"/> Risks must be allocated through conceptual design and performance specifications, so the owner may lose some ability to participate in the risk management process.</li> <li><input type="checkbox"/> Risks for costs can be shared by the construction manager and the airport through the use of a GMP structure.</li> <li><input type="checkbox"/> Airport risks for scope creep and cost growth can be transferred to the design-builder through best-value, fixed-price procurement.</li> </ul>		

**Table D-6. Risk management/allocation advantages/disadvantages summary.**

Issue	DBB	CMR	DB
6. Risk Management/Allocation			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

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**Issue 7: Lifecycle Costs**

Delivery methods can influence costs in the operation and maintenance phase. This issue focuses on the opportunities or barriers that each delivery method provides with regard to lifecycle costs.

Design-Bid-Build (DBB)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> The airport can control lifecycle costs through completed design and performance specifications.</li> <li><input type="checkbox"/> There is little opportunity for constructor input into lifecycle costs.</li> </ul>		

Construction Manager at Risk (CMR)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> CMR has all the benefits of DBB, plus the airport can leverage the construction manager's input into lifecycle costs.</li> <li><input type="checkbox"/> If CMR is employing a fast-track schedule, lifecycle costs may be difficult to address in detail.</li> <li><input type="checkbox"/> If lifecycle performance criteria are not well understood during the development of the GMP, lifecycle issues may be difficult to incorporate into the final product.</li> </ul>		

Design-Build (DB)		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> The airport can use performance criteria to set lifecycle performance standards and rely on design-builder innovation to achieve these standards.</li> <li><input type="checkbox"/> If lifecycle issues are difficult to define through performance criteria, a GMP pricing structure could allow for more owner input than a fixed-price option.</li> </ul>		

**Table D-7. Lifecycle costs advantages/disadvantages summary.**

Issue	DBB	CMR	DB
7. Lifecycle Costs			

- Key:
- Most appropriate delivery method
  - ◐ Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

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**Issue 8: Maintainability**

As with lifecycle issues, there can be advantages and disadvantages to each delivery method with regard to how maintainability is achieved. This issue concerns these advantages and disadvantages as they relate to the owner’s ability to specify quality and ease of maintenance.

Design-Bid-Build (DBB)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> The opportunity to view completed plans before award allows airports to review maintenance issues in designs.</li> <li><input type="checkbox"/> There is little opportunity for constructors to have input into maintenance issues.</li> </ul>		

Construction Manager at Risk (CMR)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> CMR has all the benefits of DBB, plus the airport can leverage the construction manager’s input into maintenance issues.</li> <li><input type="checkbox"/> If CMR is employing a fast-track schedule, maintenance issues may be difficult to address in detail.</li> <li><input type="checkbox"/> If maintainability issues are not well understood during the development of the GMP, they may be difficult to incorporate into the final product.</li> </ul>		

Design-Build (DB)		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> The airport can use performance criteria to set maintainability performance standards and rely on design-builder innovation to achieve these standards.</li> <li><input type="checkbox"/> The airport can emphasize maintainability issues through performance criteria and best-value award factors.</li> <li><input type="checkbox"/> If maintainability issues are not well understood at the procurement stage, they will not be incorporated into the DB contract.</li> <li><input type="checkbox"/> Some DB contracts can incorporate maintenance warranties from the design-builder.</li> </ul>		

Table D-8. Maintainability advantages/disadvantages summary.

Issue	DBB	CMR	DB
8. Maintainability			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

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**Airport-Level Issues**

***Issue 9: Airport Experience/Staff Capability***

This issue mainly concerns the airport’s experience, its staffing requirements, and its ability to properly administer alternative delivery methods.

Design-Bid-Build (DBB)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Since this is the traditional method of project delivery, owners will likely have the most experience with this method.</li> <li><input type="checkbox"/> As projects grow in size, more experienced staff is required.</li> <li><input type="checkbox"/> Owners typically have different staff to oversee design and construction processes.</li> <li><input type="checkbox"/> DBB typically requires a larger owner staff than CMR or DBB.</li> </ul>		

Construction Manager at Risk (CMR)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> CMR is similar to DBB in many key areas in which airports have experience (e.g., separation of design and construction).</li> <li><input type="checkbox"/> The CMR can augment an owner’s capabilities with his own staff.</li> <li><input type="checkbox"/> Airport experience is needed with GMP pricing or when negotiation is difficult.</li> <li><input type="checkbox"/> Airport experience is needed in the use of multiple bid packages to facilitate fast-track construction.</li> <li><input type="checkbox"/> The CMR alternative can use fewer owner staff than DBB if the CMR is allowed to take on the traditional owner tasks.</li> </ul>		

