

# PACES™



**PACES™**



**PACES Overview**



# What is *PACES*?

- *PACES* is a Windows-based parametric cost estimating system.
  - Requires minimal user input to create accurate cost estimates.
  - User can develop cost estimates for:
    - Building Facilities.
    - Facilities Requiring AT/FP Capabilities.
    - Sustainable Design – Windows.
    - Sitework Projects.
    - Building Renovation Projects.
    - Life Cycle Cost Analysis.



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## What is *PACES*?

- Pre-defined engineering relationships link parameters to detailed quantities.
- Defaults and quantities can be changed by user.



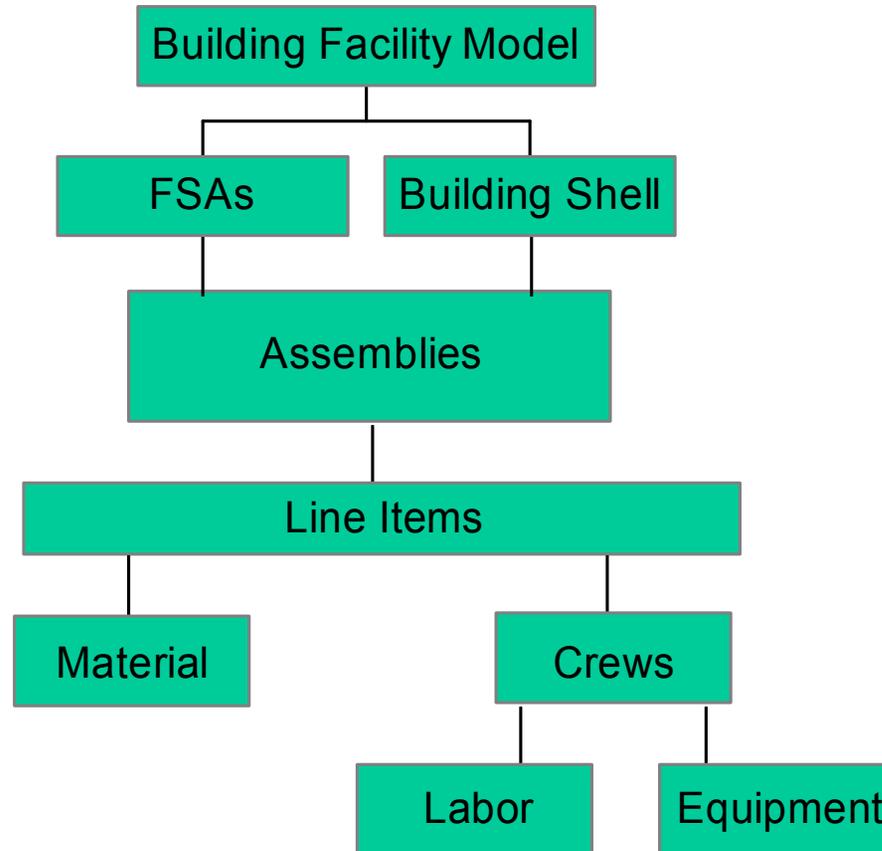
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# *PACES* Features

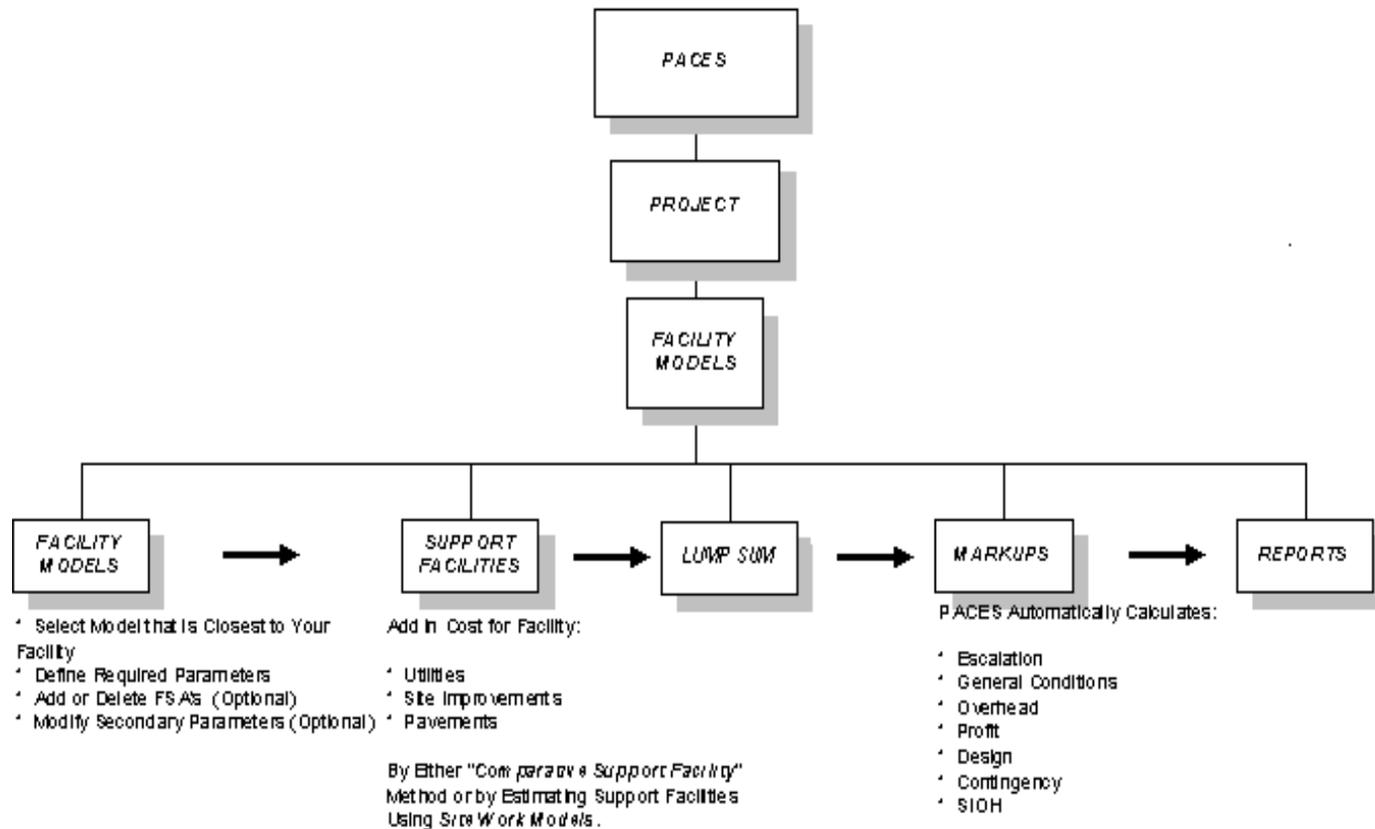
- Cost Database – 2001 UPB.
- Costs are automatically adjusted for the project location (2000+ locations).
- Additional costs associated with seismic conditions are integrated into PACES.
- English-Metric capability.
- Markups and escalation are automatically applied, however, can be manually changed by the user.
- More detailed Markup module.
- New parameter tab for tenant build out costs.



