US 2/Rice Road Intersection
Safety Improvement

General Project Details

General Information (from Solicitation Documents)	
Estimated Project Cost	$2 million to $3 million
Upset Determination	$2,750,000
Stipend	$15,000
Project Goals	• **Minimize Impact to the Traveling Public** – Minimize inconvenience to the traveling public and adjacent properties during construction through efficient traffic control and construction staging, minimizing overall project duration, and clear and proactive communication to roadway users and adjoining property owners. • **Expedited Safety Improvement** – A roundabout in Final Configuration Open to Traffic as soon as possible. • **Excellent Quality** – Meet or exceed technical quality requirements for design and construction (including materials testing and documentation) through implementation of a clear and thorough Quality Management Plan that ensures quality throughout all stages of the project and protects the environment. • **Design Approach** – A high performing roundabout that reduces the potential for severe collisions, maximizes traffic flow at the intersection, and accommodates truck traffic.
Evaluation Criteria: RFQ	Scored Criteria • Key Personnel: 500 • Major Participants: 500 Pass/Fail Criteria • Legal • Financial
Evaluation Criteria: RFP	Formula Proposal Price – Technical Credits Scored Criteria • Maintenance of Traffic: 50,000 • Project Schedule: 25,000 • Quality Management Concept: 25,000 Total Credits Available 100,000 Pass/Fail Criteria • Proposer Information and Certifications • Proposal Bond • Upset Amount Determination

Best Value Determination	Proposal Price	Technical Score	Apparent Best Value
	$2,729,048	94,000	$2,635,048
	$2,719,507	62,000	$2,657,507
	$2,170,507	**56,000**	**$2,114,507**

Project Performance Data			
Cost Data	**Schedule Data**	**Change Orders**	**Quality**
Engineer's Estimate $2,750,002 *Awarded Contract Amount* $2,170,507 *Final Contract Cost* $2,410,519	*Construction Start Date* 10/11/2011 (Planned) 10/11/2011 (Actual) *Completion Date* 07/03/2012 (Planned) 07/03/2012 (Actual)	*Total # of COs*: 17 *Total $ value*: $204,494.87 *Classification of COs*: 71% Agency directed 29% Other	As expected

Lessons Learned

Culture, Staffing, and Training	
WSDOT Staff	• Project team was inexperienced with DB • Staff that put together the RFP was not from the region • Staff involved with the procurement process should stay involved post award to maintain continuity - Could have used assistance with tracking design submittals - On subsequent projects, procurement staff now remain on the project longer; design manager is assigned
Training	• DB is very different from what most staff are accustomed to; DB requires training and experience to get better at it • Throwing a project office onto a DB project without training or guidance probably will be less than successful • Inspectors in the field assume a very different role - DOT no longer needs to defend or support the Engineer of Record - DB team is to come up with solutions to any issues that may arise; not the DOT
Internal Communication among WSDOT staff	No issues identified
WSDOT Communication with Design-Builder	No issues identified
Other	• DB team's designer and contractor did not work well together (The DB team design consultant was just a subcontractor). Internal communication issues between DB contractor and designer caused issues with documentation for quality assurance and closeout. - Past relationship of DB team members could be a useful RFQ/RFP criterion

Project Development	
Selection of DB Delivery Method	• Originally was going to be a DBB project (design was already at 90%), but WSDOT decided to use this project as one of its five small project DB projects • Intent was to evaluate use of DB on a small project using a traditional construction office approach (i.e., no co-location)
Scoping	• Design was almost complete • Design team had to restructure design documents to make them more suitable for DB • Not effective to take design too far (wasting money on something that may not be built)

Use of Performance Requirements	No issues identified

Procurement Process	
Evaluation Criteria	Team struggled to identify any meaningful goals other than schedule (required project to finish by June 30; DB earned incentives for each day project was opened to traffic early)
Use of Alternative Technical Concepts (ATC)	• ATCs are useful regardless of project size
Other	

Risk Allocation	
Differing Site Conditions	No issues identified
Permitting	No issues identified
Utilities and Railroads	No issues identified
Right-of-Way	No issues identified
Third Parties	No issues identified
Other	

Contract Administration	
Design Oversight	• Given the high level of design that was already completely by WSDOT, design-builder thought that some of the plans were already completed; instead these plans had to be revised, stamped and resubmitted by design-builder
Construction Oversight and Quality Management	• Quality management process (verification of design-builder's testing results) is somewhat duplicative on all projects, but such redundancy can be even more apparent on small job • The quality of the final constructed product was good. However, WSDOT had to provide a higher level of Quality Verification (inspection and testing) because the DB quality manager (provided by the DB team's designer) did not perform well and in some cases was not even present on the job when needed for QA activities. • Should QA be kept in-house for smaller projects?
Changes	• 2 months after completion, the DB design consultant asked for a Request for Equitable Adjustment (REA) change order for $200k due to alleged slow responses on submittals, RFIs, etc., and presented arguments at hearings. The designer did not ultimately file a claim and got zero. The submittal logs showed that WSDOT hit all the times for submittal turnaround. The consultant apparently didn't estimate properly for the required submittal effort.
Other	

Performance Outcomes (Project Engineer's perception of the project outcomes)	
Suitability of DB for Project	• Small DB projects allow smaller contractors and design firms to participate as a prime and gain experience on DB projects • DB on small projects is probably more effective for monotone projects (i.e., projects that are relatively simple and have few elements, not like Rice Road) or highly specialized projects requiring intensive engineering
Perceived Success Factors	Effective communication and strong relationships are keys to success. When the DB design consultant works very closely with contractor, a project goes very well.