(Issue 9: Airport Experience/Staff Capability continued)

<b>Design-Build (DB)</b>		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Airports can take advantage of the sole point of responsibility for design and construction to leverage their experience.</li> <li><input type="checkbox"/> DB can reduce the overall number of required owner staff when compared to DBB or CMR.</li> <li><input type="checkbox"/> DB can create peaks in owner staffing needs, particularly during procurement and design review periods.</li> <li><input type="checkbox"/> While fewer owner staff is needed, more experienced staff is required.</li> <li><input type="checkbox"/> Airport experience is needed in the area of developing procurement documents and performance criteria.</li> <li><input type="checkbox"/> If a GMP is used, airport experience is needed with GMP pricing or when negotiation is difficult.</li> <li><input type="checkbox"/> Airport experience is needed in the area of administering DB contracts, particularly in the area of design review and administration.</li> <li><input type="checkbox"/> DB necessitates experienced staff to manage design and construction under one contract.</li> </ul>		



**Table D-9. Airport experience/staff capability advantages/disadvantages summary.**

Issue	DBB	CMR	DB
9. Airport Experience/Staff Capability			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - ✕ Not applicable (discontinue evaluation of this method)

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**Issue 10: Airport Control of Project**

An airport's ability to control the details of design and construction varies with each project delivery method. (Note that cost control and time control are described in other issues.)

Design-Bid-Build (DBB)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> The use of prescriptive specifications and complete designs at the time of award provides airports with the most control over the project.</li> <li><input type="checkbox"/> Separate design and construction contracts provide clear checks and balances.</li> <li><input type="checkbox"/> With additional control can come added activities and responsibility for airport staff.</li> </ul>		

Construction Manager at Risk (CMR)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> The CMR method benefits from early constructor involvement and also has the benefit of separate design and construction contracts that give an owner control over design details.</li> <li><input type="checkbox"/> Airport control of CMR delivery requires more effort due to the use of multiple design packages and the need for a GMP pricing structure.</li> </ul>		

Design-Build (DB)		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> The transfer of design liability lessens the need for airport control over design.</li> <li><input type="checkbox"/> Award at a conceptual design level may mean that the airport will lose control over the details of the final design depending on the owner involvement program.</li> <li><input type="checkbox"/> Use of QBS and a GMP pricing structure can give the airport more control if it is willing to fix the GMP in the later stages of design development.</li> </ul>		

**Table D-10. Airport control of project advantages/disadvantages summary.**

Issue	DBB	CMR	DB
10. Airport Control of Project			

- Key:
- Most appropriate delivery method
  - ◐ Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

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**Issue 11: Security**

Security imposes another level of technical complexity and a potentially high level of liability on all airport projects. Airport security affects both the design phase and the construction phase. This issue concerns the multiple effects of security requirements on airport projects and how each project delivery method is impacted by and impacts security requirements.

<b>Design-Bid-Build (DBB)</b>		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> DBB offers the highest level of flexibility to the owner during the design phase.</li> <li><input type="checkbox"/> The low-bid award can make security-related changes difficult to negotiate during construction.</li> </ul>		

<b>Construction Manager at Risk (CMR)</b>		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> The ability of the CMR to work with the designer can allow for efficiency and flexibility in addressing security issues.</li> <li><input type="checkbox"/> The point at which the GMP is negotiated can influence efficiency and flexibility.</li> </ul>		

<b>Design-Build (DB)</b>		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> The integration of designer and constructor can allow for efficiency and flexibility in addressing security issues.</li> <li><input type="checkbox"/> In a fixed-price DB process, security-related changes may be difficult to negotiate during construction.</li> <li><input type="checkbox"/> If a GMP is used, the point at which the GMP is negotiated can influence efficiency and flexibility.</li> </ul>		

**Table D-11. Security advantages/disadvantages summary.**

Issue	DBB	CMR	DB
11. Security			

- Key:
- Most appropriate delivery method
  - ◐ Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

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**Issue 12: Control of Impact on Passengers and Operations**

This issue concerns the ability of each delivery method to allow the coordination of construction activities with airport operations management in order to minimize construction impacts.

