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Construction
Management
April 15, 2008

Mercy Medical Center - Replacement Tower

Replacement Clinical Tower



AGENDA

- Project Overview
- Women in Construction
- ICRA Research
- Mat Foundation Re-design
- Reflection



Project Overview:

Owner: Mercy Medical Center

Location: Downtown,
Baltimore, Maryland

Building Use: Acute Care

Building Size: 681,265 SQ.FT

Construction dates: May
2007- December 2010

Contractor: Whiting-Turner

A/E Firm: Ellerbe Becket

Cost: \$ 219,812,043

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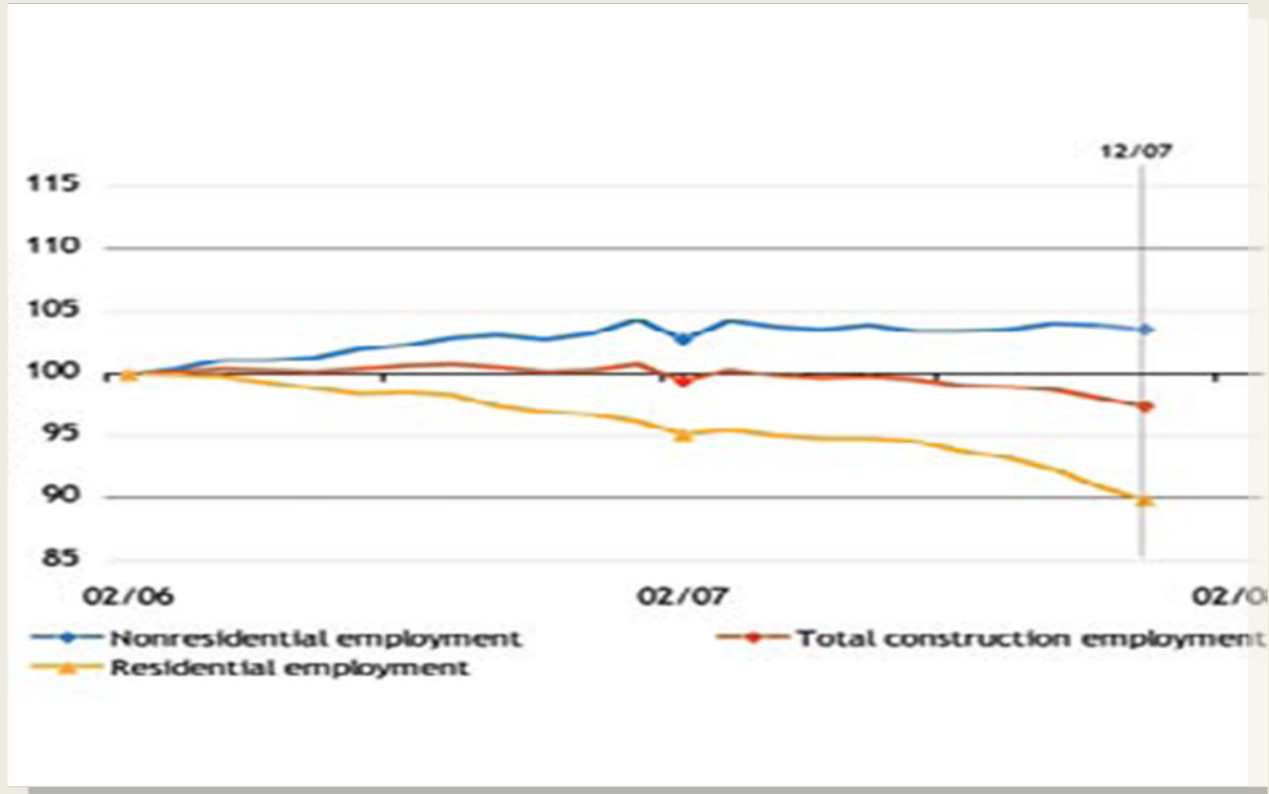
**WOMEN
AT
WORK**