# How a User Develops a Facility Estimate...



# Process for Developing Facility Cost Estimates...





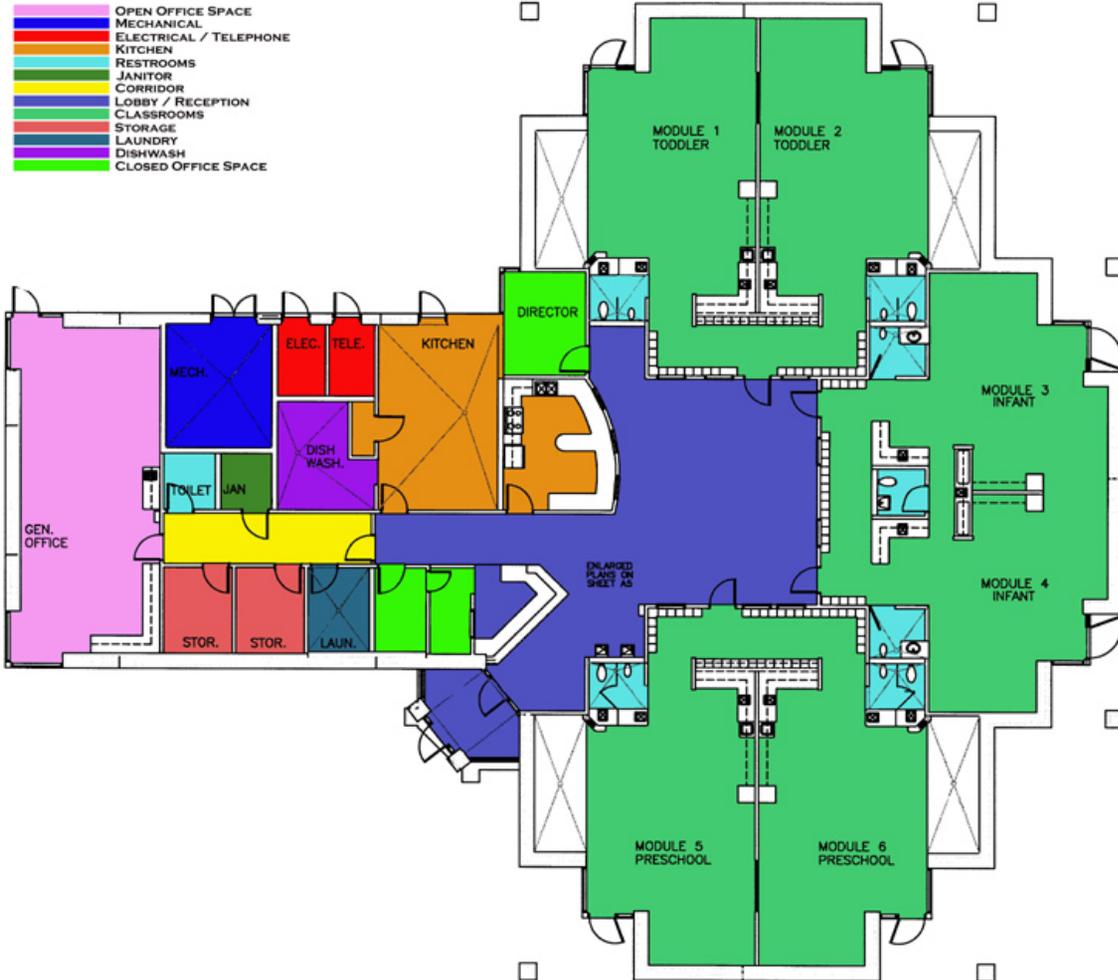
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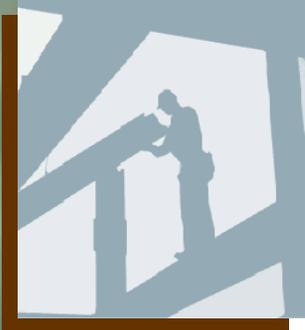
# Facility Model Types

- Administrative
- Aircraft Operations
- Base Support
- Child Care
- Communication
- Dining
- Dormitories
- Immigration and Naturalization
- Light Construction
- Lodging
- Maintenance
- Hangars
- Medical
- Housing
- Scholastic
- Storage



# Facility Broken Down by FSAs





# Sitework Models

<b>MODEL NAME</b>	<b>MODEL NAME</b>
<i>Access Roads</i>	<i>Lighting-Interstate, Roadway, Parking</i>
<i>Arterial Roads/Divided Highways</i>	<i>Load and Haul</i>
<i>Bridges</i>	<i>Materials Plant</i>
<i>Cleanup and Landscaping</i>	<i>Overhead Electrical Distribution</i>
<i>Clear and Grub</i>	<i>Parking Lots</i>
<i>Communications</i>	<i>Railroad Tracks and Crossings</i>
<i>Demolition, Buildings</i>	<i>Restriping Roadways/Parking Lots</i>
<i>Demolition, Catch Basins/Manholes</i>	<i>Resurfacing Roadways/Parking Lots</i>
<i>Demolition, Curbs</i>	<i>Retaining Wall, CIP Concrete</i>
<i>Demolition, Fencing</i>	<i>Sanitary Sewer</i>
<i>Demolition, Pavements</i>	<i>Sidewalks</i>
<i>Demolition, Pipes</i>	<i>Sprinkler System</i>
<i>Demolition, Sidewalks</i>	<i>Storm Sewer</i>
<i>Excavation, Cut and Fill</i>	<i>Structures-Culverts</i>
<i>Excavation, Trench/Channel</i>	<i>Treatment Plants/Lift Stations</i>
<i>Fencing</i>	<i>Underground Electrical Distribution</i>
<i>Gas Distribution</i>	<i>Water Distribution</i>
<i>Heating/Cooling Distribution System</i>	<i>Water Storage Tanks</i>