Areas for Improvement	When DB team's design consultant is just a sub to contractor, projects do not go as well (disconnect between DB team members). Close-out is also very difficult if relationship goes south. For this project, the DB contractor never reached a signed contract agreement with its designer subcontractor and DB team built the project without this contractual agreement. There is currently no pass/fail to check as to whether the DB contractor (prime) has an agreement with designer or a past relationship. This sort of qualification would be helpful.

I-5 Skagit River Bridge
Permanent Bridge Replacement

General Project Details

General Information (from Solicitation Documents)			
Estimated Project Cost	$3 million to $10 million		
Upset Determination	N/A		
Stipend	None		
Project Goals	• **Minimize Impacts –** Minimize impacts to the travelling public during construction of the Permanent Span 8 of the Skagit River Bridge • **Early Completion** – Open the Permanent Span 8 to traffic as soon as possible after September 4, 2013.		
Evaluation Criteria: RFQ	Submittal of LOI		
Evaluation Criteria: RFP	Formula Proposal Price minus Technical Credits Scored Criteria • Minimize impacts – score based on values assigned to the number of proposed closures (RFP includes Closure Value Table) • Early completion – score determined by formula	Pass/Fail Criteria • Summary of structure type and construction methodology • Proposer Information and Certifications • Proposal Bond	
Best Value Determination	**Proposal Price**	**Technical Score**	**Apparent Best Value**
	$6,825,000	820,000	$7,645,000
	$12,926,979	2,840,000	$15,766,979
	$6,875,800	**110,000**	**$6,985,800**
	$7,099,979	1,342,500	$8,442,479

Project Performance Data			
Cost Data	**Schedule Data**	**Change Orders**	**Quality**
Engineer's Estimate $8,000,000 *Awarded Contract Amount* $6,875,800 *Final Contract Cost* $7,139,139	*Construction Start Date* 06/19/2013 (Planned) 06/19/2013 (Actual) *Completion Date* 09/04/2013 (Planned) 09/15/2013 (Actual)	*Total # of COs*: 15 *Total $ value*: $280,818 Classifications of COs (i.e. Owner-directed, errors and omissions, etc.) were not provided on CO log.	As expected

Lessons Learned

Culture, Staffing, and Training	
WSDOT Staff	• Experienced staff from the 405 DB program provided assistance with RFP development • As project progressed, experienced DB staff from NW Region were added (double-shifting used to maintain schedule) • Project manager handpicked his project team – enough DOT resources were provided to support the delivery schedule
Training	Staff experienced with DB were handpicked to help deliver this critical project
Internal Communication among WSDOT staff	No issues identified
WSDOT Communication with Design-Builder	• Daily meetings were held to discuss issues • The biggest potential issue was the procurement of lightweight aggregate (imported from UT and NC). The requirement was identified and communicated in the procurement phase and it didn't impact the project • Co-location with DB team until design was complete for casting of girders

Project Development	
Selection of DB Delivery Method	Emergency project – DB provided the ability to deliver the project as quickly as possible
Scoping	
Use of Performance Requirements	Standard bridge specifications were used

Procurement Process	
Evaluation Criteria	• Given the emergency nature of the project, the intent was to award the project to whichever proposer could get the work done the quickest with the least disturbance to traffic and with the best overall approach • Technical credits were based on a time savings calculation
Use of Alternative Technical Concepts (ATC)	ATCs were not considered: • Contract was for an emergency project to replace damaged bridge • DOT was not seeking alternative concepts: - It had been pre-determined that the new structure could be built on existing piers, same weight and footprint - RFP allowed both steel or concrete bridge structures
Other Lessons Learned	• An expedited procurement process is possible (if project circumstances so demand): - Process only took 2 weeks - Modified short-listing was used – DOT asked a 6 handpicked contractors if they could perform the work (4 submitted bids) • Should have taken a more balanced approach to determining level of liquidated damages: - Although based on societal cost, LDs were so high, they could have eliminated all of the DB team's fees - May have scared off some proposers

Risk Allocation	
Differing Site Conditions	• Geotech baseline report defined what WSDOT would consider to be a differing site condition
Permitting	WSDOT obtained all permits in advance (environmental, Corps of Engineers, etc.); environmental staff at HQ enjoys a good relationship with the applicable state and Federal agencies
Utilities and Railroads	No issues identified
Right-of-Way	No issues identified
Third Parties	No issues identified
Other	• Special liquidated damage schedule was used for exceeding closure length • An identified risk was procuring lightweight aggregate that had to be imported from out of state – DOT identified upfront that this could be difficult; project was not impacted

