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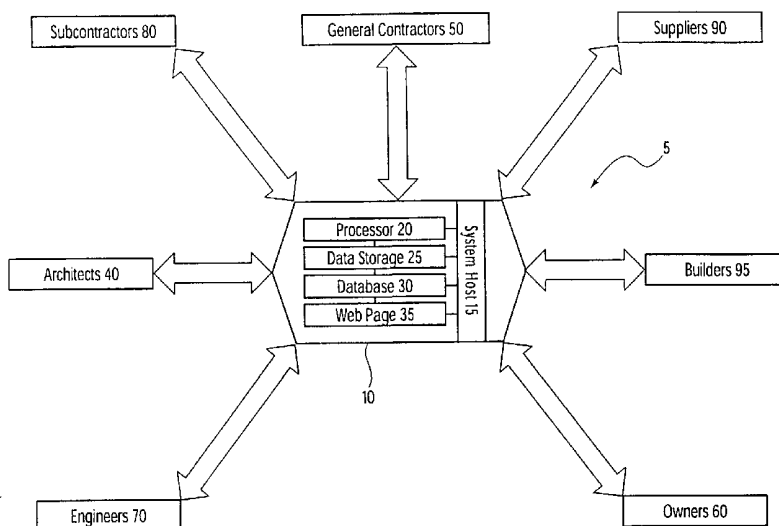
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(54) Title: A PROCESS AND A SYSTEM FOR LISTING INFORMATION RELATING TO A CONSTRUCTION PROJECT OVER A COMPUTER NETWORK



(57) Abstract: A process for estimating a construction project over a computer network (5). Architects (40) or contractors (50) can enter information relating to a construction project into an online database (30). This online database (30) is stored in a server that creates a series of quantities for each of these construction projects. Next, a system host (15) presents a series of quantities for each of the construction projects. Next users, such as contractors (50), subcontractors (80), or construction managers can purchase and download these quantities and a construction report. These quantities are presented in a unique electronic spreadsheet template. Once the users have this template with the quantities included, they can bid on each construction project either online or through any other communication system.

A PROCESS AND A SYSTEM FOR LISTING INFORMATION RELATING
TO A CONSTRUCTION PROJECT OVER A COMPUTER NETWORK.

5

1. Field of the Invention

The invention relates to a process and a system for
listing information relating to a construction project over a
computer network. More specifically, the invention relates to
a process and a system for presenting quantities, estimates,
bids, project schedules, and shop drawings relating to
construction projects over a computer network.

15

SUMMARY OF THE INVENTION

The invention relates to a process and a system for
displaying quantities, estimates, bids, project schedules and
shop drawings for a construction project over a computer
network. The quantities and estimates, are created through an
electronic spreadsheet engine while the shop drawings are
stored as a digitized drawing. The first step in the process
starts when an architect or contractor prepares construction
documents that are conceptual or working documents. The
information is then transformed into a detailed list of
quantities ready for pricing in an electronic spreadsheet
format. This information is then stored in an online
database. This online database is stored on a server that is
connected to remote computers over the computer network. When
the system host enters this information the system host
creates a series of quantities for each of the construction
projects. Next, the system host presents these quantities for
each of the construction projects on a web-page over the
computer network. Next, users such as contractors,
subcontractors or construction managers can purchase and

download these quantities and a construction report. Once the users have these quantities they can bid on each construction project either online or through any other communication means.

5

To further simplify this process, each construction project is sorted in the database by location so that when users log into the database, they can choose construction projects based upon their location.

10

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects and features of the present invention will become apparent from the following detailed description considered in connection with the accompanying drawings which disclose several embodiments of the present invention. It should be understood, however, that the drawings are designed for the purpose of illustration only and not as a definition of the limits of the invention.

20

In the drawings wherein similar reference characters denote similar elements throughout the several views:

25

FIG. 1 schematic diagram of the system for presenting construction projects over a computer network;

FIG. 2 is the process for importing construction information into a server on the computer network;

30

FIG. 3 is the process for presenting construction projects over the computer network;

FIG. 4 is a copy of an add/remove project web-page for adding or removing projects to the database;

35

FIG. 5 is a copy of a file upload web-page for uploading files into the database;

5 FIG. 6 is a copy of a project update web-page for revising projects already entered into the database;

FIG. 7 is a copy of a location selection web-page for selecting construction projects based upon their location;

10 FIG. 8 is a copy of a quantities listing web-page wherein a user can select the particular quantities to purchase;

FIG. 9 is a copy of a customer information web-page for entering in the name and information of a user who might want
15 to purchase a listing of quantities for a project;

FIG. 10 is a copy of a cost update web-page that allows an administrator to update the cost to download quantities for each division or specification section;

20 FIG. 11 is a first embodiment of a selection page for selecting quantities or estimates;

FIG. 12 is a second embodiment of a selection page for selecting a project quantity or estimate listing;

FIG. 13 is a copy of a first web-page detailing a project quantity or estimate listing;

30 FIG. 14 is a copy of a second web-page detailing the project quantity or estimate listing;

FIG. 15 is a copy of a third web-page detailing the project quantity or estimate listing;

35

FIG. 16 is a copy of a fourth web-page detailing the project quantity or estimate listing;

FIG. 17 is a copy of a fifth web-page detailing the project quantity or estimate listing;

FIG. 18 is a copy of a sixth web-page detailing the project quantity or estimate listing;

FIG. 19 is a copy of a seventh web-page detailing the project quantity or estimate listing; and

FIG. 20 is a copy of an eighth web-page detailing the project quantity or estimate listing.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 refers to a schematic diagram of the computer network 5 for presenting a construction project over a computer network. In this case, there is a server 10 that is run by a system host 15 that controls a processor 20, a data storage device 25, a database 30, and a series of web-pages 35. The database is preferably stored in data storage device 25, while web-pages 35 are generated for viewing from database 30.

System host 15 runs a program that controls the process for displaying quantities, estimates, bids, project schedules, and shop drawings on construction projects stored in database 30 over the computer network. Through a series of remote computers, a series of different purchasers can log into server 10 to review these construction projects and to purchase information relating to these construction projects on web-pages 35. These purchasers could be an architect 40, a general contractor 50, a construction owner 60, a construction

engineer 70, a subcontractor 80, a construction supplier 90 or a builder 95.

