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Technology and Construction in the Age of Integrated Project Delivery

POINT ONE

THE DESIGN-BUILD PROJECT DELIVERY METHOD

A. Definition of Design-Build/Typical Structure

Design-Build is a project delivery system in which the design and construction services are contracted to a single entity known as a design-builder. The design-builder will be in charge and control of both the design and construction processes from the beginning of preparation of the design documents through final acceptance of the project. Interestingly, while this is considered a “new” project delivery method in our time, it is actually the oldest form of project delivery. From ancient times up until relatively recently in human history, a “master-builder” was in charge of designing and building small, medium, and large-scale project in every corner of the world. This important historical point should not be forgotten during our present discussion.

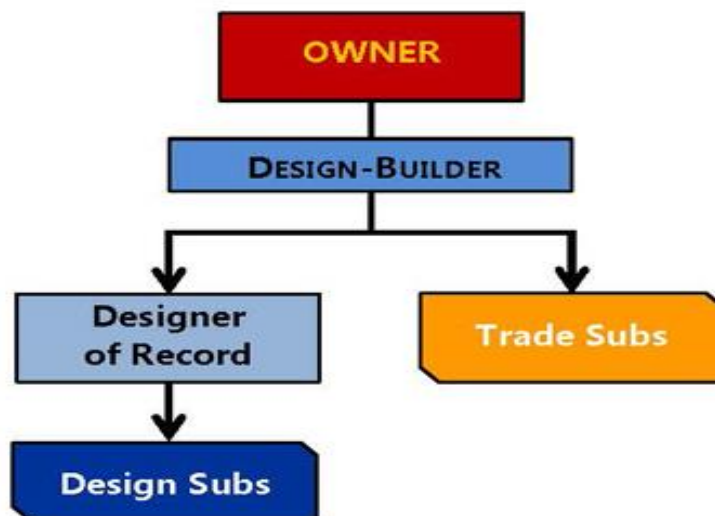
Normally, the process begins with the engagement of a design professional by owner to provide general advisory services regarding the design-build method of project delivery and prepare design criteria for the project, which will become part of the request for proposal sent to prospective design-builders.

This design professional is in a unique position vis-à-vis the rest of the project participants as their role is predominantly focused on what occurs prior to the retention of a design-builder and prior to the preparation of detailed design documents and actual construction. Briefly, some of the basic services that can be provided and the associated points of thought for this design professional are as follows:

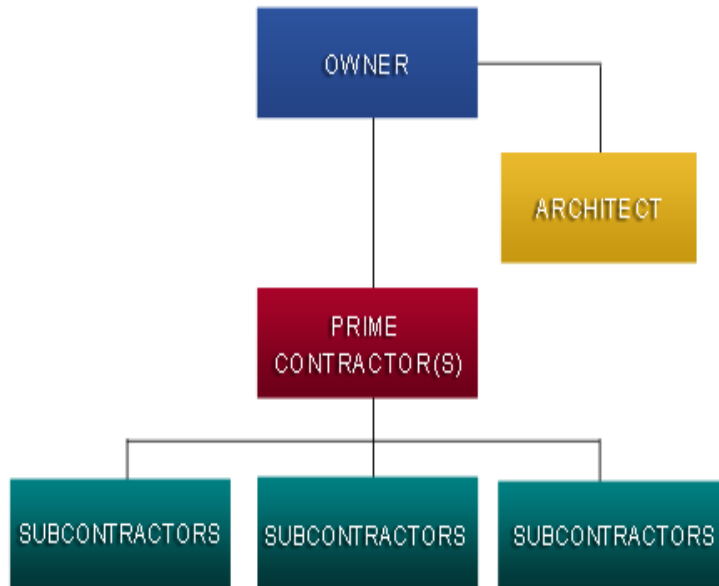
- General advisory services regarding design-build project delivery (i.e. engineering and technical issues, budget and cost issues, strategies for selecting and contracting with a design-builder)
 - Do not “guarantee” or “assume” responsibility for quality and financial health of design builder.

- Make clear that you will **not** be in control of design-builder or of the means and methods of construction.
- Development of Owner's requirements for the project (i.e. design objectives and constraints and space, capacity, and performance requirements)
 - Link any services to the normal "standard of care," i.e., the care and skill ordinarily used by members of the subject design profession practicing under similar circumstances at the same time and in the same locality
- Identify and analyze relevant requirements of governmental authorities having jurisdiction over the project
 - Be careful not to "guarantee" government interpretations of codes that are unclear or "gray"
- Review environmental assessments and impact statements
 - Do not "own" the work of others
- Preparation of a report containing schematic layouts, sketches, and conceptual design criteria
- Preparation of "Conceptual Documents"
 - Make clear that these documents are not to the level of constructability
- Preparation of a draft scope for Design-Builder
 - Do not guarantee what the entire scope will need to be
- Assist with preparation of RFQ and RFP
- Review submittals and consult on progress of work

Below please find a diagram of the structure of a typical design-build.



Compare the above with a typical example of a traditional design-bid-build project delivery method.



B. Risks and Rewards

The following can be typical benefits generally speaking of the design-build process:

- Speed of delivery: with one entity in charge of both sides of the project, there is greater overlap of tasks resulting many times in a streamlined delivery to the owner.
- Selection: design-builder is selected based on a series of factors not only lowest price: qualifications, capabilities, and experience are all factored in to a greater degree avoiding some of the pitfalls from contract awards solely based on low price or the lowest responsible bidder.
- Communication/Collaboration: The design and construction are performed by a single team under one contract. This can enhance communication between those parties and the willingness to problem solve, which can avoid future claims.
 - However, if the design-builder is not effective at channeling communications from the designer of record to the owner, the designer of record must recognize that they are more at risk than on a traditional design-bid-build where there is a direct line of communication with the owner.

