

# NO FINGER-POINTING DURING CONSTRUCTION DESIGNER-LED DESIGN/BUILD

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- In this session Discover:
- How designer-led design/build (DL\_DB) gives you control over your project from inception to completion.
- How your professional - your advocate:
  - *-Handles the process by helping you define the project's objectives*
  - *-Holds trade contracts, provides bonds, warranty for constructed work.*
- No third parties – just pure accountability.

- Community officials constantly face challenges to get the most value out of the precious resources allotted with tax revenues, utility rates and grant funding.
- Over the last several years, the market effects on your projects have created a “crap shoot” bidding environment that your Engineers can’t control. We’ve all had unwelcome surprises on bid day.
- *Designer-led Design/Build can minimize those surprises and give you a fighting chance to deliver the best value, on-budget.”*

# F&V - Introduction & Background

- Presenters: Aaron & Rich
- Design & Build at F&V



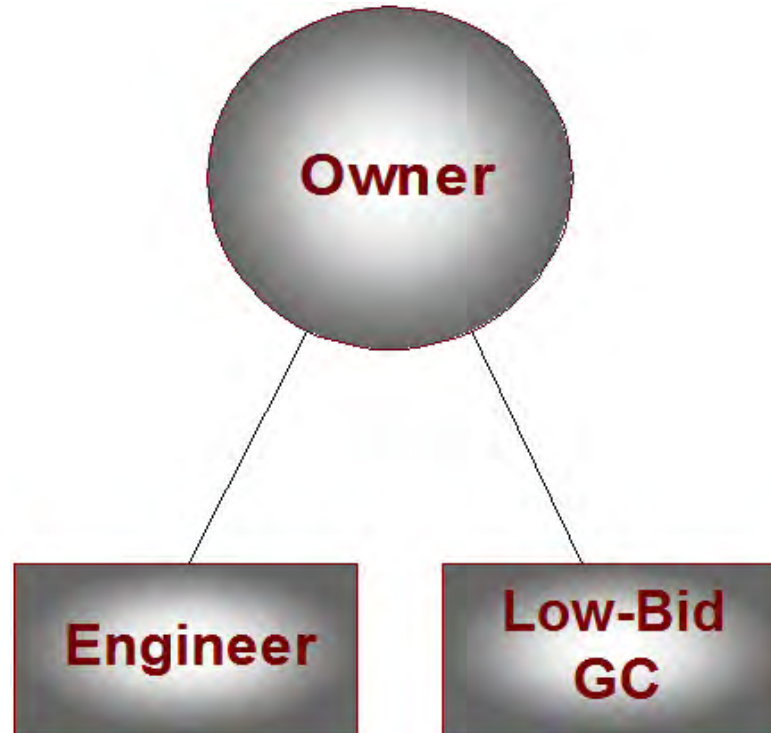
# Topics

- Become familiar with the design/build process
- Understand what type of projects can benefit from D/B
- Learn the difference between construction management, designer-led D/B and contractor-led D/B.
- Accountability – no finger pointing!
- How funding can affect the D/B approach.



# The Comparison of General Contractor Delivery to Designer–Led Design-Build

# General Contractor Method (Design-Bid-Build)



# General Contractor Delivery Method

Typical Process for work with Public Agencies

- GC holds contracts with subcontractors, suppliers.
- Three parties involved: GC in contract with Owner to deliver quality work, Engineer Rep. is on-site monitoring the work with no contractual authority over GC.
- GC not required to bid Trades. May invite only contractors they usually work with. GC can continue to shop or re-price Trades after awarded the bid.

