DRAMATIC COMEBACK Successful Reuse of Aged Facilities









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Presentation Objectives

- Identify the potential to transform a facility to meet current and future needs
- Understand the design and construction process of renovation
- Determine when it is appropriate to renovate
- Review specific examples

Presentation Outline

I. General

- Construction statistics
- Building eras
- Renovation terminology
- Why renovate?
- Renovation process
- II. Specific project examples
- III. Schedule & Cost
- IV. Discussion







Part I

U.S. Construction Statistics

- 2011 Construction Spending
- Amusement & Recreation
- Colleges & Universities
 - New Construction
 - Additions & Renovations

\$787,211,000,000 \$15,714,000,000 \$11,600,000,000 \$8,500,000,000 \$3,100,000,000



Source: U.S. Census Bureau

Construction Executive Magazine

Building Eras

• 1900 – 1930

- Historic
- Very high quality design
- 1930 1950
 - Semi-historic
 - High quality design

• 1950 – 1980

- Not considered historic
- Spotty quality
- 1980 +
 - Improved quality









Renovation

 Renovation is the upgrade of an existing facility to be used for the same purpose





Restoration

 Restoring the original level of quality and detail of the building (typically an historic structure)



• Retrofit

- The addition of a space within a space
- Building inside the box





• Adaptive Reuse

- Adaptive reuse is changing the use of building or a particular space
- Very effective use of space





Additions

- The vast majority of renovation projects include additions
- Additions address many challenges:
 - Fundraising
 - Program
 - Flexibility
 - Phasing
 - Occupancy
- Often the key to project success



Renovation Myths

- Less expensive
- More expensive
- Compromise
 - Program space
 - Quantity
 - Quality
- Still the old building



Realities

- Wide range in cost
- Less predictable cost than new construction
 - Greater construction contingency
 - Wider range in construction bids
- Unknown conditions
- Concurrent occupancy during construction
- Almost always more difficult to raise money
 - Private fundraising
 - Bond issue

Why Renovate?

- Many opportunities
- Potential savings
 - Time
 - Money
- Preservation of
 - Legacy
 - History/heritage
- Sustainability
 - LEED points earned