Contract Administration	
Design Oversight	• Having the necessary resources to support the DB schedule allowed the WSDOT project team to quickly turnaround submittals • Dedicated bridge engineer
Construction Oversight and Quality Management	No major issues
Payment	Given the short duration of the project, a modified schedule and payment process was used; instead of a cost-loaded Critical Path Method (CPM) schedule, a streamlined schedule was submitted accompanied by simple spreadsheet outlining the schedule of values (list of activities and S value)
Changes	Obstructions were encountered during the pile driving operation that exceeded the limit defined in the geotech baseline report: added some contract time and cost

Performance Outcomes (Project Engineer's perception of the project outcomes)	
Suitability of DB for Project	DB worked well for this project
Perceived Success Factors	Appropriate staffing (both number of staff and expertise) to support the project
Areas for Improvement	Should have taken a more balanced approach to determining level of liquidated damages: • Although based on societal cost, LDs were so high, they could have eliminated all of the DB team's fees • May have scared off some proposers

SR 167 Puyallup River Bridge
Bridge Replacement Project

General Project Details

General Information (from Solicitation Documents)			
Estimated Project Cost	$19 million to $23 million		
Upset Determination	$23,500,000		
Stipend	$225,000		
Project Goals	• **Manage Geotechnical Conditions** – Successfully manage challenging site geotechnical conditions during design and construction to minimize risk to the Project. • **Project Collaboration** – Project team able to identify issues early in the schedule and effectively work together with WSDOT to efficiently and effectively resolve the issue. • **Excellent Quality** – Meet or exceed technical quality requirements for design and construction through implementation of a clear and thorough Quality Management Plan. • **Minimize Impacts** – Effective design and construction methods which reduce temporary construction impacts to the public, adjacent property owners, and the environment as well as permanent environmental impacts.		
Evaluation Criteria: RFQ	Scored Criteria • Key Personnel: 500 • Major Participants: 500		Pass/Fail Criteria • Legal • Financial
Evaluation Criteria: RFP	Formula Proposal Price – Technical Credits Scored Criteria • Manage Geotechnical Conditions: 1,700,000 • Excellent Quality: 650,000 • Minimize Impacts: 625,000 • Project Collaboration: 525,000 Total Credits Available 3,500,000		Pass/Fail Criteria • Proposer Information and Certifications • Proposal Bond • Upset Amount Determination
Best Value Determination	**Proposal Price**	**Technical Score**	**Apparent Best Value**
	$23,500,000	$1,805,050	$21,694,950
	$24,866,002	$1,463,200	$23,402,802
	$23,220,880	**$2,034,400**	**$21,186,488**

Project Performance Data			
Cost Data	**Schedule Data**	**Change Orders**	**Quality**
Engineer's Estimate $20,900,000 *Awarded Contract Amount* $23,220,888 *Final Contract Cost* $27,331,648	*Design Start Date* 10/23/2013 (Planned) 11/04/2013 (Actual) *Construction Start Date* 04/01/2014 (Planned) 03/17/2014 (Actual) *Construction Completion* 10/15/2015 (Planned) 10/05/2015 (Actual)	*Total # of COs*: 26 *Total $ value*: $1,361,717 *Classification of COs*: 54% Agency directed 23% Unforeseen conditions 8% Errors & omissions	As expected

Lessons Learned

Culture, Staffing, and Training	
WSDOT Staff	
Training	
Internal Communication among WSDOT staff	• Project Manager (PM) is responsible for ensuring staff understands roles and responsibilities • PM routinely mentored/monitored staff to ensure they did not fall back into business as usual (i.e., reverting to DBB practices) • Weekly meetings held with project team
WSDOT Communication with Design-Builder	• Weekly meetings held
Other	• Over communicate with local agencies - Provide monthly schedule updates and weekly Maintenance of Traffic (MOT) schedules

Project Development	
Selection of DB Delivery Method	• Use of DB was mandated by the legislature; given the timing of the Section 106 review (bridge was historic), may have otherwise gone DBB • However, received some contractor ingenuity which minimized ROW and utility relocation
Scoping	• A high $ change order was issued to address existing bridge conditions identified during a bridge inspection conducted post award: if inspection had been done earlier could have avoided paying the premium for a changed condition vs. just making the work part of the original scope • Take care to ensure scope adequately communicates all requirements and commitments to third parties
Use of Performance Requirements	N/A

RFP Documents	• Clearly document in the RFP all agreements or commitments made with local agencies to address special lighting, signing, or other elements - Will ensure all elements are included in the RFP and design-builder is aware of them - Provides a baseline to go back to if the local agency makes additional requests during the contract • Include all environmental permits complete to date for the proposers' reference

