DESIGN BUILD – INP II

Using Design Build as a Delivery Method in the West Bank

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Executive Summary

The United States Agency for International Development (USAID) is currently engaged in a billion dollar program in the West Bank to develop and deliver infrastructure improvements primarily in the road and water/waste water sectors. USAID is tasked to rapidly and efficiently bring projects from conception to full implementation as a means to positively impact and benefit the people and economy of the West Bank.

Black & Veatch Special Project Corporation (BVSPC) is USAID's implementing partner on this program and is also global designer and constructor with experience in many types of contracting delivery methodologies. USAID in seeking to more quickly bring projects on line asked BVSPC to review possible means to accelerate the current delivery process from concept to award by looking at specifically Design Build (DB) as a delivery strategy and how it might be applied in the West Bank.

The INPII current delivery model is traditional Design-Bid-Build (DBB) where the A&E (BVSPC) completes the majority of the design and the design is tendered to the current IQC construction contractors. While DDB is a proven model, in many types of projects and locations it has been replaced by DB wherein the design and construction are done by one company to an agreed schedule, cost and performance specification. The chief advantage to DB is that the engineering and construction teams work together from contract award with the result being a fully integrated project delivery that results in shorter project schedules and is less costly than a comparable project done as DBB. Benefits to the owner include having only one point of contact and the ability to lock in and obligate the costs of engineering, procurement and construction early in the project.

All of which would bring great benefits to USAID as it develops and constructs infrastructure projects in the West Bank. With such obvious benefits it would seem a simple decision to change to a DB delivery model; so why is it not so simply done? The challenge is that working in the West Bank presents conditions that occur nowhere else in the world and that are directly in opposition to what are considered fundamental requirements to use the DB model. USAID asked BVSPC to study the conditions in the West Bank and make recommendations that USAID might consider in deciding whether or not to implement the DB approach.

To proceed with this task, BVSPC sent an experienced DB specialist to the office in Ramallah to conduct interviews with BVSPC staff, current IQC contractors and to meet with USAID to achieve a clear understanding of the task requirements and conditions on the ground. During the interviews and discussions a consensus emerged on the application of DB in the West Bank on INPII. A positive finding was that many of the current IQC contractors would prefer to work under a DB contract, several already have DB experience and the option to use DB under the current IQC

contract exists. Also most of the contractors had in-house design resources or are closely aligned to designers and the move to DB for the existing IQC contractors would be viewed as very positive and quick to implement. So why not do it?

There are several recognized "best practices" that must exist if DB is going to be successful. Two of the main concepts of DB are that the party who is best positioned to execute a phase of the project has full responsibility for that part of the work and that work of the first party not interferes with the work of the second party. Typically in DB the contractor is best positioned to execute the engineering, procurement and construction while the owner is best positioned to deal with land acquisition, permitting and project financing. For the DB contractor and the owner to realize the maximum benefits of DB the owner needs to eliminate all issues with land acquisition, permitting and financing prior to the DB contractor fully engaging in the project. Fortunately financing is not an issue on INPII as this is a US Government funded project. Unfortunately on the issues of land acquisition and especially permitting, the conditions in the West Bank are conducive to limited use of DB contracting. The reason is the involvement of the Israeli government in the evaluation of a majority of West Bank projects and issuance of the permits to allow construction to proceed.

As most working in the West Bank know, the following are three distinct geographical areas:

- Area A – full civil and security control by the Palestinian Authority (PA)
- Area B –full civil control by the PA and security control by Israel
- Area C – full civil and security control by Israel

Projects designated for Area A are fully suitable for DB from a permitting aspect, projects in Area B less suitable but still possible however any project in Area C is currently problematic for DB because of the permitting process. Currently in Area C the design must be fully completed and approved before construction can begin. In this scenario of having a 100% design before construction starts, there is no advantage to having a DB delivery model. In Area C which currently accounts for 62% of the current INP II projects, the preferred solution is to remain with the DBB delivery approach and DB should not be considered.

Despite the fact that Area C contains most sites best suited for regional infrastructure projects, there is opportunity in the other Areas to evaluate the conditions and put forth recommendations for use of DB on INP II. Additionally there may be DB opportunities for INP III that could be evaluated and worked on now so that they are ready to implement on INP III.

This study provides a general explanation of what DB is and then goes into how it might be applied in the West Bank despite the challenges presented.

1.0 Design Build as a Delivery Method

1.1 DESIGN BUILD EXECUTION

1.1.1 Background of Design Build

Design Build (sometimes called Design and Construct) contracting is one of the oldest delivery methods if you consider the example of the "master builder" who was responsible for both the design and the construction of a structure in early times. More recently it has become an established method of project delivery after having resurgence in the early 1990s. DB contracting is a favored approach when the project is a revenue producing project such as a power plant or toll road because the fast tracking of the project and shorter overall schedule allows an owner to more quickly see a return on investment. During periods of high inflation in the 1980's in the US DB was in favor because the longer the project schedule, the more the project cost. DB was seen as a way to mitigate the effect of high inflation on overall project cost.

Owner's have several different choices when it comes to project delivery models. One model is the "Traditional" method also known as Design-Bid-Build (DBB) and another is DB. Today DB is routinely used by US Government, state agencies and private companies for many types of projects from roads to buildings, to power plants, water and waste water projects. Currently INP II utilizes the DBB model. We will focus our discussions here on these two delivery methods and define in more detail what the DB delivery method is and how it compares to DBB and where the two should be applied.

All projects essentially have the same players, it is how you organize and link them that define the different delivery methods. In DB and its various forms, the owner always contracts with one entity, the DB contractor to do the design, construction and commissioning. The owner, depending on their in-house capability, may or may not contract separately with a consultant to help them in developing preliminary designs and the bid package prior to contracting with the DB contractor. Often times an Architect & Engineer (A&E) will be retained by the owner until project completion to oversee the work of the DB contractor and help the owner to manage the project. In DBB the owner contracts with two entities, a designer or A&E who does the design and a constructor who does the construction. The owner manages the interface between the two.

DB can be structured so that the owner has different degrees of involvement, some of which are noted below:

- **Design Build** – The owner defines the end product and expected results and the DB contractor achieves them through their own means and methods. The DB contractor either does all the design based on a conceptual plan, and performance specification all provided by the owner or completes the design from basic design

information provided by the owner. Normally 5%-15% of design is completed by the owner but less is also acceptable and preferred especially if the concept and performance specification is well written, and the contractors suitably experienced.

- **Detail Design Build** – In this case the owner decides that they need to provide more than just a concept or basic design; they need to actually provide a portion of the design and the DB contractor finishes the design and also does the construction. Normally design done by the owner that exceeds 30% of the overall design requirement classifies the project as Detail Design Build.
- **Turn Key** – Turn Key implies that everything is done by the DB contractor and at the end of the project, the DB contractor "turns over the keys" to the owner. Often when a project includes commissioning activities and these are done by the DB contractor, the term Turn Key is used. Turn Key is an extension of the DB. In it the DB contractor may be involved in more front end activities of the project. This may include feasibility studies, land acquisition, financing, permitting etc.
- **Design Manage** – In this model an organization contracted to the owner will hire the contractor and designer. They will in turn manage the work of the designer and the contractor while interfacing with the owner.
- **Managing Contractor** - this involves the DB contractor managing the design consultants and subcontractors on behalf of the owner. The owner usually pays the Managing Contractor on a cost plus fixed fee basis in the preliminary stages of the project then switches to a lump sum for the construction phase. Open book pricing is completed in the first phase. The Managing Contractor is expected to act in the owner's interest. There is less risk for the Managing Contractor when compared to a traditional DB role. This model is used when there are too many unknowns for the owner to use a fixed price/fixed schedule DB model.

The main characteristics of the DB model are the single point of contact for the owner, early involvement in the project by the construction team and the ability to "fast track" a project by having construction activities start before the designs are complete. The following comparison to the current delivery method employed on INP II may help to better illustrate what DB is.

1.1.2 Comparisons of Design Build (DB) to Design-Bid-Build (DBB)

The basic difference between DB and DBB are easy to see when the two delivery methods are depicted using simple organizational charts. Figure 1below shows the relationship of the different parties in a DB delivery strategy. Essentially the owner is contracting with one prime contractor to do both the design and the construction. Depending on the owner's in-house capability they may or may not need to retain an A&E consultant to develop the conceptual design, help manage the contract, do design reviews and provide quality assurance support. The owner does not manage the interface between design and construction in DB.

Figure 1 Design Build Organization Chart

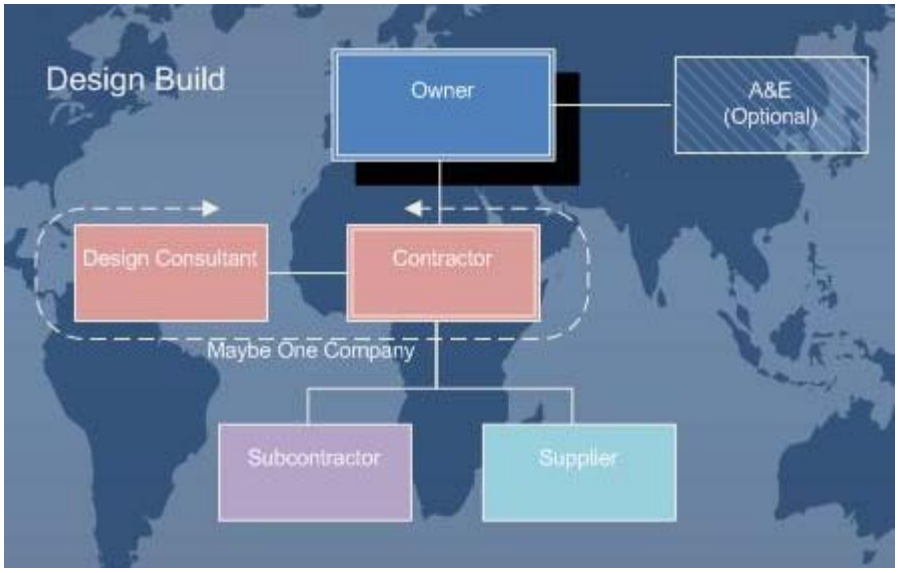
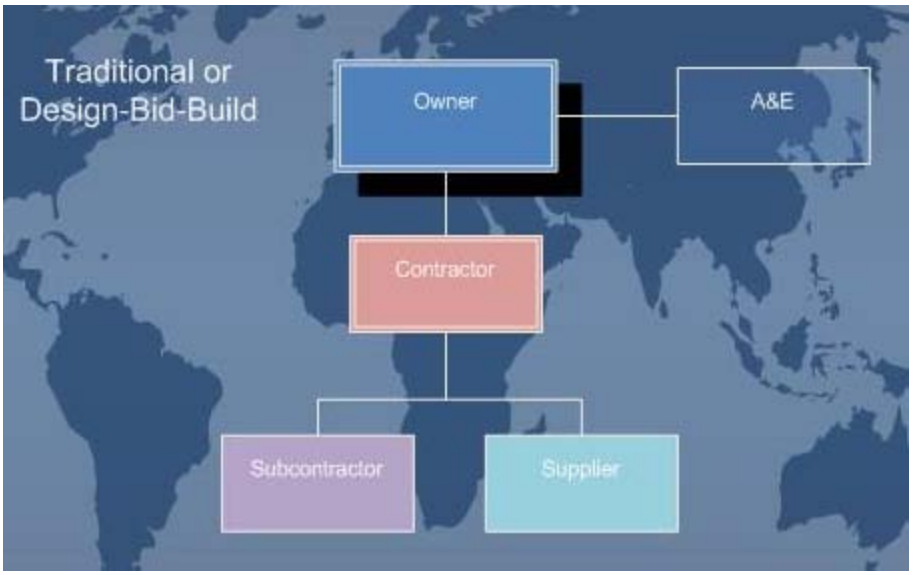