# Work Breakdown Structure

## CSI Master Format

- Division 1 General Requirements
- Division 2 Site Work
- Division 3 Concrete
- Division 4 Masonry
- Division 5 Metals
- Division 6 Wood and Plastic
- Division 7 Thermal and Moisture Protection
- Division 8 Doors and Windows
- Division 9 Finishes
- Division 10 Specialties
- Division 11 Equipment
- Division 12 Furnishings
- Division 13 Special Construction
- Division 14 Conveying Systems
- Division 15 Mechanical
- Division 16 Electrical

## Modified Uniformat

- 01 Substructure
- 02 Superstructure
- 03 Exterior Closure
- 04 Roofing
- 05 Interior Construction
- 06 Interior Finishes
- 07 Conveying Systems
- 08 Plumbing
- 09 HVAC
- 10 Fire Protection Systems
- 11 Electric Power and Lighting
- 12 Electrical Systems
- 13 Equipment
- 14 Furnishings
- 15 Special Construction
- 16 Selective Building Demolition
- 17 Site Preparation
- 18 Site Improvements
- 19 Site Civil/Mechanical Utilities
- 20 Site Electrical Utilities
- 26 Airfield Construction
- 27 Airfield Electrical
- 28 Other Airfield
- 99 Contractor Overhead and Profit



# Assemblies/Line Items

- 03030105      1020 mm X 2180 mm (3'4" X 7'2") Hollow Metal Door With Glass
  - Door closer, traditional, hvy duty, parallel arm, primed,
  - Weatherstripping, 3' x 7' door, metal frame, spring type, bronze
  - Ext. painting, wood, door & frame, 1 coat primer, 2 coats
  - Deadlocks, mortise, heavy duty, outside key, brass
  - Doorstops, door bumper, floor type, bronze
  - Mortise lockset, keyed, coml, wrt stl case, brs base, entr, US26D
  - Threshold, bronze
  - Float glass, 1/4" thick, plain, clear
  - Steel frames KD, 3'-4" W, sgl, 16 ga, 5.25" D, 2" dr, 7'-0" H
  - Grouting, door frame, 2.5 CF/opening, 3' x 7' opening
  - Coml stl dr, fl, 3'-4" x 7'-0", full pnl hol core, 18 ga, 2" thk
  - Hinge, full mortise, low freq, brass base, 4.5" x 4.5", US4



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# *What's New for PACES 2003?*

- ***Updated AT/FP Specifications and Functionality.***
- ***PACES Sustainable Design – Windows.***
- ***PACES Sustainable Design – LCC Reports.***
- ***More Facility Models.***
- ***New Tenant Assignment Feature.***
- ***PACES Pricing Guide – AT/FP Percentage Method.***
- ***New 'Total Cost' Window.***

*PACES*<sup>TM</sup>



*PACES* 9 Steps



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# Before Starting

- Gather all project information about the facility or facilities you are going to estimate.
  - Building Function
  - Location
  - Utility information
  - Design information

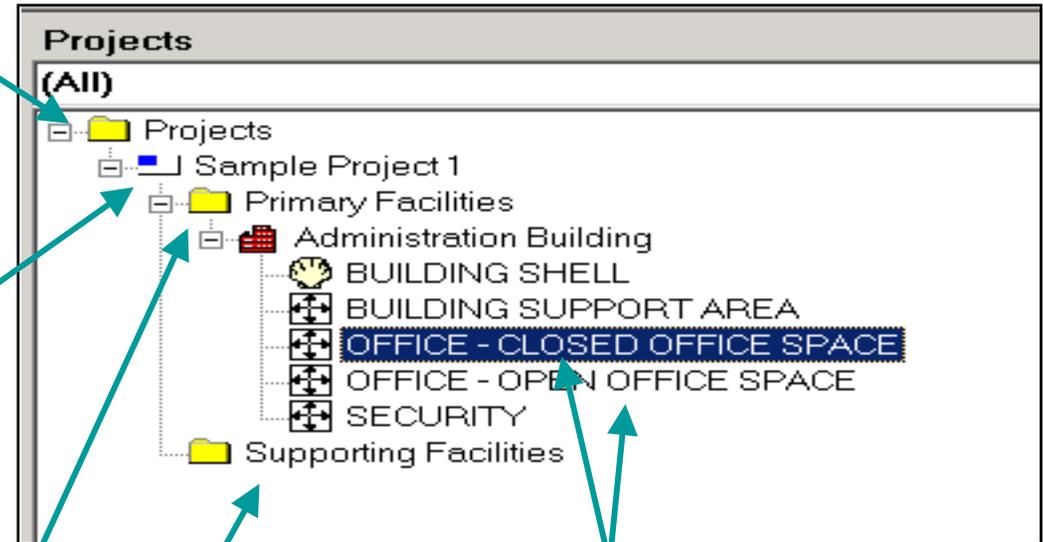


# PACES Main Window

The **Project Folder** holds all of your projects

**Projects** contain the date and location of construction and the Primary and Supporting facilities

The **Primary Facilities** folder contains all building facilities and their direct costs



**Supporting Facilities** contain the costs for the construction of utilities, site work, and pavements

**Functional Space Areas (FSA's)** contain the parametric information that creates the estimate. FSA's are made up of assemblies that contain detailed cost information



## 9-Step Outline

- Step 1 – Add a Project
- Step 2 – Add a Facility
- Step 3 – Required Parameters
- Step 4 – Secondary Parameters
- Step 5 – Calculate & Edit Quantities
- Step 6 – Supporting Facilities
- Step 7 – Lump Sum
- Step 8 – Project Markups
- Step 9 – Cost Reports