Design-Bid-Build (DBB)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> The airport's control over the design and construction packaging can help to minimize impacts on operation and passenger flow.</li> <li><input type="checkbox"/> Post-award changes in the construction schedule due to airport operations may be difficult to negotiate.</li> </ul>		

Construction Manager at Risk (CMR)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Additional CMR experience in design can help minimize impacts on operation and passenger flow.</li> <li><input type="checkbox"/> Having one CMR contract to oversee multiple bid packages may assist the airport in appropriately phasing the project to minimize impact.</li> <li><input type="checkbox"/> The airport and the CMR must have a clear understanding of roles and responsibilities with regard to these controls.</li> </ul>		

Design-Build (DB)		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> DB provides a single source of responsibility for controlling the impact of the project on airport operations that can be tied to performance criteria in both the project's design and construction schedules.</li> <li><input type="checkbox"/> The airport will have less control over the constructor than in the other methods.</li> <li><input type="checkbox"/> If a GMP is used, the point at which the GMP is negotiated can influence the airport's input into operations.</li> </ul>		

**Table D-12. Control of impact on passengers and operations advantages/disadvantages summary.**

Issue	DBB	CMR	DB
12. Control of Impact on Passengers and Operations.			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

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***Issue 13: Third-Party Stakeholder Input to Design and Construction***

This issue concerns each project delivery method’s ability to promote coordination and project-specific agreements with third parties involved in the project or affected by it— political entities, utilities, adjacent communities, and so forth. This issue also concerns the opportunities afforded by the delivery method to the owner for coping with community input.

<b>Design-Bid-Build (DBB)</b>		
<b>Issue Statements</b>	<b>Advantage</b>	<b>Disadvantage</b>
<ul style="list-style-type: none"> <li><input type="checkbox"/> Separate design and construction phases provide an opportunity to get stakeholders’ inputs before the commencement of construction.</li> <li><input type="checkbox"/> The use of complete plans and prescriptive specifications facilitates third-party agreements.</li> <li><input type="checkbox"/> The opportunity for stakeholder changes in design can cause delay in the project and add to the costs in the form of change orders.</li> <li><input type="checkbox"/> Expediting third-party agreements in the DBB process can be cumbersome if it is required.</li> </ul>		

<b>Construction Manager at Risk (CMR)</b>		
<b>Issue Statements</b>	<b>Advantage</b>	<b>Disadvantage</b>
<ul style="list-style-type: none"> <li><input type="checkbox"/> The construction experience of the construction manager can help facilitate stakeholder input.</li> <li><input type="checkbox"/> Construction managers can help facilitate third-party agreements.</li> <li><input type="checkbox"/> Stakeholder input can make GMP negotiation troublesome if not managed correctly.</li> <li><input type="checkbox"/> Construction managers typically do not guarantee costs that stem from problems with third-party agreements.</li> </ul>		



(Issue 13: Third-Party Stakeholder Input to Design and Construction continued)

<b>Design-Build (DB)</b>		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> The owner can require the DB contractor to include a public information and outreach program to facilitate communities' inputs.</li> <li><input type="checkbox"/> Design-builders can be innovative in helping gain community involvement.</li> <li><input type="checkbox"/> Any third-party change after the award of a fixed price or the negotiation of a GMP can be costly or difficult to negotiate.</li> <li><input type="checkbox"/> Design-builders can use innovative methods to assist in obtaining third-party agreements.</li> </ul>		

**Table D-13. Third-party stakeholder input to design and construction advantages/disadvantages summary.**

Issue	DBB	CMR	DB
13. Third-Party Stakeholder Input to Design and Construction			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - X Not Applicable (discontinue evaluation of this method)

Comments \_\_\_\_\_

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**Public Policy/Regulatory Issues**

***Issue 14: Competition and Local Talent***

This issue concerns how each project delivery method affects the level of competition among potential bidders, especially whether or not a project delivery method leverages local competition.

Design-Bid-Build (DBB)		
Issue Statements	Advantage	Disadvantage
<input type="checkbox"/> The airport benefits from a large pool of potential bidders and high level of competition. <input type="checkbox"/> There may be issues that follow low-bid procurement such as a higher probability of request for change orders, disputes, and claims.		

Construction Manager at Risk (CMR)		
Issue Statements	Advantage	Disadvantage
<input type="checkbox"/> QBS factors can be applied to select only the most highly qualified construction managers. <input type="checkbox"/> The presence of a constructor early in the project may give the owner less competitive leverage when pricing construction.		

Design-Build (DB)		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<input type="checkbox"/> QBS factors can be applied to select only the most qualified design-builders. <input type="checkbox"/> Proposal package size and bid preparation costs can decrease the number of qualified bidders. <input type="checkbox"/> Opposition from public-sector employees, unions, or other interested parties can exclude the DB method from consideration (see Step 3. Review Go/No-Go Decision Points).		