Figure 2 shows the relationship of the different parties in a DBB delivery strategy. Construction work under the INP II and LCP IQCs is performed as a traditional DBB. Multiple projects are typically packaged together by USAID for tender in sector specific Firm-Fixed-Unit-Price construction Task Orders. In this application of DBB USAID has BVSPC (A&E) do the designs, which USAID tenders to construction companies to bid. BVSPC then provides Construction Management services to observe the construction activities at site to ensure the contactor is installing per the design and to answer any questions the contractor may have. USAID manages the interface between the A&E and the constructor.

Figure 2 Traditional Delivery Organization Chart



The principle differences between DB and DBB in terms of assignment of risk and responsibility for major project phases are illustrated in the Table 1:

Table 1 Design Build and Traditional Delivery Comparison

MODEL	OWNER	DB CONTRACTOR	A&E (OWNER)	DBB CONTRCTOR	COMMENTS INCLUDING ASSIGNMENT OF RISK
Design Build Delivery					
Performance Specification	■		■		This defines an objective performance standard or goal. Often incorporates industry standards and requirements
Conceptual Design	■		■		Should be no more than 30%, usually 5%-15% depending on type of project. Minimum needed to start permitting. Less is better to allow flexibility to the DB contractor and to minimize Owner/A&E liability.
Geotech Studies			■		Normally done by Owner and A&E before tendering DB. Owner/ A&E are responsible for the accuracy of this work when providing in the DB tender.
Land Acquisition and Permitting	■		■		Normally done by Owner and A&E before tendering to ensure there are no delays and claims from the contractor. Risk lies with Owner.
Remaining Design		■			Done entirely by DB contractor, with review by A&E to confirm conformance with Conceptual Design. DB contractor is the engineer of record.

MODEL	OWNER	DB CONTRACTOR	A&E (OWNER)	DBB CONTRCTOR	COMMENTS INCLUDING ASSIGNMENT OF RISK
Design/Construction Interface		■			Managed entirely by DB contractor. Cost impacts due to design done by DB contractor will not be the responsibility of the Owner or A&E.
Procurement		■			Can be shared especially if Owner is able to get better pricing for high value equipment but best left with the DB Contractor to limit Owner liability.
Construction		■			Performed entirely by the DB Contractor with QA oversight by the A&E. Starts before design is complete.
Commissioning		■			Performed entirely by the DB Contractor with QA oversight by the A&E
Schedule Completion	■				Normally part of the Performance Specification but sometimes can be left with the DB contractor to propose and becomes part of the tender evaluation along with cost.
Traditional Design-Bid-Build Delivery					
Design Specification	■		■		Owner and A&E have 100% liability for the accuracy of design and specifications.
Conceptual Design	■		■		Normally done to a percentage required to start permitting by the owner or provide basic requirements
Geotech Studies			■		Normally done by A&E before tendering to allow the design to move forward and to minimize unknown conditions that might result in a claim by the contractor later in the contract.
Land Acquisition and Permitting	■		■		Normally done by Owner and A&E before tendering to ensure there are no delays and claims from the contractor. Risk lies with Owner.
Remaining Design			■		A&E takes design to 100% or to a point where the contractor can complete. Must be clear what the intent is in the tender. A&E is the engineer of record.
Design/Construction Interface	■		■		Managed entirely by Owner/A&E. Cost impacts due to design will not be the responsibility of the contractor.
Procurement				■	Can be shared especially if Owner is able to get better pricing for high value equipment but best left with the DBB Contractor to limit Owner liability.
Construction				■	Performed entirely by the DBB Contractor with QA oversight by the A&E. Starts when design is complete.
Commissioning				■	Normally performed by the contactor but if they lack capability Owner/A&E could take on all or part of this role.
Schedule Completion	■				Owner fixes the date and includes in tender package, contractor bids to this date.

Once the functional differences are clear between DB and DBB, the owner should evaluate the relative advantages and disadvantages of one over the other. This approach facilitates in making a decision which option is best for a given project.

Advantages of DB over DBB from the Owner's Perspective

- One point of interface for the owner
- Reduced design/construction schedule due to overlapping of activities
- Less of an adversarial arrangement between the designer and the constructor as they are working on the same team
- DB contractor takes the design risk
- Interface between design and construction managed by the DB contractor
- Less owner staff is required.
- Documentation requirements for the owner are less
- Lower overall project price due to shorter schedule and improved efficiencies
- More innovation possible since the designer is working directly with the constructor
- Early committal of project funds
- Total project costs are known right after DB tenders are evaluated
- Fewer claims because the DB contractor has complete responsibility for design
- Owner only responsible for performance specification not prescriptive specification
- Less overall risk to the owner for work done by the DB contractor

Disadvantages of DB over DBB from the Owner's Perspective

- Less involvement by the owner and perceived loss of control
- Ability of the owner to make changes without significant cost impact is less
- Increased cost of DB contractors to put together tender may diminish bidder's pool
- Poorly crafted conceptual plan and drawings may lead to claims later on in the project
- The bidding period will be longer as the DB contractor will have to develop designs, bills of material and drawings to a level that can be priced by their estimators
- Writing a performance specification may be more challenging than writing a prescriptive specification.
- Properly addressing maintenance and operational concerns in the performance specification may be challenging. Possible option is to use a Design-Build-Maintain contracting methodology.
- Pool of qualified DB contractors is smaller than pool of qualified construction contractors resulting in less qualified bidders and less competition.

- Difficulty in evaluating tenders because bidders are presenting their own unique proposal rather than bidding to a completed set of drawings.
- Owner may need to implement additional Quality Assurance oversight to ensure the DB contractor meets the requirements set forth in performance specification for design and construction as this interface is managed by the DB contractor not the owner.
- DB is not a good choice for projects that require land acquisition, special permitting, community approval, public comment or other factors that can potentially stop the work of the DB contractor. Delays caused by factors outside the control of the DB contractor will result in claims to the owner.

Both delivery models can be used successfully on many types of projects. It is up to the owner to decide based the actual project what delivery method is most appropriate and will bring the greatest value to the project. The most effective delivery method is the one that best serves the interests of the owner as well as the contractor. Below is an example of a table that might be used in determining which delivery model brings the most value to a particular project for INP II. This table further illustrates the differences between DB and DBB and when one might be chosen over the other.

Table 2 Selection of Delivery Method DB vs. DBB

PROJECT CRITERIA	WEIGHT%	RATING 1-5		SCORE	
		DB	DBB	DB	DBB
Quick Obligation of Project Funds Required		5	1		
Work in Area A, B		3	3		
Work in Area C		1	5		
Long or Unknown Time for Permits		1	5		
Large Percentage of Design Already Complete		1	5		
Land Acquisition Required		1	5		
Complex Project		5	3		
High Value Project		5	3		
Need to utilize In-House Design Resources		1	5		
Benefit to “Fast Tracking” the project		5	1		
Unknown conditions at time of tender		2	4		
High Level of Process Design (BVSPC best qualified on INP II)		1	5		

PROJECT CRITERIA	WEIGHT%	RATING 1-5		SCORE	
Short Tender Period Required		1	5		
Contractor to do Design		5	1		
Large amount of project unknowns		2	4		
Potential for termination of project once awarded		1	5		
Potential for Innovation by early engagement of contractor		5	2		
Cost of Project		3	2		
Potential for Changes after Contract Award		2	4		
Potential for End User Involvement after Award		1	3		
Total					

Project Criteria – Factors to consider for a specific project
Weight – Importance factor based on percentage of 100%, this is subjective
Rating – 1-5 with 5 being extremely effective, 1 having minimal or no effectiveness
Score – Weight x Rating

The information presented provides the reader a good understanding how DB compares with DBB and how selection of one over the other might be done. In the following sections we will look further into the specific benefits of DB.

1.2 KEY BENEFITS OF DESIGN BUILD

Several studies show that DB provides cost and schedule benefits for owners when compared to DBB. Typically for DB projects there is a shorter overall project schedule with commensurate cost savings. Also if the project is one where innovative construction solutions can be engineered into the design, considerable cost savings can occur during the construction phase of the project.

Complex projects present a better opportunity for innovation that can lead to significant cost savings. An example would be taking construction input and designing access points into a structure so that when installing large components that temporary steel and other temporary and costly means of installing the large components don't need to be field engineered resulting in a cost and schedule savings as well as a safer installation. Table 3 below illustrates some of the benefits of DB over DDB in terms of schedule and cost.