This process is shown in greater detail in FIGS. 2 and 3. Essentially, FIG. 2 shows the process for entering information into database 30. In this case, in step 100, a project owner such as an architect 40 selects to add or remove a project. Next in step 110, the user such as an in house project co-ordinator receives information relating to a construction project in a central office that houses system host 15 via an electronic transfer, or through a regular mail service. The electronic transfer can be effected by either an electronic transfer such as electronic mail or a file upload. The user uploads this information via a web-page shown in FIG. 5. This information comes in the form of shop drawings, or project schedules. Here, in step 120, the user reviews the drawings and specifications with team leaders and enters information such as digitized sketches taken from blueprints, and a spreadsheet that contains the estimate numbers for each type of material necessary to build this construction project. Next, in step 130 the user prepares the order of the quantities to take off. Next, in step 140, the user distributes the order of the take off to each discipline. Each discipline or section is categorized and listed in FIGS. 13-20. Next, in step 150 the user starts the quantities take off process for each discipline. Here, all material quantities are taken off and listed with the associated specification section, sub-sections, and drawing number. All quantities that are taken off include an audit trail, indicating how the quantities were derived and the location in the documents where these quantities were specified. Each detail, location and specification is referenced with respect to construction documents when available or at the discretion of the team leader. In some cases, a traced drawing is included with the quantities indicating precisely what was

taken off from the drawings.

Next, in step 160 a project supervisor such as a head of a division reviews the quantities taken off of the information presented. Here the project supervisor can question the user regarding the type and the amount of quantities taken off of the information presented. In this case, the estimators use a take off software such as a digitizer which allows each estimator to review the drawings and take off quantities based upon these drawings.

Next, if the supervisor accepts these quantities, then in step 170 the user prepares these quantities for posting online.

After that, each specification section and subsection that has been quantified will be saved as an individual electronic spreadsheet file and posted online in that manner. Next, in step 180 the user creates a test run to determine whether the data has errors. Finally, in step 190 the user posts quantities online for sale or use online to bid.

FIG. 4 shows a web-page for allowing a member of an administrative team to enter information relating to this construction project. This information is the project name, the address of the project, including the city, state, and zip code of the project, the engineers estimated cost, the bid due date, the General Contractor's estimated project start date, the project contract number, the size of the project in square footage, and a brief description of the project.

Once this information has been entered, the administrative team can change the project information via a web-page shown in FIG. 6. FIG. 6 shows a series of fields that allows a user to update quantities, estimates or bids for each sub heading. For example, this web-page allows a member

of the administrative team to enter the division number and the name of the subheading taken from one of the sixteen divisions shown in FIGS. 13-20. Next, the user can update the division cost and the project square footage for each division entered.

FIG. 3 shows the process for retrieving this information for the construction projects. This process starts with step 200 wherein a purchaser such as a contractor, subcontractor, engineer, or construction manager logs into server 10. Next, in step 210 the purchaser selects the location of the project via a web-page shown in FIG. 7. In this case, when the purchaser selects a project based upon the location of that project, system host 15 sorts each project based upon its location and then presents these project in the order of the proximity to the location that the user selected. Once this project has been selected in step 220, the purchaser can review this project in step 230 to make sure that this project is the exact project selected by the purchaser. The purchaser reviews this project via a web-page shown in FIG. 8.

Next, in step 240 the purchaser agrees to purchase this project wherein the purchaser is next directed step 250 to enter in the purchaser's purchasing information in a webpage shown in FIG. 9. Here the purchaser enters customer information such as company name, address, the user's name, telephone number, fax number, email address, the user's login id and password. In addition, the purchaser is asked to enter in his or her credit card information to purchase this item.

Next, in step 260 the purchaser downloads the information that he or she purchased. Essentially the information purchased by the user is either quantities, estimates, bids, project schedules, or shop drawings.

If in step 250 the purchaser purchased quantities from system host 15, then the purchaser could proceed to step 270 to enter estimates for the quantities downloaded by the purchaser. The purchaser has the option to either enter these estimates online and have them saved into database 30, or to send these estimates directly to the purchaser presenting the construction project online. If the purchaser presents his or her estimates online then the purchaser simply uploads this information relating to the estimates to server 10 and system host 15 saves this information in database 30.

Next, in step 280, the purchaser can also present a bid based upon these estimates so that this system creates not only an online quantity disclosure for construction projects but also an online bidding process for construction projects.

At any time during this bidding process, the user displaying the construction project information could provide cost updates to the purchasers bidding on this project. These cost updates could be in the form of a change in the price of each quantity report downloaded, or a change in the price of quantities for each division based upon the square feet of the project. The display of this cost estimate is shown in a web-page in FIG. 10.

FIG. 11 shows a first embodiment of the invention showing a listing for the quantities in the sixteen different fields shown in FIGS. 13-20. In addition, on this web page there is included a listing of the quantities in a left-hand column and the corresponding estimate in the right-hand column. In this way a purchaser can simply select a check box in the left-hand column to select the quantity and the price for that quantity.

FIGS. 13-20 show the layout of a series of web-pages that list quantities. Essentially, when an architect presents

information relating to this project to system host 15, the architect 40 presents this information in a spreadsheet style with CSI index numbers detailing the different areas of construction. A user using system host 15 then arranges this information into a series of 16 headings that are standard for all projects. These headings are general conditions, sitework, concrete, masonry, metals, wood and plastics, thermal and moisture protection, doors and windows, finishes, specialties, equipment, furnishing, special construction, conveying systems, mechanical, and electrical. In that way, a series of purchasers connected to system host 15 can select different quantities for purchasing based upon the purchaser's selection of these divisions or headings.

Accordingly, while two embodiments of the present invention have been shown and described, it is to be understood that many changes and modifications may be made thereunto without departing from the spirit and scope of the invention as defined in the appended claims.

WHAT IS CLAIMED IS:

1. A system for presenting a series of quantities relating to a construction project over a computer network having a server comprising:

a) at least one database comprising a series of tables listing information relating to the construction project;

b) at least one data storage device for storing said at least one database;

c) at least one processor for sorting said construction projects based upon their geographic location; and

d) a series of web pages for displaying information relating to said series of construction projects over the computer network.

2. The system as in claim 1, further comprising a central office location for receiving information relating to said series of construction projects and entering said information into said server.

3. The system as claimed in claim 1, further comprising a digitizer to allow a user to take off a series of quantities from a series of shop drawings relating to the construction project.

4. The system as claimed in claim 1, wherein said at least one database comprises a series of tables of information relating to the construction project wherein said information is stored and presented in a spreadsheet format.