**Table D-14. Competition and local talent advantages/disadvantages summary.**

Issue	DBB	CMR	DB
14. Competition and Local Talent			

- Key:
- Most appropriate delivery method
  - ◐ Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

Comments \_\_\_\_\_

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**Issue 15: DBE/Small Business Impacts**

Delivery methods may facilitate fair competition for DBEs for airport contracts and reduce burdens on small businesses. The effect of each delivery method on promoting participation by DBEs and small businesses is evaluated under this issue.

Design-Bid-Build (DBB)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Airports can include DBE requirements in both design and construction requirements.</li> <li><input type="checkbox"/> DBE involvement is known at the time of award for design and construction.</li> <li><input type="checkbox"/> The low-bidding environment may harm the future viability of DBE companies.</li> </ul>		

Construction Manager at Risk (CMR)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Airports can include DBE requirements in both design and construction requirements.</li> <li><input type="checkbox"/> DBE involvement is known at the time of award for design and construction.</li> <li><input type="checkbox"/> Due to the phased nature of CMR contracts, final DBE involvement may not be known until the project is ultimately completed.</li> </ul>		

Design-Build (DB)		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Airports can include DBE requirements in the procurement selection factors for design and construction requirements.</li> <li><input type="checkbox"/> Owners can set DBE requirements, but because all subcontractors are not known at the time of award, there is a risk that design-builders may not achieve the DBE goals they specify in their proposals.</li> <li><input type="checkbox"/> The use of a fixed-price procurement process early in the project development process, as well as the use of a GMP negotiation later in the process, will not facilitate the identification of a DBE.</li> </ul>		

**Table D-15. DBE/small business impacts advantages/disadvantages summary.**

Issue	DBB	CMR	DB
15. DBE/Small Business Impacts			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

Comments \_\_\_\_\_

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**Issue 16: Legal and Statutory Constraints**

This issue concerns the interactions between each delivery method and governing regulations. Due to constant changes in state and local laws, airports should check all the relevant codes in order to determine the legality of each delivery method at the time when possible delivery methods are studied for a project.

<b>Design-Bid-Build (DBB)</b>		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> All states are authorized to use DBB.</li> <li><input type="checkbox"/> Labor agreements are generally not an issue.</li> <li><input type="checkbox"/> Open bidding procedures are typically not constrained by public law.</li> </ul>		

<b>Construction Manager at Risk (CMR)</b>		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Some states allow more flexible procurement regulations with CMR, which can be advantageous in appropriate situations to expedite project development.</li> <li><input type="checkbox"/> Some state airports are not authorized to use CMR or need to get extra approvals (see Step 3. Review Go/No-Go Decision Points).</li> </ul>		

<b>Design-Build (DB)</b>		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Some states allow more flexible procurement regulations with DB, which can be advantageous in appropriate situations to expedite project development.</li> <li><input type="checkbox"/> Some state airports are not authorized to use DB or need to get extra approvals (see Step 3. Review Go/No-Go Decision Points).</li> </ul>		

**Table D-16. Legal and statutory constraints advantages/disadvantages summary.**

Issue	DBB	CMR	DB
16. Legal and Statutory Constraints			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

Comments \_\_\_\_\_

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***Issue 17: Sustainability and LEED Certification***

Sustainable design is becoming ever more important in achieving overall sustainability goals for projects. This issue concerns project delivery method effects on achieving sustainable design goals (and, if the owner desires, LEED certification).

<b>Design-Bid-Build (DBB)</b>		
<b>Issue Statements</b>	<b>Advantage</b>	<b>Disadvantage</b>
<ul style="list-style-type: none"> <li><input type="checkbox"/> Airports can work with designers to incorporate sustainable designs into complete designs through prescriptive specifications.</li> <li><input type="checkbox"/> Airports can assume liability when prescribing construction methods.</li> <li><input type="checkbox"/> The process provides little opportunity for constructability reviews to ensure that sustainable designs can be constructed efficiently and are not cost prohibitive.</li> <li><input type="checkbox"/> There is little opportunity or incentive for the constructor to do more than what is specified in terms of sustainable construction practices.</li> </ul>		

<b>Construction Manager at Risk (CMR)</b>		
<b>Issue Statements</b>	<b>Advantage</b>	<b>Disadvantage</b>
<ul style="list-style-type: none"> <li><input type="checkbox"/> CMR has all the benefits of DBB, plus the airport can leverage the construction manager's input into sustainable design issues.</li> <li><input type="checkbox"/> The use of separate bid packages can create barriers in the integration of sustainable solutions if not approached correctly.</li> </ul>		

(Issue 17: Sustainability and LEED Certification continued)