Women in Construction

Women In Construction

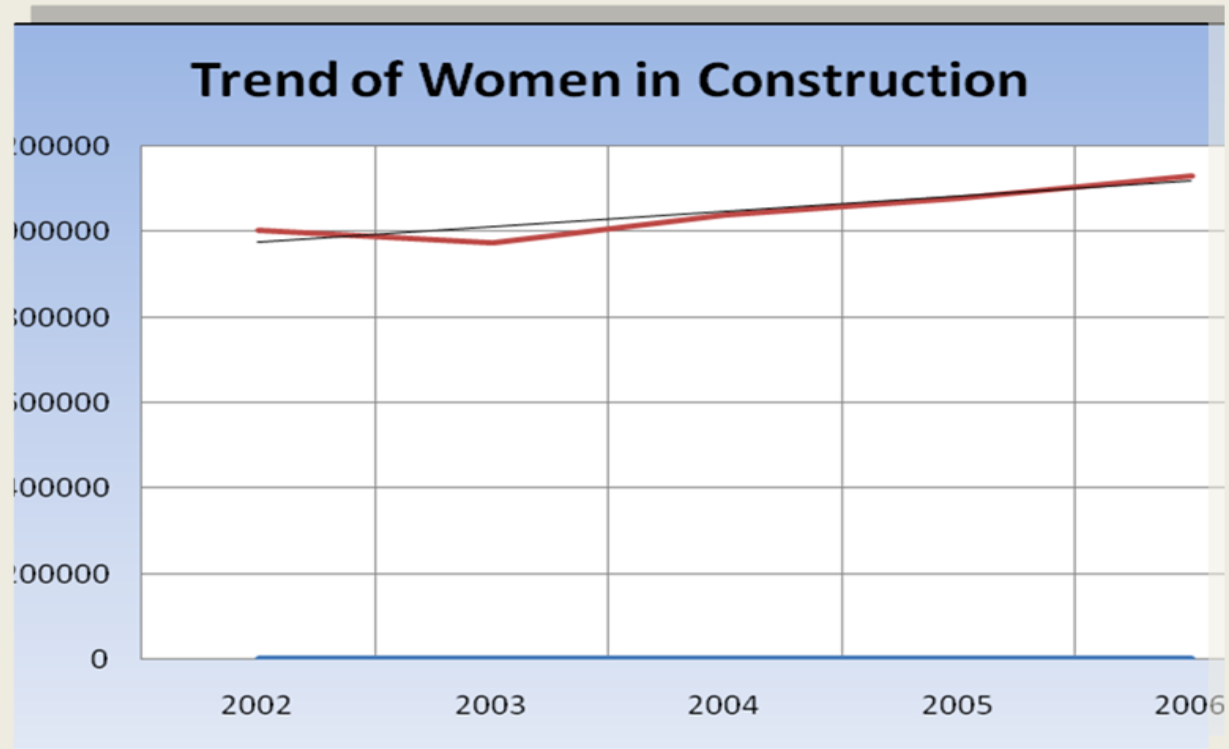
What are ways more women can be recruited in the construction Industry?