Procurement Process	
Evaluation Criteria	• Given the geotechnical risks, DOT wanted proposers to consider the geotech design as part of the proposal evaluation process - Ensured the constructability of the project - Ensured proposers knew what they were getting into, and possibly - Probability resulted in lower risk pricing
Use of Alternative Technical Concepts (ATC)	• One-on-one meetings, while useful and worthwhile, entail a significant effort that should be accounted for when planning procurement staffing needs, and determining the number of firms to shortlist (going from 3 to 4 entails a big jump in time and effort) • Anticipate the need for weekly 1.5 hour meetings with each of the proposers and schedule these as early as possible with WSDOT staff • Keep WSDOT staff small; limit consultant support to ensure the strictest confidentiality • When evaluating an ATC, consider: - If it could have any peripheral impacts (e.g., impacts to illumination, signing, sign structures, etc.) - If it may require any changes to ROW and easement acquisition plan (e.g., additional property may be needed and/or property that was originally slated for acquisition may no longer be required) - If it eliminates the need to make an improvement to existing drainage (or other) features, WSDOT can live with the existing condition

Risk Allocation	
Differing Site Conditions	• Geotech baseline report established what would be considered a differing site condition • During procurement, each proposer can ask for 3 additional borings; the resulting information is used to supplement the original baseline report • Risks were identified related to constructing deep foundations through alluvial soils - Risk shifted to design-builder - Geotech approach was a highly scored criterion in the DOT's evaluation of technical proposals
Permitting	• Include all environmental permits received in an appendix for reference
Utilities and Railroads	No issues identified
Right-of-Way	May be better to not be stingy with regard to ROW acquisition: proceed with what may be more difficult ROW to acquire if needed for facilities such as signs, luminaires, sign structures, foundations, etc.
Third Parties	No issues identified

Contract Administration	
Design Oversight	• DOT staff need to be careful to not direct the design-builder; intent is to review for compliance with contract documents • Design-builder had a bit of a challenge understanding DOT requirements related to scour analysis - If another in-water project is planned for the future, RFP should better communicate specialty design needs and requirements
Construction Oversight and Quality Management	• Clarify in the RFP that QC inspection needs to be done for each work activity for permanent work
Changes	A high $ change order was issued to address existing bridge conditions identified during a bridge inspection conducted post award: if inspection had been done earlier could have avoided paying the premium for a changed condition vs. just making the work part of the original scope
Other	Best Practices: • PM routinely mentored/monitored staff to ensure they did not fall back into business as usual (i.e., reverting to DBB practices). This entailed: - Weekly meetings with the design-builder at which the PM would inquire if the DOT project team was providing what was needed to support the DB effort - Weekly staff meetings at which the audit plan would be reviewed - Oversight of DOT design team to ensure they were not directing the design-builder - Field reviews during which PM would ensure that staff were inspecting what they should and collaborating well with the design-builder's team

Performance Outcomes (Project Engineer's perception of the project outcomes)	
Suitability of DB for Project	• Use of DB worked out very well from the perspective of contractor innovation: implementing the design-builder's solution (which entailed building the replacement bridge on existing steel instead of on new alignment as conceived by the DOT) resulted in: - Less right-of-way impacts - Less utility relocations • Anticipated time savings due to the use of DB were <u>not</u> achieved on this project - By the time the bridge made it through the Section 106 review process (bridge was historic), the DOT would have had time to prepare a complete Plans Specifications & Estimates (PS&E) package
Perceived Success Factors	• Conducting a risk analysis so DOT could properly allocate them in the DB contract • Making sure intent is clear in the contract
Areas for Improvement	• If project delivery selection procedure had been in place, might not have been a candidate for DB. WSDOT was leaning towards bid-build with the bridge design staff because of complications related to geotechnical challenges and bridge repairs. Did not achieve added value by having 3 teams looking at geotechnical solutions; however all three ultimately came up with right answer (depth of shaft)

I-5 et al
Active Traffic Management System

General Project Details

General Information (from Solicitation Documents)			
Estimated Project Cost	$15 million to $45 million		
Upset Determination	$50,000,000		
Stipend	$75,000		
Project Goals	• **Minimize Impacts** – Minimize public inconvenience by maintaining traffic operations. Minimize impacts to adjacent and interrelated projects by coordinating traffic control and construction schedules. Maximize safety during construction by avoiding incidents involving the traveling public, contractor employees, and WSDOT staff. • **Lead Project to Success** – Establish successful working relationships with Project participants holding diverse and competing interests and goals. Achieve successful outcomes through dynamic leadership. • **Navigate the Federal Contracting Environment** – Successfully deliver the Project within the Federal procurement environment. • **Deliver a Quality Product -** Deliver highly reliable and sustainable ATM equipment that reduces WSDOT and public expenditures of time and money over the long-term.		
Evaluation Criteria: RFQ	Scored Criteria • Project Team Qualifications: 300 • Project Manager Experience: 250 • Dynamic Sign Delivery Manager Experience: 200 • Project Approach 250	Pass/Fail Criteria • Legal • Financial	
Evaluation Criteria: RFP	Formula Proposal Price – Technical Credits Scored Criteria • Innovations in Dynamic Message Sign Design: 6,000,000 • Project Management Approach: 2,000,000 • Maintenance of Traffic - Lane & Ramp Closure Plan: 1,500,000 - Rolling Slowdown Plan: 250,000 • Quality: 200,000 Total Credits Available 9,950,000	Pass/Fail Criteria • Proposer Information and Certifications • Resumes • Details of Dynamic Message Sign • Proposal Bond • Letters from Sureties • Upset Amount Determination	
Best Value Determination	**Proposal Price**	**Technical Score**	**Apparent Best Value**
	$41,296,078	3,150,000	$38,146,078
	$34,450,000	**1,790,000**	**$32,660,000**