Design-Build (DB)		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> The airport can emphasize sustainable design issues through performance criteria and best-value or QBS award factors.</li> <li><input type="checkbox"/> Integration of the design and construction team can enhance the constructability of designs.</li> <li><input type="checkbox"/> If sustainable design issues are not well understood at the procurement stage, they will not be incorporated into the DB contract.</li> <li><input type="checkbox"/> The airport may not be involved in all design decisions.</li> </ul>		

**Table D-17. Sustainability and LEED certification advantages/disadvantages summary.**

Issue	DBB	CMR	DB
17. Sustainability and LEED Certification			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

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**Other Issues**

***Issue 18: Adversarial Relationships***

The extent to which a delivery method can minimize adversarial relationships on a project team varies depending on the nature of the project and the owner’s experience with the delivery method.

<b>Design-Bid-Build (DBB)</b>		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Roles and responsibilities in a DBB contract are well understood in the industry.</li> <li><input type="checkbox"/> DBB can create an adversarial relationship between parties, primarily between the owner and the construction contractor.</li> </ul>		

<b>Construction Manager at Risk (CMR)</b>		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Inclusion of the construction manager in the design process can align team members and lessen adversarial relationships.</li> <li><input type="checkbox"/> Negotiation of GMP can create an adversarial situation if the process is not well understood and well managed.</li> </ul>		

<b>Design-Build (DB)</b>		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Inclusion of the designer and constructor on the same team can lessen adversarial relationships.</li> <li><input type="checkbox"/> Due to the loss of control over the details of design, DB requires a high level of trust between the owner and design-builder. Without this trust, DB can become adversarial.</li> </ul>		

**Table D-18. Adversarial relationships advantages/disadvantages summary.**

Issue	DBB	CMR	DB
18. Adversarial Relationships			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

Comments \_\_\_\_\_

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**Issue 19: Construction Claims**

The effect of each delivery method on airport exposure to potential conflicts and claims is addressed under this issue.

Design-Bid-Build (DBB)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> DBB has well-understood legal precedents for construction claims.</li> <li><input type="checkbox"/> DBB historically has the highest occurrence of claims and disputes, which often occur in the areas of authority, responsibility, and quality.</li> <li><input type="checkbox"/> The low-bid environment can provide incentives for a constructor to file claims, particularly if there is any ambiguity in the plans.</li> </ul>		

Construction Manager at Risk (CMR)		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> Having the constructor on the team early during design can lessen the likelihood of disputes and claims regarding design.</li> <li><input type="checkbox"/> Since design and construction contracts are separate, the potential for disputes and claims regarding design still exist.</li> <li><input type="checkbox"/> If multiple bid packages are not managed correctly, the coordination of these bid packages can result in claims.</li> </ul>		

Design-Build (DB)		
Please specify procurement system: ( _____ )		
Issue Statements	Advantage	Disadvantage
<ul style="list-style-type: none"> <li><input type="checkbox"/> The single source for design and construction eliminates claims for design errors or omissions from the airport's perspective.</li> <li><input type="checkbox"/> There is a potential for claims with regard to scope definition if the form of the DB contract is not well understood.</li> <li><input type="checkbox"/> The size and frequency of change orders are smaller in DB.</li> </ul>		

**Table D-19. Construction claims advantages/disadvantages summary.**

Issue	DBB	CMR	DB
19. Construction Claims			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - X Not applicable (discontinue evaluation of this method)

Comments \_\_\_\_\_

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Table D-20. Project delivery method advantage/disadvantage summary.

	DBB	CMR	DB
<b>Project-Level Issues Rating</b>			
1. Project Size/Complexity			
2. Schedule Compression			
3. Schedule Growth Control			
4. Early Cost Precision			
5. Cost Control			
6. Risk Management/Allocation			
7. Lifecycle Costs			
8. Maintainability			
<b>Airport-Level Issues Rating</b>			
9. Airport Experience/Staff Capability			
10. Airport Control of Project			
11. Security			
12. Control of Impact on Passengers and Operations			
13. Third-Party Stakeholder Input to Design and Construction			
<b>Public Policy/Regulatory Issues Rating</b>			
14. Competition and Local Talent			
15. DBE/Small Business Impacts			
16. Legal and Statutory Constraints			
17. Sustainability and LEED Certification			
<b>Other Issues Rating</b>			
18. Adversarial Relationships			
19. Construction Claims			
Other			

- Key:
- Most appropriate delivery method
  - Appropriate delivery method
  - Least appropriate delivery method
  - X Not Applicable (discontinue evaluation of this method)

Project Delivery Advantages and Disadvantages Summary

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