Construction Employment



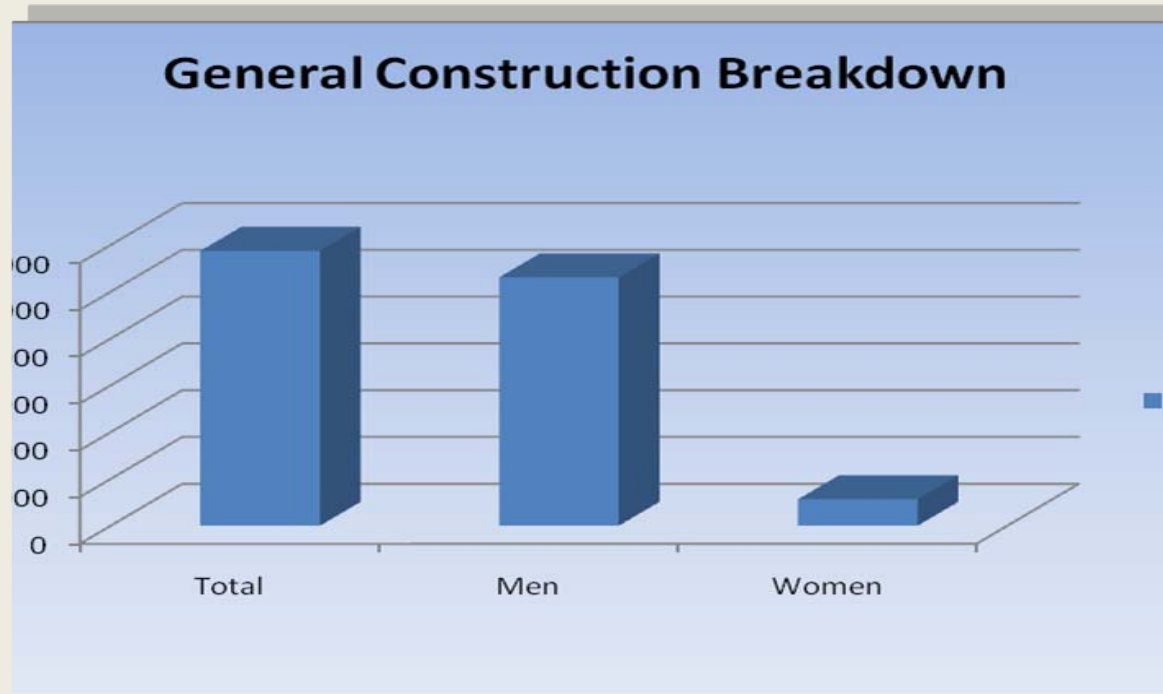
Women in Construction

Trend of Employment



Women in Construction

Men and Women Employees



Women in Construction

Methodology

Establish A Noticable Trend

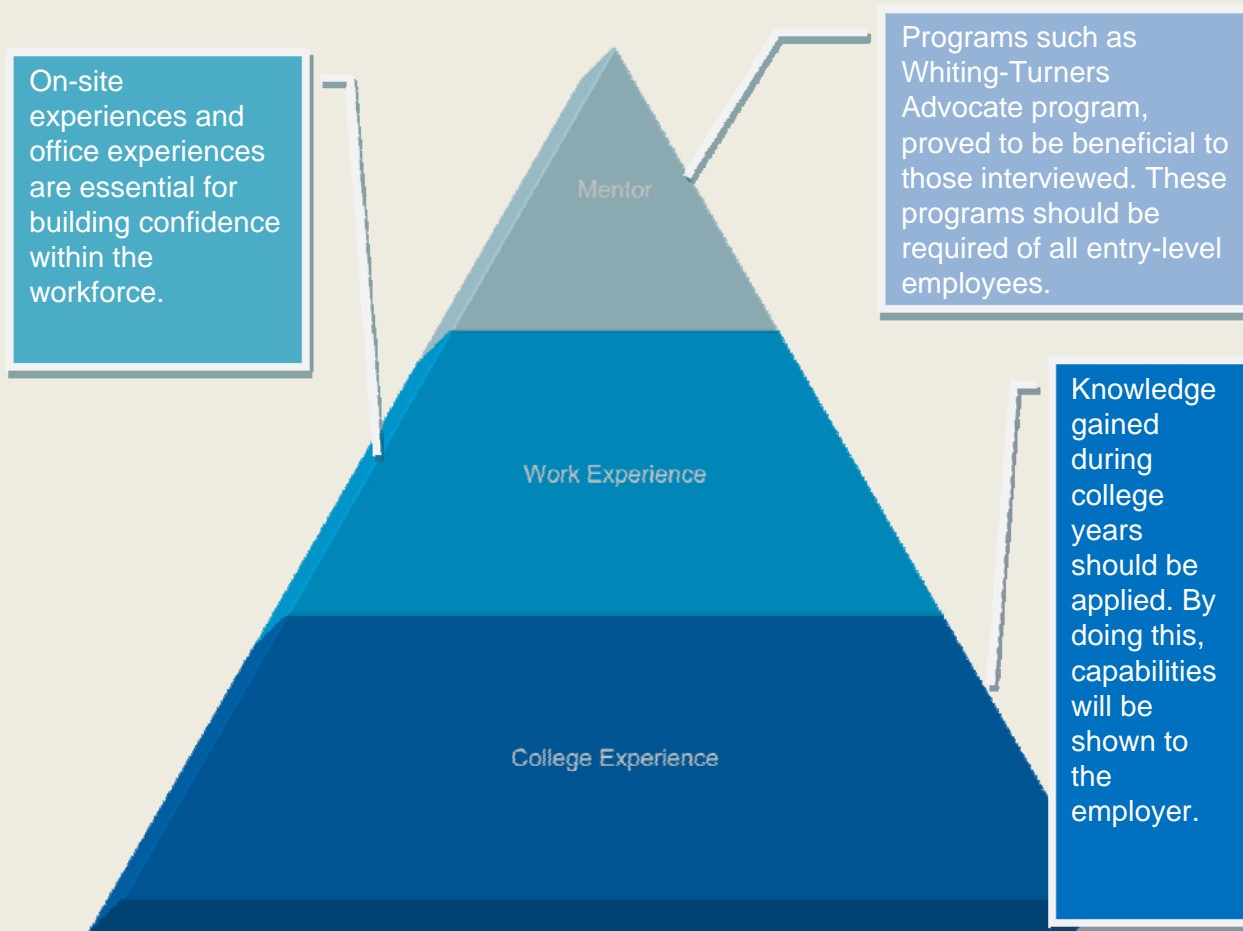
Identify Possible Reasons for the trend

Research ways to increase women in the industry

Interview Industry members

Women in Construction

Response



Solution

- Women in Construction Workshop

- **ESTABLISHING INTEREST**