# Step #1 - Add Project

Add Project

Project Name:

Description:

Location

Zip Code:

State/Country:

City/Location:

Units Option:  English  Metric

Agency:

Project Number:

Prepared By:

Date Prepared:

Program Year:

Comments:

Location Cost Factors | Location Modifiers

Description	Material	Labor	Equipment
General			
Site Work			
Concrete			
Masonry			
Metals			
Wood/Plastic			
Thermal/Moisture			
Doors/Windows			
Finishes			
Specialties			
Equipment			
Furnishings			
Special Construction			
Conveying Systems			
Mechanical			
Electrical			

Percent Change

\* Required Field



# Step #1 - Add Project

- Modify Location Cost Factors and Location Modifiers as required.
  - Location Cost Factors give state, city, or installation location cost information.
  - Location Modifiers contain information used to build cost assemblies for the facility's Foundation, Structure, Seismic and HVAC systems.



# Step #1 - Add Project

Location Cost Factors | Location Modifiers

Description	Material	Labor	Equipment
General	0.950	0.873	0.913
Site Work	0.998	1.034	0.913
Concrete	0.861	0.836	0.913
Masonry	0.790	0.791	0.913
Metals	0.954	1.099	0.913
Wood/Plastic	0.922	0.840	0.913
Thermal/Moisture	0.948	0.766	0.913
Doors/Windows	0.944	0.804	0.913
Finishes	1.013	0.841	0.913
Specialties	0.984	0.944	0.913
Equipment	0.984	0.944	0.913
Furnishings	0.984	0.944	0.913
Special Construction	0.984	0.944	0.913
Conveying Systems	0.984	0.944	0.913
Mechanical	0.984	0.795	0.913
Electrical	0.965	0.863	0.913

Percent Change

Update Cell

Column Global

Defaults

Location Cost Factors | Location Modifiers

Seismic Zone: Moderate Damage

Summer Dry Bulb (Degrees F): 93.00

Winter Dry Bulb (Degrees F): 16.00

Frost Line Depth (Inches): 3.00

Defaults



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## Step #2 - Add Facilities

- Define primary facility.
- What will the facility be?
  - Building
  - Renovation
  - Site work
  - Life Cycle Cost



# Step #2 - Add Facilities

Add Facility

Facility Name:

Description:

Facility Type: **Primary Facility**

Date Prepared:

Comments:

Model Group:

Model Name:

Use Sustainable Design

\* Required Field

Model Help

Model Parameters

OK Cancel



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## Step #3 - Required Parameters

- Parameters are based on the default model.
- Functional Space Areas (FSA's) and area size can be defined.
- Add or delete FSA's as required by design information.
- Define number of stories (above or below grade).

# Step #3 - Required Parameters

BARRACKS (48 MAN) PARAMETER INPUT

Facility Definition | FSA Selection | FSA Density | Shell Quantity | Shell Descriptive | Tenants

Facility Name: 48-Man Barracks

Model: BARRACKS (48 MAN)

Area

Gross Area  SF

Project Area (1391)

Options

Use Model Default FSA's

Floors

Above Ground:

Below Ground:

Accept

OK Cancel



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## Step #4 - Secondary Parameters

- **FSA Selection** – This tab allows you to add and remove FSAs from your facility.
- You can also find more information about an FSA by accessing its help.
- Remember to adjust your other FSA areas to keep the square footage of the facility intact.

# Step #4 - Secondary Parameters

BARRACKS (48 MAN) PARAMETER INPUT

Facility Definition | **FSA Selection** | FSA Density | Shell Quantity | Shell Descriptive | Tenants

Find/Add FSA's

FSA Category:

Search:

Selected FSA's

FSA	Area
BARRACKS COVERED WALKWAYS AND SERVICE AR	12,284
BARRACKS MECHANICAL ROOM	<b>1,582</b>
BARRACKS ELECTRICAL ROOM	<b>562</b>
BARRACKS QUARTERS /1 + 1	<b>25010</b>
BARRACKS TELEPHONE EQUIPMENT ROOM	<b>562</b>

Project Area:  SF

Gross Area:  SF



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## Step #4 - Secondary Parameters

- **FSA - Density Parameters** indicate the number of fixtures associated with each FSA.
- PACES automatically defaults the secondary parameters.
- All values may be modified per project scope.



# Step #4 - Secondary Parameters

BARRACKS (48 MAN) PARAMETER INPUT

Facility Definition | FSA Selection | **FSA Density** | Shell Quantity | Shell Descriptive | Tenants

FSA
BARRACKS COVERED WALKWAYS AND SERVICE AREAS
BARRACKS MECHANICAL ROOM
BARRACKS ELECTRICAL ROOM
BARRACKS QUARTERS /1 + 1
BARRACKS TELEPHONE EQUIPMENT ROOM

Density Parameters

Area  SF

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			Default
Doors	<input type="text" value="0"/> EA		<input type="text" value="0"/> EA
Wall Finish	<input type="text" value="0"/> SF		<input type="text" value="0"/> SF
Partitions	<input type="text" value="0"/> SF		<input type="text" value="0"/> SF
Plumbing Fixtures	<input type="text" value="0"/> EA		<input type="text" value="0"/> EA
Special Doors	<input type="text" value="0"/> SF		<input type="text" value="0"/> SF

OK Cancel



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## Step #4 - Secondary Parameters

- **Building Shell - Quantity Parameters** contain details about the building shell.
- *PACES* keeps track of the original defaults allowing user to revert to original model values if necessary.
- The shell includes items within 5 feet of the building.