• Up to 23 LEED points related to renovation

14	Sustainable Sites	Possible Points:	26		Materi	als and Resources, Continued		
1''	Prema 1 Construction Activity Pollution Prevention			(TT	Credit 4	Recycled Content		1 to 2
1	Credit i Site Selection		T.		Credit 5	Regional Materials		1 to 2
5	Credit 2 Development Density and Community Conne	activity	5		Gridita	Repidly Renewable Materials		1
1	Oredita Brownfield Redevelopment		1		Credit 7	Certified Wood		1
6	Credit 4.1 Alternative Transportation-Public Transpor	tation Access	6	1	S			
	credit 4.2 Alternative Transportation-Bicycle Storage	and Changing Rooms	1		Indoor	Environmental Quality Po	ssible Points:	15
	Gredit 4 7 Alternative Transportation-Low-Emitting a	nd Fuel-Efficient Vehicle	5 3			And the second of the second second		
	Credit 4.4 Alternative Transportation-Parking Capacit	ty.	2	Y	Prereg 1	Minimum Indoor Air Quality Performance		
	Gredit 5.1 Site Development-Protect or Restore Habit	at	1	Y	Prereg 2	Environmental Tobacco Smoke (ETS) Control		
1	Credit 5.2 Site Development-Maximize Open Space		1		Credit 1	Outdoor Air Delivery Monitoring		1
	Credit 6.1 Stormwater Design-Quantity Control		1		Criente 2	Increased Ventilation		1
	Credit o.2 Stormwater Design-Quality Control		1		Qredit 2.1	Construction IAQ Management Plan-During Constru	uction	1
T	Oredit 7.1 Heat Island Effect-Non-roof		1		Ored # 3.7	Construction IAQ Management Plan-Before Occupa	ancy	1
	Credit72 Heat Island Effect-Roof		1		Credit 4.1	Low Emitting Materials-Adhesives and Sealants		1
	Credita Light Pollution Reduction		1		Gredit 4.2	Low-Emitting Materials-Paints and Coatings		1
-					Gredit 4.3	Low-Emitting Materials-Flooring Systems		1
1	Water Efficiency	Possible Points:	10		Credit 4.4	Low Emitting Materials-Composite Wood and Agrit	fiber Products	1
-					Gredits	Indoor Chemical and Pollutant Source Control		1
	Prervy Water Use Reduction-20% Reduction				Credit 6.1	Controllability of Systems-Lighting		1
T	Credit I Water Efficient Landscaping		2 to 4		Credit 6.2	Controllability of Systems-Thermal Comfort		1
1	Oredit ? Innovative Wastewater Technologies		2		Cretit 7.1	Thermal Comfort-Design		1
T	Credit 3 Water Use Reduction		2 to 4		Credit 7.2	Thermal Comfort-Verification		1
-					Gedit 8.1	Daylight and Views-Daylight		1
L	Energy and Atmosphere	Possible Points:	35		creat 0.2	Daylight and Views-Views		1
	Prerso I Fundamental Commissioning of Building Ene	argy Systems		11	Innova	tion and Design Process Po	ssible Points:	6
	Prereg 2 Minimum Energy Performance							
-	Prores 3 Fundamental Refrigerant Management			1	Gredit 1.1	Innovation in Design: Unique Adaptive Reuse		1
T	Credit 1 Optimize Energy Performance		1 to 19		Gedit 1.2	Innovation in Design: Specific Title		1
	Gredit ? On Site Renewable Energy		1 to 7		Credit 1/3	Innovation in Design: Specific Title		1
	Credit 3 Enhanced Commissioning		2		Credit 1.4	Innovation in Design: Specific Title		1
T	Credit 4 Enhanced Refrigerent Menagement		2		Gredit 1.5	Innovation in Design: Specific Title		1
	Gealt 5 Measurement and Verification		3		Oredit 2	LEED Accredited Professional		1
T	Gredit 6 Green Power		2	-				
-					Region	nal Priority Credits Pe	ossible Points:	-4
5	Materials and Resources	Possible Points:	14	F-1 -1	i	and the second second second		
	and the second se				Gredit 1.1	Regional Priority: Specific Credit		1
-	Prereg 1 Storage and Collection of Recyclables		-		Gredit 1.2	Regional Priority: Specific Credit		1
3	Credit 1.1 Building Reuse - Maintain Existing Walls, Flo	ors, and Roof	1 10 3		Gredit 1.3	Regional Priority: Specific Credit		1
	Greaters 2 Building Reuse-Maintain 50% of Interior No.	Structural Elements	1.		Crédit 1.4	Regional Priority: Specific Credit		1
-	Gredit 2 Construction Waste Management		1 to Z	-				
2	Credit 3 Materials Reuse		1 to 2	23	Total	P	ossible Points:	110

• 4 points specifically apply to building reuse, 2 for material reuse

0	6	0	Materials an	d Resources	Possible Points:	14
Y	?	Ν				
Y			Prereq 1	Storage and Collection of Recyclables		
	3		Credit 1.1	Building Reuse–Maintain Existing Walls, Floors, and Roof		1 to 3
				Reuse 55%		1
				Reuse 75%		2
				3 Reuse 95%		3
	1		Credit 1.2	Building Reuse–Maintain 50% of Interior Non-Structural Elements		1
			Credit 2	Construction Waste Management		1 to 2
				50% Recycled or Salvaged		1
				75% Recycled or Salvaged		2
	2		Credit 3	Materials Reuse		1 to 2
				Reuse 5%		1
				2 Reuse 10%		2