Table 3 Schedule and Cost Comparison DB vs. DBB[1]

Metric	DB vs. DBB
Unit Cost	6.1% lower
Construction Speed	12% faster
Delivery Speed	33.5% faster
Cost Growth	5.2% less
Schedule Growth	11.4% less

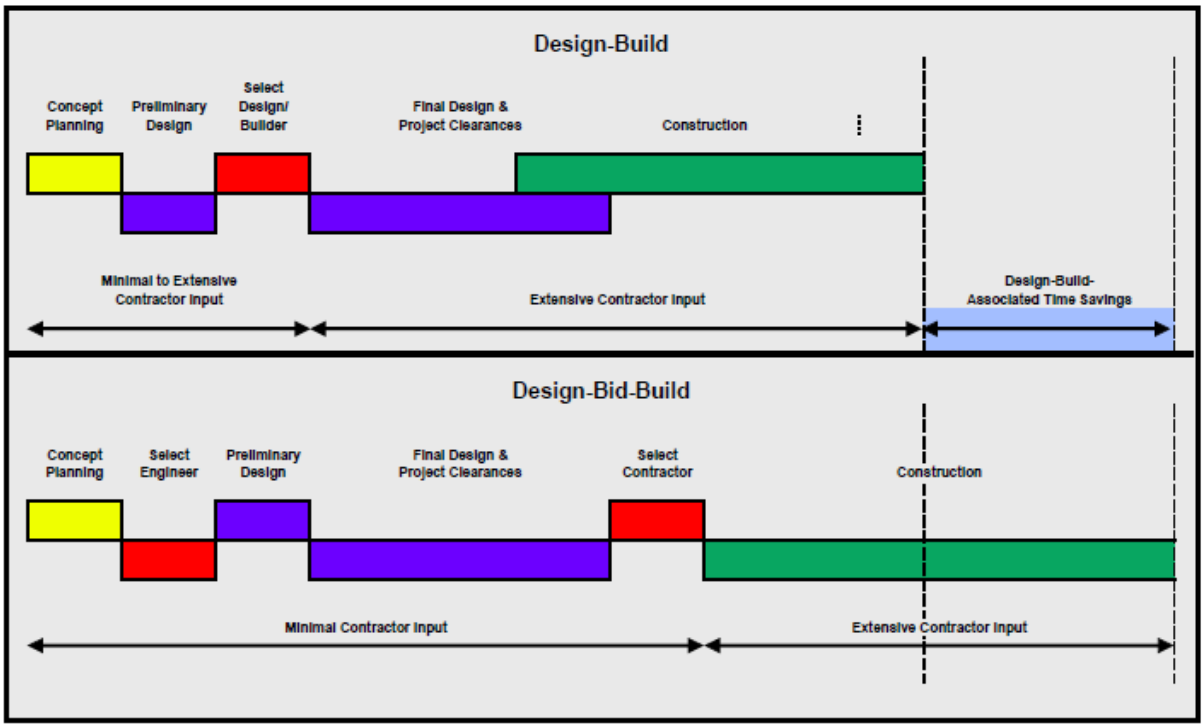
It needs to be stated that without the proper preparation and project selection by the owner and a well written conceptual plan along with open communication and collaboration within the DB contractor's team that there is no guarantee that using DB as a delivery method will result in cost and schedule savings when compared to DDB.

1.2.1 Schedule

One of major differences and benefits of DB is a reduction in the schedule primarily because activities run in parallel rather than sequentially as in DBB. The attached timeline for DB and DBB shows how DB is able to shorten the overall project schedule by having activities run in parallel.

[1] Re: "Comparison of U.S. Project Delivery Systems, "Mark Konchar & Victor Sanvido, Journal of Construction Engineering and Management, Vol 124, No. 6 (1998), pp 435-444.

Figure 3 Design-Build and Design-Bid-Build Timelines[2]



Source: Dr. Keith Molenaar, University of Colorado at Boulder

Depending on the complexity of the project, the tender period could be much greater for a DB project because the DB contractor must develop design drawings and bills of quantities (BOQ) in order to prepare the bid. In DBB the drawings are done by the owner and the DDB contractor merely fills in and prices the BOQ utilizing the drawings to develop quantities and understand issues such as access and complexity of the work.

In DB the contractor will generally work closely with the designer and the procurement team to shorten the schedule as much as possible sometimes deciding to spend more money on design to lessen construction costs or to pay to expedite delivery of a critical piece or equipment to minimize installation costs at site. With the DB model these conversations take place easily and frequently between the DB team members during the bid preparation phase of the project. In DBB this type of collaboration is not possible owing to the fact that the owner's designer is not receiving input from the constructor in the design phase.

[2] Source: Dr. Keith Molenaar, University of Colorado at Boulder. From Design-Build Effectiveness Study done by AECOM for USDOT - Federal Highway Administration – January 2006

1.2.2 Cost

The project cost is generally more dependent on the project type, complexity, and size of the project rather than the delivery method i.e. DB or DBB. Cost savings using DB compared to DBB are not nearly as significant as the schedule savings. A properly executed DB project has more chance of lowering the overall cost of the project; however a poorly executed DB project has a greater chance of costing more than if delivery had been DBB. This is because design changes associated with a DB project have a greater chance of occurring during construction which may impact work already in place. Whereas in DBB the design is complete before the construction starts; therefore, there is more opportunity to make a design change without seriously affecting construction work and costs. This is a good example of why project selection is so important when deciding which delivery method to use.

Projects that have a large number of unknown factors or have the likelihood of being stopped or suspended due to permits or public challenge are not good candidates for DB if these issues can't be resolved prior to award to the DB contractor. If an owner insists on awarding a project with too many unknowns to a DB contractor, the DB contractor will mitigate perceived risk by adding contingency to his price. In this case any cost saving from choosing DB over DBB may not materialize. DBB may have been the better choice as the risks and cost for the unknowns would have been better managed by the owner rather than the DB contractor.

The larger and more complex a project the better the chance of DB saving cost verses DBB. The reason for this is in a complex project the construction experience of the DB contractor is used to provide the designer with information that the designer will use in the design to make the installation work easier. In DBB the a designer without construction experience, often focuses on the end product not how to build it and construction costs on a complex project can go up if things like access and sequencing of the work are not considered at the design stage. If the project is simple or small there is no real advantage to go with DB if cost is the criteria.

Another aspect of project cost that is important to the owner is to have an idea of the projected cost of the project as soon as possible as financing may be a major consideration in the project moving forward. In DBB the cost of the project isn't really confirmed until pricing is received from the constructor. Since 90%-95% of the cost of the project is due to construction and procurement, the owner may have difficulty in securing financing if the true costs of the project are not known early in the project. In DBB the construction costs estimates come after the design is complete and this could be a year or more after the project starts. In DB once the DB contract is awarded the owner has a good idea of the construction costs as well as the schedule to complete the work. One can see from Figure 3 that the DB contractor is selected much earlier in the project life cycle as compared to DBB therefore allowing the owner to know much earlier what the project costs will be.

1.2.3 Quality

Various studies have shown there is no significant difference in quality between DB and DBB projects. In DB the DB contractor will be solely responsible for all quality defects and as long a as the owner provides proper monitoring of the DB contractor's design and construction activities and ensures that the DB contract has liquidated damages for schedule and plant performance the DB contractor is highly motivated to adhere to the quality requirements.

1.2.4 Owner Role in DB

The owner can choose the level of management they feel most comfortable with however in a DB delivery model the owner must be very careful not to interject themselves into the means and methods of the contractor nor put themselves in a position of risk and liability by treating a DB contract as though it is DBB. If a performance specification is issued and agreed to with a DB contractor and they proceed with the work, any requests to change the specification, enhance the design, accelerate the work, increase the number of inspections or reviews by the owner will result in cost impacts to the DB contractor who will likely seek compensation or relief from the owner. Owners that are used to having full control and oversight over each and every aspect of a design or project will have difficulty successfully working with the DB model.

The owner's management team must have experience in administering a DB contract or receive training on the differences between DB and DBB contract delivery methods before being tasked with overseeing a DB contract. The major difference in the role the owner plays in DB verses DBB is that the owner is responsible for developing a performance specification as opposed to a prescriptive specification. A well written performance specification with clear expectations and requirements will enable the DB contractors to put together realistic proposals that will result in fewer claims as the project progresses. If the owner is comfortable with DB and has selected a good DB contractor may of the tasks normally done by the owner's staff in DBB be able to be shifted to the DB contractor.

Design, Design/Construction interface, dispute resolution between the designer and contractor, claims arising from design errors etc are all handled now by the DB contractor. There are however some tasks that should not be shifted to the DB contractor, those being land acquisition, special permitting, management of public opinion, development of the performance specification and end user management. This is because the DB contractor is not the best placed party to manage these tasks, the owner is. In addition since the owner is only managing one interface in DB, fewer management staff from the owner's side are required.

1.2.5 Contract Award

In DBB contract award to the contractor takes place after the bidders have turned in pricing based on complete or nearly complete design. It is relatively easy for the owner to make a determination and award a contract usually based on lowest price.

In DB the contractors are submitting proposals that may have large degrees of variation and it may not be immediately obvious to the owner which proposal represents the best value and most closely meets the intent of the performance specification. The period to evaluate proposals in DB is much longer and more intense than the evaluation in DBB. Contract award in DB takes place early in the project life cycle and follows a much longer proposal phase than in DBB. The owner needs to factor this into to bid schedule to ensure the DB bidders have sufficient time to develop innovative solutions, minimize contingency estimates and to develop a proposal that is clear and easy for the owner to evaluate.

1.2.6 Contractor Role in DB

In the traditional DBB contracting methodology the contractor's focus is on his role which is to construct what the owner has provided in the form of detailed construction drawings and specifications.

In DB the role of the contractor is very different. The contractor is expected to work closely with the designer and provide the following services:

Design Phase Services

- Costing and Estimating
- Value Engineering
- Information Analysis
- Constructability Reviews
- Preliminary Scheduling
- Design Checks
- Long Lead Procurement Analysis
- Selection of Subcontractors
- Review of Commissioning Requirements for Inclusion in the Design

Construction Phase Services

- Fast Tracking of the work
- Recognize and Avoid construction problems caused by design issues
- Research alternatives and feedback to the designer as construction progresses

1.2.7 Designer Role in DB

The designer in a DB role will do the design but due to the interface and needs of the contractor much earlier in the project as compared to DBB, designer is forced to forced to interact on a greater level and more frequently than in DBB. Some designers will find this way of working less structured than what they are normally used to but to be a successful DB team the designer will need to adapt. The basic role, behaviors and outputs of the designer in DB are:

Design Phase Services

- Early engagement with the contractor on how the contractor would like to build the project and then design to support this
- More frequent and less formal communication with the contractor
- Evaluation of alternative proposals put forth by the contractor
- Provision of design information and details that are out of sequence to support the contractors need to price equipment and select subcontractors
- Reliance on a performance specification rather than a prescriptive specification

Construction Phase Services

- Responding to Requests for Information from the contractor
- Evaluation of substitute materials and equipment
- Design Changes
- Collaboration with the contractor to solve problems.