5. A process for estimating a construction project over a computer network comprising the steps of:

5 a) entering information relating to a series of construction projects into an online database stored on a server;

10 b) creating a series of quantities for each of said series of construction projects;

15 c) presenting said series of quantities for each of said series of construction projects; and

20 d) allowing users to download a construction report with said quantities for subsequent bidding.

25 6. The process as in claim 5, further comprising the step of presenting a series of bids over the computer network based upon said series of quantities.

30 7. The process as in claim 5, wherein said step of entering information includes entering a date, a location, and a description of said series of construction projects.

35 8. The process as in claim 7, further comprising the step of sorting said series of construction projects based upon said location of said series of construction projects and presenting said series of construction projects over the computer network.

9. The process as in claim 5, wherein said step of creating a series of quantities includes creating a series of quantities for each of a series of components for each of said series of construction projects.

10. The process as in claim 9, further comprising the step of categorizing said series of quantities into a series of subheadings.

5 11. The process as in claim 9, further comprising the step of displaying over the computer network each of said quantities under said subheadings.

10 12. The process as in claim 5, wherein said step of displaying said quantities in said subheadings includes displaying said series of quantities under at least one of the following subheadings: general conditions, site work, concrete, masonry, metals , wood and plastics, thermal and moisture protection, doors and windows, finishes, specialties,
15 equipment, furnishings, special construction, conveying systems, mechanical and electrical.

20 13. The process as in claim 5, further comprising the step of updating said information entered for said series of construction projects.

25 14. The process as in claim 5, further comprising the step of presenting a cost update to a purchaser so that the purchaser knows an estimate rate on each project.

30 15. The process as in claim 5, further comprising the steps of presenting at least one shop drawing and at least one project schedule associated with said series of construction projects over the computer network.

16. An article of manufacture comprising:

35 a) a computer usable medium having a machine readable program code means for entering information relating to a series of construction projects into an online database stored

on a server;

b) a machine readable program code means for creating a series of quantities for each of said at least one

5 construction projects;

c) a machine readable program code means for presenting said series of quantities for each of said series of construction projects; and

10

d) a machine readable program code means for allowing users to download said construction report with said quantities for subsequent bidding.