• Up to 14 sustainable site points are more likely

0 14 0	Sustainable	Sites	Possible Points:	26
Y ? N				
Y	Prereq 1	Construction Activity Pollution Prevention		
1	Credit 1	Site Selection		1
5	Credit 2	Development Density and Community Connectivity		5
1	Credit 3	Brownfield Redevelopment		1
6	Credit 4.1	Alternative Transportation—Public Transportation Access		6
	Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms		1
	Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicle	S	3
	Credit 4.4	Alternative Transportation—Parking Capacity		2
	Credit 5.1	Site Development-Protect or Restore Habitat		1
1	Credit 5.2	Site Development-Maximize Open Space		1
	Credit 6.1	Stormwater Design—Quantity Control		1
	Credit 6.2	Stormwater Design—Quality Control		1
	Credit 7.1	Heat Island Effect—Non-roof		1
	Credit 7.2	Heat Island Effect—Roof		1
	Credit 8	Light Pollution Reduction		1

• Up to 2 additional points for energy efficiency

0 2 0	Energy and	Atmosphere Possible Points	: 35
Y ? N			
Y	Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y	Prereq 2	Minimum Energy Performance	
Y	Prereq 3	Fundamental Refrigerant Management	
2	Credit 1	Optimize Energy Performance	1 to 19
		Improve by 12% for New Buildings or 8% for Existing Building Renovations	1
		Improve by 14% for New Buildings or 10% for Existing Building Renovations	2
		Improve by 16% for New Buildings or 12% for Existing Building Renovations	3
		Improve by 18% for New Buildings or 14% for Existing Building Renovations	4
		Improve by 20% for New Buildings or 16% for Existing Building Renovations	5
		Improve by 22% for New Buildings or 18% for Existing Building Renovations	6
		Improve by 24% for New Buildings or 20% for Existing Building Renovations	7

* Energy efficiency can be more difficult to achieve

• Innovation points are possible with renovation

0	1	0	Innovation and Design Process		Possible Points:	6
Y	?	Ν				
	1		Credit 1.1	Innovation in Design: Unique Adaptive Reuse		1
			Credit 1.2	Innovation in Design: Specific Title		1
			Credit 1.3	Innovation in Design: Specific Title		1
			Credit 1.4	Innovation in Design: Specific Title		1
			Credit 1.5	Innovation in Design: Specific Title		1
			Credit 2	LEED Accredited Professional		1

Renovation/Building Process

- Multiple phases comprise a project
- Decision to renovate is made during the process







- Review potential sites
- Identify renovation candidates
- Integrate with master plan effort





Main Field

House

Marginal

Adequate

Not Adequate

- Electrical systems
- Hazardous materials
- Code compliance
- ADA

Renovation Potential?

- Will it comply with the master plan?
- Can it meet the goals of the project?
- Does it have architectural quality?
- Is it structurally sound?
- Does it have useable space to meet current use?
- Does it have potential for adaptive reuse?
- Does it have historic value?
- Can it meet current code and design standards?
- Will it be cost effective?



- Develop design alternatives
- Compare to new construction options
- Cost/benefit analysis







- Professional/technical input
- Consensus decision
 - Justifiable
 - Defensible
 - Sellable



Evaluate

Part II

Marietta College

- 1929 field house + 1978 addition
- Building program elements
 - Major upgrades throughout
 - 200 meter track
 - Performance gymnasium
 - Fitness center
 - Sports medicine facility
 - Athletic offices
 - Support space







Marietta College



Main Level Floor Plan

Marietta College





Addition

• Seamless integration of old and new





Old + New



Restoration

- Out with the new, in with the old
- Tribute to past and present





Old Exterior

New Interior

Adaptive Reuse





Locker Room

Conference Room

Adaptive Reuse





Weight Room

Multi-Purpose

Renovation + Retrofit





Original Gym

New Gym + Fitness




Original Gym

Fitness Center



Original Gym

Hall of Fame





Original Gym

Hall of Fame

- 1920 field house + 1978 addition
- Building program elements
 - New entry
 - Performance gymnasium
 - Jogging track
 - Fitness center
 - Training room
 - Climbing wall
 - Athletic offices
 - Support space