- Through establishing interest there is a more likely chance that more females will enter into a construction related field.

- **CREATING THE OPPORTUNITY**

- The workshops main purpose is to create and show the opportunities available within the construction industry.

- **FOLLOW-THROUGH FROM BOTH PARTIES**



ICRA Research

ICRA Research

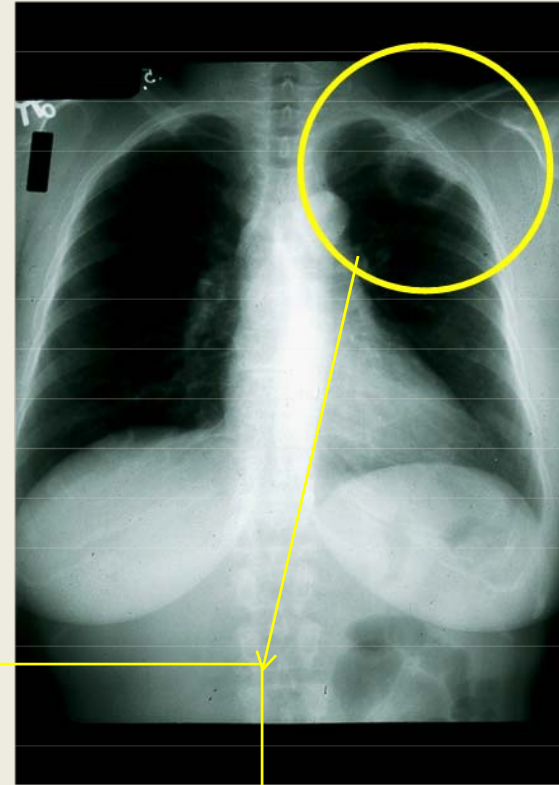
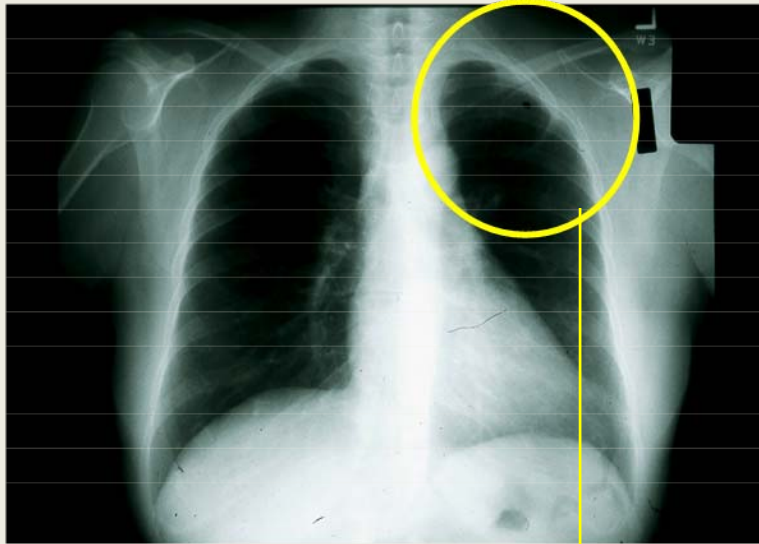
- How can cross-contamination be reduced or eliminated?

