

HEI ENGINEERING GROUP APPROACH TO WORKING WITH ARCHITECTS ON PROJECTS

HEI Engineering Group recently had a lunch and learn presentation at an architectural firm on the process of how we work with architects when a new project is introduced to the team. The following is an abbreviated process from the presentation on how we approach the project and how we coordinate with all of the team members. This process is also the same when working with other firms such as design build or direct with owners.

Introduction

As an architect you are responsible for researching and finding building products that are high quality, well designed, competitively priced and have lead times that complement project schedules. We think that those same criteria are probably often used to select members of a project design team, including consulting engineers.

At HEI Engineering Group our goal as HVAC & Plumbing Engineers is to find correct balance of system functionality, efficiency, safety, reliability, maintainability, cost and even overall appearance. This correct balance can be different for every project, but what is not different is our approach.

Our approach to working with architects allows us to provide sensible engineering and a well-coordinated set of deliverables, while integrating team goals to ultimately satisfy the owner.

#1 - Request for proposal & project preview or “sneak-peak”

If you would like to consider us as part of your professional design team, we would be glad to come to your office or directly to the site (if the project is an existing building) so we could get a preview of the project (or what we like to call a “sneak-peak”). During this meeting we would expect to discuss some of the following items which are needed for us to prepare a proposal for engineering/consulting services:

- Preliminary floor plan
- Services required (hvac and/or plumbing)
- Project schedule
- 2d cad or 3d revit
- Leed certification
- Construction Administration Services (submittal review, site visits, etc.)

During the “sneak-peak” we can review conceptual design options based on the system types that are desired, and determine if feasible with the given budget and allotted mechanical space. We may not be able to commit to a specific system at the time of the project preview if more extensive research is required.

The project preview also allows us to offer suggestions early in the design to possibly make the project more successful (i.e. a boiler to be located in a basement below grade with no exterior wall for proper venting).

Of course, if a phone call is more desirable, due to the small project size or a tight budget, we are also able to easily accommodate this request.

As already mentioned in the company overview, HEI Engineering Group is a small firm so we have the capability of tailoring the needs of our services to the size and type of project easily and efficiently. When you call our office, you deal directly with the person that is designing the project, not through layers of personnel.

#2 - Consultant fee proposal

Once the project preview is completed, we will develop the fee proposal. The fee proposal will contain a brief description of the HVAC & Plumbing Systems that will be designed and the hours required. The project can be set up as hourly, hourly not to exceed or a flat fee.

A breakdown of any extra services such as site visits, shop drawings, as-builts, energy modeling, etc. along with an associated cost will also be indicated. Additional breakdowns could be shown on larger projects that have schematic, design development, and construction phases.

#3- Project kick-off meeting

Once the proposal is accepted, we believe that a project kick-off meeting is the next key to our approach in providing a successful project with architects.

If brought in early and knowing the architect's vision, we can present the possible mechanical system limitations we foresee so no team member feels blind-sided. These early discussions can help to minimize or even prevent redesign work for the team later.

We feel each discipline is integral to the building design from start to finish. We suggest that the entire design team be required to attend the kick-off meeting to help ensure all strive for the same project goals and milestones. HEI Engineering Group will have the principal in charge of the project and/or the project team leader present.

During this meeting we would expect the architect to further present the building concepts; indicate areas with limited space or aesthetic concerns; update the team of any major changes since the project "sneak-peak"; review project schedule & tentative deliverable dates; and provide prints and/or existing building drawings, if available.

Speaking of existing buildings, whether we obtain existing drawings for our use or not, HEI will always visit the site to confirm existing conditions at least once during the design. We feel good documentation of the existing field conditions, where applicable, definitely allows for a better coordinated set of documents, reduced field issues and more accurate bid pricing.

Typically, the project "sneak-peak" will give us enough information to generate a list of questions to bring to the kick-off meeting. Often times we email these to the architect prior to the meeting to allow them to better prepare.

A few common questions to get a jump start on the project design are as follows:

- Cadd files
- U-values for walls, roofs, windows, overhead doors
- Ceiling heights
- Heat producing equipment in each space (copiers, kitchen equipment)
- Utilities
- Plumbing fixture types

#4 – Design & deliverables

Coordination is vital during this phase of the project. We strongly believe the drawings reflect to others, especially the owner, how well the architect & engineer can communicate with each other.

By this time all necessary cadd files for the project should have been received. This includes the required sheet set-up information such as size of the project, title blocks, elevations, wall sections, etc.

The first task HEI Engineering Group will perform are the building load calculations. This allows preliminary equipment selections to be obtained early in case there are any space or weight concerns that need to be addressed as soon as possible to prevent any team member from being delayed.

Once equipment selections and placement are finalized, we are then responsible for coordinating with the architect & structural engineer items such as: equipment locations, opening sizes, chase locations and sizes, door grilles, concrete pads, etc. Exterior mechanical system terminations such as louvers and vents shall also be coordinated for aesthetics.

Likewise, equipment electrical loads are given to the electrical engineer for coordination. In turn, where applicable, we request transformer sizes & locations for our use to determine if any electrical rooms require exhaust or air-conditioning.

Ductwork & pipe sizing and layout will start next. We will need wall/building sections, structural drawings and ceiling heights to determine available space for duct clearances. Ductwork that will be exposed for aesthetic purposes will be coordinated with the architect and lighting layout. A reflected ceiling plan with lighting locations is essential for diffuser and grille placement.

As part of the plumbing design process, the plumbing fixture selections are one of the first tasks performed. HEI Engineering Group has a basis of design fixture list that is typically used, unless the owner has another preferred manufacturer. A set of cut sheets will be sent to the architect for coordination and final approval. Locations are coordinated as well for the water, fire, fuel, storm and sewer lines entering the building.

If the project team members do not frequently communicate coordination items are often neglected. We feel this is best avoided through regular progress drawings sent to the team or through additional meetings at select project milestones. This also helps to ensure that the team has met all the project needs and goals.

Note that it is typical towards the end of the design process that the project specifications and probable construction cost estimates are prepared.

#5 – Construction Administration (if services are requested)

We prefer to be a part of the project from start to finish, but often due to tight project budgets we are not hired for “Construction Administration” services. These are services HEI can provide once the construction documents have gone out and bids are received. A few of the more common tasks are: review shop drawings/submittals, attend construction meetings, conduct regular site visits, generate as-built drawings, etc.

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