*All savings go to GC.*

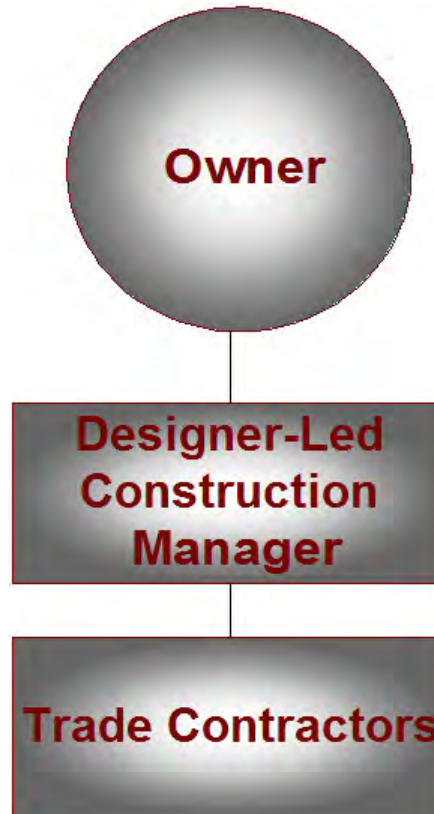
- GC has little incentive to keep costs down – business objective is to maximize profit.

*GC costs, overhead and profits are “closed book” information.*

- GC can benefit if corners are cut and pricing is not reduced.



# Designer-Led Design/Build



# Designer-Led Design/Build

## Typical Process for work with Public Agencies

- Designer-led D/B firm holds contracts with subcontractors - single source of responsibility thus

*No finger pointing.*

- Public advertising of trades. Advertising is typically posted on MITA website.
- Local contractors and DBEs are encouraged to bid on each trade contract.
- Trade bids are opened publicly with Owner. Best possible pricing for each trade.

*Transparency! Owner sees bids from each Trade*

- Total costs to Owner are in an "open book" arrangement with DL\_DB

*All cost savings are passed to Owner.*

- DL\_DB is the advocate for Owner during construction.

*Overhead and profit are negotiated upfront – no incentive to grow project. DB works closely in getting best pricing on changed conditions as Owners advocate - DB has no hidden benefits from change orders.*

- DL\_DB provides performance bond, payment bond, insurances and warranty.

# Summarizing DL\_DB Features

- Typically “Open-Book”
  - Cost-Plus
  - Guaranteed Maximum Price
  - Clear Accountability
- Good Option to “See Everything” about Important Details
- Best Fit Projects:
  - Complex
  - Short schedule
  - Multiple trades involved
  - Where cost control is very important



# DL\_DB Unwinds Problems & Surprises

- Best Control .... Cost/Quality/Schedule
  - ...*Hold us responsible for this message today!*
- “Open Book” to develop/price the project
  - ...You see each trade, all the bids
  - ...If costs are coming in high, it's easy to pull apart & select optimal scope – *before final price is set!*
- Value Engineering is key,
  - ...Before final pricing, sometimes before final detailing
  - ...Contractor input during design, collaboration with Designer/Owner

# DL\_DB Unwinds Problems & Surprises

- Compare & Contrast: DBB and DL\_DB
  - ...DBB is one big project to wrestle, take it or leave it.
  - ...DL\_DB typically has less change orders (WDBC survey)
- Compare & Contrast: DBB and DL\_DB
  - ...DL\_DB: Continuity & no finger-pointing. One stop responsibility.
  - ...During construction: Easier to resolve problems, focus, move on.
  - ...Nobody know your project better than the design professional.
- Compatible funding sources: (SRF, DWRF, MDNR-TF, Market-rate loan, cash.)

# "Best Interest of the Government"

Office of Inspector General, USDA Project:

No Finger-pointing ....

"In order **to maintain a single source of liability**, any corrections, revisions, or additions made to the project design were required to be made by the professional engineer, or a company representative, who originally signed and sealed the documents. Consequently, ARS' management determined that **it was in the best interest of the government to contract with** Delta Engineers & Architects, P.C., **to perform the bid phase and construction management services in order to mitigate the risks that could arise from errors and/or deficiencies with the design of the project.** We agree with the justification for awarding the contract on a sole-source basis, and no issues were noted."