- Changes: There is a close relationship between the design and construction teams, resulting — one would hope — in fewer change orders.

These benefits are causing more and more owners (public¹ and private) to choose the design-build project delivery method.

However, like all construction projects, design-build projects have their own inherent risks. The following is a brief list of some of those risks:

- Cost of Responding the RFP: Many times, owners ask design-builders to present design documents of up to fifty percent (50%) completion. This can be a significant expense if the project is not ultimately awarded.
- Spearin Doctrine: Because the design-builder is in charge of both design and construction, it will be responsible for delivering the project specifications whether performance based, design specific, or a mixture of both. This is distinguished from a traditional design-bid-build where the general contractor is allowed to rely upon the owner's design and can be insulated from incomplete and/or impractical specifications.
- Means and Methods/Safety: The design-builder will often be responsible for not only the means and methods but for project safety.
- Delays: The design-builder will be responsible for overall coordination of design (sub-consultants) and construction (the trades). This greatly increases this entity's responsibilities when it comes to delivering the project on-time; concomitantly it increases the responsibility for delay damages.
- Construction Without Complete Design: Many times, construction will begin without reaching 100% construction drawings. This increases the risk for design errors and omissions because design must happen "on the fly" in highly complex situations.
- Bonding: Because of the combined nature of the services, procuring payment and performance bonds may be more difficult.
- Licensing: Does the design-builder hold the appropriate licenses in the given state to act as a design professional and/or as a contractor?
- Insurance: Various types of insurance products are available for the owner, design-builder, contractors, and design professional sub-consultants. These products should be thoroughly and properly evaluated in an effort to insure risk where possible.

¹ Of course, the percentage of public projects that will select the design-build delivery method depends heavily on whether the particular state has adopted implementing legislation allowing for the use of same. New York for example does not have overarching legislation and only allows certain state entities to use the design-build model.

- Consider project-specific professional liability insurance – This is particularly useful for large projects (public utilities, highways, airports, large-scale municipal projects), as the exposure on such a project is typically much greater than the exposure for which a practice-specific professional liability policy is intended.
 - Recognize that many design-build projects, especially the large ones, will require very high professional liability limits.
- Owners Protective Professional Indemnity Insurance – This type of policy can provide first-party indemnity to the owner (insured) for damage they incur as a result of negligence of the design professionals. It typically does not extend coverage to the design team so the possibility of defense costs eroding the limit of liability, which can be a significant concern with professional liability policies, is reduced. This policy is in the name of the owner and sits as excess of the design professionals’ professional liability insurance and essentially supplements coverage and capacity that the design firms bring to the project via their own insurance. No design professionals are insureds under this policy.
- Contractor’s Professional Liability Insurance – When a design-builder takes on a project, the design-builder will have to seek coverage for at least one of the following: (a) in-house designers who require professional liability coverage; or (b) subcontracted designers, for whom the design-builder may be held vicariously liable
- Less competition: Not every company can put together an effective design-build team. This will limit the selection of companies that can perform the work.

POINT TWO

TECHNOLOGY AND DESIGN-BUILD

The effects of technology on the construction industry are widespread and increasing with incredible speed. These effects are experienced on design-build projects like they are on all other types of construction projects.

Below is a list of points to be discussed:

- Building Information Modeling: On large scale design-build project where integration and cooperation is key, BIM is a useful tool being implemented more expansively. When using BIM design professionals should be aware of the following:

- Who is responsible for the overall management of BIM on the project? Such responsibility can lead to increased risk and liability.
 - Who has access to BIM?
 - Who has control over changes being made?
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 - Is everyone on the project proficient in and required to use BIM? If not, there will likely be situations where project participants are essentially speaking different languages when it comes to the design documents.
- Global Position Systems: This type of technology can be extremely beneficial.
 - However, claims can arise when the technology is not working properly through no fault of the design professional.
 - E.g., a geotechnical engineer is using a tool implementing GPS to identify certain types of subsurface conditions and the technology gives an improper reading. This improper reading causes an inaccurate assessment or survey of the location and/or integrity of the foundation. This issue is not caught until work continues and now work has to be redone or undone for proper installation (e.g., conduit must be ripped out and reinstalled). The design professional could be subject to a malpractice suit because of his use of the technology and will likely not be able to pass that risk down to the manufacturer/designer of the technology.
 - One way to avoid this type of risk is to use a more traditional method to double check the technology once or twice in order to arguably establish compliance with the design professional's standard of care.
- Drones: The use of drones on construction projects has increased and will likely continue to do so in the foreseeable future. One commonplace usage enlists drones in the inspection of the overall progress of a project and in inspecting various types of difficult to reach areas. Their most obvious advantage — their ability to fly — is conducive to this project function and can provide a design-builder and/or other design professional with a quick and efficient way to gather project information.
 - Associated risks and concerns involve (among others):
 - The amount of data being collected and the requirements of storing and/or producing such data in the instance of a litigation.
 - The potential for accidental damage to person and/or property.

- Invasion of privacy.

- Use of Email – This is typically the most common method of communication on a job-site, outside of person-to-person conversation. While this provides the benefit of creating a “paper trail” to document decisions and conversations, design professionals should use discretion in determining what to include in their emails. From an insurance claims perspective, we recommend that design professionals should be aware of certain issues that may adversely affect coverage for a claim: (1) written apologies and admissions of liability; (2) an email history reflecting that the professional was aware of a particular complaint/problem/issue for many months or years prior to the formal dispute (lawsuit, mediation, etc.).