Project Performance Data			
Cost Data	**Schedule Data**	**Change Orders**	**Quality**
Engineer's Estimate $41,500,000 *Awarded Contract Amount* $34,450,000 *Final Contract Cost* $37,021,000	*Construction Start Date* October 2009 (Planned) October 2009(Actual) *Completion Date* 02/01/2011 (Planned) 09/01/2011 (Actual)	*Total # of COs*: 70 *Total $ value*: $2,571,000 *Classification of COs*: 25% Agency directed 40% Unforeseen conditions 35% Errors and omissions	As expected 32 nonconformance reports 32 nonconformance incidents

Lessons Learned

Culture, Staffing, Training, and Communication	
WSDOT Staff	• Need a dedicated Project Manager: having the PM split time between two projects did not work out well • Need to have staff consistency to avoid multiple learning curves • Project team needs to have the right experience (in this case, inspectors with ITS and electrical experience were needed) • Project was not adequately staffed for the procurement stage: staffing needs to be better planned for all project phases, including procurement
Training	Staff has to be trained and educated on the DB process before the start pf the project
Internal Communication among WSDOT staff	• Subject matter experts from HQ and region were not always on the same page, affecting design reviews and construction inspection • Need to communicate design changes to inspectors
WSDOT Communication with Design-Builder	Co-location was helpful
Other	Good public outreach efforts by WSDOT

Project Development	
Selection of DB Delivery Method	There were questions regarding whether to deliver this project using DB: • Decision was made to use DB to develop a partnership with the sign manufacturer • Schedule was a large driver in selecting DB; however, in hindsight, schedule was not the appropriate driver; Innovation would have been a better driver
Scoping	• Significant design was performed ahead of time but conceptual drawings were missing key details, which led to change orders or accepting less than what WSDOT had intended • Design requirements for signs were lacking in detail
Use of Performance Requirements	Either needed very good performance specifications or very prescriptive requirements: • Contract documents had a hybrid of both • Led to questions regarding what was in the contractor's scope

Procurement Process	
Evaluation Criteria	• Evaluation criteria did not result in the best team being selected • Large discrepancy in price proposals led to the selecting the team that was least able to deliver innovation

Use of Alternative Technical Concepts (ATC)	ATCs were used, but only a few were presented and none were significant or accepted. There was not as much opportunity for innovation as the technical requirements were fairly prescriptive
Other	Additional time needs to be planned for the procurement process to answer questions arising out of the RFP

Risk Allocation	
Differing Site Conditions	
Permitting	
Utilities and Railroads	
Right-of-Way	
Third Parties	

Contract Administration	
Design Oversight	• Co-location with design-builder was helpful • Weekly task force meetings resulted in no delays to design
Construction Oversight and Quality Management	• Quality assurance went smoothly - Design-builder did QA for construction - DOT did verification and auditing
Changes	• Majority of costly change orders were related to technology specifications for message signs and lack of detail in requirements - Led to disagreements with contractor regarding scope of ITS work • Project staff has to get better at deflecting change orders • A process should be established for obtaining approval from the project sponsor for requested changes to requirements or project scope • Establishment of a Dispute Review Board from the beginning of the project would have helped with quick resolution of issues
Other	• At the time, the DOT construction office did not have any DB experience. This was 1st DB project for the office. • Makeup of the DB team was not ideal for this project: - Prime contractor had never delivered a DB project before (only worked as a subcontractor on DB) - An electrical contractor, who was unfamiliar with WSDOT requirements for civil materials and equipment, was the lead for construction of the ATM system - Supplier had never worked in the US before • Better coordination was needed with adjacent contractors

Performance Outcomes (Project Engineer's perception of the project outcomes)	
Suitability of DB for Project	In hindsight, DB was not appropriate. Need more experience with DB for
Perceived Success Factors	WSDOT now uses DBOM (with 10 year operations terms) for IT contracts. Initial maintenance is for 3 years with options to add 3-year increments. For the recent I-405 Express lanes contract, a DB contract was used for civil infrastructure (express lanes) and the IT tolling contract was a separate procurement - using a two-step BV. WSDOT feels that it is better to keep IT contracts separate because they can assure that they are getting the best value from the IT industry.

Areas for Improvement	Minimizing traffic impacts was a criteria for using DB for this project. In hindsight traffic management was not an appropriate driver. Also innovation was not enough of a driver in the selection either (the VMS sign design innovation was the primary criteria but the selection to lowest price proposer ultimately did not realize any innovation). The large discrepancy in price proposals resulting in selecting team that was least able to deliver innovation. In hindsight, technical criteria should be selected very carefully and should carry more weight in the selection.

