

## Project Cost Evaluation

### Actual Cost

- Total Building Renovation Cost per Square Foot (per base bid): \$261.78/SF
- MEP System Cost per Square Foot (Mechanical, Electrical, Plumbing, Fire Protection): \$94.24/SF

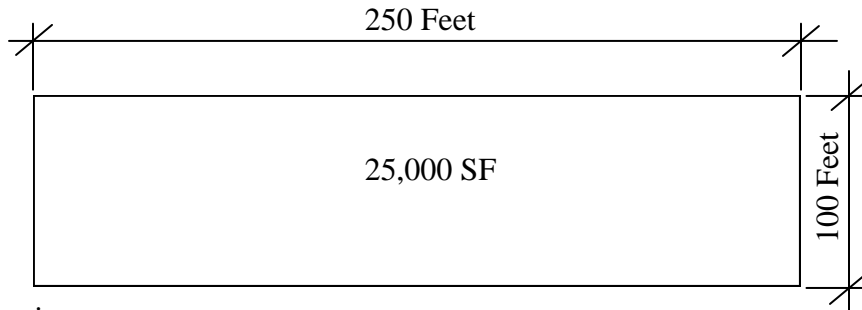
### D4 Cost Estimate

- What is D4? - D4 is software for estimating projects based on historical project costs. The program has a database of projects and the database can be searched by a list of criteria to find projects similar to the project being estimated. Once a list of similar projects is put together, the user chooses the projects best most like their project and using the software can “Smart Average” them. The software weighs the different buildings to account for number of floors, floor heights, etc. The outcome is an estimate split up into the 16 CSI divisions. The user then has a base estimate to work from and can make adjustments for the unique characteristics of their actual project.

D4 Original Estimate	Adjustment	New Amount	Reason for Adjustment
\$5,298,710	\$6,000,000	\$11,298,710	Multiple trailers, staff of 20+, 3 year job, 5 trucks, parking \$,
\$5,496,093	\$5,000,000	\$10,496,093	extensive lead & asbestos abatement, demolition work, CY work
\$10,924,196	\$0	\$10,924,196	repouring all of the floors, CY foundations & floor
\$2,109,917	\$1,000,000	\$3,109,917	all masonry bldg, lots of repair work
\$4,910,729	\$0	\$4,910,729	
\$1,030,431	\$2,000,000	\$3,030,431	repairing historical wood, lots of exposed wood
\$1,754,023		\$1,754,023	CY
\$1,942,231	\$0	\$1,942,231	
\$4,763,065	\$3,000,000	\$7,763,065	high end finishes, hand made, from overseas
\$3,573,145	\$0	\$3,573,145	
\$1,776,191	\$0	\$1,776,191	
\$1,348,894	\$1,000,000	\$2,348,894	casework, auditorium seating
\$1,136,200	\$2,000,000	\$3,136,200	blast resistance, measurement/control instrumentation
\$1,847,123	\$2,000,000	\$3,847,123	installing multiple elevators
\$7,791,697	\$10,000,000	\$17,791,697	two systems, extensive ductwork, new sprinkler system
\$6,723,695	\$10,000,000	\$16,723,695	high end security system, new data lines, UPS system
\$62,426,340	\$42,000,000	\$104,426,340	<b>Totals</b>

RS Means SF Cost Estimate

Dimensions: Courtyard - the new construction portion of the project.



Assumptions:

- 1 Story Building
- 24' Story Height
- Precast Concrete w/ Steel Frame

Revisions to Standard Data:

- Interpolation between 24,000 SF and 27000 SF to get numbers  
{Formula = 24,000 + (25,000-24,000)/(27,000-24,000)}
- Modification from 640 LF of Perimeter to 700 LF of perimeter (4.70 / 100LF)  
→ \$2.82/SF = (60 LF \* 4.70 / 100)
- Change to Padded Seats costs \$207 EA for 300 seats  
\$207 \* 300 = \$62,100

RS Means Estimate:

$$\begin{array}{r}
 \$111.81 / \text{SF} \\
 + \$2.82 / \text{SF} \\
 \hline
 \$114.63 / \text{SF} \quad \times 25,000 \text{ SF} = \$2,865,750 + \$62,100 = \boxed{\$2,927,850}
 \end{array}$$

Comparisons:

- D4: The D4 Estimate was considerably lower than expected. The projects used to “Smart-Average” in order to come up with an estimated project cost were not very similar to the Smithsonian Institution Patent Office Building. The projects used ranged for a arts center, to the National Archive II bldg. The trouble lies in the unique nature of the Patent Office Building. Also, estimating for a renovation changes significantly from building to building because of each buildings different history.
- RS Means: The RS Means estimate appears to below what the courtyard should probably cost. The Smithsonian Institution is sparing no expense for their project, and the high end finishes they are using is not apparent in the SF cost of the courtyard. The SF cost is less than half of what the SF cost for the entire building is for the base contract. Since the courtyard is basically a new project within the renovation, the cost per SF should probably be a little less than the rest of the building, since there is limited demolition and no abatement. The estimate also cannot show the lack of access to the courtyard that will raise costs of doing any work requiring equipment in the area.