Here's Our Problem!

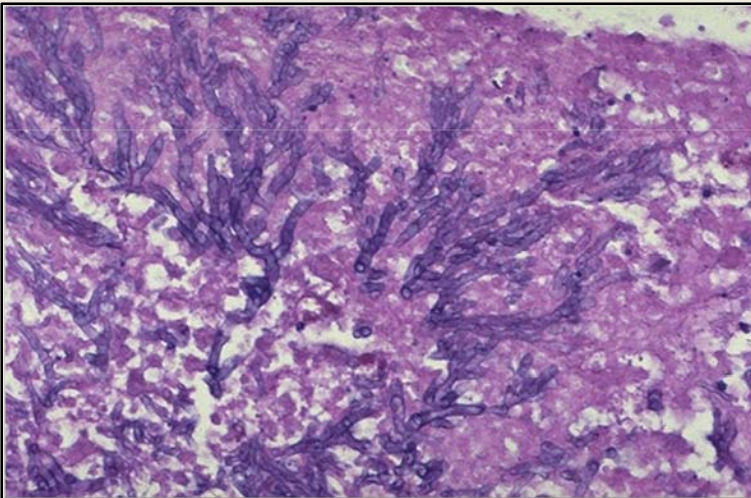
	Annual Passenger Departures Annual Hospital Admissions	Deaths per year/ Nosocomial Deaths per year	Deaths per Scheduled Activity
Airline Industry	1,009,971,000	525	1 death/ 1,923,750 passenger departures
Hospital Industry	34,890,768	88,000 (all nosocomial)	1 death/396 admissions
Hospital Industry	34,890,768	4,400 (airborne)	1 death/7,930 admissions