I-405/I-5 to SR 169 Stage 2 Widening and SR 515 Interchange Project

General Project Details

General Information (from Solicitation Documents)	
Estimated Project Cost	$100 million
Upset Determination	110,000,000
Stipend	$250,000
Project Goals	• **Minimize Impacts** – Minimize inconvenience to the public and adjacent properties during construction. • **Excellent Quality** – Meet or exceed technical quality requirements for design and construction through implementation of a clear and thorough quality management plan. • **Permit Compliance** – Meet or exceed environmental requirements with no permit violations by adopting WSDOT's permitting and environmental compliance standards. • **Smooth Start-up** – Maximize Project development effectiveness through implementation of a well-planned start-up that ensures efficient delivery of the Project. • **Forward Compatibility** – Maximize Project elements that can be integrated into future planned I-405 improvements without significant demolition or reconstruction of these elements.
Evaluation Criteria: RFQ	Scored Criteria • Key Personnel: 300 • Project Experience: 400 • Collective Team as a Whole: 300 Pass/Fail Criteria • Legal • Financial
Evaluation Criteria: RFP	Formula (Tech Score x $10,000,000) ÷ Price* *This formula pre-dated the current price minus technical credits approach Scored Criteria • Technical Approach & Innovations in Design and Construction of Project: 300 • Qualifications: 200 • Project Management Approach: 100 • Quality Management Approach: 100 • Preliminary Baseline Contract Schedule: 100 • Maintenance of Traffic: 100 • Environmental Compliance: 100 Maximum Score: 1,000 Pass/Fail Criteria • Proposer Information and Certifications • Resumes • Proposal Bond • Letters from Sureties • Schedule of Values • Upset Amount Determination

Best Value Determination	Proposal Price	Technical Score	Apparent Best Value
	$89,715,661	874.60	97.4858
	$86,065,172	914.60	106.2683
	Proposal Price: $83,559,000 Property Exchange Adjustment: $1,078,000 Adjusted Price: $82,521,000	885.00	107.2454

Project Performance Data			
Cost Data	**Schedule Data**	**Change Orders**	**Quality**
Engineer's Estimate $100 million *Awarded Contract Amount* $83.6 million *Final Contract Cost* $84.65 million	*Construction Start Date* 03/18/2009 (Planned) 03/18/2009 (Actual) *Substantial Completion Date* 09/04/2011 (Planned) 07/07/2011 (Actual)	*Total # of COs*: 23 (31 if no-cost COs are included) *Total $ value*: $1,954,858 *Classification of COs*: 47% Unforeseen conditions 53% Other causes not defined in CO log	Better than expected

Lessons Learned

Culture, Staffing, and Training	
WSDOT Staff	• Staff that are accustomed to DBB processes may initially find it difficult to get their hands around DB • Need to have sufficient staff resources to support an accelerated DB schedule; for example the DB contractor used five 10-hour shifts for this project • Use of consultants to augment WSDOT staff: - Consultants were often more rigid than WSDOT would have been - Can't negotiate as effectively as WSDOT
Training	Training is needed to deliver a DB project
Internal Communication among WSDOT staff	• Project team should keep headquarters apprised of project developments (lots of disciplines have HQ equivalents)Maintenance staff should be involved or consulted on issues that could affect future maintenance work
WSDOT Communication with Design-Builder	• Weekly meetings between the technical leads from WSDOT and DB team worked well
Other	• Historically, there had been little support from HQ. Then HQ got involved reviewing COs (Type A and Type B). This review involved documentation of COs, and tracking and statistical analysis of materials. Now HQ is providing more support – assigning ASCEs to projects. The current goal on the 405 program is to have HQ involved

Project Development	
Selection of DB Delivery Method	
Scoping	The CVEP process and resulting risk matrix were very useful for validating the estimate and developing the RFP documents Level of design – each discipline is different level (20-30% from drainage, basic alignment is 5%) Try to establish a clear ROW and a baseline alignment for permitting. In some cases we have used a phased ROW, but not a good way to go.
Use of Performance Requirements	Technical specifications are relatively prescriptive - Certain disciplines in particular (e.g., ITS) have difficulty developing scopes (appendices to contract might contradict RFP) - Geotechnical technical section is very detailed, which is sometimes a struggle - DOT Geotechnical and structural staff were very concerned with end products, which wasn't always directly spelled out in contract documents
RFP Documents	RFP requirements are often repetitive or covered in manuals: RFP for 405 went to tech writer to achieve consistent language and version control

Procurement Process	
Evaluation Criteria	• Need to carefully consider the value of technical credits • Connect goals with technical criteria
Use of Alternative Technical Concepts (ATC)	• ATCs generate better ideas, schedule reductions, and/or better means and methods • Limit ATC evaluation to a demonstration of the ATC being equal to or better than baseline configuration, i.e., do not ask proposers to price the ATC or its presumed cost savings • Weekly one-on-one meetings to discuss ATC concepts with proposers: - Very beneficial - helps with working out any kinks in the RFP - Confidentiality is very important: use confidentiality agreements - Going from 3 to 4 proposers greatly increases the workload: a shortlist of 3 is more manageable
Other Lessons Learned	• Better manage proposers' discussions with third-party stakeholders - One proposer went to the City of Renton with ideas that were well-received; when a different proposer, whose proposal did not make similar accommodations to the City was selected, the DOT found itself in conflict with the City • Some DB teams have become very good at preparing proposals (employing technical writers) but may miss key requirements