15

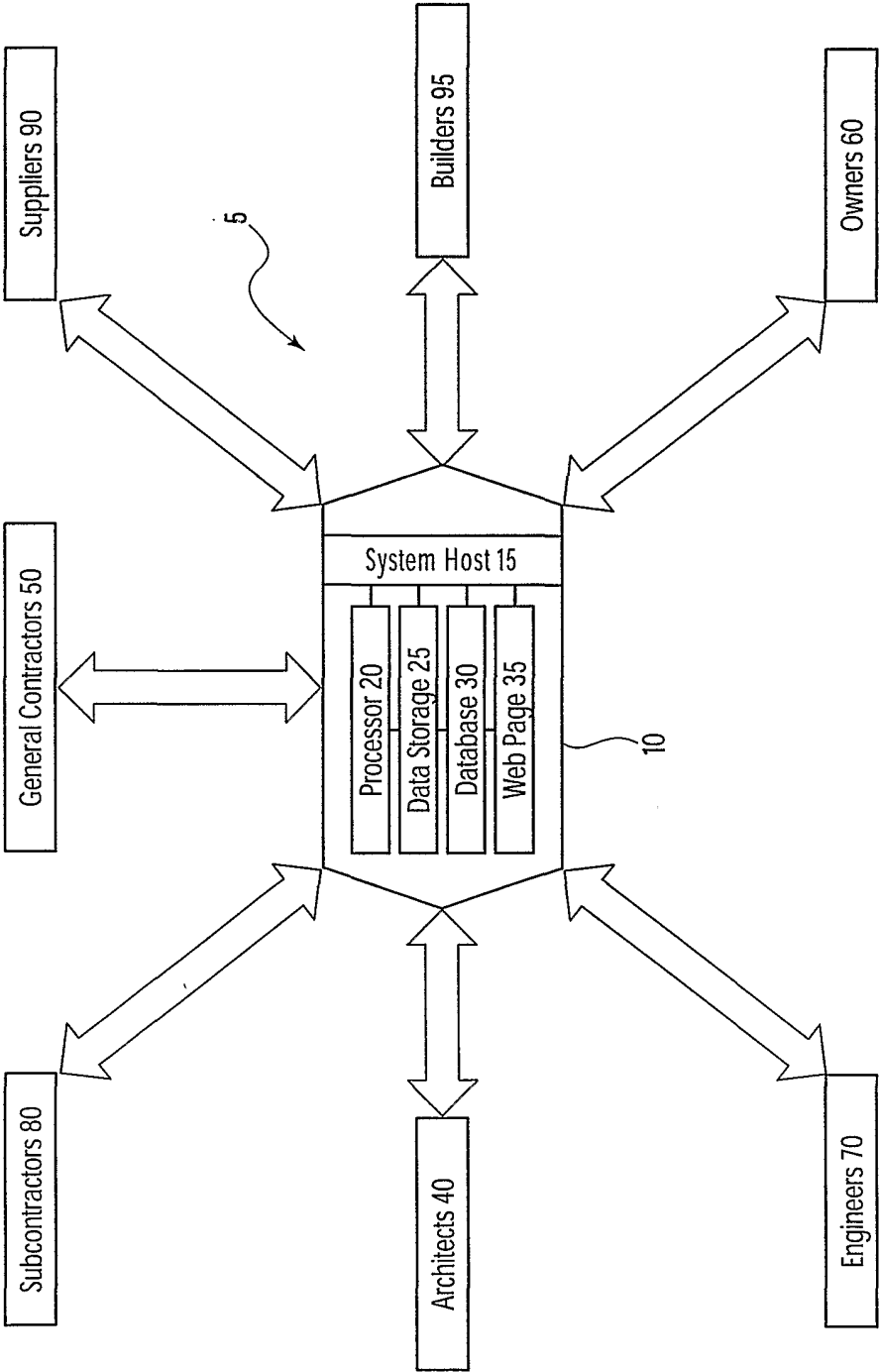


FIG. 1

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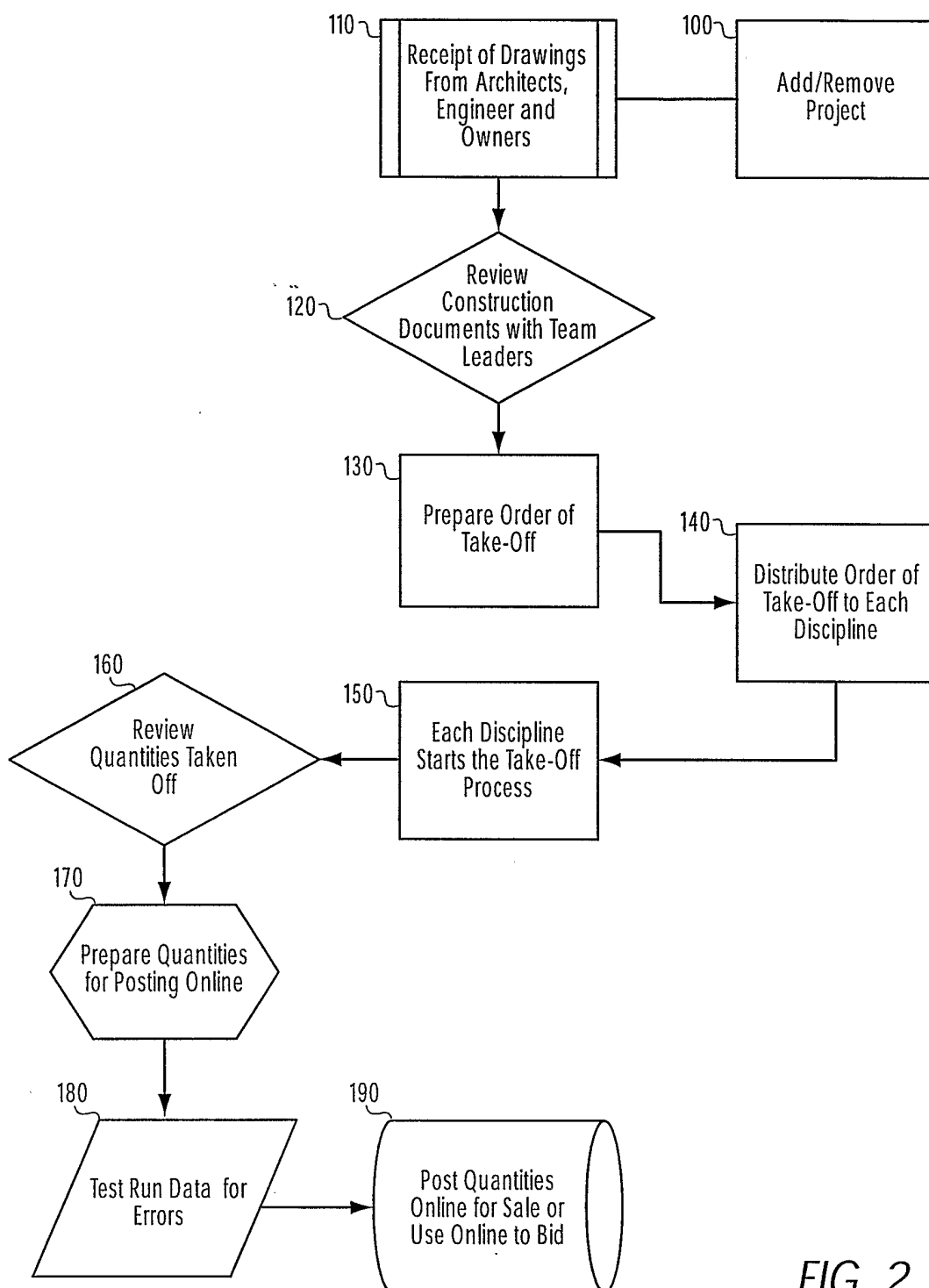


FIG. 2

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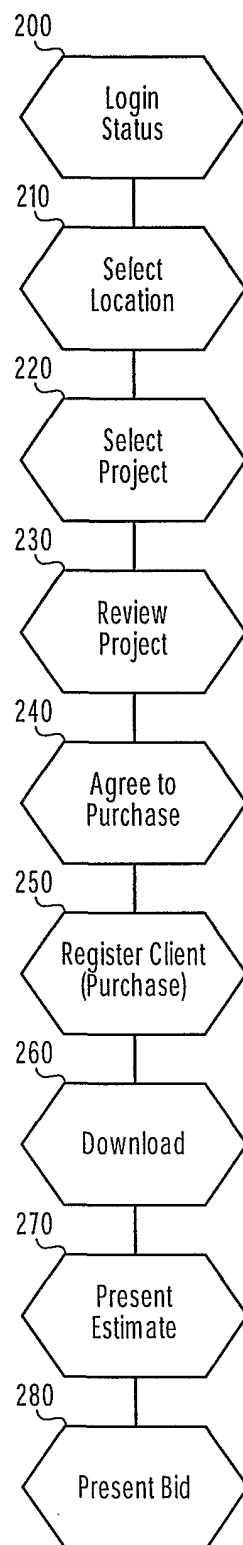


FIG. 3

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Add/Remove Project

Select Project Name to Delete

Delete

Enter/Edit Project

Project Name:

Address1:

Address2:

City:

State:

Zip:

Submit

Reset

Engineer's Estimated Cost::

Bid Due Date:

GC's Estimated Project Start Date:

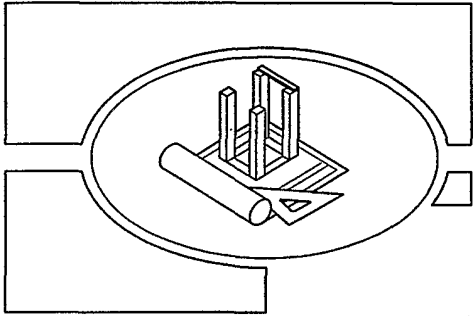
Project Contract Number:

Project Sq. Foot:

Project Description:

FIG. 4

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Create Account

User ID

Password

File Upload

File to Upload:

Estimates

Quantity Survey

Project Schedules

Administration

Cost Update

Add/Delete Project

Project Update

File Upload

FIG. 5

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Project Update

Select Project Name

Select Parent Division Name (if applicable)

Delete Parent

Enter Division Number - Name

-

Parent Division Cost Override (if applicable)

Select Download Association:

1-Estimates

Enter Child Division File Name:

Enter Child Division File Description:

Add\Edit

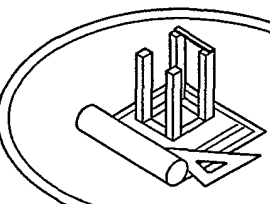
Delete

Project Square Foot:

20000

FIG. 6

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Create Account

User ID

Password

Estimates

Quantity Survey

Project Schedules

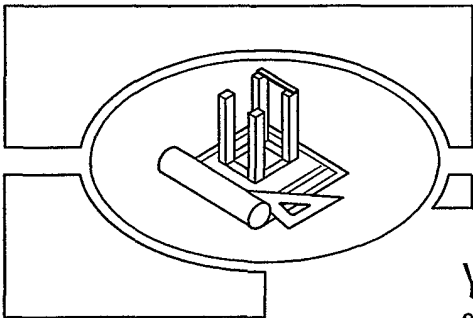
Select State:

Select Location:

Select Project:

FIG. 7

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[Create Account](#)

User ID

Password

Logon

[Estimates](#)

[Quantity Survey](#)

[Project Schedules](#)

Your selected project

Select Division(s) to download:

Project Name: Washington_Heights Views

Washington_Heights, NY 10568

Contract Number: SWH001

Description: New apartment complex

Bid Due Date: 2/5/2000

1-GENERAL CONDITIONS

- | | |
|--|---------|
| <input type="checkbox"/> 01910-Permits & Fees | \$30.00 |
| <input type="checkbox"/> 01920-Temporary Protection | \$30.00 |
| <input type="checkbox"/> 01930-Field Offices | \$30.00 |
| <input type="checkbox"/> 01940-Field Offices Furniture | \$30.00 |
| <input type="checkbox"/> 01950-Sidewalk Bridge | \$30.00 |
| <input type="checkbox"/> 01960-Life Safety Signs | \$30.00 |
| <input type="checkbox"/> 01970-Project Signage | \$30.00 |
| <input type="checkbox"/> 01980-Security | \$30.00 |

2-SITEWORK

- | | |
|---|---------|
| <input type="checkbox"/> 02000-Shoring | \$50.00 |
| <input type="checkbox"/> 02001-Excavation | \$50.00 |
| <input type="checkbox"/> 02003-Haulage | \$50.00 |

15-MECHANICAL

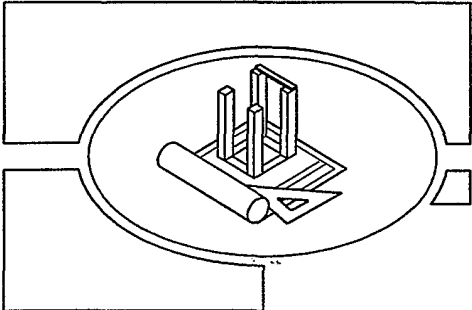
- | | |
|---|----------|
| <input type="checkbox"/> 1500-HVAC | \$140.00 |
| <input type="checkbox"/> 15000-HVAC | \$30.00 |
| <input type="checkbox"/> 1502-Plumbing | \$30.00 |
| <input type="checkbox"/> 152001-Plumbing | \$30.00 |
| <input type="checkbox"/> 152233-Plumbing Piping | \$30.00 |

16- ELECTRICAL

- | | |
|---|---------|
| <input type="checkbox"/> 16020-Fire | \$46.00 |
| <input type="checkbox"/> 16021-Controls | \$46.00 |
| <input type="checkbox"/> 16030-Alarm | \$46.00 |

FIG. 8

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[Create Account](#)

User ID

Password

Logon

[Estimates](#)

[Quantity Survey](#)

[Project Schedules](#)

[Administration](#)

[Add/Delete Project](#)

[Project Update](#)

[File Upload](#)

Customer Information

Company Name:

Address1:

Address2:

City:

State:

Zip:

Telephone:

Fax:

User First Name:

User Last Name:

E-mail Address:

User ID:

Password:

Confirm Password:

Provide a phrase in the event that you forget your password.

Password phrase:

Card Owner

☒ Company ☐ User

Card Number:

Expiration Date:

Card Type:

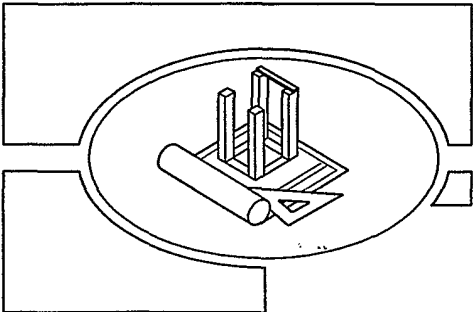
AMEX ☐

Submit

Reset

FIG. 9

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Create Account

User ID

Password

Logon

Estimates

Quantity Survey

Project Schedules

Administration

Cost Update

Add/Delete Project

Project Update

File Upload

Cost Update:

Project name: Washington_Heights Views

(a) Project square foot: 20000

Project Service ID:

Division name:HVAC

(b) Cost / Sq. foot: 0.00000 Division cost (a x b) 0.00

Division name:GENERAL CONDITIONS

(b) Cost / Sq. foot: 0.00150 Division cost (a x b) 30.00

Division name:SITWORK

(b) Cost / Sq. foot: 0.00250 Division cost (a x b) 50.00

Division name:MECHANICAL

(b) Cost / Sq. foot: 0.00150 Division cost (a x b) 30.00

Division name:ELECTRICAL

(b) Cost / Sq. foot: 0.00230 Division cost (a x b) 46.00

Project total cost:

156

Update

FIG. 10

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New Page 5 - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss

Address <http://stariong.com/> Go Links

QUANTITIES.com

Estimates --- Project ---

Divisions 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

<input checked="" type="checkbox"/> 1500-HVAC	\$140.00
<input checked="" type="checkbox"/> 15000-HVAC	\$30.00
<input checked="" type="checkbox"/> 1502-Plumbing	\$30.00
<input checked="" type="checkbox"/> 152001-Plumbing	\$30.00
<input checked="" type="checkbox"/> 152233-Plumbing Piping	\$30.00

Save Selection(s)

Project Name: Washington_Heights Views
 Washington_Heights, NY 10568
 Contract Number: SWH001
 Description: New apartment complex
 Bid Due Date: 2/5/2000

User ID

Password

[Sign-Up](#)

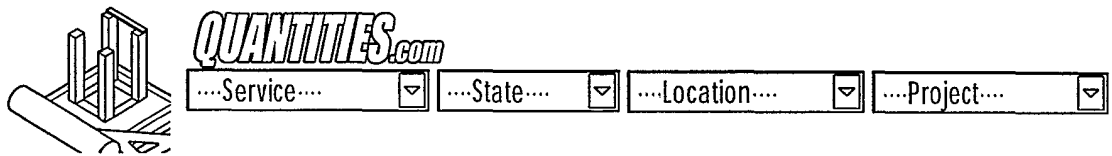
Our Advertisers...

