

Design Build A “Greater Role” for the Engineer

History and current status of design-build, and its potential for the future.

Engineer roles in design build, including opportunities to assume both a larger technical and financial role

Chuck Williams, CEO
ODC Synergy
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History – Design Build

- Master Builder through time
- Purists vs. Integrators 1850s
- ASCE, AIA, AGC, other associations develop
- Universities - engineers for Industrial Revolution
- AIA 1909 – 1978 ban involvement in const.
- Private Sector – always done design build
- 100 years of marginal productivity gains
- Agency CM & CM@risk 70s – 80s
- Public Sector design–build 1990 >
- DBIA – 1993, Industry advocate
- Federal Procurement Act 1996
- Legislation and Licensing changes on-going
- DB increasing - currently 25-30% \$ of market



Current Status – Jan 2003

- 40+ States, many counties, cities, towns and utility districts, school districts, and universities doing design-build
- Federal – across the Board – USPO, DOD (Navy, AF, COE) , GSA, Park Service, FHWA
- Private Sector – manufacturing, hi-tech, hospitals, sports & recreation, commercial
- Added services – O&M, finance, PPP ownership and/or leaseback
- DBIA grown significantly + DBIA Chapters
- University Programs / Student Chapters



Current Status

Who is leading Design Build Projects?

- Approx. 55% are “contractor led” with Engineer in sub-contractor role
- Approx. 35% are “integrated services” firms having both design & construction in-house
- Approx. 10% are E / A firms as a prime contract holder, as either in Joint Venture or as sole Design Builder



Future

- Schedule demands, risk avoidance, and cost effectiveness, continue as market drivers
- Continued growth in DB Trend; 50% of all non-residential construction \$\$ by 2010
- Accelerated DB education – owner experience growing - - success stories being shared
- More design /construction integrated teams
- More performance spec. based DB - less up front design needed. “What versus How”



Why Owners Like Design-Build

- Schedule savings – up to 33%
- Single source accountability; no un-rewarded middleman risk
- Early cost definition – less surprises
- Reduces administration – one contract
- More efficient use of their time – focus on final product
- Cleaner warranty issues; no “who shot John”



Why Owners are Challenged by Design-Build

- Normal forces that oppose change
- Needs for early scope definition
- Demands high level of early involvement by senior staff
- Requires change in organizational mindset
- Requires revised processes and procedures
- Something new - “getting it right”



Engineer Concerns

“Glass is half empty”

- Losing owner relationship
- Protecting integrity of design
- Treated as sub in key decisions
- Quality control of construction
- More of a commodity – fees squeezed further
- Performance risk ill-defined

Engineer Opportunities

“Glass half full”

- Credit for constructed project
- Proactively adjust / tune design
- Ensure final constructed quality
- Highly valued resource
- Leverage problem solving skills
- Make more money
- Enhance owner relationship in long term – differentiate themselves






Engineer in Owner Role

- More project delivery tools
- Less cost / schedule surprises
- Promote innovation and collaboration
- Lead energized team rather than arbitrate disputes
- Getting more accomplished sooner with taxpayer \$\$\$

the Differentiators

- Be proactive in your market approach – vision
- Accept risk for your own –and, perhaps, others performance
- Engage your best and brightest
- Get expert help – planning and execution; paying your dues is over-rated
- Create resolutions for some valid concerns – part of the mix





*Design Build is a
High Performance,
Higher Risk Environment
there will be
those that lead
and those that bleed !*



Engineer performance adds value:

- Code review, historical research, permit requirements
- Design Quantities
- Specs. for Equipment & Materials (size, type, power, application, etc.)
- Specs for Construction & Testing (installation & testing requirements & details)

Engineer performance adds value



- Schedule (dwg. issues, submittal reviews, shop dwg. reviews, RFI responses, permitting docs.)
- Drawing / Spec. Revisions
- “Value Added” changes (credits)
 - Savings from better / more efficient design
 - Savings from improving constructibility