1.3 REQUIREMENTS TO SUCCESSFULLY IMPLEMENT DESIGN BUILD

1.3.1 Project Selection

Almost any project can be tendered as a DB project. There is however several criteria that make a project more likely to succeed as a DB project and help to identify better project candidates.

- Complex projects are good DB candidates because the close collaboration between the designer and constructor can yield large cost savings through innovation and thorough constructability reviews. More highly qualified contractors will be interested in bidding because the evaluation will not be on solely on lowest cost but best value.
- Large projects are good candidates because the DB contractors will invest significant time in developing a DB proposal and on a large project there is more opportunity for them to recover this cost if they win the project. This will increase the interest the contractors will have in bidding the work.

- Projects that do not have onerous permitting issues and have support of the community and government are good candidates for DB. Most DB contractors will not consider spending the money to bid a project that has potential to be suspended or cancelled.
- Projects that deliver revenue are good DB candidates. Toll roads, factories, power plants and projects that produce revenue will start paying back the return on investment the quicker they are completed. DB if done correctly nearly always shortens the project schedule when compared to DBB.

1.3.2 Risk Mitigation

Some owner's think that by using a DB execution model they can shift all risk to the DB contractor. This is not the case. The owner still has liability for the work they did in developing and conceptual design or any information they provided for the DB contractor to use in preparing their bid. The Spearin[3] doctrine provides that an owner is held to have impliedly warranted the adequacy and sufficiency of its plans and specifications. Therefore the owner will have liability if any of the design or information provided to the DB contractor (pre-award) result in cost impacts to the DB contractor. If there are no errors in the information provided by the owner and the DB contractor and owner agree on the performance specification including schedule then a large portion of the risk the owner would have in a DBB model does shift to the DB contractor. The DB contractor will have the risk for the remaining design, the interface with the construction, productivity risk, schedule risk and performance and output risk.

1.3.3 Contract Terms and Conditions

Many parts of the DB contact closely resemble DBB and other delivery method contracts. Dispute resolution, terms of payment, changes, equitable adjustment, and warranty are relatively independent of the delivery system. Items that are somewhat unique to DB include the identification of the scope of the work, design development and owner's review, ownership of documents, establishment of price and limits of liability.

The most important aspect of DB is the definition and agreement of scope between the owner and DB contractor. Since the DB contractor is providing a service rather than just a product, the owner needs to be very clear on what they will provide the contractor to achieve the delivery of the service. Most of the work product provided by the DB contractor is developed post-award where in the DBB model the contractor will have a fully developed set of plans and specifications prior to award. Any ambiguity about what is required pre-award will only result in conflict and claims post-award.

[3] United States v. Spearin, 248 U.S. 132 (1918); Annotation: Construction Contractor's Liability for Defects or Insufficiency of Work Attributable to Latter's Plans and Specifications, 6 ALR3d § 2 at 1397 (1966)

The role of each party during the design development period needs to be clearly defined. The DB contractor is developing a design to meet a performance specification and substantial involvement of the owner in the work can be viewed as turning the performance specification into a prescriptive specification. In this case the owner may be seen as unduly interfering with the work of the DB contractor and cost claims may arise. Additionally involvement of the owner in the design phase may make the owner liable for design errors and subsequent cost impacts later in the project. The owner and DB contractor need to agree on the level and schedule of the owner's involvement during the design phase. In a DB contract the owner's involvement in post-award design work should be limited to reviews that confirm conformance the performance specification.

During the bid phase the owner will have access to design work done by the bidders. The contract needs to be clear on what the owner may and may not do with this information. For instance the losing DB contractor may have had design information that the owner wants the winning contractor to incorporate. The contract should state that the work of the losing DB contractor should be paid for if used by the owner and a clear mechanism established to determine the price. Without this kind of contract language the owner may be prevented from using this information or he may be sued for using it without the losing DB contractor's permission.

Price can be established in different ways but it is normally done as a lump sum at the time of contract award to the DB contractor. If for some reason the owner prefers to wait for construction pricing the DB contractor can be released to develop the design documents on a cost plus fixed fee basis and then develop the final pricing.

Limitations of liability under a DB contract are usually:

- Cap on damages that can be assessed by the owner
- Exclusion of consequential damages
- Waiver of implied warranties
- Limit of liability for defective work to the cost to rectify

Without these waivers many bidders would not accept the risk to do a DB project. The owner needs to understand that these limitations are common in DB contracts and necessary to attract qualified bidders to tender.

1.3.4 Payment Methodology

Usually DB contracts are lump sum. This is because the DB contractor has sufficient information to price the project on a lump sum basis and lump sum clearly locks in project costs for the owner. Payment on a DB contract is normally by agreed milestone. As part of the contract negotiations the owner and DB contractor will agree on a milestone payment schedule of values. The owner will want milestones that represent completion of activities while the DB contractor will want milestones tied to the start of the activities. Final negotiations usually result in a mix of start

and finish milestones that address the needs of cash flow for the DB contractor yet still protect the owner from paying before work is accomplished.

1.3.5 Level of Design

As noted earlier the less the design the better for the owner in DB but some owners prefer to develop more design to ensure they get what they need and want in the final project. Usually 5%-15% but no more than 30% of the design is developed by the owner. If more than 30% is developed then the Detail Design Build (DBB) model should be used as there is little benefit in continuing on with a DB model.

1.3.6 Performance Requirements and Guarantees

This is the most important aspect of a successful DB contract. The owner must spend the time to develop a clear concept of what they want the DB to provide. The concept can be conveyed by drawings and or documents. Sometimes called the Owner's Brief it sets out the owner's requirements for the project. It describes what the end product is supposed to look like, what it is supposed to do and how well it must perform.

The owner must develop clear parameters prior to starting the bidding process. This is a critical document for achieving project success. It articulates and describes the owner's requirements for the end product or facility. It is essentially a performance specification that the DB contractor must meet. It transfers the risk of delivering an acceptable outcome to the contractor. It generally includes:

- Performance Criteria
- Functional Requirements
- General Requirements
- Schedule Requirements
- Owner Involvement especially with engineering review and quality

The Owner's Brief should not be more complicated than necessary so that the contractor's means and methods are not bound. However it needs to contain enough detail so that there is no ambiguity in the requirements. A well thought out and written Owner's Brief is an absolute requirement to minimize conflict during the execution of the project.

1.3.7 Contractor Qualifications

Another key factor to ensure success when using the DB contracting delivery method is to pre-qualify the contractors to ensure they are capable to successfully execute a DB contract. Many contractors will join with a designer to form a joint venture for execution of the project and they fail to understand the fundamental concepts of DB and approach the project as if it were DBB. They fail to understand that they have the responsibility to deliver to a performance specification and what

is required to do that. It is best to only use contractors who have proven DB experience on projects of similar size and scope as what they are being asked to bid on.

1.3.8 Owner Involvement

Although a DB contracting model has been chosen, the owner still needs to be involved in the project and this involvement needs to be clearly understood and agreed to prior to contract award. Key areas are noted below.

1.3.8.1 Design Reviews

The owner needs to be clear on how and when they want to be involved in the drawing and design reviews. More is not necessarily better in DB. It is better to clearly lay out what is expected in the owner's brief than to try to control design after contract award.

1.3.8.2 Quality Control

If the owner has done a good job of pre-qualifying the contractors, maintaining quality should not be an issue as the DB contractor has 100% responsibility for this aspect of the work. The owner should monitor however to confirm conformance to the DB contractor's approved QA/QC plan and to be especially vigilant if the DB contractor begins to lose schedule or appear to be having financial issues. Shortcuts in the design, construction or the design/construction interface may be taken by the DB contractor to compensate for schedule or cost issues.

1.3.8.3 Payment

If the contract is based on lump sum with milestone payments, it will be up to the owner to confirm achievement of the milestone and make payment per the terms of the contract. Sometimes owners require the DB contractor to adhere to a payment schedule and do not allow the DB contractor to bill for milestones achieved that are above the approved payment schedule.

1.3.8.4 Commissioning and Closeout

Depending on the capability of the DB contractor and the desire of the owner to be involved, the owner may participate in commissioning checks of systems and equipment but not normally lead the activities. All performance tests must be witnessed by the owner. Closeout documentation is normally the responsibility of the DB contractor and the owner will review for completeness before accepting and making final payments.

2.0 INP II West Bank DB Implementation

2.1 SPECIFIC INP II WB ISSUES

The purpose of this paper is twofold, one is to provide information on the DB contracting model and the other is to see how it could be applied to INP II and what value it might bring. The following sections look at the application of DB in an INP II context.

2.1.1 Funding Requirements

Since the work on INP II is funded by the US Government and funds are obligated to the program, work is able to proceed. This allows flexibility in examining and determining which projects might be good candidates for DB and if DB should be pursued.

2.1.1.1 Obligation of Funds

In the event that additional sums of funding become available and must be obligated quickly the preferred contracting method for doing this is DB. DB will allow obligation of the entire project cost much quicker than DBB unless the designs are complete, in which case DBB is the preferred delivery method. Once design is complete the bid period is very short and construction costs can be obligated to the IQC contractor quickly, there is no advantage to use DB.

2.1.2 Contract

Contracts used in a typical DB project are a prime contract between the owner and the DB contractor and subcontracts between the DB contractor and their subcontracts. If the owner utilizes the services of an A&E there will be a contract between these two parties. Most DB prime contracts are done on a lump sum basis. Seventy five percent of DB contractors said that the most commonly used contract is a lump sum contract[4]. Standard contract forms for DB can be found at:

- American Institute of Architects
- Associated General Contractors of America
- The Engineer's Joint Contract Documents Committee
- The Design-Build Institute of America
- Federation Internationale des Ingenieurs-Counseils (FIDIC)

2.1.2.1 Current IQC

Work on INP II is delivered under the requirements of the Federal Acquisition Regulations. The use of DB on INP II is allowed by the current INP II IQC contract for construction and is supported by FAR. With this in place the two main requirements are the project selection and the qualification of the contractors among other requirements listed in FAR 36.3 Phase One. The FAR requirements are very much in line with commercial best practices when implementing DB and would not be difficult for a DB experienced owner or A&E to implement.