DJH

Total cost of item(s) selected: 260

FIG. 11

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Div 1	Div 2	Div 3	Div 4	Div 5	Div 6	Div 7	Div 8	Div 9	Div 10	Div 11	Div 12
				Div 13	Div 14	Div 15	Div 16				

Our advertisers...

JOB CO

DJH
Mechanical

Total cost of items you selected:

Purchase item(s)

FIG. 12

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Div	10,000 Project Avg. Size Trade Description	Avg. Cost Per Item	Cost Per Div	Projected Sales/Div	Total Sales Per Div
1	GENERAL CONDITIONS		\$150.00	3	\$450.00
	01910 Permits & Fees	\$25.00			
	01920 Temporary Protection	\$35.00			
	01930 Field Offices	\$10.00			
	01940 Field Offices Furniture	\$25.00			
	01950 Sidewalk Bridge	\$25.00			
	01960 Life Safety Signs	\$10.00			
	01970 Project Signage	\$10.00			
	01980 Security	\$10.00			
2	SITEWORK		\$1,130.00	3	\$3,390.00
	02150 shoring & underpinning	\$50.00			
	02164 soil & rock anchors	\$50.00			
	02246 geotextiles / geomatrixes	\$25.00			
	02270 slope protection & erosion control	\$25.00			
	02276 earth retainage	\$50.00			
	02280 soil treatment	\$20.00			
	02480 marine work	\$50.00			
	02515 unit pavers & accessories	\$25.00			
	02520 concrete paving	\$25.00			
	02524 porous paving	\$25.00			
	02525 curbing	\$25.00			
	02535 athletic & playground surfacing	\$20.00			
	02540 synthetic surfacing	\$20.00			
	02710 subsurface drainage materials	\$50.00			
	02712 subsurface drainage pipe	\$50.00			
	02722 drains & inlets	\$50.00			
	02725 precast trench drain system	\$50.00			
	02800 site improvements	\$50.00			
	02820 fountains, pools & water displays	\$25.00			
	02830 fences & gates	\$25.00			
	02835 gate operators	\$25.00			
	02840 walk, road & parking appurtenances	\$50.00			
	02842 bicycle racks/ lockers	\$20.00			
	02853 highway sign posts	\$50.00			
	02860 recreational facility & playground	\$25.00			
	02870 site, street & mall furnishings	\$25.00			
	02872 street, mall docks, bells & carillons	\$25.00			
	02875 site and street shelters	\$75.00			
	02880 outdoor sculpture & ornamental work	\$25.00			
	02890 bridges-pedestrian, vehicular	\$50.00			
	02980 landscape accessories	\$50.00			

FIG. 13

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2	03000	CONCRETE	\$385.00	3	\$1,155.00
	03010	concrete materials	\$25.00		
	03100	concrete formwork	\$25.00		
	03125	formliners	\$25.00		
	03200	concrete reinforcement	\$50.00		
	03250	concrete accessories	\$20.00		
	03346	concrete crack control equipment	\$25.00		
	03404	precast autoclaved aerated concrete wall roof p	\$50.00		
	03412	precast, insulated foundation wall systems	\$50.00		
	03450	architectural precast concrete	\$50.00		
	03500	cementitious decks	\$20.00		
	03650	cementitious underlayment	\$20.00		
	03700	concrete restoration & cleaning	\$25.00		
4	04000	MASONRY	\$475.00	3	\$1,425.00
	04100	mortar & masonry grout	\$25.00		
	04150	masonry reinforcing & accessories	\$25.00		
	04200	unit masonry	\$50.00		
	04225	precast autoclaves aerated concrete masonry ur	\$25.00		
	04235	preassembled masonry panels	\$25.00		
	04242	masonry wall systems	\$25.00		
	04245	veneer masonry systems	\$25.00		
	04270	glass unit masonry	\$25.00		
	04400	stone	\$25.00		
	04455	marble	\$25.00		
	04460	limestone	\$25.00		
	04465	granite	\$25.00		
	04475	slate	\$25.00		
	04480	reconstructed stone	\$25.00		
	04500	masonry restoration & cleaning	\$25.00		
	04555	flue liners	\$25.00		
	04710	simulated / manufactured stone	\$25.00		
	04720	cast stone	\$25.00		
5	05000	METALS	\$700.00	3	\$2,100.00
	05010	metal materials	\$50.00		
	05030	metal coatings	\$50.00		
	05050	metal fastening	\$50.00		
	05100	structural metal framing	\$75.00		
	05160	structural framing systems	\$75.00		
	05300	metal decking	\$25.00		
	05400	cold-formed metal framing	\$50.00		
	05515	ladders & rungs	\$25.00		
	05532	gratings, trench covers	\$25.00		
	05535	floor plates	\$25.00		
	05540	castings	\$25.00		
	05600	architectural metalwork	\$75.00		
	05712	straight run stairs	\$25.00		
	05715	spiral & circular stairs	\$50.00		
	05720	railings & handrails	\$25.00		
	05723	treads & nosings	\$25.00		
	05800	expansion control	\$25.00		

FIG. 14

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6	06000	WOOD AND PLASTICS	\$665.00	3	\$1,995.00
	06010	lumber	\$75.00		
	06060	connectors & supports	\$25.00		
	06124	fiberboard sheets & decking	\$25.00		
	06170	prefabricated structural wood	\$75.00		
	06180	glued laminated timber	\$50.00		
	06182	glued laminated decking	\$25.00		
	16190	prefabricated wood joints & trusses	\$75.00		
	16240	laminates	\$25.00		
	06300	wood treatment	\$20.00		
	06310	wood coatings	\$20.00		
	06400	architectural woodwork	\$75.00		
	06412	cabinet & drawer hardware	\$25.00		
	06482	wood veneers & flitches	\$25.00		
	06600	plastic fabrications	\$75.00		
	06610	glass fiber & resin fabrications	\$25.00		
	06650	solid polymer fabrications	\$25.00		
7	07000	WOOD AND PLASTICS	\$780.00	3	\$2,340.00
	07100	waterproofing & dampproofing	\$25.00		
	07180	water repellants	\$25.00		
	07190	vapor retarders	\$25.00		
	07200	insulation	\$25.00		
	07220	roof & deck insulation	\$25.00		
	07240	exterior insulation & finish systems	\$50.00		
	07250	fireproofing	\$25.00		
	07270	firestopping	\$25.00		
	07280	smoke containment barriers	\$25.00		
	07310	shingles	\$50.00		
	07320	roofing tiles	\$50.00		
	07325	roofing tile fastening accessories	\$25.00		
	07410	roof & wall panels	\$25.00		
	07420	wall panels	\$25.00		
	07460	siding	\$25.00		
	07500	membrane roofing	\$25.00		
	07555	roof ballast materials	\$25.00		
	07560	roof maintenance / repair	\$25.00		
	07570	traffic topping	\$20.00		
	07610	metal roofing	\$25.00		
	07620	sheet metal flashing & trim	\$25.00		
	07650	flexible flashing	\$25.00		
	07710	prefabricated roof specialties	\$25.00		
	07715	fascias, soffit panels & penthouse enclosures	\$35.00		
	07720	roof accessories	\$20.00		
	07810	unit skylights	\$20.00		
	07820	skylight structures	\$35.00		
	07920	sealants, caulking & seals	\$25.00		