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## Step #4 - Secondary Parameters

- The shell includes:
  - Electric supply
  - Domestic Water
  - Telephone
  - Sanitary sewer
  - Gas supply
  - Complete Fire Protection System
  - Electric Motor Control Centers
  - Windows
  - Exterior Doors
  - Stairwells
  - Exterior Walls
  - Complete HVAC System
  - Elevators



# Step #4 - Secondary Parameters

BARRACKS (48 MAN) PARAMETER INPUT

Facility Definition | FSA Selection | FSA Density | **Shell Quantity** | Shell Descriptive | Tenants

Parameter	User	Model	Units
Footprint	6,486	6,486	SF
Perimeter	390	390	LF
Roof Area	10,955	10,955	SF
Floor to Floor Height Above Grade	10	10	FT
Floor to Floor Height Below Grade	0	0	FT
Exterior Wall Area	44,039	44,039	SF
Exterior Window Area	1,607	1,607	SF
Exterior Doors	59	59	EA
Exterior Overhead & Special Doors	0	0	SF
Floor to Ceiling Height Above Grade	8	8	FT
Floor to Ceiling Height Below Grade	0	0	FT
Number of Stairwells	1	1	EA
Number of Elevators	0	0	EA
Plumbing Domestic Water Supply	363	363	EA
Plumbing Sanitary Waste System	532	532	EA
Plumbing Special System	0	0	EA
Plumbing Equipment	2	2	EA
Electric Load	1,648	1,648	AMPS
Heating Load	288	288	MBH
Cooling Load	56.38	56.38	TN

Parameter Value

Update Cell(s)

Reset to Default

Grid Legend

- Selected Parameter Value
- Trigger Parameter Name
- Affected Parameter Names

OK Cancel



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## Step #4 - Secondary Parameters

- **Building Shell - Descriptive Parameters** indicate the materials used in different areas of the shell.
- Editing the parameters allows the user to increase the accuracy of the estimate based on known information.



# Step #4 - Secondary Parameters

BARRACKS (48 MAN) PARAMETER INPUT

Facility Definition | FSA Selection | FSA Density | Shell Quantity | **Shell Descriptive** | Tenants

Shell

Soil Type << Average Bearing Capacity(2000 - 3500 PS ->

Floor Structure << Steel Frame/Lt Load/Mtl Joist/Stl Deck/Co->

Roof Structure << Steel Frame/Lt Ld/Metal Joist/Steel Roof ->

Bay Size << Small 300-600 SF->

Stair Type << Metal Pan->

Roof Type << Standing Seam Metal->

Heating Sys. << Hot Water Boilers - Gas Fired->

Cooling System << Reciprocating - Chiller->

Foundation << H-Piles->

<< = Default

Exterior Wall and Backup

Exterior Wall << Brick Veneer->

Wall BackUp << 6 in. Metal Stud/Painted Gypsum Bd.->

Percentage 100 %

Exterior Wall << Brick Veneer->

Wall BackUp << 6 in. Metal Stud/Painted Gypsum Bd.->

Percentage 0 %

Exterior Wall << Brick Veneer->

Wall BackUp << 6 in. Metal Stud/Painted Gypsum Bd.->

Percentage 0 % Note: Percentages must add up to 100.

OK Cancel



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## Step #4 - Secondary Parameters

- **Tenants** – Allows you to assign a specific FSA to one or more specific “tenants.”
- A “Tenant Cost” report can be generated to show the costs for each tenant based on this assignment.

# Step #4 - Secondary Parameters

BARRACKS (48 MAN) PARAMETER INPUT

Facility Definition | FSA Selection | FSA Density | Shell Quantity | Shell Descriptive | **Tenants**

FSA

BARRACKS COVERED WALKWAYS AND SERVICE AREA
BARRACKS MECHANICAL ROOM
BARRACKS ELECTRICAL ROOM
BARRACKS QUARTERS /1 + 1
BARRACKS TELEPHONE EQUIPMENT ROOM
<<<BUILDING SHELL>>>
<<<BUILDING SUPPORT AREA>>>

Tenant Percentages : BARRACKS COVERED WALKWAYS AND SERVICE AREAS

FSA Area  SF  Building Support Area (\*)

FSA	Percent

% Total



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## Step #5 - Calculate & Edit Quantities

- Assemblies may be modified, added or deleted at this level.
- Assemblies can be searched by key word or based on Hierarchy.
- Assemblies are modified within each FSA category.



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## Step #5 - Calculate & Edit Quantities

- You can edit existing assemblies, add new ones, and remove quantities for assemblies that you do not want.

# Step #5 - Calculate & Edit Quantities

Assembly	Description	QTY	U/M	Material	Labor	Equipment	Total	Mo
01010102	1'0" X 2'0" Strip Footing 3000 PSI	1198	LF	\$6.61	\$7.29	\$0.12	\$16,795.96	119
01010201	Spread Footing	26.61	CY	\$60.40	\$36.32	\$2.09	\$2,629.33	26
01010241	Spread Footing, Reinforcing Steel	0.73	TON	\$452.59	\$512.25	\$0.00	\$704.33	0.7
01010277	Spread Footing Column Bolts	64	EA	\$1.12	\$3.91	\$0.00	\$321.92	64
01029050	Tie Beams (Seismic Modification)	159.04	LF	\$12.02	\$14.73	\$0.16	\$4,279.77	159
01030102	5" Standard Slab On Grade	8409	SF	\$1.80	\$1.51	\$0.22	\$29,683.77	840
02010113	Sml Span, Lt Ld, Stl Frm, Mtl Joist	33514	SF	\$3.25	\$1.06	\$0.26	\$153,158.98	335
02010126	Structural Steel, Lt Load, Columns	70347.77	SF	\$0.62	\$0.20	\$0.05	\$61,202.56	703
02010135	BRICK COLUMN	12206.69	SF	\$7.53	\$13.98	\$0.00	\$262,565.90	122
02010313	Floor Slab Of 38.1 mm(1-1/2") Steel Deck, 1...	33514	SF	\$1.42	\$0.75	\$0.05	\$74,401.08	335
02020114	Sml Span, Lt Ld, Stl Frm, Mtl Joist	10955	SF	\$1.91	\$0.87	\$0.16	\$32,207.70	109
02020136	Structural Steel, Lt Load, Columns	6846.88	SF	\$0.56	\$0.18	\$0.05	\$5,409.04	684
02020306	1-1/2" Galv. Metal Roof Deck, Open Type, F...	10955	SF	\$1.04	\$0.68	\$0.03	\$19,171.25	109
02030102	4'0" Wide, Metal Pan, Stair Construction	40	VLF	\$308.92	\$110.02	\$2.44	\$16,855.20	40
03010102	Brick Veneer Wall	44039	SF	\$3.89	\$8.73	\$0.00	\$555,772.18	440

**Total:** \$2,817,324.45



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## Step #6 - Supporting Facilities

- Support Facilities may consist of utilities, site improvements, pavements, and/or support facilities.
- Two ways to calculate Support Facilities:
  - Adding Sitework Models.
  - Pre-defined Comparative Facilities Method.