[4] Zweig White & Assocs. Inc., Design-Build Survey at p. 26 (1999)

Provisions of the current IQC for the utilization of DB, along with FAR36.3- "Two Phase Design-Build Selection Procedures" are extracted below as follows:

B.2 CONTRACT TYPE AND SERVICES

This is an Indefinite Quantity Contract (IQC). The Government intends to issue Firm Fixed Unit Price task orders for the construction services required under this contract. The Government may issue cost type task orders should the services contemplated include ***Design-Build*** or Operations and Maintenance (O&M).

C.1. PURPOSE

The purpose of this Indefinite Quantity Contract is to obtain the services of multiple US Construction contractors to implement Task Orders for the construction, rehabilitation and/or improvement of infrastructure works throughout the West Bank and, if conditions permit, Gaza, that USAID may specify and describe. The scope of work may in general terms include, but not be limited to, the following:

…

3. Sanitation infrastructure including solid waste management and disposal, wastewater treatment and reuse, pollution control, and/or ecological sanitation. This may include the ***design-build*** or only construction of new wastewater treatment plants, commissioning and start-up of the new plants, and maintenance for periods to be specified in respective RFTOPS following which the PA would take over the facilities;

…

7. ***Design-Build*** of facilities and infrastructure in any of the sectors contemplated in this Scope of Work. Work may also include start-up, commissioning, operations and maintenance for eventual take over by the PA. At present this does not represent a substantial portion of the Scope of Work but is retained as an option that may be exercised in the future under the INP II based on USAID priorities and objectives. Design capability requirements and/or facilities O&M requirements will be defined in respective RFTOPS at such time as they are issued;

C.3 STATEMENT OF WORK

The major types of construction deliverables under this activity will likely vary, though roads and water are expected to represent the largest share of the construction activities. Potential types of Construction Task Orders include, but are not limited to, the following representative activities:

- ***Design-Build*** task orders are anticipated and included in the Scope of Work of this contract

- ***Design-Build*** task orders are anticipated and included in the Scope of Work of this contract, and may include Start-up, Commissioning, Operations and Maintenance of INP II facilities and infrastructure for eventual take over by the PA

C.8 TASK ORDERS AND INP II CONSTRUCTION CONTRACTORS' RESPONSIBILITY

Each INP II Construction Contractor will be responsible to USAID for the efficient, successful, and timely implementation of all awarded Task Orders in accordance with respective statements of work, plans, specifications, budgets, schedules, quality and performance standards. ***Design-Build*** services are expected to be utilized for certain construction projects under this IQC. In all cases, the development and refinement of shop drawings under the respective task order shall be the sole and absolute responsibility of the respective INP II Construction Contractor.

C.8.1 General Information Concerning Infrastructure Needs

f. ***Design-Build*** and other Infrastructure Related Services Evolving political/security conditions and other strategic factors may require USAID to expedite the completion of infrastructure projects contemplated under the INP II. USAID may identify the need to ***design-build*** (and possibly fast-track) facilities and infrastructure in any of the sectors contemplated in this Scope of Work. Depending on the complexity of the project and the state of PA capabilities to effectively operate and maintain facilities and other infrastructure implemented under the INP II, work may also include start-up, commissioning, operations and maintenance of INP II infrastructure for eventual take over by the PA. At present these items do not represent a substantial portion of the Statement of Work. They are retained as an option under INP II that may be exercised by USAID based on USAID priorities and objectives. Required contractor team capabilities and experience requirements will be defined in respective RFTOPs at such time as they are issued.

F.6 DESIGN-BUILD

General

USAID may issue design-build task orders under the INP II IQC to combine design and construction into a single RFTOP and subsequent task order award. Should this be the case, then the appropriate clauses will be inserted into the respective task orders.

Additionally, in such instances USAID will develop, either in-house or through the A&E firm, a scope of work that defines the project and states the Government's requirements. The scope of work may include criteria and preliminary design, budget parameters, and schedule or delivery requirements.

In any instance where ***design-build*** task orders are issued, this RFP shall have constituted phase one of the two phase ***design-build*** selection procedures described under FAR Part 36.3. In accordance with FAR Part 36.6, the A&E firm will advise and support USAID throughout any design-build activities.

FAR Subpart 36.3—Two-Phase Design-Build Selection Procedures

36.300 Scope of subpart.

This subpart prescribes policies and procedures for the use of the two-phase design-build selection procedures authorized by 10 U.S.C. 2305a and 41 U.S.C. 253m.

36.301 Use of two-phase design-build selection procedures.

(a) During formal or informal acquisition planning (see Part 7), if considering the use of two-phase design-build selection procedures, the contracting officer shall conduct the evaluation in paragraph (b) of this section.

(b) The two-phase design-build selection procedures shall be used when the contracting officer determines that this method is appropriate based on the following:

(1) Three or more offers are anticipated.

(2) Design work must be performed by offerors before developing price or cost proposals, and offerors will incur a substantial amount of expense in preparing offers.

(3) The following criteria have been considered:

(i) The extent to which the project requirements have been adequately defined.

(ii) The time constraints for delivery of the project.

(iii) The capability and experience of potential contractors.

(iv) The suitability of the project for use of the two-phase selection method.

(v) The capability of the agency to manage the two-phase selection process.

(vi) Other criteria established by the head of the contracting activity.

36.302 Scope of work.

The agency shall develop, either in-house or by contract, a scope of work that defines the project and states the Government's requirements. The scope of work may include criteria and preliminary design, budget parameters, and schedule or delivery requirements. If the agency contracts for development of the scope of work, the procedures in Subpart 36.6 shall be used.

36.303 Procedures.

One solicitation may be issued covering both phases, or two solicitations may be issued in sequence. Proposals will be evaluated in Phase One to determine which offerors will submit proposals for Phase Two. One contract will be awarded using competitive negotiation.

36.303-1 Phase One.

(a) Phase One of the solicitation(s) shall include—

(1) The scope of work;

(2) The phase-one evaluation factors, including—

(i) Technical approach (but not detailed design or technical information);

(ii) Technical qualifications, such as—

(A) Specialized experience and technical competence;

(B) Capability to perform;

(C) Past performance of the offeror's team (including the architect-engineer and construction members); and

(iii) Other appropriate factors (excluding cost or price related factors, which are not permitted in Phase One);

(3) Phase-two evaluation factors (see 36.303-2); and

(4) A statement of the maximum number of offerors that will be selected to submit phase-two proposals. The maximum number specified shall not exceed five unless the contracting officer determines, for that particular solicitation, that a number greater than five is in the Government's interest and is consistent with the purposes and objectives of two-phase design-build contracting).

(b) After evaluating phase-one proposals, the contracting officer shall select the most highly qualified offerors (not to exceed the maximum number specified in the solicitation in accordance with 36.303-1(a)(4)) and request that only those offerors submit phase-two proposals.

36.303-2 Phase Two.

(a) Phase Two of the solicitation(s) shall be prepared in accordance with Part 15, and include phase-two evaluation factors, developed in accordance with 15.304. Examples of potential phase-two technical evaluation factors include design concepts, management approach, key personnel, and proposed technical solutions.

(b) Phase Two of the solicitation(s) shall require submission of technical and price proposals, which shall be evaluated separately, in accordance with Part 15.

2.1.2.2 INP II Stand Alone DB

In the event that USAID prefers to issue a standalone DB tender outside the current IQC contract, this could be done. The reason to do this would be to bring other contractors who are not currently in the INP II IQC contract to the West Bank to compete on the project. In discussions with the current IQC contractors they indicated that if they were not a member of the current IQC team, they would not consider bidding on a DB project in the West Bank unless the value of the project exceeded $30 million USD. Since all the current IQC members support doing DB under the current IQC and they have DB experience there is not much advantage to issue a standalone DB tender for the West Bank.

2.1.2.3 INP III IQC

The current IQC contains sufficient information on implementing DB but when the current contractors were qualified, emphasis was on DBB construction and not on DB. If DB is going to be implemented on INP III then the selection of the contractors will need to include criteria for DB to ensure that contractors fully capable of implementing DB are selected. The current IQC contractors have indicated they all have varying degrees of DB experience. As part of Phase One DB solicitation work as specified in FAR 36.3 this will need to be validated in the prequalification exercise.

2.1.3 INP II Staffing Requirements to Implement DB

The current INP II Program Management team has some experience with DB. Additional support in drafting the solicitation and performance specification will be needed from the BVSPC home office to support the site team. Support will also be needed during review of the contractor's proposals and selection of a contractor. Other activities such as drawing reviews, oversight and construction monitoring will not require any additional support or special training.

2.1.3.1 Organization to Manage DB Work

In DB more of the work is shifted to the DB contractor than is currently done in the DBB model. As an example management of the design construction interface that is currently done by USAID and the Program Management Team shifts to the DB contractor. Detailed reviews of submittals, shop drawings and responding to RFI's are minimized by using the DB model. Monitoring of the site activities will likely go up to ensure that the DB contractor is building to the agreed performance specification. Other than these changes there are no major changes required for the INP II team to manage a DB contract.

2.1.3.2 Capabilities and Experience Required

The current INP II team will need some training on DB, how it works and how to manage the contracts and work. This training can be easily delivered by experienced DB managers from the BVSPC home office. The current team has very good DBB experience and can easily be trained to manage DB work.

2.1.4 Project Selection for DB in the West Bank

Probably one of the most important factors to execute a successful DB project in the West Bank is the selection of the project. On INP II there are a limited number of types of projects and most are not high value or technically complex. High value meaning projects over $20 million and complex in the sense of process, mechanical and electrical systems. This limits the number of projects that would be good DB candidates or that could not be successfully performed using DBB. Further inhibiting the use of DB is the complex and onerous permitting process in the West Bank.

Table 2 Selection of Delivery Method DB vs DBB is appropriate to use in helping to make the determination if a project should be delivered as DB or DBB.

2.1.4.1 Area A, B, C

Permitting is the most important criteria to consider when deciding if a project is a good candidate for DB in the West Bank. If a project or part of a project (for example a regional road or pipeline) is in Area C, DB should not be considered for a contracting method. Besides the time and effort it takes to get the permits, the Israeli authorities require 100% of the design to be done before construction can start. If this is the case then DB makes no sense and DBB should be chosen. Area A and B with less restrictions on permitting and percent complete of drawings can be considered with Area A having preference.