FIG. 15

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8	08000	DOORS & WINDOWS	\$1,285.00	3	\$3,855.00
	08100	metal doors & frames	\$25.00		
	08200	wood & plastic doors & frames	\$25.00		
	08250	door opening assemblies	\$25.00		
	08275	door louvers & vision lights	\$25.00		
	08300	special doors	\$25.00		
	08305	access doors	\$25.00		
	08315	blast-resistant doors	\$25.00		
	0831B	air & watertight doors	\$25.00		
	08330	coiling doors & grilles	\$25.00		
	08350	folding doors & grilles	\$25.00		
	08352	folding fire barriers	\$25.00		
	083B0	upward-acting sectional doors	\$25.00		
	08370	industrial & hangar doors	\$25.00		
	08375	hangar doors	\$50.00		
	08380	traffic / impact doors	\$50.00		
	08382	darkroom doors	\$25.00		
	08385	sound control doors	\$25.00		
	08400	entrances & storefronts	\$75.00		
	08455	fire-rated glazed wall / door assemblies	\$75.00		
	08460	automatic entrance doors	\$50.00		
	08464	automatic sliding circular entrance doors	\$50.00		
	08470	revolving entrance doors	\$50.00		
	08500	metal windows	\$35.00		
	08B10	wood windows	\$35.00		
	08B30	vinyl windows	\$25.00		
	08640	glazed patio doors	\$25.00		
	08B53	sound control doors	\$25.00		
	08660	detention / security windows & screens	\$50.00		
	08665	pass & observation windows	\$50.00		
	086B7	exterior roll-up window shutters	\$25.00		
	08BB8	exterior folding, sliding shutters	\$25.00		
	08710	finish hardware	\$50.00		
	08716	exit devices	\$10.00		
	08718	sliding & folding door hardware	\$10.00		
	08720	door operators	\$10.00		
	08722	automatic door sensors	\$10.00		
	08730	weather-stripping & thresholds	\$10.00		
	08760	window hardware & specialties	\$10.00		
	08810	glass	\$10.00		
	08820	decorative glazing	\$20.00		
	08840	plastic glazing	\$20.00		
	08850	glazing accessories	\$10.00		
	08870	glazing film	\$10.00		
	08900	glazed curtain walls	\$25.00		

FIG. 16

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9	09000	FINISHES	\$1,285.00	3	\$1,155.00
	09120	ceiling suspension systems	\$25.00		
	09200	lath & plaster	\$25.00		
	09250	gypsum board	\$35.00		
	09290	gypsum fabrications	\$25.00		
	09300	tile	\$25.00		
	09390	tile setting materials & accessories	\$25.00		
	08400	terrazzo-poured, precast	\$20.00		
	09500	acoustical treatment	\$25.00		
	09545	special ceiling surfaces	\$25.00		
	09550	wood flooring	\$25.00		
	09600	stone flooring	\$25.00		
	09650	resilient flooring	\$20.00		
	09700	special flooring	\$25.00		
	09770	athletic surfacing- Indoor	\$25.00		
	09782	detectable / tactile warning surfaces	\$25.00		
	09795	flooring underlayment	\$10.00		
10	10000	SPECIALTIES	\$745.00	3	\$2,235.00
	10110	chalkboards & tackboards	\$10.00		
	10155	toilet compartments	\$25.00		
	10190	hospital cubicles	\$25.00		
	10200	louvers & vents	\$10.00		
	10235	brick & block vents	\$10.00		
	10240	grilles, & screens	\$10.00		
	10250	service wall units	\$25.00		
	10260	wall and corner guards	\$25.00		
	10270	access floors	\$25.00		
	10290	pest control	\$25.00		
	10300	fireplaces & stoves	\$25.00		
	10350	flagpoles	\$10.00		
	10405	banners & flags	\$10.00		
	10410	directories & bulletin boards	\$10.00		
	10416	computerized directories & message boards	\$20.00		
	10420	letters & plaques	\$25.00		
	10426	signage & graphics	\$25.00		
	10450	pedestrian control devices	\$25.00		
	10500	lockers	\$25.00		
	10501	locker accessories & locks	\$25.00		
	10512	tenant storage compartments	\$25.00		
	10520	fire protection specialties	\$25.00		
	10530	protective covers	\$25.00		
	10536	awnings	\$25.00		
	10550	postal specialties	\$25.00		
	10605	wire mesh partitions	\$25.00		
	10615	dismountable partitions	\$25.00		
	10650	operable partitions	\$25.00		
	10670	storage shelving	\$25.00		
	10700	exterior sun control devices	\$25.00		
	10750	telephone specialties	\$10.00		
	10800	toilet & bath accessories	\$25.00		
	10820	tub & shower doors / enclosures	\$15.00		
	10900	wardrobe & closet specialties	\$15.00		
	10914	hat & coat racks & accessories	\$15.00		
	10916	closet specialties	\$25.00		

FIG. 17

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11	11000	EQUIPMENT	\$850.00	3	\$2,550.00
	11014	window washing and building facade maintenance	\$50.00		
	11030	bank equipment	\$25.00		
	11040	ecclesiastical equipment	\$50.00		
	11050	library equipment	\$25.00		
	11060	theater & stage equipment	\$25.00		
	11090	checkroom equipment	\$25.00		
	11100	merchandising / display equipment	\$25.00		
	11110	laundry & dry cleaning equipment	\$25.00		
	11130	audio-visual equipment	\$25.00		
	11132	projection screens	\$25.00		
	11133	motorized projection screencover & carriers	\$25.00		
	11146	vehicle lubrication equipment	\$25.00		
	11150	parking control equipment	\$25.00		
	11160	loading dock equipment	\$25.00		
	11171	incinerators	\$25.00		
	11172	waste compactors & destructors	\$25.00		
	11175	waste chutes & collectors	\$25.00		
	11190	detention equipment	\$25.00		
	11400	food service equipment	\$25.00		
	11406	walk- in coolers & freezers	\$25.00		
	11452	residential appliances	\$25.00		
	11455	kitchen and bath cabinets	\$25.00		
	11457	television units & accessories	\$25.00		
	11458	disappearing stairs	\$25.00		
	11460	unit kitchens	\$25.00		
	11470	photo & graphic arts equipment	\$25.00		
	11480	athletic, recreational, and therapeutic equipment	\$25.00		
	11496	shooting range equipment	\$25.00		
	11528	paint spray booths	\$25.00		
	11700	medical & hospital equipment	\$25.00		
	11780	mortuary equipment	\$25.00		

