Existing Construction Conditions

Executive Summary

For this assignment, I have sent out an email to gather for more information. The email was sent to the electrical contractor, Truland Systems Corporation, but it was forwarded to the GC, Clark, for more detailed information. The replied email was very helpful with detailed information concerning the project.

There are three parts to this assignment: Project Delivery System, Project Schedule Summary and Project Cost Evaluation.

Project Delivery System
The email I sent out was basically a list of questions related to this area. (For example: How the subcontractors are selected and the types of contracts held between players?) Some of the information was gathered from the specification. The replied I receive have been incorporated into this section of the assignment.

Project Schedule Summary
Dates and durations of the major phases of construction were provided by Truland, and therefore, the schedule was easily put together. However, I did not have all the details for each individual activity. I used some reference book, such as Fundamentals of Building Construction, and studied what are the key elements in the activities.

Project Cost Evaluation
All cost from D4 and R.S. Means data are relatively close to the actual project cost. More details of estimates are provided in the assignment.

Interesting Fact about the Project
An interesting part of this project is the owner hired an electrical consultant, Truland Systems Corporation, to assist in the design process. Truland Systems Corporation was also “named” the electrical contractor for this project due to the role of design assist. The owner had an agreed budget with Truland, who would maintain the budget by utilizing value engineering.
**Project Delivery System**
The delivery method is based on the traditional, Design, Bid, Build model with slight modification. The owner, Carr America Urban Development LLC hired SmithGroup as the Architect and Engineer and the contract was fixed fee.

All the contracts between the GC and subcontractors are Lump Sum. The contract between the owner and the GC is also Lump Sum. Subcontractors were selected based on the lowest bidder for this project. However, this was an exception with the electrical contractor, Truland Systems Corporation. Truland is one of the few contractors in the Washington DC area to offer design assist. Carr American selected Truland to assist in the design process. They had an agreed budget in which Truland would work to maintain by utilizing value engineering. As a result, Truland was “named” the electrical contractor for this project.

Interesting Note: There is a minority agreement in Washington DC stated that each contractor is required to utilize lower hire subcontractors to perform work.

Below is an organizational chart showing the relationship between major project players.

![Organization Chart](image)

Terrell Place, Washington DC
Project Schedule Summary

Foundation:
Underpinning was done to strengthen and stabilize the foundation of the existing Hecht’s building. For the other part of the new building, piles were driven to be parts of the foundation. At the same time, tiebacks were used to support sheeting around the excavation. After the tiebacks were installed, concrete crew started to pour footings until it cured. Once the footings cured, they framed the foundation walls. Then to make the slab on grade foundation, concrete was poured onto the top most layers.

Structural:
Terrell Place is an 11 story, cast-in-place concrete structural building. The structural design is repetitive and each of the floors is built in a similar process. After the foundation was build, the concrete contractor coordinate with the MEP to start putting forms and rebar together. The concrete is poured soon after. After concrete is cured, concrete crew can strip form work and post shores. Then they will have to repeat the process for all the levels.

Finishes
The Mechanical, Electrical, Plumbing and Sprinkler contractors closely coordinate together to make sure there is no interference in the plenum. Weekly coordination meeting were set up before any of the installation.

Drywalls, doors and windows, and bathroom finishes are installed when the MEP rough in is done. Also, interior work is included in the tenant work package which is still in the bid process at this moment.

A summary schedule with all major phase of construction is attached on the following page.

See Appendix A
Project Cost Evaluation

Actual Building cost information was provided by Truland Systems Corporation.

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Square Footage</td>
<td>634,890SF</td>
</tr>
<tr>
<td>Actual Building Construction Cost (CC)</td>
<td>$48.5 Million</td>
</tr>
<tr>
<td>Actual Building Construction per SF</td>
<td>$76.39/SF</td>
</tr>
<tr>
<td>Land Cost</td>
<td>*</td>
</tr>
<tr>
<td>Total Project Cost</td>
<td>*</td>
</tr>
<tr>
<td>Mechanical Systems</td>
<td>$10 Million</td>
</tr>
<tr>
<td>Mechanical Systems per SF</td>
<td>$15.75/SF</td>
</tr>
<tr>
<td>Electrical Systems</td>
<td>$5 Million</td>
</tr>
<tr>
<td>Electrical Systems per SF</td>
<td>$7.88/SF</td>
</tr>
</tbody>
</table>

*Can not obtain the information of land cost at this moment

**D4 Cost 2002**

D4 Estimate combined three similar buildings to attain the result. Each of the models is within 20% of the square footage. A few adjustments were made to obtain a more accurate estimate. Time and location were adjusted to Sept 2001, Washington DC. Mechanical division was adjusted to $10 million and Electrical division to $5 million. The previously stated amounts are the actual cost. The total Project cost is $46,607,300.

A breakdown of D4 Cost 2002 is attached.

D4 estimate can be more accurate if the models are the same structure as Terrell Place. Terrell Place is a cast in place concrete structure however the estimate has only 5.5% of the total cost in concrete division and 18.9% of the total cost in Metals division. The three models I used are all Steel structure and therefore the estimate is not the most accurate. Conversely, those are the only three buildings that have the same construction type and within a 20% square footage to Terrell Place and which is why those building are chosen for analysis.

See Appendix B
S. F. Estimate by using R. S. Means data
Commercial/Industrial/Institutional office 11-20 story is the model to Terrell Place. With
the following criteria, total cost is $49.3 million.

- 634,890 Square Footage
- 1057.5 Linear Foot Perimeter
- Precast concrete panel with exposed aggregate
- Reinforced Concrete Frame
- Location Factor (Washington DC) = .95

$77.75/SF + (1057.7LF - 740LF)/100 X $1.25 = $81.85 X .95
The Total construction cost = $49.3 Million
A date sheet from R. S. Means is attached.

See Appendix C

Comparison of the estimates

<table>
<thead>
<tr>
<th>Cost per SF</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Building Construction Cost</td>
<td>$76.49</td>
</tr>
<tr>
<td>D4 cost Estimate</td>
<td>$73.41</td>
</tr>
<tr>
<td>Square Foot Estimate using R. S. Means</td>
<td>$77.76</td>
</tr>
</tbody>
</table>

The D4 estimate and Square foot estimate are both within 4% of the actual building cost.

- As mentioned before, D4 estimate is not the most accurate because the models are
  slightly different from that of Terrell Place. But for this estimate, it is only 4%
  less than the actual building cost.
- R. S. Means usually gives a slightly higher estimate than the real project and in
  this case, it is 2% higher than the actual building cost.
- Overall, the results from D4 Cost Estimate and R. S. Means are very close to the
  actually building cost and they are always good tools to estimate when only
  limited information is provided or time is limited.