Risk Allocation	
Differing Site Conditions	
Permitting	
Utilities and Railroads	• WSDOT had to provide some assistance with coordinating some significant utility relocations • Coordinating with railroads can be very difficult
Right-of-Way	Try to establish clear ROW and baseline for permitting - Phased ROW, although necessary in some cases, is not ideal
Third Parties	No issues

Contract Administration	
Design Oversight	• Given the very fast-tracked nature of the project, close coordination was necessary • "Red zone" meetings were held every week where the project manager conducted interdisciplinary reviews
Construction Oversight and Quality Management	• Third-party QA worked well for testing, not so well for inspection (WSDOT inspection standards for materials were not well understood by third party QA inspectors) • Developing an industry for quality management has been a challenge; however, Washington now has more people/firms qualified to provide QA testing and inspection services
Payment	• Difficulty in getting a cost-loaded baseline schedule approved - No payments until baseline is approved - Initially WSDOT asks for a 90-day schedule, then a complete baseline schedule. Getting an approved cost-loaded baseline schedule in place was a challenge for this project • Highest monthly payment for the I-405 program was on the order of $6 million a month • Payments at biennium cut-off (June 30) – need to estimate progress to account for this cutoff can be challenging
Changes	
Other Lessons Learned	• Organizational structure of DB Team - A design firm was the majority partner on the DB team - Provided an additional level of oversight and engineering that was perceived to work better than contractor-led DB teams. PM led weekly red zone meetings where the PM addressed any outstanding issues and coordinated the DB team efforts. • Closing out Non-Conformance Reports (generated by DB team) and NCIs (issued by WSDOT) was difficult from the perspective of achieving the expected turnaround time - Expectation is 30 days to close out NCRs and NCIs - This timeframe is challenging, especially for large projects - Paperwork process where subcontractors are involved is difficult

Performance Outcomes (Project Engineer's perception of the project outcomes)	
Suitability of DB for Project	• Delivering project using DB was successful • Project had a 4% contingency that was not exceeded (none of the 405 projects ever exceeded their contingency)
Perceived Success Factors	• Communication • Having the right people (both on WSDOT's team and on the Design-Builder's team) • Co-location
Areas for Improvement	• Consultants can't always deliver decisions the same as owner (more rigid). Also, Consultants are 1-1/2 cost of WSDOT employee, and not able to negotiate as effectively. Need to be used • Close-out can be very difficult, need better processes or incentives for paperwork, especially when subs are involved

SR 520
Eastside Transit and HOV Project

General Project Details

General Information (from Solicitation Documents)	
Estimated Project Cost	$325 million to $425 million
Upset Determination	• $425,000,000 • Contract Time Bid: 1,340 calendar days • East Approach and Maintenance Facility Area Work: 485 calendar days • Evergreen Point Work Area: 970 calendar day
Stipend	$1,000,000
Project Goals	• **Project Infrastructure** – Provide maximum amount of effective multi-modal infrastructure within project limits and for the funds available. All new infrastructure should seamlessly connect at project limits and allow maximum capacity improvements. • **On Time & Within Budget** – Achieve schedule milestones and leverage opportunities for schedule enhancement to support the goal of opening the new facilities to traffic in 2014 within the available budget. • **Environmental Stewardship** – Meet or exceed all Project requirements related to the protection and enhancement of the environment. This goal includes effective reductions in temporary and permanent noise impacts, minimize construction impacts and maximize enhancements to steams and riparian areas, and provide an aesthetically compatible corridor to the local communities. • **Maximize Opportunities for Positive Community Involvement and Interaction** – Work with WSDOT to engage in effective communications, public outreach and community involvement to address Project impacts on, and opportunities for; individuals, businesses, neighborhoods, and other stakeholders.
Evaluation Criteria: RFQ	RFQ not obtained
Evaluation Criteria: RFP	Formula Proposal Price – Technical Credits Scored Criteria • Environmental Stewardship Plan: 10,000,000 • Community Harmony: 7,000,000 • Transit Facilities: 5,000,000 • Maintenance of Traffic: 5,000,000 • Management Plan: 2,000,000 Total Credits Available: 29,000,000 Pass/Fail Criteria • Proposer Information and Certifications • Proposal Bond • Upset Amount Determination

Project Performance Data			
Cost Data	**Schedule Data**	**Change Orders**	**Quality**
Engineer's Estimate $422,064,082 *Awarded Contract Amount* $306,278,000 *Final Contract Cost* $364,131,001 *CEI Costs:* $13,589,048 *Preliminary Design* $20,750,172	*Construction Start Date* 12/01/2010 (Planned) 12/01/2010 (Actual) *Substantial Completion Date* 12/01/2010 + 1115 (Planned) 097/08/2015 (Actual) 1115 + 376 = 1491 days (approx.. 1 year late)	*Total # of COs*: 97 *Total $ value*: $57,318,293.51 The majority of CO costs were attributed to following: • Retaining wall design dispute ($27M) was resolved by a Dispute Review Board (DRB) decision • Screening/Noise wall change to wall height	As expected