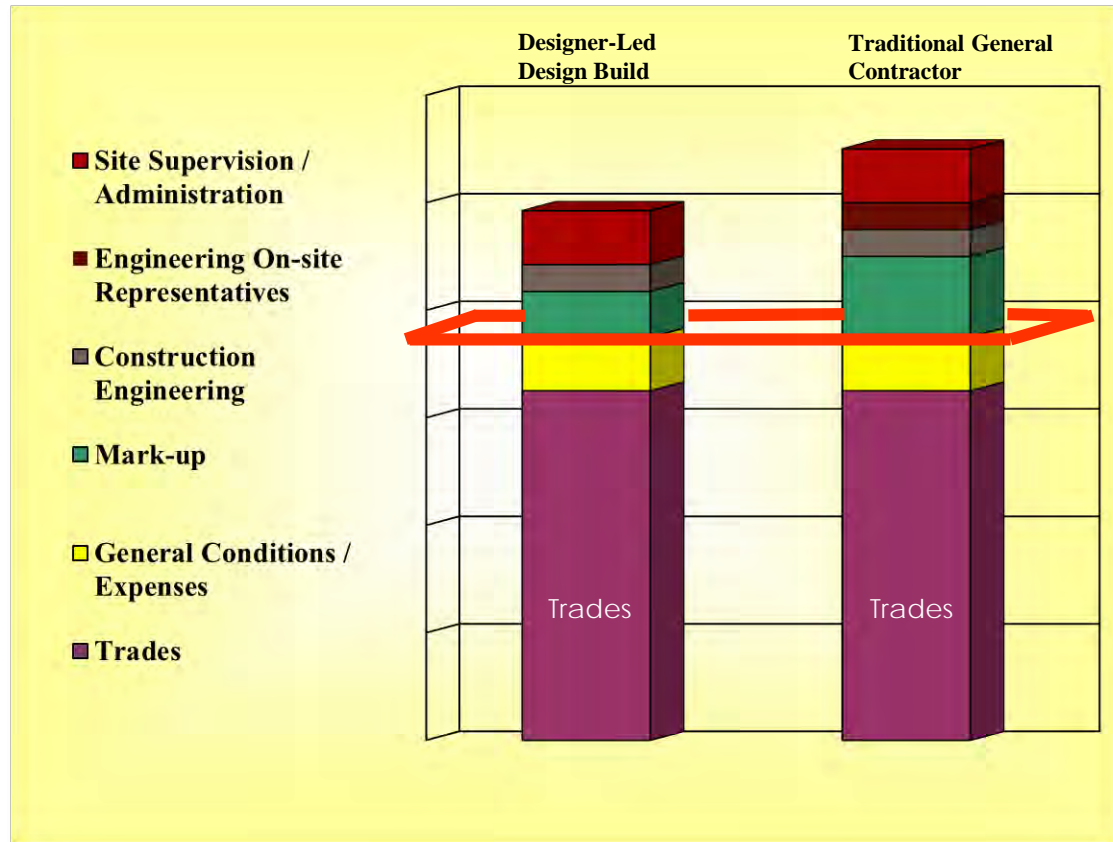
USDA ARS – DLDB is acting in best interest of the Owner

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# Why DL\_DB System is a Good Value

- No duplication of site inspection vs supervisor labor & expenses
- No duplication of contract administration efforts
- Better control of change orders
- Owners review actual invoices for price reductions or increases
- If “cost plus” format is used, the owner doesn’t pay for hidden contingencies or risk fees (CYA costs!)
- There is no better value than “get what you pay for & pay for what you get” - as long as you are happy with the results

# Project Cost Comparison





# Engineering Fees for Designer-Led Construction Phase are ... Lower

- Construction Administration fees are about the same for both delivery types - for designer input, shop drawings, construction staking, administration – typically runs 4 to 5% - same approximate fees for both types.
- RPR (Inspector) position is not needed for Designer-Led DB projects. Instead DB has a site superintendent direct the construction (like a GC is required to do). Savings of 4 to 5%.

## Personnel on-site for the two delivery methods

- GC Project -- Engineer's RPR (inspector) and Contractor's site superintendent
- Designer-Led DB Project -- DB's site superintendent only

# Traditionally GC has 15% Markup Overhead and Profit Costs

- Standard General Condition specifications allow GC's to mark up their change orders 15% without any questions being asked.
- This is typical. Published data shows average GC's Contractor's overhead and profit of 15.3 to 19.2% on their gross revenue
- FVC and Others are delivering DL\_DB for 8-12% markup
- GC's close the books on their bids. They can improve their margin post-contract
- Open Book DL\_DB no increases in margin on costs.

# Federal Highway Administration

## Design-Bid-Build

“The process, known as design-bid-build (D-B-B) can lead to lengthy project delays because the process must be completed in sequential order and delays can occur from the lack of communication or sharing of expertise between the designer and contractor.

