



## **White Paper**

### **Dynamic Design Assist™ – What is it and what are its benefits?**

An introduction to Dynamic Design Assist™ in the construction industry, and why using this project delivery method makes so much sense.

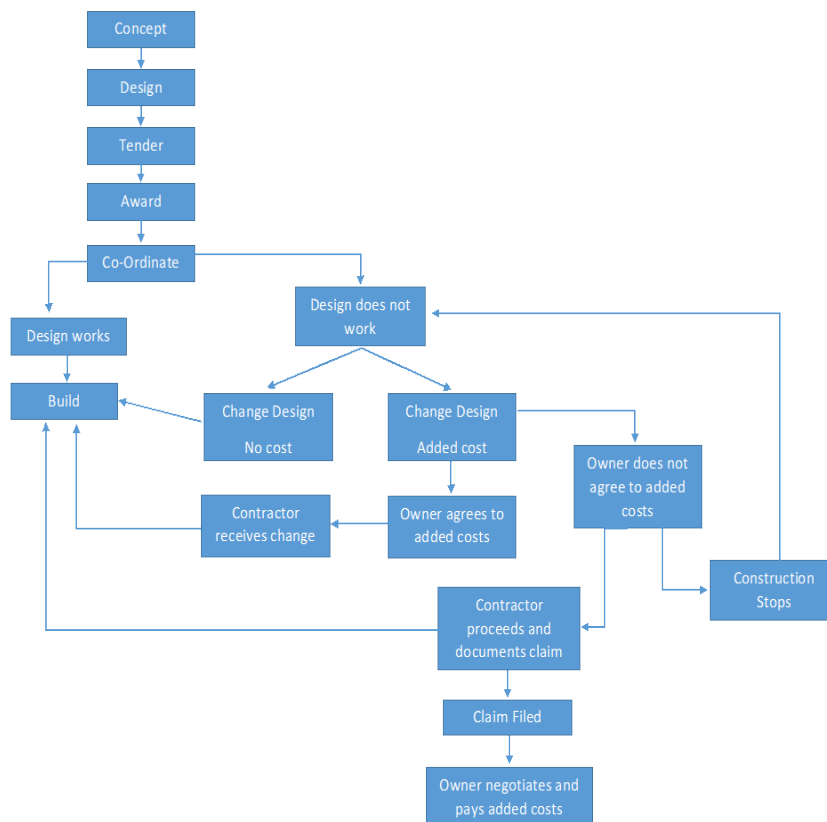
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## Dynamic Design Assist

Dynamic Design Assist – What is it, why is it different and what benefit does it provide?

At it's simplest, design assist is collaboration between the design and construction teams at a point in the project where it provides the most financial benefit to the owner.

In order to understand why this is of benefit one must look at the traditional approach to design and construction. The simplified process flow chart below illustrates how today's typical construction project operation flows:



The issue with this approach is where coordination takes place, after the cost to perform the work is finalized and at a time whereby there is insufficient time given to properly coordinate the work. First let's look at it from a cost perspective, the tender pricing is based on a design on paper and frequently what works on paper does not work in the real world. As the

cost has now been fixed, any changes from the coordination process become change notices to the project. While not every coordination issue results in added costs, there can be instances where entire portions of the design do not work with the limitations of the building (typically an issue in complex renovations) and results in large sections of the work being reissued. While there is a credit for some of the work as an offset for the additional work, in almost every instance the revised scope costs significantly more. It goes without saying that there is no more expensive a time to resolve co-ordination issues than during the construction process.

The second issue is time and timing. The design team does their best with the limited information (again typically an issue in complex renovations) available and has limited access to the actual spaces to review. Further they are under significant pressure to produce a design in a compressed timeline in order for the construction manager to go to tender. Once the contract is awarded the construction manager typically gives the contractor 2-4 weeks to fully coordinate the drawings, something the design team was unable to accomplish in 6-12 months in conjunction with design.

In addition, the contractor is burdened with getting the project started, procuring equipment (usually this information is actually needed prior to coordination), interviewing and awarding the project to multiple sub trades (again who's input into the coordination process is required before it can be completed).

If you consider all factors relating to timing, it's impossible to perform the coordination fast enough to allow construction to begin immediately and meet today's compressed construction schedules.

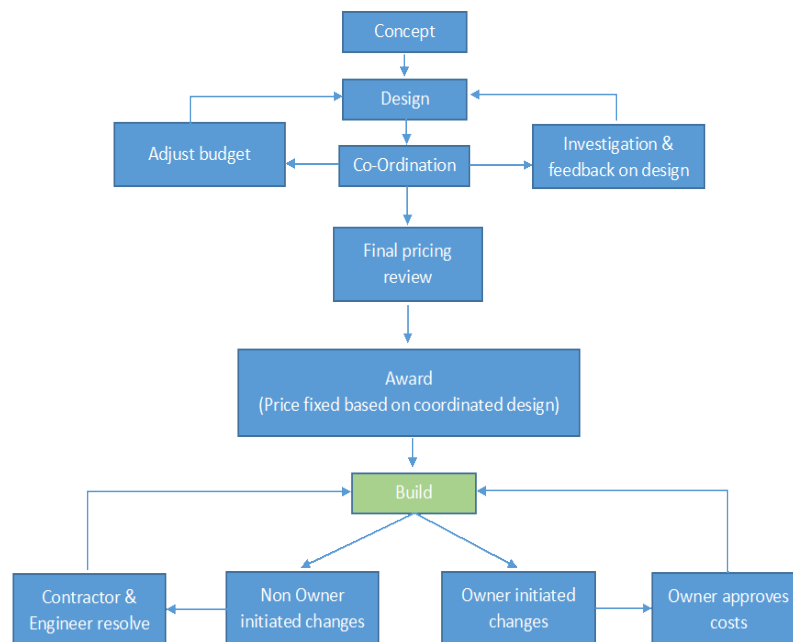
As a result, the question is frequently asked, what can be done differently to correct this? For years the design build approach was used however it contains an inherent flaw. For example, the design team works for the contractor and not the owner, thereby removing any responsibility to the owner to ensure they receive the best design. Consultants are governed by professional standards regardless however these relate to how they perform and not what they deliver. If the owner has no direct contract with the design team, then the design team has no direct deliverable to the owner.