2.1.4.2 Water/Wastewater Treatment Plants

The best candidates for DB will be water and wastewater plants in Area A or B where JWC approval is in place. These projects will likely be large enough, complex enough and more easily permitted to make DB a good choice. However if design for a project is very advanced then DBB should be used as most of the contractors can finalize the design themselves and have the Program Management Team review the shop drawings. There is no real benefit in time savings or cost if the design is advanced to the point the contractor can finalize the work. A quick look and application of some the criteria reveal that there are two possible DB candidates in the current INP II portfolio of perspective projects (the data in this table is currently under review as it was developed in 2011):

Table 4 INP II Water Wastewater Project DB Candidates

WWTP PLANT	PWA PRIOIRTY	AREA	PUBLIC	LAND	COMMENTS
Al Yamoun	1	B	Favorable	Available	Very Strong DB candidate depending on design status and permitting
Yabad	2	C	Favorable	Available	Poor DB Candidate, Area C
Dura	3	B	Favorable	Available	Possible DB Candidate
Azzoun	4	C	Favorable	Available	Poor DB Candidate, Area C
Tarqumia	5	C	Favorable	Not Available	Poor DB Candidate, Area C, Land not available
Qabatia	6	C	Favorable	Not Available	Poor DB Candidate, Area C, Land not available

2.1.4.3 Wells and Pump Booster Stations

Booster pump stations in Area A and B would be good candidates for DB. Performance specifications can be easily written and standard details of design can be used by the DB contractor. New wells would not be good candidates as they require Joint Water Committee (JWC) approval and the JWC is not meeting on a regular basis. Refurbishment of existing wells could be considered for DB but is not a very good candidate due to limited opportunity for innovation.

2.1.4.4 Network & Reservoirs

Networks would likely not be good candidates if they are in “brownfield” or urban settings. This is because too many unknown conditions would make it difficult for the DB contractor to develop the design and price it without putting in large amounts of contingency money. It would be better for USAID to do this work as DBB as changes can be more easily addressed with less cost impact. Networks where there were fewer unknown conditions might be considered for DB. Reservoirs while not being complex could be considered for DB but the current INP II design team

can develop a reservoir specification and detailed design fairly quickly and tender the project as DBB, so there is not much advantage to doing a reservoir on a DB basis unless it was being done to trial the DB process.

2.1.4.5 Pipelines

New pipelines that are not in urban or "brownfield" areas would be good candidates for DB. Though not complex, there could be some cost and schedule savings through the use of innovative installation solutions developed by the DB team. As long as the specification issued by USAID is not prescriptive and limiting, the DB contractor might be able to bring value by defining routes that resulted in schedule and cost savings.

2.1.4.6 Roads

In the US many road projects are delivered using the DB model but these tend to be large projects of over $200 million dollars and include bridges and tunnels. In the West Bank bridges and tunnels are not allowed due to security restrictions imposed by the Israeli government. The potential to use innovation in the design phase to shorten construction schedules and cost is limited. The potential savings coming from a road project done as DB might be the overlap of construction and design as opposed the sequential design construct model when using DBB.

2.1.5 Contractors and Capability Assessment

All current IQC contractors were interviewed about the possibility of doing DB projects in the West Bank. All were very supportive of this and all claimed to have experience delivering DB projects. All were aware of the challenges of working in the West Bank and still thought that given the right conditions a project could be successfully delivered using the DB model. They were unanimous in what activities USAID had to be responsible for before they thought a DB project could be bid.

- Permits
- Land Acquisition
- Right of Way
- Geotech Studies
- Land Surveys

2.1.5.1 Current IQC Contractors

The current IQC contractors are listed below along with their experience doing DB projects. For anticipated projects in the West Bank it should be possible to have at least three qualified bidders out of the six IQC contractors.

Table 5 Current IQC Contractors and DB Experience

CONTRACTOR	DB EXPERIENCE
CDM Smith	DB in Jordan, Lebanon, Oman and Pakistan. Utilize in-house design team
IRD	Teams with CH2M-Hill for design, limited DB experience
APCO	Team with designer to do DB buildings in Michigan in the US
Morganti	Wastewater plant in Jordan and DB in Oman and Qatar, in-house design
AICI	USACE DB experience, runways, water treatment, US Embassy $100 M DB
BLD	Have done several DB in the US by teaming with a designer

2.1.5.2 Local Contractors

As a result of discussions at site a determination was made that the local West Bank contractors do not have the experience to do DB nor could they pre-qualify. They can do DBB but are not qualified to perform DB projects as the prime DB contractor.

2.1.6 DB Pre-Qualification Requirements

As part of the Phase One DB work a pre-qualification of the interested IQC contractors will be required. USAID and BVSPC will need to prepare this. Criteria to evaluate as well as the methodology to apply will need to be defined. As an example, criteria for pre-qualifying a contractor for a waste water project may look like Table 6 below.

Table 6 DB Contractor Pre-Qualification Scorecard

CATEGORY	POINTS
Average Annual Turnover[5]	Pass/Fail
1. Structure and Organisation	30
2. Financial Statement information	40
3. Experience	400
4. International and West Bank Experience in the last 10 years	250
5. Personnel Resources	100

[5] The financial check is rrequired to demonstrate the financial strength of the DB contractor as they will take on more risk than in traditional DBB and need to be able to withstand negative cash flow issues. Also to demonstrate that the project they are bidding will not represent more than 25% of their annual revenue. If more than 25% of their annual review, poor performance on this one project could bankrupt the company during the project.

6. Project Management Expertise	80
7. Equipment and Facilities	50
8. Subcontracting Information	50
Total Points Available	**1,000**

The methodology for scoring needs to be clearly stated in the pre-qualification request and the evaluation team needs to follow this strictly so that protests from contractors not prequalified will have no basis. As an example to score the section No. 3 above "Experience" in Table 5, specific relevant information that can be documented is presented by the contractor. By studying the Table 6 below which is included in the pre-qualification document, the contractor can see what how No. 3 "Experience" is being scored.

Table 7 DB Contractor Pre-Qualification - Experience

CRITERION	DESCRIPTION	AVAILABLE POINTS	POINTS AWARDED
3.1	Design Build Experience in the last 10 years	80	
3.2	Wastewater Treatment Plant Experience in the last 10 years	250	
3.3	WWTP Works in last 10 years completed on time	40	
3.4	Client References	30	
	TOTAL POINTS	**400**	

Further granularity is possible as shown in Table 7 for item 3.3 in Table 6. When properly structured the pre-qualification process will limited subjectivity and provide transparency in the selection of the DB contractors who will actually move to Phase Two of the procurement process. It also allows contractors to make an early determination as to whether or not they should continue to spend money and resources on a particular proposal as they will be able to judge themselves how likely it is they would be selected to move to the next phase in the procurement process.

Table 8 DB Contractor Pre-Qualification Timely Completion

3.3 TIMELY COMPLETION	POINTS
All completed on time	40
> 75% completed on time	20
> 50% completed on time	10

< 50% completed on time	0

2.1.7 Local Regulations Affecting DB in the West Bank

In the past in the there were many regulations that prevented a designer from doing construction work and a contractor from doing design work. This was done as a kind of "check and balance" as it was thought that an independent designer was needed to ensure the contractor installed the work as designed and did not compromise on quality or deviate from the design. Experience with DB shows this is not required and that quality is not a function of the delivery model. However in some areas such as the West Bank this separation of duties still exists. Local designers cannot be contractors and local contractors cannot be designers. In the case of an international contractor building projects funded by international sources this restriction does not apply. DB work on INP II is thus permitted.

2.1.8 DB Tender Requirements Phase Two

The minimum DB tender requirements are spelled out in FAR 36.3 for work on INP II under the current IQC. The Phase One work is basically the pre-qualification of the contractors and Phase Two is the preparation of the actual proposal and pricing for the proposal. Noted before is the requirement for the DB contractor to prepare much more information for DB as compared to DBB. This is what causes the DB proposal schedule to be longer than the traditional DBB proposal schedule and needs to be accounted for in the overall project schedule. Also USAID will need to prepare the owner's brief and performance specification prior to Phase Two to allow the DB contractor to prepare the DB proposal. USAID will not need however to prepare detailed design as is done in DBB.

2.1.8.1 Scope of DB Phase Two Work and Responsible Party for INP II

Successful implementation of DB in the West Bank will require recognition and management of some very specific risks found in the West Bank. These risks as well as the roles of each participant need to be clearly defined and understood by all parties.

2.1.8.1.1 Owner's Brief and Conceptual Design

USAID with the assistance of BVSPC will need to prepare the performance specification, conceptual drawings, preliminary milestone schedule, performance requirements and preliminary budget for each DB project. During Phase One and Two the preliminary budget is not shared with the prospective DB contractors but is prepared to help in the internal evaluation of the Phase Two proposals. The schedule prepared should be at a Level One very high level schedule, be milestone based and show the activities for the Phase One and Two as well as the post award work. Part of the Phase Two evaluation process will be to see if the DB contractors can improve on the preliminary schedule.

2.1.8.1.2 JWC approvals and Permits

JWC approvals and permit status and requirements will need to be clearly stated in the performance specification. Based on current experience USAID will still be responsible for the permits with support provided by BVSPC.

2.1.8.1.3 Land Acquisition

Land acquisition status and requirements will need to be clearly stated in the performance specification. Based on current experience USAID/PWA will still be responsible for the land acquisition with support provided by BVSPC.

2.1.8.1.4 Surveys

Results of land surveys will need to be clearly stated in the performance specification. Based on current experience USAID will still be responsible for the land surveys with support provided by BVSPC. As this is pre-ward information USAID/BVSPC will be responsible for the accuracy of the information.

2.1.8.1.5 Geotechnical and Subsoil Investigations

Results of geotechnical surveys will need to be clearly stated in the performance specification. Based on current experience USAID will still be responsible for the land surveys with support provided by BVSPC. As this is pre-ward information USAID/BVSPC will be responsible for the accuracy of the information.

2.1.8.1.6 Design

USAID/BVSPC will need to provide very little in the way of design for the Phase Two proposal work, generally only referencing standards to be followed unless there is a need for the DB contractor to use a specific treatment process for example or use a certain type or manufacturer of equipment or to match some existing condition. For any design or prescriptive specification provided by USAID/BVSPC prior to contract award, USAID/BVSPC will have responsibility for the accuracy of the information.