# Step #6 - Supporting Facilities



Site Work Models

#	Model	Direct Costs
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SW Groups

- All
- NAF
- Pavement
- Site Work
- Utilities

Access Roads  
Active and Passive Barriers  
Arterial Roads/Divided Highways  
Baseball Fields  
Bowling Center  
Bridges  
Cleanup and Landscaping  
Clear and Grub  
Communications  
Demolition, Buildings  
Demolition, Catch Basins/Manholes  
Demolition, Curbs

Total Direct Costs:  \$

Site Name

Description

Comments

\* Required Field



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# Step #6 - Supporting Facilities

- Comparative Supporting Facilities Method uses a percent factor based on the project's total direct costs.
- Comparative Support Facilities include:

## Utilities

Communications  
Electric Feed  
Sanitary Sewer  
Water  
Gas

## Site Improvements

Clearing & Grubbing  
Excavation  
Site Drainage  
Landscaping  
Fencing

## Pavements

Parking Lots  
Sidewalks



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## Step #7 - Lump Sum

- Lump Sum function allows the user to add in extra costs not included in project models.
- Additional amount will only appear on the 1391 Report.



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## Step #7 - Lump Sum

- There are four lump sum type options:
  - In Facility Direct Cost
  - In Project Marked up Cost
  - In Facility Marked up Cost
  - Out of Project Marked up Cost



# Step #7 - Lump Sum

Lump Sum

Type

In Facility Direct Cost       In Project Marked up Cost

In Facility Marked up Cost       Out of Project Marked up Cost

Description

Amount

Quantity       Unit of Measure



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## Step #8 - Project Markups

- Project Markups adjust the direct costs for the project estimate.
- Markups apply to all of the facilities within a project.



# Step #8 - Project Markups

## PACES Markups - Project 9 Step Presentation

Prime/Sub %

Prime

Sub

100 %

Print

Jan 2001 Cost Database

Markup Category	Percentage	Cost
Total Direct Cost		\$4,947,059
Escalation <input type="button" value="Calculate..."/>	7.39	\$365,588
Escalated Direct Cost		\$5,312,647
Escalated Material Direct Cost	50.24	\$2,669,074
Mobilization	0.00	\$0
Sales Tax	4.00	\$106,763
Total Adjusted Cost	9.55	\$5,419,410
Prime Overhead	5.75	\$311,616
Sub Overhead	5.75	\$0
Prime General Conditions	2.75	\$149,034
Sub General Conditions	2.75	\$0
Prime Subtotal		\$5,880,060
Sub Subtotal		\$0
Prime Profit <input type="button" value="Calculate..."/>	10.50	\$617,406
Sub Profit <input type="button" value="Calculate..."/>	10.50	\$0
Prime Markup on Sub	3.50	\$0
Cost Accuracy Factor	0.00	\$0
Pre-Construction Services (Contractor)	0.00	\$0
In-Facility Marked-Up Cost		\$0
Total Contract Value	31.34	\$6,497,466
Contingency <input type="button" value="New Construction"/>	5.00	\$324,873
CMC Contingency	0.00	\$0
SIOH	5.70	\$388,873
Total Contract Value, including Contingencies and SIOH	45.77	\$7,211,212
Design Consultant Cost <input type="button" value="Calculate..."/>		\$0
Owner's Indirect Cost <input type="button" value="Calculate..."/>		\$0
In-Project Marked-Up Cost		\$0
Total Project Cost	45.77	\$7,211,212

OK

Cancel



# Step #9 - Cost Reports

## *TOTAL CONSTRUCTION COST REPORTS: (at Project Level)*

- Summary
- Detail
- Construction Cost Summary
- CSI Construction Cost
- System Detail
- Subsystem Detail
- Assembly Detail
- 1391 Cost Worksheet
- Army 1391 Summary
- Army 1391 Detail
- Prorated Systems

## *DIRECT COST REPORTS: (at Facility Level)*

- Summary
- Detail
- Assembly Cost Detail
- Assembly Cost Stats
- FSA Cost (PF only)
- FSA Cost/SF (PF only)
- Subsystem Cost
- System Cost
- Building Parameters (PF only)
- AT Assembly Cost Report
- Model Cost Report (SF only)

*PACES*<sup>TM</sup>



***PACES* Renovation Express**



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# Generating an Estimate

- Nine Steps
  - Create a baseline estimate (optional)
  - Create a new project
  - Define renovation facility
  - Select baseline estimate (optional)
  - Complete renovation detail
  - Calculate
  - Load and Haul
  - Markups
  - Reports



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## Step #1 –Create Baseline Estimate

- Use a baseline estimate to model an existing facility as closely as possible.
- Creates a grouping of assemblies for the foundation of renovation estimate.



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## Step #2 –Create New Project

- Add a new construction estimate to the projects folder.
- Do not place a renovation estimate in the same project as the baseline estimate.