Lessons Learned

Culture, Staffing, and Training	
WSDOT Staff	• Lack of staff consistency over the course of a long project was an issue - Staff was stable for first 2 years (through design submittals to get to release for construction documents) - Design development staff then started to transition off the project - After original design team had transitioned off, contractor began to issue field design changes - Notice of Design Changes began to quickly overwhelm the DOT's construction team, who didn't necessarily have the requisite design expertise to review the proposed changes - Had to scramble to bring design team back, which led to some inefficiency and impacted DOT's responsiveness (instead of meeting their goal of a 3-day turnaround time, reverted to the contractual 14-day timeframe) • DOT's designers had very good technical expertise, but limited understanding of contractual requirements regarding reviews
Training	Upfront training could have helped: • DOT designers understand how to review design deliverables for contract compliance • Instill better understanding of roles and responsibilities • Better explain processes for submitting and responding to NCI/NCRs
Internal Communication among WSDOT staff	• Relationship of team members and communication was generally good
WSDOT Communication with Design-Builder	• Specific DB team did not have a good understanding of DB
Other	• DB team did a good job with public outreach • Communication within DB team was a big issue - Designer and contractor did not work well together

Project Development	
Selection of DB Delivery Method	
Scoping	Scope and DOT expectations were not clearly defined; led to large change order for wall redesign in unstable soil
Use of Performance Requirements	Design requirements were too performance-oriented with regard to structural design in historical landslide area – DB team's design showed a simple soil nail wall, which did not satisfy the requirements for unstable soils in a landslide area (ended up with a double tie-back wall with deep foundations)
Other	Reference manuals: • Geotechnical and manuals were identified as mandatory standards, but they were not written for a DB contract (allowed for engineer discretion intended only for DOT staff, not design-builders) • Geotech reports provided by DB team were lacking what DOT felt was needed for a full report (issue resolved in new geotech spec)

Procurement Process	
Evaluation Criteria	• Primary risk on project was geotech (historical landslide area) – it may have been helpful to consider geotech approaches as part of the scored criteria • Successful DB team significantly underbid project ($59M gap to the next lowest bid)
Use of Alternative Technical Concepts (ATC)	
Other	

Risk Allocation	
Differing Site Conditions	• Geotechnical risks were not well-defined in the contract (one specific location was landslide prone) - Requirements should have prescribed what was needed
Permitting	
Utilities and Railroads	
Right-of-Way	
Third Parties	

Contract Administration	
Design Oversight	• DOT's designers had very good technical expertise, but limited understanding of contractual requirements regarding reviewing for compliance - Project Manager mentored designers on how to word comments to address contract compliance as opposed to directing the DB team on what was right vs. wrong - Citing contract clauses was new to design staff • Lack of staff consistency over the course of a long project was an issue - Some design changes were not handled efficiently because of a lack of dedicated staff with the right expertise - Once some of the original staff returned to the project, issue was resolved

Construction Oversight and Quality Management	• Designer and contractor on DB team did not work well together - State found many field mistakes made by contractor which were not getting back to the designer - Chief designer for the DB team felt that they were being kept in the dark about field changes and were relying on the DOT to keep them informed - Revised plans were not meeting contract requirements • Construction quality was an issue - Things built in wrong locations - Early problem with voids (rock pockets in wall pours) • DB team was initially not adhering to the communication flow chart for Non-conformance Reports (NCR) as included in its Quality Management Plan - Took about 9 months to get the process sorted out - Common theme was geotechnical non-conformances - QA staff for contractor (independent QA firm) were construction oriented - not familiar with design side - It was a challenge for the QA staff to think like an owner and identify quality problems
Other	Would be helpful to develop a deliverables list at the beginning of the project and update it as project proceeds • Use it as a starting point for audit planning • Tool for communicating with DB team

Performance Outcomes (Project Engineer's perception of the project outcomes)	
Suitability of DB for Project	• Despite problems, project turned out well: - DB a good option when major roadway closures are needed to complete work - Project came in well under engineer's estimate (but likely due at least in part to market conditions) • DB team did a really good job with a weekend closure - Hour-by-hour schedule was developed - Good communication with the local community
Perceived Success Factors	• Good relationship between DB teaming partners (on this project designer and contractor never formed into a cohesive unit)
Areas for Improvement	• Better RFP template • DB Manual to provide PE offices with guidance on roles and responsibilities • Deliverables list needs to be developed at beginning of project and updated as project proceeds (source document for all deliverables and planning and executing). A deliverables list pulls everything together – D-Builder should develop and coordinate. WSDOT contract reads that when work is complete (substantially), DOT has full use of facility or responds with a list of 3Ds (deficiencies) within 30 days. Having database of deliverables (living document) would greatly improve completion and closeout. • Staff training needed: - Clear understanding of roles and responsibilities, particularly for review and comment of submittals - Better communication and coordination with DB team - No preferences; when reviewing for contract compliance