- **Everyday Counts-Innovation Initiative”** Federal Highway Administration  
<https://www.fhwa.dot.gov/innovation/everydaycounts/edc-2/designbuild.cfm>

# Federal Highway Administration

## Design-Build

“State DOTs have found that they can accelerate project delivery, lower project costs and improve project quality with an alternative project delivery method: design-build (D-B). In the D-B process, a State DOT identifies what it wants constructed, accepts proposals and selects a D-B team to assume the risk and responsibility for the design and construction phases. With D-B, DOTs generally have the option of selecting a D-B team based on a best-value basis; allowing DOTs to consider other factors beyond lowest price.

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# Federal Highway Administration

## Construction Manager as the General (a traditional FVC method)

"Construction Manager/General Contractor (CM/GC) occupies the middle ground between the traditional design-bid-build and design-build. In a typical CM/GC scenario, the owners of a project hire either a general contractor or design firm to serve as the construction manager, placing responsibility for design review, design modifications, system integration, and construction with that single (party). CM/GC allows State DOTs to remain active in the design process while **assigning risks to the parties most able to mitigate them**. As with the design-build approach, there are **potential time savings** because of the ability to undertake a number of activities concurrently. Additional benefits include:

- Increased partnership and team building fosters an environment where **innovation can be nurtured, be rewarded, and flourish**.
- Owner has control over design details as a member of the design team.
- **Potential for lower project costs**, primarily due to risk identification and allocation during early project development.
- **Enhanced cost certainty at an earlier point in design** because of real time costing information inherent to CM/GC.
- Value engineering **savings accrue to owner**. The **number of change orders, which are indicators of design quality, is also low**."

*"Everyday Counts–Innovation Initiative" Federal Highway Administration*

# Other Studies/Data

## DB & CM Projects = Great Cost Control

### Cost Control Features

- DL\_DB Eliminates the RPR (inspector) fees
- Trade-by-Trade Bids yields better cost control
- Open Book Transparency for Owner
- Less Change Orders<sup>1</sup>
- Value Engineering Savings Accrues to Owner<sup>1</sup>
- Lower Overhead and Profit<sup>2</sup>
- GC D-B-B is nearly 2x more likely to be overbudget<sup>3</sup>

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1. Federal Highway Administration "Every Day Counts – Innovation Initiative" (\*1)

2. Sageworks Industry Data & Analysis database 15-18% GC (\*2)

3. Independent Comparative Evaluation of Design/Build v Conventional Design-Bid-Build Project Delivery for Municipal Water and Wastewater Facilities– 08/2009 (\*3)



# Example 1 of Designer-Led DL\_CM vs. GC

Michigan community – site work, paving, underground

- Phase 2 by Designer-Led CM \$1,290,308
- Phase 2 by GC utilizing Phase 1 pricing just completed \$1,610,327

*24.8% cost savings to  
Owner utilizing Designer-Led CM*





# Example 2 of Designer-Led CM vs. GC

Three Michigan communities – wellhouse, generator, pumps – Similar scopes

- Community 1 – By CM \$277,516
- Community 2 – By CM \$362,999
- Community 3 – By GC \$369,500

*1.8% to 33.1% cost savings to  
Owner utilizing DL\_CM*





# Example 3 of Designer-Led DB vs. GC

- Price bid by DB/CM Process (0.75 mgd) \$10,200,000
- Price bid by GC Delivery (0.45 mgd) \$8,460,000

Michigan community – Original design was for 0.75 mgd WWTP and bid via Designer-Led CM with SRF. Community lost some customer base which required redesign of the WWTP. Major cost-cutting was made on the design and many expensive features that were part of the original project were eliminated; major design and cost saving changes were accomplished. Project was financed through Rural Development.