The contractors will prepare general design drawings, lists of equipment and proposed suppliers during Phase Two to enable USAID/BVSPC to evaluate their approach and compliance with the performance specification. USAID/BVSCP will need to provide a list of the minimum design and drawings required in Phase Two to the DB bidders. Work product of the bidders remains the property of the bidders unless otherwise agree to by USAID and the bidders.

2.1.8.1.7 Project Execution Plan

The DB contactors will develop and provide their proposed project execution plan for review by USAID/BVSPC. The plan must be in enough detail that USAID/BVSPC can determine conformance to the performance specification and that the bidder understands the scope of the work, the expected outcome and the DB process. As with any work product produced in Phase Two, the ownership of the plan is with the bidder unless otherwise agreed.

2.1.8.1.8 Quality

As part of the owner's brief and conceptual plan, USAID/BVSPC will clearly identify what QA/QC standards are to be followed; roles and responsibilities of the different parties during project execution and any witness or hold points that must be included in the bidders plan.

2.1.8.2 Level of Design Provided by USAID

A decision of how much design to provide to the DB bidder in the owner's brief must be decided on a project by project basis and on the expected experience level and capability of the potential DB contractors. Since DB within INP II is an unproven delivery model, a higher level of design is proposed until experience and results dictate otherwise. For water and waste water plants this should be about 30%, for roads 20% and for networks 20%.

2.1.8.3 Technical Evaluation

During the Phase Two evaluation USAID/BVSPC will need to spend a considerable amount of time and effort reviewing proposals and making a decision as to which proposal best meets the technical requirements of the owner's brief and performance specification. The bidders should be ranked technically before cost information is reviewed to prevent cost from influencing the technical evaluation. Once bidders are ranked based on technical and cost proposals, contract discussions should take place starting with the highest ranked bidder to ensure there is agreement on the scope and performance requirements, liquidated damages and other terms and conditions of the contract.

The following will be evaluated with input not only from USAID/BVSPC but the ultimate end user of the plant or road and various affected parties.

- Preliminary Engineering Designs
- Management Team
- Expected Performance Outcomes
- Construction Plan
- Project Execution Plan
- Schedule
- QA/QC Plan
- Community Management Plan
- Health Safety and Environmental Plan
- Procurement Plan
- Lump Sum Price
- Payment Schedule
- Proposed changes in Terms and Conditions
- Proposed Subcontractors

2.1.8.4 Special DB Contract Requirements for INP II

In addition to the general contract clauses required in a DB contract, special clauses dealing with circumstances that might occur in the West Bank need to be included.

2.1.8.4.1 Off Ramps

Once the DB contract is awarded the DB contractor is very sensitive to any changes or impacts that can affect their work. Impacts outside the control of the DB contractor likely will result in claims and variation orders to USAID. The INP II DB contracts need to recognize that there is a high likelihood that issues beyond the control of all parties may impact the project potentially requiring suspension or cancellation.

2.1.8.4.2 Suspension and Termination Clauses

All contractors working in the West Bank will be aware of the potential for project suspensions or terminations. Contract doctrine establishes that each party act in good faith and deal fairly with the other. It is best then to consider all the possible impacts of working on a DB project in the West Bank and build the mechanisms to deal with these impacts into the DB contract so that both parties are treated fairly.

Generally if a project is suspended longer than an agreed period or eventually abandoned, the DB contractor will be entitled to reimbursement of reasonable costs incurred up to that point less any payments already received for work performed. Some contracts deal with suspension of work by establishing a fixed per diem rate that will be paid to the contractor during the suspension period. Additionally the DB contractor may be asked to price in a certain number of days of suspension that will not be compensated. The per diem payment will only are be applied to days above the non-compensable suspension days. On INP II the contractors should be required to accept a certain number of days of suspension for convenience without entitlement to a price increase or time extension. This will result in greater cost certainty at the time of contract award.

Another methodology to consider for project termination and compensation is to provide for cost-plus payment only if the project is terminated early in the design -build process. If the project is terminated later, the DB contractor will be entitled to retain milestone payments already earned and be paid demobilzation and other costs associated with termination.

If the possibility exists that a project may restart, there needs to be contract clauses that clearly state how long the original proposal cost is valid so that the work can be restarted within this time period without discussion regarding increases in the contract price.

2.1.8.4.3 Acceptable USAID Risks in using DB

USAID will need to determine what their acceptable level of risk is based on the importance and need for a project to move ahead on a DB basis as opposed to continuing using DDB. A major

risk in doing DB is significant cost of delays accruing to the owner when the contractor is impacted by events outside the control of the contractor.

2.1.8.4.4 Obligation of Funds

In DB, funds are obligated much earlier in the project than in DBB. Cash flow management is different in DB and DBB so this will need to be considered when utilizing DB.

2.1.8.4.5 Risk Management Options

DB risks for the owner are significantly reduced as compared to DBB risks. However the owner is still responsible for any work product they produce before contract award, interference by the owner during contract performance can result in claims by the DB contractor and impacts outside the control of the contractor will be the owner's responsibility. Most DB risk can be mitigated by good project management practices and a thorough understanding of what DB is and how it works. Mitigation of risk will require experienced DB professional managers on USAID and BVSPC's staffs until the INP II team develops experience. Proper selection of projects will also be a key risk mitigation factor.

2.1.8.4.6 Performance Requirements

USAID/BVSPC will need to prepare clear performance requirements prior to moving ahead on DB in the West Bank. The first DB performance specification will involve a substantial learning curve but fortunately BVSPC is very experience in the DB model from the owner's side as well as the contractor's side and provide key support in the development of the performance specification and bid package.

2.1.8.4.7 Contingency

USAID will need to examine what options are available for project contingency. The obligation of funds should include some form of contingency that is available to deal with cost impacts the USAID as the owner in DB contracting would be responsible for. BVSPC can help to advise what level of contingency should be allocated for a given project.

3.0 Conclusions

3.1 REVIEW OF OBJECTIVES

The two main objectives were to explain what the Design Build contracting method is and how it might be applied to projects through the INP II. Both required extensive research. There are many publications and sources on what Design Build is but very little information or experience on how it might be applied to projects on the West Bank. The study allowed for an in-depth look at how DB might be applied to projects on INP II in the West Bank and captures much of the experience of the people currently working in the West Bank.

3.2 BENEFITS OF VARIOUS OPTIONS

Design Build does have numerous advantages for Design-Bid-Build including savings in schedule, cost, early knowledge of project costs, and ability of early obligation of project funds and limiting the risk to the owner. In an environment like the West Bank the aspect of permitting and the requirement for fully developed design in some cases diminishes the value of DB as a contract delivery methodology leaving DBB as the preferred choice.

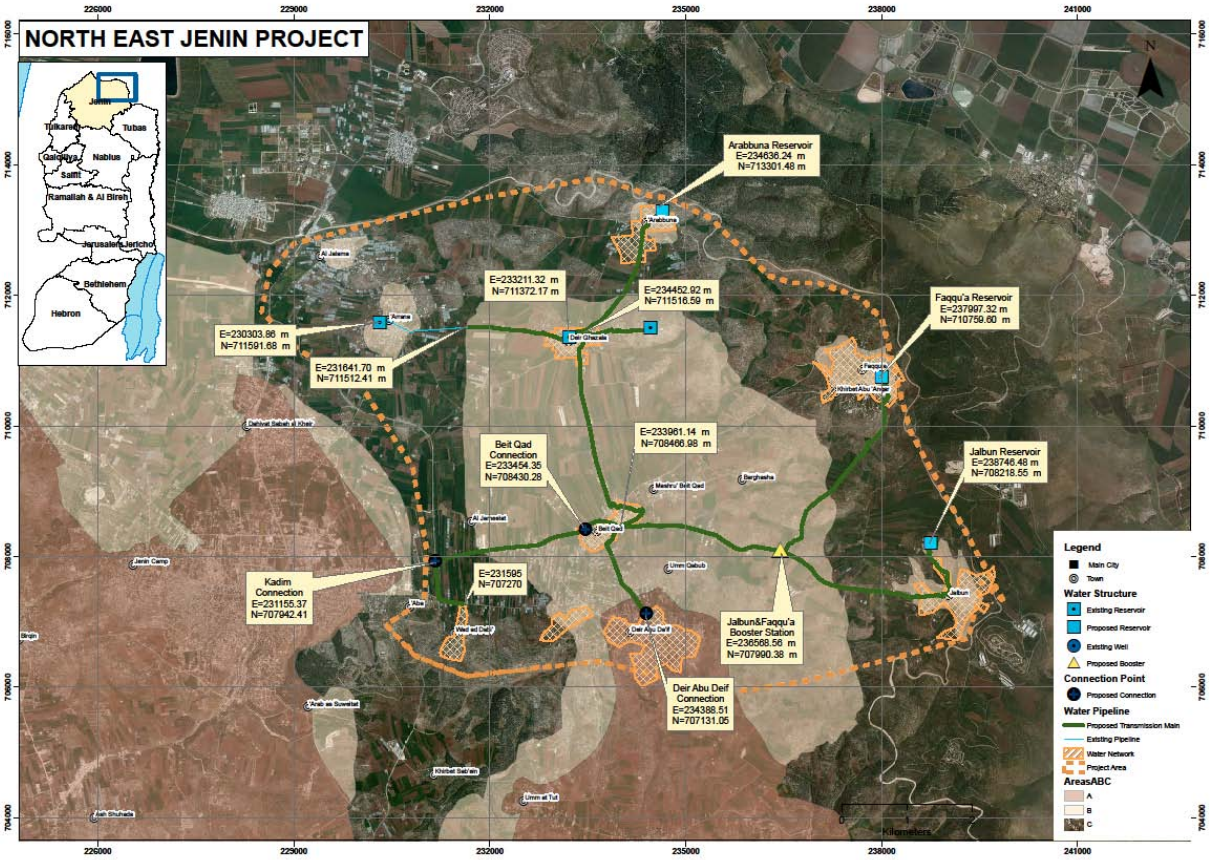
3.3 RECOMMENDATIONS

- Perform a general DB pre-qualification of the existing IQC contractors
- Indentify all possible DB project candidates and rank them as to DB suitability
- Develop several "On the shelf" conceptual designs and performance specifications based on these rankings to have if DB moves ahead on these projects
- Develop a INP II program specific DB manual that clearly identifies processes and procedures for all phases of the DB contracting model
- Review current IQC contract T&C for DB application and develop special clauses as needed.
- Provide DB management training to the INP II staff
- Trial at least one DB project