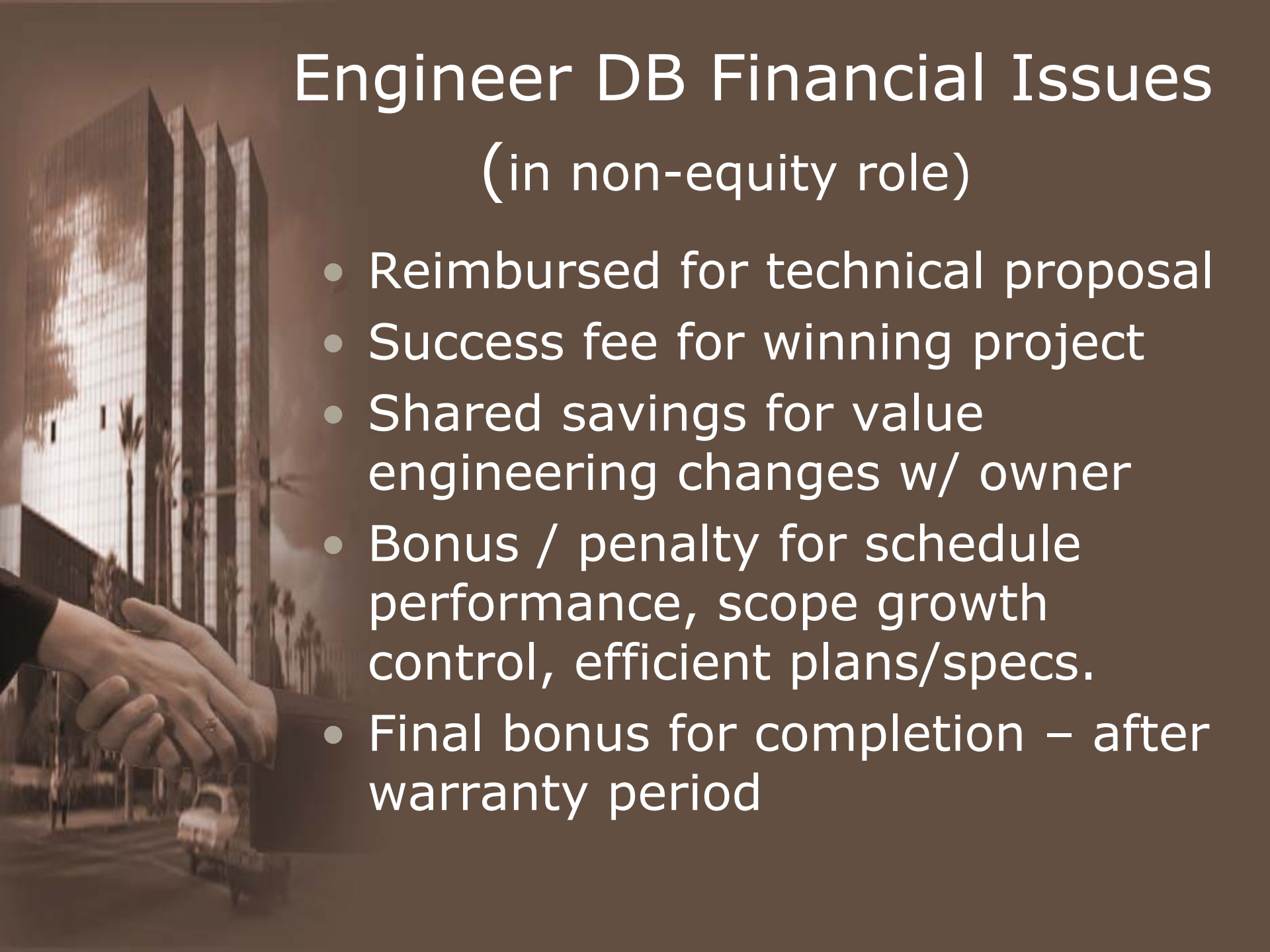
Engineer Roles

- Assume risk on only what you can control
 - Lead Designer Sub to Design Builder
 - Sub to Lead Designer
- Assume risk on what you control, *and on what others control*
 - Equity participant in common contingency or bonus pool – share over/under-run
 - JV Partner with 50 / 50 risk & reward



Engineer Roles (cont'd)

- Assume risk for total project w/ allocation to subs & suppliers
 - Prime Design-builder
 - ✓ Project – specific LLCs, with subcontract for construction
 - ✓ Design – Build or Construction Mgmt subsidiary (licensed & bonded) w/ in-house design entity as sub
 - ✓ Integrated Firm w/ in-house licenses & bonding capacity



Engineer DB Financial Issues (in non-equity role)

- Reimbursed for technical proposal
- Success fee for winning project
- Shared savings for value engineering changes w/ owner
- Bonus / penalty for schedule performance, scope growth control, efficient plans/specs.
- Final bonus for completion – after warranty period



Engineer Financial Issues (in 50 % equity role)

- Share 50/50 in technical proposal cost
- Agree on price and schedule
- Share 50 / 50 risk - reward on total project
- Share 50 / 50 in key management decisions
- Equally share in representing team to owner

The Bottom Line \$\$\$

Profit Expectations

- Sub-consultant role:
 - 2 times traditional, but less control and maybe not less risk
- Equity role:
 - 4 times traditional, and more control of your destiny
- Either way – you'll earn every penny

My Conclusions

- Our industry has changed, and change will accelerate
- High performance & accountability will be rewarded; anything less will be marginalized and commoditized
- Professionally, and for the purpose of really serving clients, Engineers need to step up; not step back
- Personally – stretch your skills and capabilities. You'll learn more and get more satisfaction on one DB Project, from concept – completion, than any other way you can perform your profession