*RD didn't allow CM on wastewater projects. GC bid result was a disappointing 20.6% cost reduction on an expected 40% savings, considering inflation.*

*Cost per gpd capacity by GC was \$18.80 and \$13.60 by CM.*

# LOCAL... LOCAL... LOCAL

More Effort is Made to Get Local Small Companies, DBEs  
and Appropriate Trade Contractors to Bid the Local  
Contracts

# Major Effort Made to Actively Encourage Local Contractors to Bid



- Advertise on MITA website
- Advertise & telconfs locally to qualified contractors
- Contact Trades (subcontractors) worked with from other projects
- Contact local contractors recommended by you!
- Contact DBE's to notify them of the work and solicit their bids for each trade – 30 to 50 contacts on each project
- Contact regional contractors
- Eliminated bonding requirements for small contracts to encourage local contractors to bid

# Many Competitive Bids Are Received

- Biggest handicap on amount of bidders is multiple bid openings within days
  - Multiple fourth quarter projects within days of each other
  - Contractors have smaller staff now to respond to bids
- DL\_DB/CMs receive many bids – 83 bids on 4 recent SRF projects
- GCs aren't required to get multiple bids each for trade.
- GC's don't have to utilize the low bidder and the book is closed from review.
- DL\_DB-CMs are required to utilize lowest qualified bidder and are scrutinized bid-by-bid and publicly reviewed.
- Other delivery methods don't necessarily have any more bidders or lower pricing
  - Pricing is very market based. *Trade Bids: 'How much work do I have, how much is out there, and how was the pricing of the competitors last time'*



EXAMPLE: "If desired, we can provide **turnkey design/build delivery** of the project. As design professionals, we **would take the lead** and have **full responsibility for design, bidding, construction, and warranty** of the constructed project. Our sister company, F&V Construction, would handle the **construction services**. We feel a **designer-led project** can provide you with a **higher quality product** since the professional is leading the project and is **fully responsible from start to finish**. We hold the trade contracts and would **handle all design and construction activities**. The individual trade contractors would work as subcontractors to us, and you only have one person to talk to for **single source responsibility**. Our firm is fully insured and bonded. Please let us know if you would like to explore this option."

Funding sources may affect the applicability of this option and it might not be best for small single trade type projects.

Yes: Bonded, self-funded, DWRF, SRF, USDA, DOT

No: USDA-RD

...yet remember, we can still provide sealed public bids for each trade if there is a concern with local bidding protocol.

# DL\_DB Marketplace

- Municipal Market: Cities, Villages and Townships
- Common focus on Infrastructure and Process Projects
- Industrial, Commercial, Private Development



# IMPROVED PROJECT SCHEDULE OF DESIGNER-LED DB & CM



# Easily Fast-Tracked/Phased Designer-Led DB & CM Projects

U.S. DOT: D-B & CM are “Accelerated Project Delivery Methods”

SRF Example: 2012 Michigan SRF Project Required Expediting:

- Early activities completed while remaining design was underway
- CM process easily allowed for scheduling of Trade by Trade in expedited activities
- Early work mitigated major odor issues in community.....time sensitive
- Remaining parts of project followed normal SRF schedule



# Why this DL\_DB is Important to Designers

- We manage risk (it exists) by embracing & controlling it
- We're held responsible for almost everything, so we might as well get paid to manage and control as much risk as possible.
- *Even at half the typical GC mark-up...*

our success still contributes nicely to our bottom line, helps take care of problems and incentivize our staff

# EXPERIENCE

# City of Sturgis

- “The Designer-led Construction Management projects have been delivered **under budget and on-schedule**.”
- Yields **full transparency**... no mystery re project costs, overhead and profit. The work is **competitive** and **provides high value**.
- “We see **better options** beyond GC-led projects as antiquated... especially based on what we know happens in the private sector.”
- We have used designer-led, open-book CM delivery method and given **its success**, we would **likely use it again with similar projects**”



# City of Plainwell

- “Proponent of Designer-Led, Open Book CM for SRF & DWRF projects”

“Important advantages:

- **Sole-source responsibility**; continuity between design and construction to eliminate “finger pointing”
- Excellent **cost control**
- Increased control over **project quality**
- Increased control over project **schedule**
- **Full transparency**. The work is **competitive** and provides **high value**”







# Kalamazoo Lake Water & Sewer Authority

...for our facility's construction improvements projects, the CM delivery process has the following important **advantages**:

- **Reduces hassles** to Owner in dealing with contractors
- **Single-source responsibility** for **cost control, schedule, quality** of work and **warranty** issues
- **Open-book** pricing provides **transparency, no-hidden mark-ups**
- CM's site superintendent represents the **Owner** as their **advocate** to maintain quality and schedule