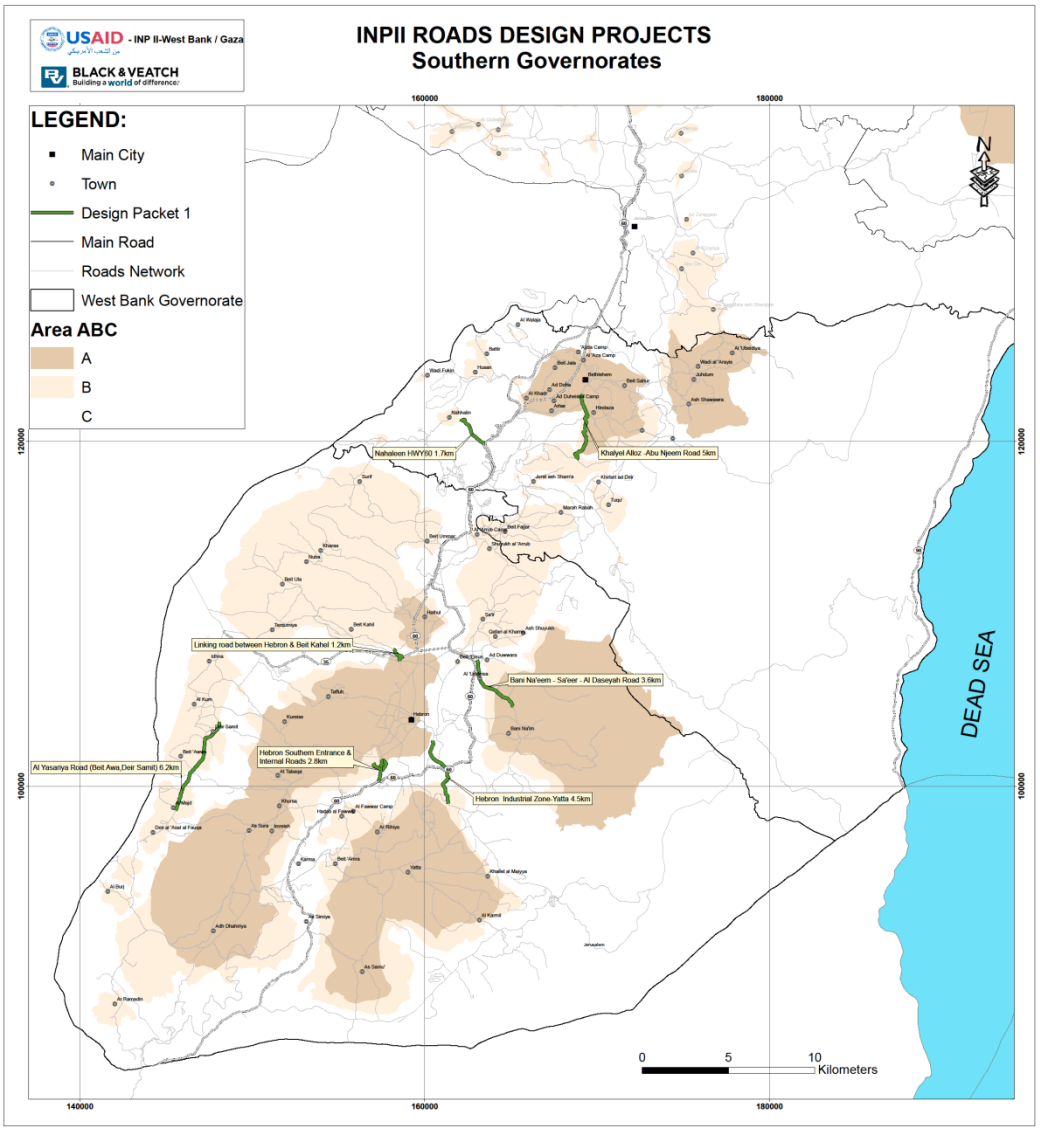
3.4 FOLLOW-ON ACTIONS

- Review of this study by interested parties
- Confirm DB will be used by INP II and develop timeline

Appendix A. North East Jenin Map Showing Area A, B, C



Appendix B. Area Map A, B, C Southern Roads



Appendix C. Permitting Flow Chart Area A & B

Water And Wastewater Projects
(Areas A&B)

Conceptual Design 5%:
•Alignment & Sites
•Scope
•Facility Descriptions
(1 to 2 months)

JWC Approval
(3 to 12 months)

Preliminary Design (15 to 30%)
•Performance Specs
•Testing & Sampling & Surveying
•Bidding Documents
(3 to 6 months)

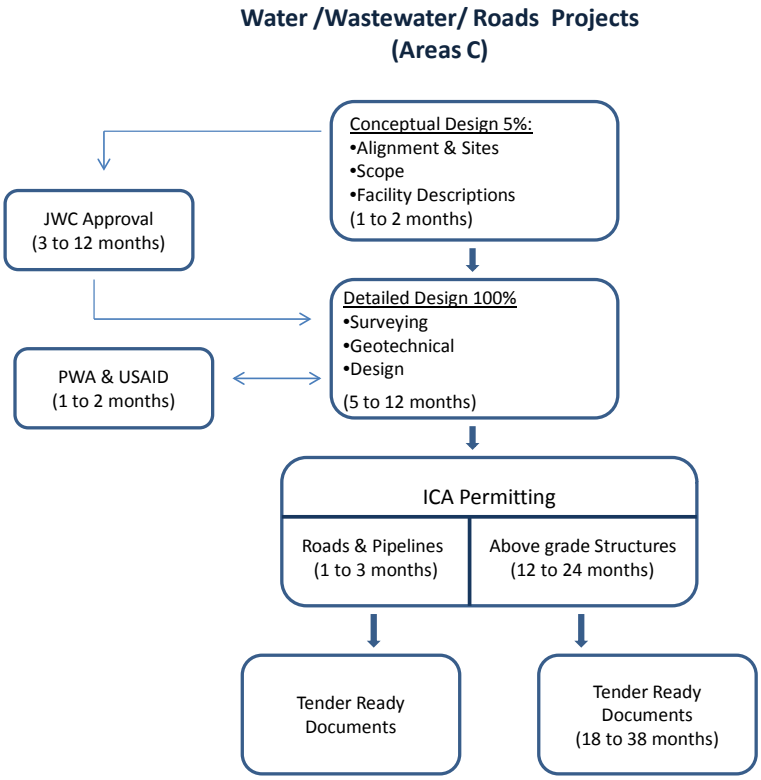
Detailed Design 100%
•Surveying
•Geotechnical
•Design
(5 to 12 months)

PWA & USAID
Review &Approval
(1 to 2 months)

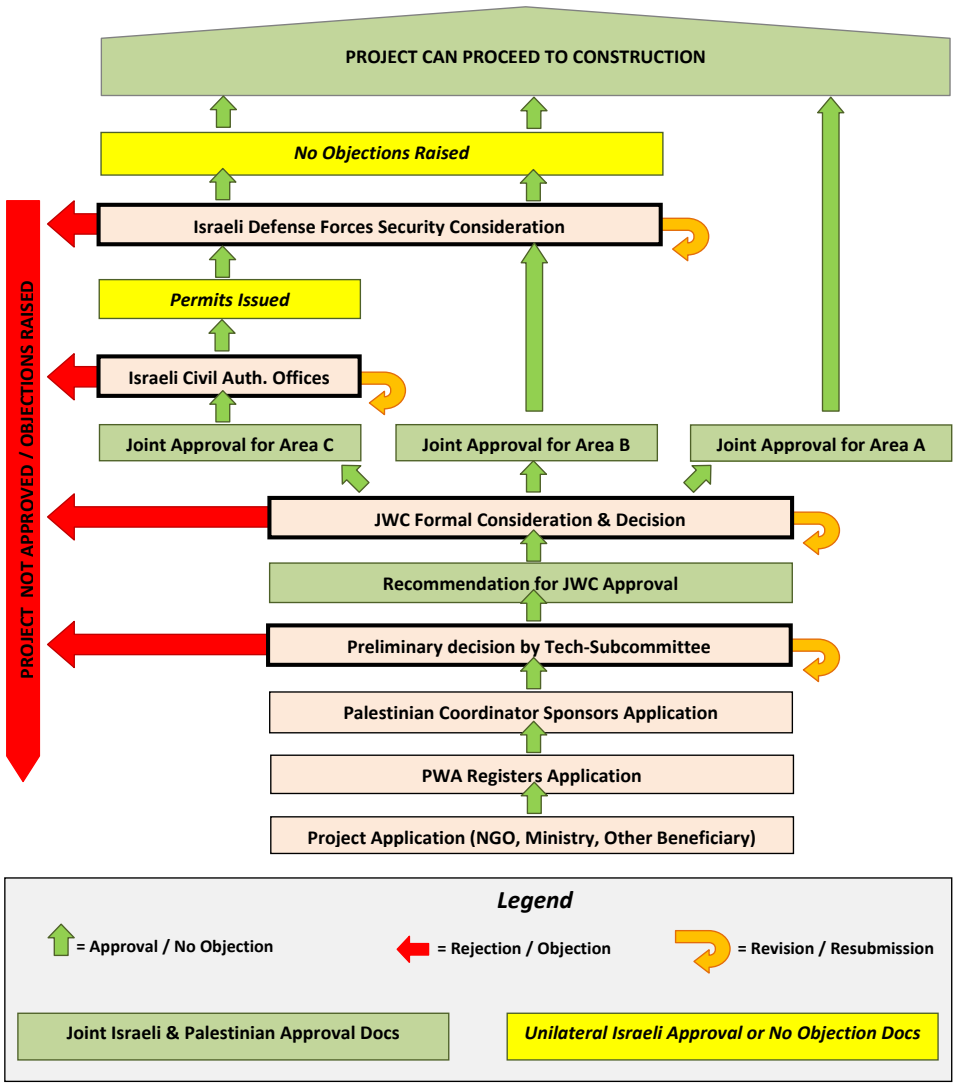
DB Tender Ready Document
Total time required
(4 to 12 months)

DBB Tender Ready Document
Total time required
(6 to 14 months)

Appendix D. Permitting Flow Chart Area C



Appendix E. INP II Project Approval Process



Data Source: BV INP II Operations Team