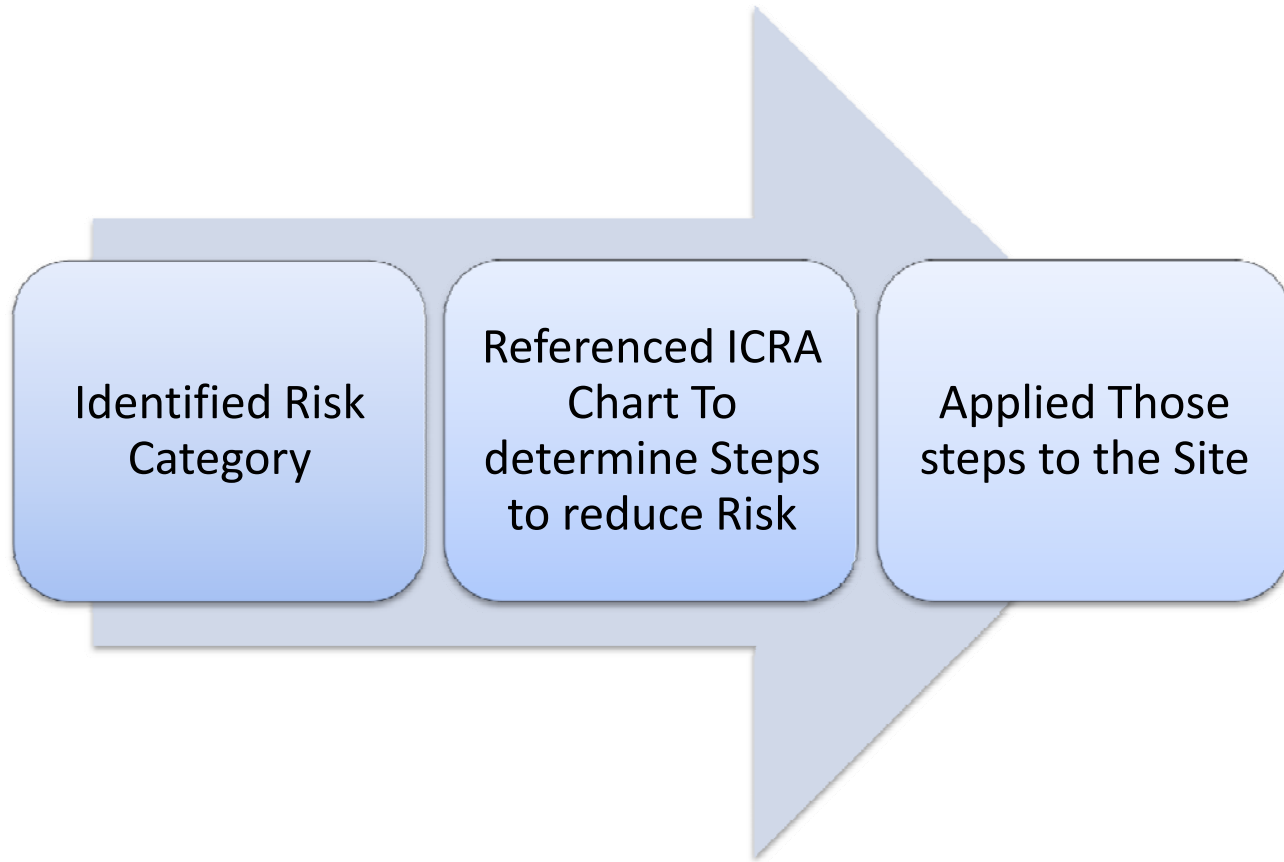


ASHE 2002 Annual



X-rays one-month apart

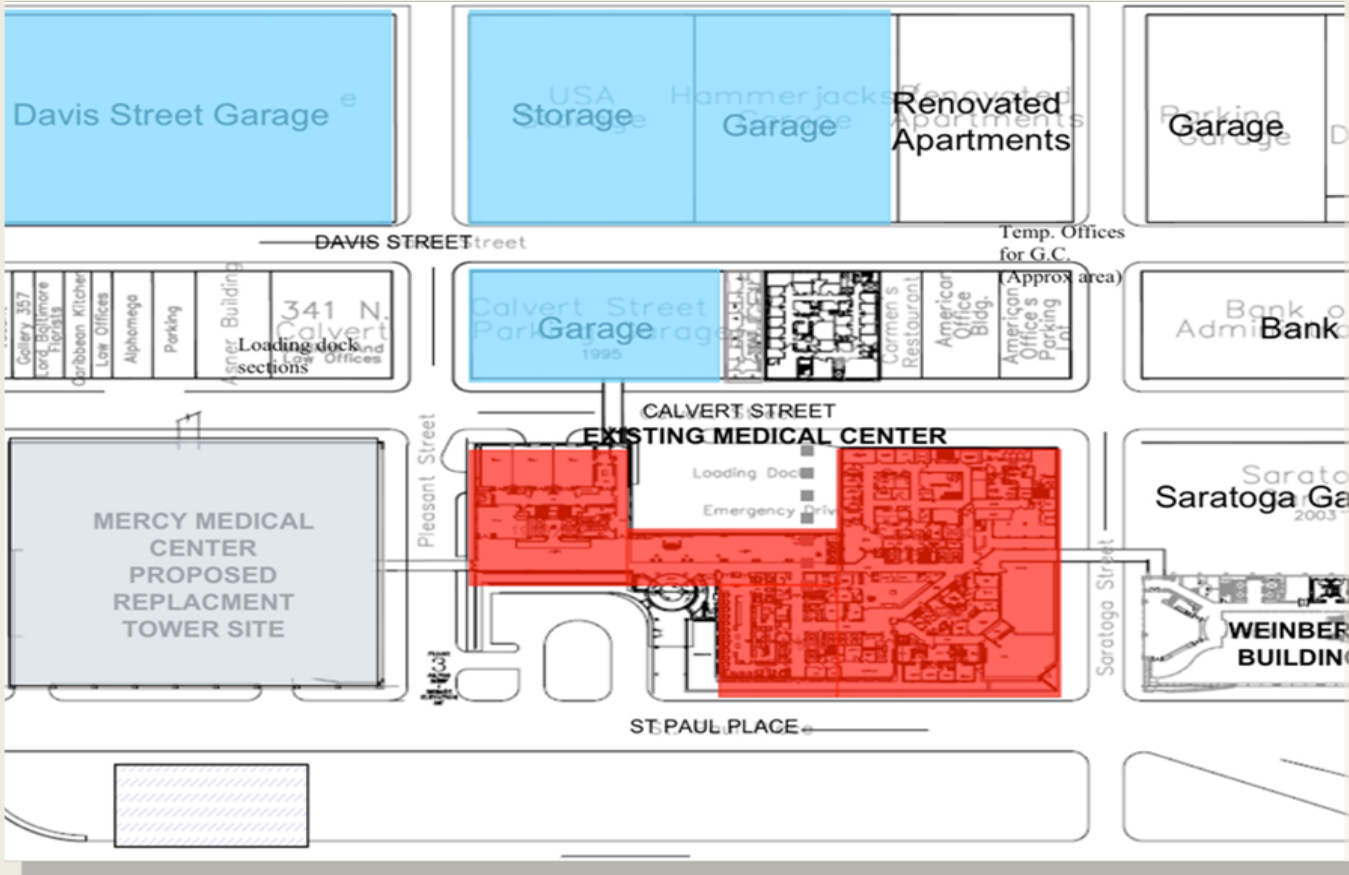




Methodology

Mercy Medical Center - Replacement Tower

ICRA Research



ICRA Research



At Risk Patient Areas

ICRA Research

ICRA Team

- ICRA Team needs to be established
- The team should include the owner, contractor, and a ICRA specialist
- All responsibilities should be divided

Ventilation

- On site temporary ventilation
 - HEPA filters and vacuums are shown to be the most effective.

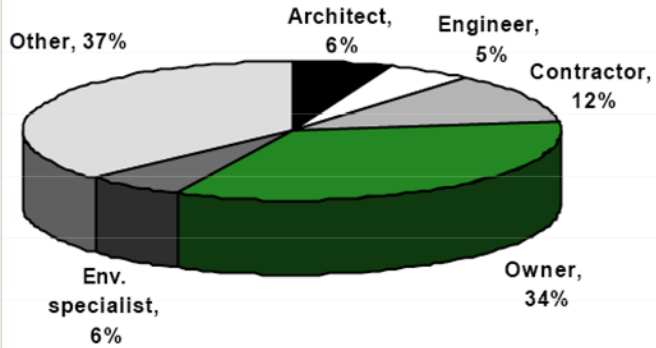
Monitoring System

- Safety Surveillor
 - A system which monitors the number of infections in a hospital during a particular time frame.