# CONCLUSIONS

# Designer-Led Design/Build is Competitive

- DB & CM delivery is getting lots of bids. (Major effort is made to get local contractors, major contractors involved in the local work.)
- Provides Owner with many cost controls not available under the GC method (lower mark-up, open book, less change orders, demonstrated competitive delivery method)
- Provides Owner with a fast-tracked project option.
- Major effort is made to involve DBEs (DBEs pursued on **every Trade Contract**)



# Designer-Led is Great Schedule Control

- ...Enhanced coordination with Owner's staff and facility operational requirements
- ...Won't "disappear" from the job to work on another project
- ...Understands funding source requirements for disbursements, etc.



# Designer-Led Design/Build is Quality

- ...Early balancing of budget, scope and quality objectives
- ...No incentive to cut quality or corners
- ...Designer is responsible for the constructed project



# Designer-Led Design/Build is Accountability

- Single source responsibility, bonded, insured
- Design & construction under one roof ... no finger pointing
- One source for warrantee issues
- Relationships and repeat business are lifeblood of DL\_DB  
(municipal work, particularly)

# Designer-led DB and/or CM are Approved

## 21<sup>st</sup> Century, Innovative Delivery Methods at

MDOT - [http://www.michigan.gov/mdot/0,4616,7-151-9625\\_21539\\_53226---,00.html](http://www.michigan.gov/mdot/0,4616,7-151-9625_21539_53226---,00.html)

U.S. DOT - <http://www.fhwa.dot.gov/everydaycounts>

## USDA

-<http://www.rurdev.usda.gov/SupportDocuments/an4566.pdf> 04/2011

-<http://www.rurdev.usda.gov/NE-ArchitecturalDesignMgmt.html> 08/2012

-<http://www.afm.ars.usda.gov/acquisitions/designconstruct.htm>

re the **"Cultural Transformation of USDA"** 06/2012

-<http://www.usda.gov/oig/webdocs/02703-05-HQ.pdf> OIG: *Engineer is uniquely qualified as CM*

DEQ SRF/DWRF – Valid from 2006 guidance through revised 07/2012 guidance

DEQ SRF/DWRF –2014 guidance through revised 07/2012 guidance

# Example Project Set-Up (1 of 2)

- Fixed fee contract with DL\_DB firm to design the system and supervise the construction.
- Benefits of fixed fee design-build approach vs. typical project markup through General Contractor include:
  - -With open book, design-build contract the project management fee is fixed at the beginning and all equipment and construction costs are known.
  - -Project markup is reduced from 12%-15% with general contractor to approximately 8%-9% with design-build due to improved risk control.
  - -Any incentive for the designer-builder to “cut corners” to save money is eliminated with the fixed price contract.
  - -All the trade labor contracts and equipment contracts are competitively bid (e.g., raw water intake construction, site work and excavation, concrete, building, mechanical, electrical, instrumentation and controls, etc.).
  - -The relationship with design builder allows the owner a choice in selecting trade contractors. Owner can pick the best “value” in trade contractors, in lieu of just picking the lowest bid if specific expertise provided by sub-contractor warrants it.

# Example Project Set-Up (2 of 2)

- Bidding of the project at 70-85% design completion allows for adjustment to design to reflect bidding results.
- Individual bids awarded for each trade
- Project bonded overall by experienced and insured design-builder for sole source responsibility. With one responsible party for problem resolution, there's no 'finger pointing' regarding design problem(s) versus contractor problem(s).
- Benefits of involving qualified "Trade Contractors" early in the design phase before designs and specifications are finalized include:
  - -Value engineering which is continuous refining of the design concept, construct-ability and streamlining of the construction process.
  - -Providing options for lower cost substitute equipment to be evaluated and considered.
  - -Retaining the competitive bidding of each trade while obtaining early advice on design options.
  - -Reducing unforeseen costs and minimizing change orders.
- Proposed system warranted by the contractor:
  - -Treatment equipment suppliers provide warranties and performance bonds.
  - -Contractor(s) to provide a performance bond that covers construction quality.
  - -Where schedule is deemed critical, the project would typically include liquidated damages, assessed to contractor(s) commensurate with delays.



Questions?