# Step #2 – Create New Project

Add Project

Project Name:

Description:

Location

Zip Code:

State/Country:

City/Location:

Units Option:  English  Metric

Agency:

Project Number:

Prepared By:

Date Prepared:

Program Year:

Comments:

Location Cost Factors | Location Modifiers

Description	Material	Labor	Equipment
General			
Site Work			
Concrete			
Masonry			
Metals			
Wood/Plastic			
Thermal/Moisture			
Doors/Windows			
Finishes			
Specialties			
Equipment			
Furnishings			
Special Construction			
Conveying Systems			
Mechanical			
Electrical			

Percent Change

\* Required Field

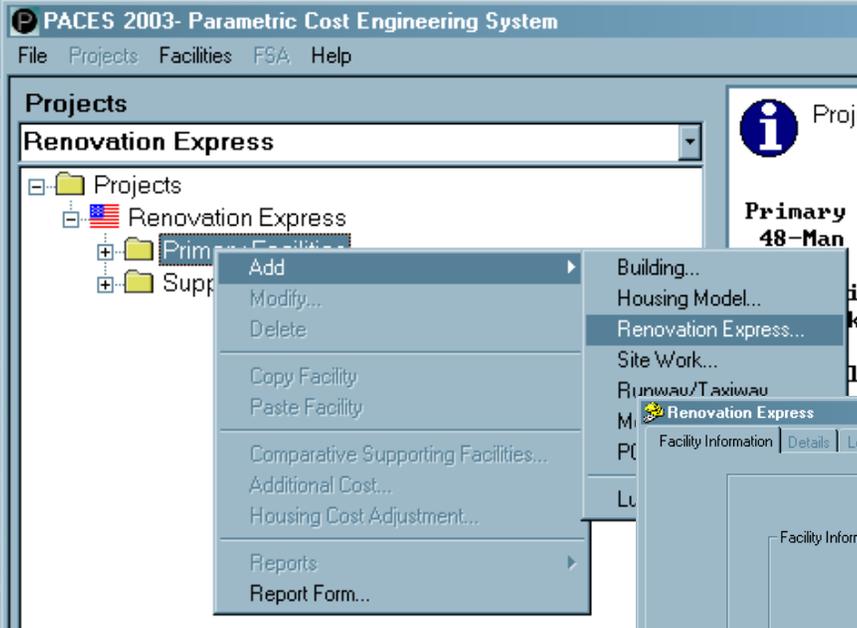


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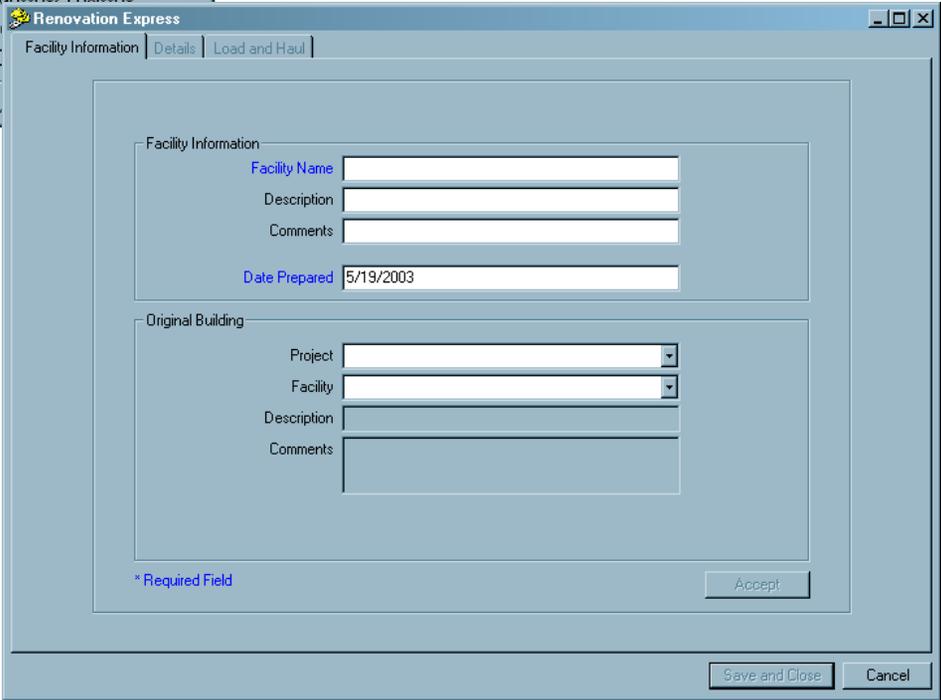
## Step #3 – Define Facility

- Add a Renovation Express estimate to the Primary Facilities folder.
- Add the facility name and date to the Facility Information tab.

# Step #3 – Define Facility



The screenshot shows the main application window titled "PACES 2003- Parametric Cost Engineering System". The menu bar includes "File", "Projects", "Facilities", "FSA", and "Help". The "Projects" pane on the left shows a tree structure with "Renovation Express" selected. Under "Renovation Express", there are sub-folders for "Projects", "Primary Facilities", and "Supporting Facilities". A context menu is open over "Primary Facilities", listing options such as "Add", "Modify...", "Delete", "Copy Facility", "Paste Facility", "Comparative Supporting Facilities...", "Additional Cost...", "Housing Cost Adjustment...", "Reports", and "Report Form...". A secondary menu is also visible, listing "Building...", "Housing Model...", "Renovation Express...", "Site Work...", "Runway/Taxiway", "Miscellaneous", "PC", and "Lu".



The dialog box is titled "Renovation Express" and has tabs for "Facility Information", "Details", and "Load and Haul". The "Facility Information" tab is active. It contains the following fields:

- Facility Information:**
  - Facility Name:
  - Description:
  - Comments:
  - Date Prepared: 5/19/2003
- Original Building:**
  - Project:
  - Facility:
  - Description:
  - Comments:

At the bottom left, there is a note: "\* Required Field". At the bottom right, there are three buttons: "Accept", "Save and Close", and "Cancel".



---

## Step #4 – Select a Baseline Estimate

- Not a required step to generate estimate.
- Select an existing project and facility on which to base the renovation estimate.



# Step #4 –Select a Baseline Estimate

Renovation Express

Facility Information | Details | Load and Haul

Facility Information

Facility Name Administrative Building Renovation

Description

Comments

Date Prepared 5/19/2003

Original Building

Project Building Model Testing - Admin Fac Grp

Facility General Administrative Facility

Description

Comments

\* Required Field

Accept

Save and Close Cancel



---

## Step #5 – Complete Detail

- Three types of renovation can be performed on an assembly.
  - Add: Provides cost of constructing an assembly.
  - Remove: Provides demolition cost of assembly.
  - Replace: Provides demolition cost of an assembly and construction cost of replacing an assembly.



---

## Step #5 – Complete Detail

- Select assemblies from the Project or WBS Sections of the screen. Designate them to one of three categories to give renovation costs.
- Quantify assembly that has been added, removed, or replaced by editing the assembly.