ICRA Research

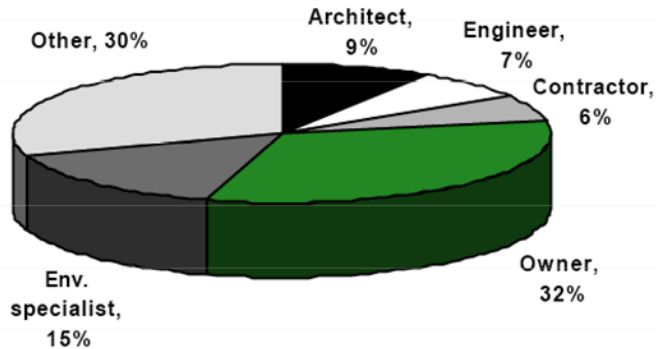
Owners Most Frequently Responsible for Infection Control

Actually Responsible for I.C.



- ▶ More than a third (34%) of respondents cite owners as the individuals who were responsible for infection control planning and execution on their last project. Contractors (12%), environmental specialists/industrial hygienists (6%), architects (6%), and engineers (5%) are also cited as responsible parties.

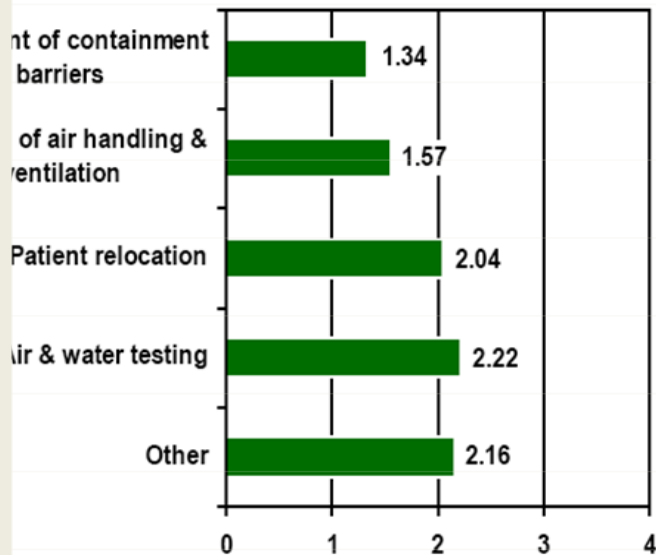
Should be Responsible for I.C.



- ▶ When asked who *should* be taking the lead in infection control planning and execution, respondents say that fewer owners (32%) and contractors (6%) should be responsible, while more environmental specialists (15%), architects (9%), and engineers (7%) should be responsible.
- ▶ Other individuals cited by respondents as being responsible on past projects, as well as who *should* be responsible, include infection control practitioners/specialists/nurses or teams of individuals.

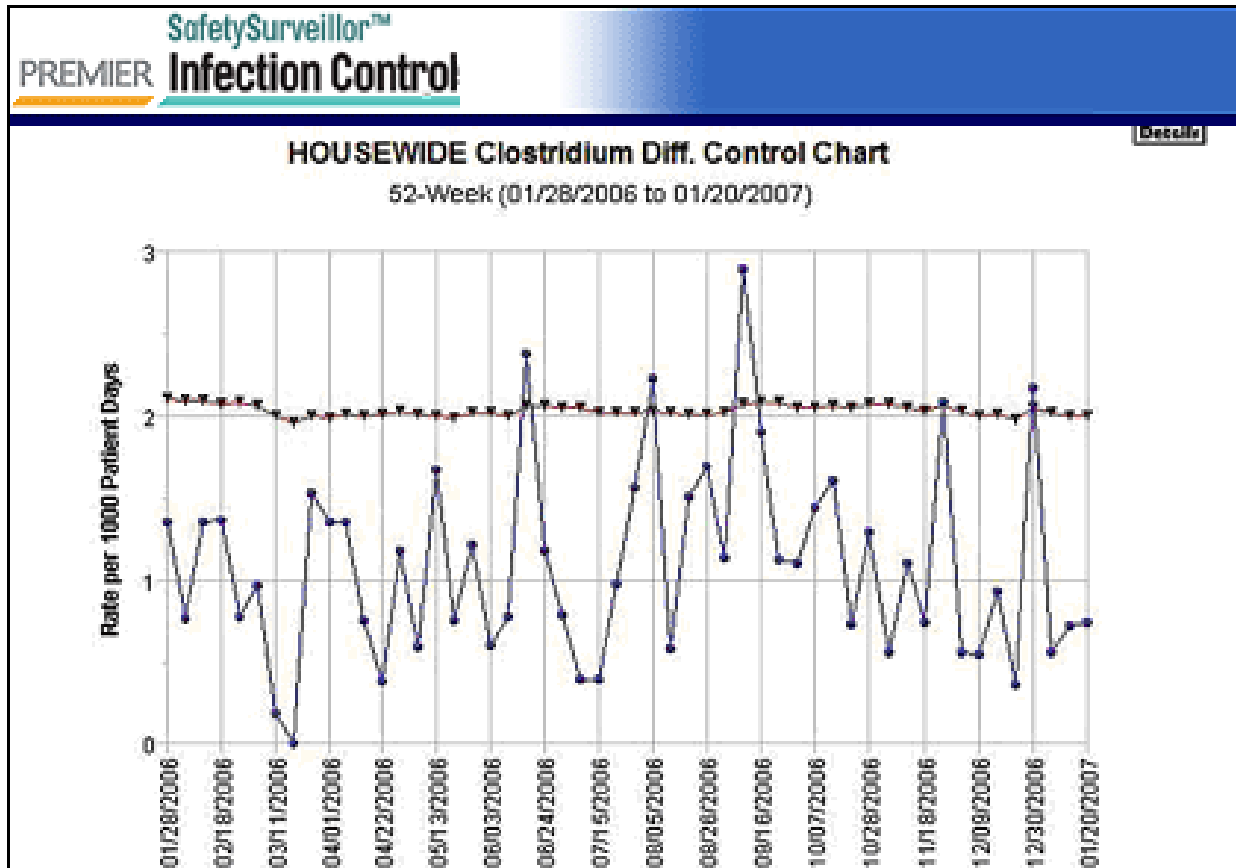
Placement of Containment Barriers Most Frequently Employed Infection Control Measure