FIG. 18

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12	12000	FURNISHING	\$350.00	3	\$1,050.00
	12300	manufactured casework	\$25.00		
	12345	laboratory casework	\$25.00		
	12350	medical casework	\$25.00		
	12505	blinds, shades & shutters	\$25.00		
	12530	drapery & curtain hardware	\$25.00		
	12535	motorized hardware-blinds shades draperies	\$25.00		
	12624	restaurant/bar furniture	\$25.00		
	12628	mailroom furniture	\$25.00		
	12628	computer / communications furniture & accessories	\$25.00		
	12839	folding wall furniture	\$25.00		
	12890	floor mats & frames	\$25.00		
	12710	auditorium arena & theater seating	\$25.00		
	12745	built-in table / seating	\$25.00		
	12750	multiple-use fixed seating	\$25.00		
13	13000	SPECIAL CONSTRUCTION	\$725.00	3	\$2,175.00
	13015	cable-supported & fabric structure	\$25.00		
	13028	interior framing assemblies	\$25.00		
	13032	athletic rooms	\$25.00		
	13034	sound- conditioned rooms	\$25.00		
	13036	precision controlled environments	\$25.00		
	13038	cold storage rooms & buildings	\$25.00		
	13039	wine storage rooms	\$25.00		
	13046	shelters & booths	\$25.00		
	13052	saunas & equipment	\$25.00		
	13054	steam baths & equipment	\$25.00		
	13070	bullet-resistant protection	\$25.00		
	13074	pressure relief panel assemblies	\$25.00		
	13080	sound & vibration control	\$25.00		
	13090	radiation protection	\$25.00		
	13095	radio frequency-shielded enclosures	\$25.00		
	13122	metal building systems	\$25.00		
	13123	glazed structures	\$25.00		
	13125	grandstands & bleachers	\$25.00		
	13123	fire training structures	\$25.00		
	13132	dome structures	\$25.00		
	13145	mezzanine systems	\$25.00		
	13146	equipment / storage enclosures	\$25.00		
	13149	swimming pool enclosures	\$25.00		
	13152	swimming pools & equipment	\$25.00		
	13170	whirlpool spas & hot tubs	\$25.00		
	13185	kennels & animal shelters	\$25.00		
	13200	liquid & gas storage tanks & basins	\$25.00		
	13600	solar energy systems	\$25.00		
	13800	building automation systems	\$25.00		

FIG. 19

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14	14000	CONVEYING SYSTEMS	\$350.00	3	\$1,050.00
	14100	dumbwaiters	\$25.00		
	14200	elevators	\$25.00		
	14205	passenger cabs	\$25.00		
	14235	residential elevators	\$25.00		
	14320	moving walks	\$25.00		
	14420	wheelchair lifts	\$25.00		
	14425	stair lifts	\$25.00		
	14450	vehicle lifts	\$25.00		
	14460	material handling-lifts	\$25.00		
	14500	material handling systems	\$25.00		
	14555	vertical reciprocating conveyors	\$25.00		
	14580	pneumatic tube systems	\$25.00		
	14700	turntables	\$25.00		
	14930	funiculars	\$25.00		
15	15000	MECHANICAL	\$350.00	3	\$1,050.00
	15250	mechanical insulation	\$25.00		
	15320	fire protection sprinkler systems	\$25.00		
	15440	plumbing fixtures	\$25.00		
	15445	fittings, trim & accessories	\$25.00		
	15455	water coolers & drinking, fountains	\$25.00		
	15500	heating, ventilating & air conditioning	\$25.00		
	15555	boilers & water heaters	\$25.00		
	15620	fuel-fired heaters	\$25.00		
	15835	convectors & radiators	\$25.00		
	15840	radiant heating systems	\$25.00		
	15875	air curtain units	\$25.00		
	15877	fume exhaust equipment	\$25.00		
	15890	ductwork	\$25.00		
	15942	registers, grilles & diffusers	\$25.00		
16	16000	ELECTRICAL	\$625.00	3	\$1,875.00
	16110	raceways, conduits & trenches	\$50.00		
	16128	undercarpet cabling systems	\$50.00		
	16500	lighting	\$35.00		
	16503	poles, posts & standards	\$35.00		
	16504	ballasts	\$25.00		
	16505	lenses, louvers, reflectors & accessories	\$25.00		
	16510	interior luminaries	\$35.00		
	16520	exterior luminaries	\$35.00		
	16535	emergency lighting	\$35.00		
	16670	lighting protection	\$50.00		
	16720	building security equipment-alarm, detection, ac	\$50.00		
	16734	score boards	\$35.00		
	16855	electric heating cables & mats	\$25.00		
	16880	electric radiant heaters	\$65.00		
	16915	lighting control equipment	\$75.00		

FIG. 20

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/12525

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 17/00

US CL : 707/104

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 707/7, 10, 104; 705/1, 10

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,950,206 A (KRAUSE) 07 September 1999 (07.09.1999), columns 4-5, lines 1-67	1-2
X	US 5,918,219 A (ISHERWOOD) 29 June 1999 (29.06.1999), column 6, lines 35-47	3
X	US 5,189,606 A (BURNS et al) 23 February 1993 (23.02.1993), columns 4-5, columns 103-104, columns 25, lines 15-50	4-16
A	US 6,202,051 B1 (WOOLSTON) 13 March 2001 (13.03.2001)	10-12

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

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Date of the actual completion of the international search

15 June 2001 (15.06.2001)

Date of mailing of the international search report

17 JUL 2001

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INTERNATIONAL SEARCH REPORT

ional application No.

PCT/US01/12525

Continuation of B. FIELDS SEARCHED Item3: DBs: USPTO, JPO, EPO, IBM TDB, Derwent

Search terms: construction, bid\$ or contract, database, server or storage, location, computer network, sort\$, table or entity