# Step #5 - Calculate & Edit Quantities

The screenshot shows the 'Renovation Express' software window with the 'Load and Haul' tab selected. The interface is divided into several sections:

- Facility Information:** Includes tabs for 'Facility Information', 'Details', and 'Load and Haul'.
- Item List:** A tree view showing project components. The selected item is '05020304 6'0" X 7'0" Pair Fire Rated Wood D...'. Other items include 'OFFICE - CLOSED OFFICE SPACE' with sub-items like '05010101 Mtl Stud Partition, 3-5/8"', '05010102 Mtl Stud Partition, 3-5/8", Sound Rated', '05010504 Fixed Type Window With Aluminum Frm - 3', '05020117 3'0" X 7'0" Wood Door, H.M. Frm', '05020303 3'0" X 7'0" Fire Rated Wood Door', '05040301 Porcelain Enamel Chalkboard', '05050101 Plastic Laminate Countertop With B...', '05050201 Plastic Laminate Cabinets With Cou...', '06010301 5/8" Gypsum Board On 7/8" Furring Chan...', and '06010302 Two Layers Of 5/8" Fire Resistant Gypsum...'. Below this is a 'WBS' (Work Breakdown Structure) list with items 01 through 11.
- Assembly Panel:** Shows the selected assembly: 'Replace 05010504 Fixed Type Window With Aluminu...'. A context menu is open over this panel with options: 'Add', 'Remove', and 'Replace'.
- Status Bar:** Displays '\* Zero Quantity' and '1 item(s)'. A 'Calculate' button is present.
- Footer:** Contains 'Save and Close' and 'Cancel' buttons.



---

## Step #6 -Calculate

- Once assemblies have been added, removed, or replaced, an estimate can be calculated.
- The calculation may be run at any time while modifying the Detail tab.



# Step #6 - Calculate

Renovation Details								
Orig Asse...	Orig Qty	New Assembly	New Qty	UOM	Mode	Orig Desc	New Desc	Cost
05020304	1.00	05020304	1.00	EA	Add	6'0" X 7'0" Pair Fire Rated Wood Doors		\$2,146.02
05010504	24.00	16010428	24.00	SF	Remo...	Fixed Type Window With Aluminum Fr...	Remove Window	\$123.31
05010504	24.00	AL	.05	SF	Waste	Fixed Type Window With Aluminum Fr...		N/A
05010504	24.00	05010504	24.00	SF	Add	Fixed Type Window With Aluminum Fr...		\$912.92
	.00	16019906	.05	CY	Dump		Metals Dump Charge	\$0.98
	.00	16019918	.00	EA	Dump		Dumpster Pull Charge	\$0.00
	.00	16019912	.00	HR	Dump		15.29 m3 (20 CY), Semi...	\$0.00
	.00	16019913	.00	HR	Dump		950, 2.29 m3 (3.0 CY) ...	\$0.00

Close

Total cost = \$3,183.22



## Step #7 – Load and Haul

- Modify costs for portions of waste created by demolition process.
- Waste types include:
  - Concrete
  - Masonry
  - Roofing
  - Tanks
  - Equipment
  - Metals
  - Plastics
  - Wood
  - Miscellaneous
  - Hazardous



# Step #7 – Load and Haul

Renovation Express

Facility Information | Details | **Load and Haul**

Waste Type	Waste Receptacle		Miles Hauled
Concrete	<input checked="" type="radio"/> Truck	<input type="radio"/> Dumpster	20
Masonry	<input checked="" type="radio"/> Truck	<input type="radio"/> Dumpster	20
Roofing	<input checked="" type="radio"/> Truck	<input type="radio"/> Dumpster	20
Tanks	<input checked="" type="radio"/> Truck	<input type="radio"/> Dumpster	20
Equipment	<input checked="" type="radio"/> Truck	<input type="radio"/> Dumpster	20
Metals	<input checked="" type="radio"/> Truck	<input type="radio"/> Dumpster	20
Plastics	<input checked="" type="radio"/> Truck	<input type="radio"/> Dumpster	20
Wood	<input checked="" type="radio"/> Truck	<input type="radio"/> Dumpster	20
Miscellaneous	<input checked="" type="radio"/> Truck	<input type="radio"/> Dumpster	20
Hazardous			40

Save and Close Cancel



---

## Step #8 - Markups

- Renovation uses same markup methodology as new construction markups.
- One difference is that a renovation project typically uses a contingency of 10%.



# Step #8 - Markups

## PACES Markups - Project Renovation Express

Markup Category	Percentage	Cost
Total Direct Cost		\$4,949,054
Escalation <span>Calculate...</span>	7.39	\$365,735
Escalated Direct Cost		\$5,314,789
Escalated Material Direct Cost	50.25	\$2,670,681
Mobilization	0.00	\$0
Sales Tax	4.00	\$106,827
Total Adjusted Cost	9.55	\$5,421,616
Prime Overhead	5.75	\$311,743
Sub Overhead	5.75	\$0
Prime General Conditions	2.75	\$149,094
Sub General Conditions	2.75	\$0
Prime Subtotal		\$5,882,453
Sub Subtotal		\$0
Prime Profit <span>Calculate...</span>	10.50	\$617,658
Sub Profit <span>Calculate...</span>	10.50	\$0
Prime Markup on Sub	3.50	\$0
Cost Accuracy Factor	0.00	\$0
Pre-Construction Services (Contractor)	0.00	\$0
In-Facility Marked-Up Cost		\$0
Total Contract Value	31.34	\$6,500,111
Contingency <span>Renovation</span>	10.00	\$650,011
CMC Contingency	0.00	\$0
SIOH	5.70	\$407,557
Total Contract Value, including Contingencies and SIOH	52.71	\$7,557,679
Design Consultant Cost <span>Calculate...</span>		\$0
Owner's Indirect Cost <span>Calculate...</span>		\$0
In-Project Marked-Up Cost		\$0
Total Project Cost	52.71	\$7,557,679

Prime/Sub %

Prime

Sub

100 %

Print

Jan 2001 Cost Database

OK

Cancel



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## Step #9 - Reports

- Print reports using same methodology as in new construction.