Average Rank of Infection Control Measure Use (1 = frequently, 3 = not often)



- ▶ Respondents ranked the frequency infection control measures occur on their projects in the following order (average ranks): placement of containment barriers, isolation of air handling and ventilation, patient relocation, and air & water testing.
- ▶ More than half (55%) of respondents cite placement of containment barriers to be the most frequently employed infection control measure.
- ▶ Other frequently employed infection control measures include negative pressure/air filtration, dust control, materials testing, and staff training.

Safety Surveillor

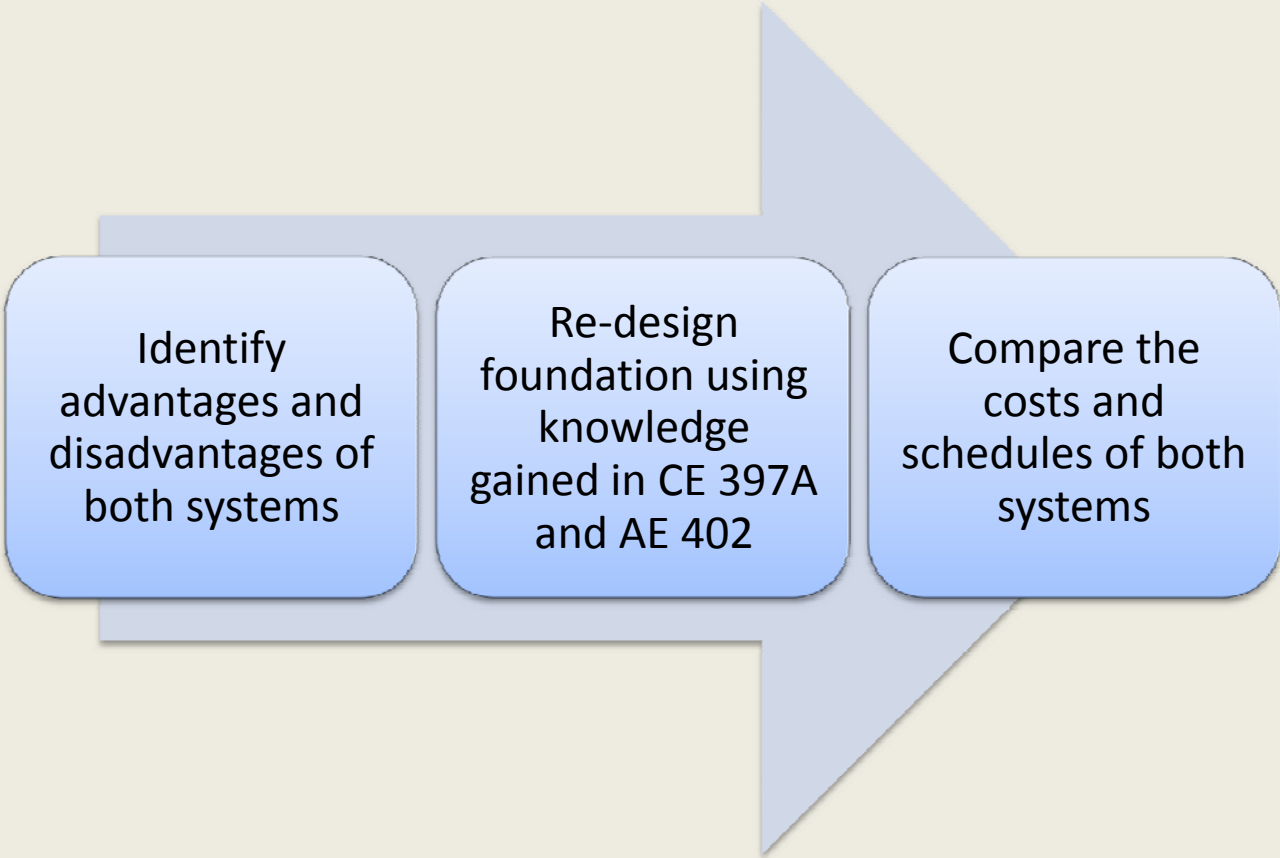


ICRA Research



Mercy Medical Center - Replacement Tower

Foundation Re-design



Identify
advantages and
disadvantages of
both systems

Re-design
foundation using
knowledge
gained in CE 397A
and AE 402

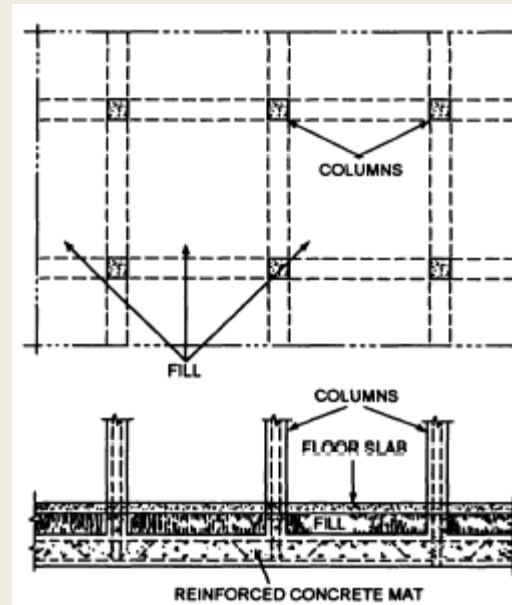
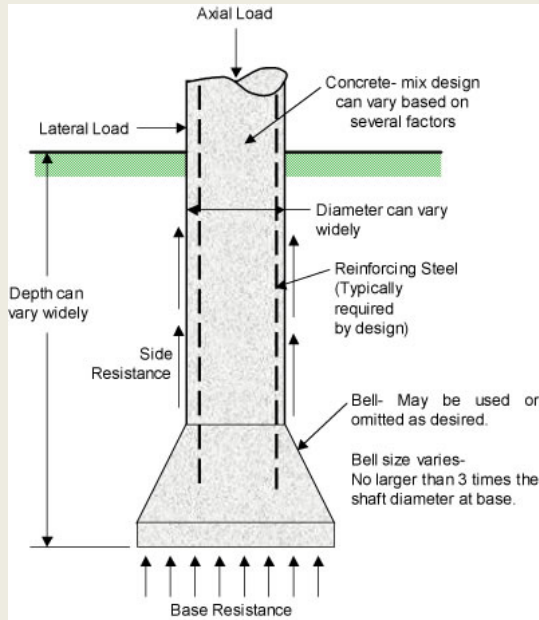
Compare the
costs and
schedules of both
systems

Foundation Re-design

Drilled Shaft Foundation

Vs.

Mat Foundation



Foundation Re-design

Advantages of Mat Foundation

- Cost (affordable)
- Construction Procedure (simple)
- Materials (mostly concrete)
- Labor (does not need expertise)

Disadvantages of Mat Foundation

- Settlement
 - Limit Capacity * Soil * Structure
 - Irregular ground surface (slope, retaining wall)
- Foundation subjected to pullout, torsion, moment

Foundation Re-design

RESULTS

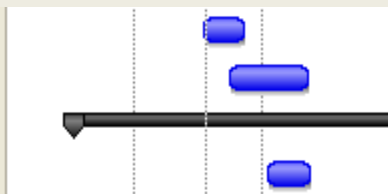
Mercy Medical Center Calculations:

- AREA CALCULATIONS: 41,520 SQ FT
- LIVE LOAD :101,761 kips
- DEAD LOAD :104,767 kips
- CRITICAL COLUMN LOAD:6,935 kips
- MAT SLAB THICKNESS: 74 INCHES
- REINFORCEMENT: No. 11 bars @ 6 ½ inches apart
- Reinforcement : 883 Tons

Foundation Re-design

Drilled Shaft Foundation Schedule

8		Demo Existing Caissons	44 days	Tue 4/8/08	Fri 6/6/08
9		Caissons	84 days?	Tue 5/13/08	Fri 9/5/08
12		<input type="checkbox"/> Construction	496 days?	Mon 10/8/07	Mon 8/31/09
10		Concrete Foundation	45 days?	Tue 7/8/08	Mon 9/8/08



Mat Foundation Schedule

	i	Task Name	Duration	Start	Finish	alf	2nd Half		1st Half		2nd Half		1st Half		
						Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	
1		Permitting	258 days	Thu 5/3/07	Mon 4/28/08										
2		<input type="checkbox"/> Preconstruction	180 days?	Fri 9/28/07	Thu 6/5/08										
7		Excavation	108 days	Tue 1/8/08	Thu 6/5/08										
5		<input type="checkbox"/> Site Work	109 days?	Tue 4/8/08	Fri 9/5/08										
9		Demo Existing Caissons	44 days	Tue 4/8/08	Fri 6/6/08										
12		Foundation	23 days	Tue 5/13/08	Thu 6/12/08										

Foundation Re-design

Cost Savings

Original Foundation Costs: \$ 3,804,477

Mat Foundation Costs: \$2,289,163

Total Savings: \$ 1,515,314

Foundation Re-design

Schedule Reductions:

22 day difference between the foundation types

Foundation Re-design

Ellerbe Becket

Adrian Hagerty, AIA
Hani Wahbi, PE, Electrical
Paula Gillette, PE, LEED

Whiting-Turner Contracting Company

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Bob Moore, Project Manager

Southland Industries,

Mike McLaughlin, PE

LVI

Brian Kline, PE

RTKL

Robert Berry

Schnabel Engineering

David Carpenter, P.E, Project Engineer

Schnabel Engineering

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