Dynamic design assist was developed to take advantage of maintaining the direct relationship between the owner and design team while realizing the advantage of having trade contractors involved at such an early stage.

The owner will hire the design team directly and maintain control over the process, thereby ensuring the design team to delivers what the owner requires. The construction manager will recommend a trade contractor who's experience in both the design assist process as well as the scope of the work will benefit the project. The timing of this is crucial, for maximum benefit the contractor has to be engaged early in the design development.

It's also critical that the design team recognize the importance of the contractor's involvement and that the contractor become fully engaged in the design process. This process fails when the design team believes they do not require the added knowledge the contractor brings to the process, or the contractor does not actively participate in the design and review of the design development drawings.

So now let's consider the changes this represents to the flow diagram for the project:



By moving the coordination process to a point before pricing is finalized, all of the coordination effort is performed at the most cost-effective time in the process. It also has the benefit of not impacting the construction schedule and happens at a point where significantly more time is available.

One of the cornerstones of dynamic design assist is the constant evolution of the construction budget. The contractor prepares an initial budget based on a design brief and throughout the design process he/she maintains and adjusts the budget. This allows the construction manager and owner to understand the financial impact that design decisions have in a near real time process.

As the dynamic design assist process removes the tendering process several questions arise regarding cost transparency and the added cost of this delivery model.

The first and most important question is, does this procurement process cost more? The answer is not as simple as that, while it does cost more upfront (mainly due to the early involvement and added time commitment), it does provide an overall savings compared to the traditional process. By not coordinating the work through change notices there is substantial savings on labour, material costs and mark ups. Change notices are the most expensive form of adding work to a contract. In complex renovations it's not unrealistic to see 50-70% of the base contract added through change notices by the end of the project.

The mechanics of how these savings are realized lie in the transfer of risk from the design to the contractor. Many believe they can achieve this through notes on a drawing or providing a site walk during tender however they will not stand up. Walking a group of people into a room and then claiming they now have responsibility for unforeseen conditions will never hold up. Adding a note to a drawing saying the contractor assumes all risk for a design of which they had no input will also fail.

Dynamic design assist however engages the contractor at a point where he/she does have input and by providing access to the space to be constructed (assuming a renovation) he/she can verify the constructability of the design.

As a result of this engagement in the process the contractor can reasonably assume this risk without significant concern thereby de-risking the project for the owner.

The second common question concerns cost transparency and how the owner can be assured of the best value for services without tendering the work. This is accomplished through open book dialogue with the construction manager and the engineer. Throughout the development of the design the budget is shared with both, allowing the engineer to see the impact of design development on the overall cost and the construction manager to keep the owner updated on anticipated construction costs. Once the final budget is prepared, all three parties (the contractor, the engineer, and the construction manager) review all costs on a line-by-line basis.

Once all three parties are in agreement of the final budget, both the engineer and the construction manager will advise the owner and issue recommendations as well as detail any risks that could not be assumed. A detailed responsibility matrix and scope of work are prepared that become the basis of the contract between the trade and the construction manager.

At this point the project can proceed to the next phase and equipment procurement, shop drawings and any other required actions can take place while the construction manager prepares to tender the remaining work to trades not under dynamic design assist. By taking advantage of this time, the contractor and construction manager are more prepared for the ever-shortening construction schedules typical of today's needs.

Frequently we are asked if this process applies only to renovations. While this process delivers the most cost-effective construction method for complex renovations it's value also applies to new commercial and condominium construction. The same coordination process is required and many of the same issues can be avoided through the input of the contractor.

Here are several recent dynamic design assist projects Onyx Mechanical has successfully executed:

- Toronto Eaton Centre North Food Court
- Toronto Eaton Centre Sears Tower Redevelopment
- Sherway Gardens South Parkade, Etobicoke
- Sherway Gardens South Retail Expansion, Etobicoke
- William Thomas Student Residence, Hamilton
- 65 King Street East, Toronto

### Summary

In summary dynamic design assist represents a hybrid delivery method that benefits owners in multiple ways and can be used as a tool not only to mitigate risk but to handle significant scheduling issues.

In order to get the most benefit out of the dynamic design assist methodology one must understand that what's important is final cost, not initial cost. In conventional tendering and delivery there is an adage, "he who makes the most mistakes wins" meaning the lowest price is often the contractor who made the most mistakes estimating the tender. Anyone having been in construction long enough understands this; however, it also means that same contractor upon award looks to make back that error. This can only be accomplished through changes and short cuts.

Dynamic design assist avoids this, it gives the contractor fair compensation for work performed and delivers the lowest final price for the owner. At the same time, it reduces over all management costs for the construction manager as there is far less paperwork and disagreements as well as less schedule impact.

Dynamic design assist requires the right team, cooperation, respect and above all the common goal of delivering the highest level of end product to the client. Through the teamwork and cooperation of everyone involved the project can exceed the expectations of the client and result in additional projects and a relationship with an owner that exceeds all others.