1920 Field House

1978 Addition





Main Entry

Lobby





1920 Field House

1978 Gym





Locker Room

Weight Room







Old Entry

New Entry

Renovation





Old Lobby

New Concourse







Recreation Gym + Jogging Track

Renovation





Original Gym

Renovated Gym

Renovation





Old Gym

Renovated Gym





Old Weight Room

New Fitness Center





Hall of Fame



- Collection of buildings over time
- Building program elements
 - 50 meter pool
 - Diving tank
 - Indoor/outdoor leisure pools
 - Fitness center
 - Climbing wall
 - Multi-purpose space
 - Wellness center
 - Common social space











Addition & Renovation



Addition & Renovation





Original

New Entry/Addition





Competition Pool

Fitness Center

Adaptive Reuse





Rothwell Gym

Leisure Pool

Adaptive Reuse





Fitness Center



Renovation





Original Rec Gym

Renovated Rec Gym



Squash Court

Conference Room

Colorado State University

- 1984 Recreation Center
- 1996 Addition
- Lack of Windows
- Major Addition Required
- Significant
 Reorganization of Space
- Extensive Renovation
- LEED Gold Certified





Pool Level Plan

Gym Level Plan





Original

New Entrance





Original Entrance

New Fitness Center





Original Fitness Center

New Fitness Center

Renovation





Original Pool

Renovated Pool

Mount Union University

- Original Facility Constructed 1978 + 1986 Addition
- Lack of Windows and Architectural Features
- Fundamentally Sound and Efficient Layout
- Project Requirements
 - Extensive Renovation
 - Field House Expansion
 - Fitness Center Expansion
 - Additional Gym
 - Office Space



Mount Union University



First Level

Second Level





Original

New Entrance

Renovation





Original

Renovated Pool
Renovation





Original

Renovated Field House

Georgia Southern University

- 1996 Original building
- New building program
 - Multi-purpose gymnasium
 - MAC gymnasium
 - Expanded fitness center
 - Pool
 - Expanded climbing wall
 - Outdoor recreation
 - Additional multi-purpose space



Georgia Southern University



Original Design - 1996

Georgia Southern University



Phase II Expansion

Adaptive Reuse





Original Entry

Climbing Wall

Adaptive Reuse





Entry Lobby

Climbing Wall

Addition



New Entry

Addition



New Lobby

Georgia Tech

- 1977 recreation center
- 1996 addition
- Olympic aquatic venue
- Preserve legacy
- Solar roof
- Enclose pool
- Renovate
- Expand recreation
- 500 car parking garage











Original Rec Center

Olympic Pool Addition







Pool Section

Olympic Pool

Retrofit





Pool Section

Renovated Pool

Renovation + Addition





Pool Level Plan

Gym Level Plan

Renovation + Retrofit





Olympic Pool



Renovation + Retrofit





Olympic Pool

Gymnasium/Track

Renovation + Addition



University of Central Florida

- 2002 Original Building
- Undersized From Start
- 2011 Addition
- Master Plan
- Future Phases





Phase II Expansion – 65,000 SF

University of Central Florida MULTI BUILDIN URPOSE MULTI-MULTI-MULTI WRESTLING 5 PURPOSE PURPOS MULTI URPOS 1 AECH CHILLER PLANT STORAGE EQUIPT REPAIR 0 -pi lo RBALL OPEN TO OPEN TO EXISTING CHILLER PLANT MAC MAC MAC BELOW MAC BELOW RBALL RBALL RBALL 0 RBALL ----PP/rappings EXISTING EXISTING EXISTING EXISTING GYMNASIUM FITNESS GYMNASIUN FITNESS BELOW BELOW FXISTING EXISTING LL OFFICE MULTI-PURPOSE

11

Phase III Expansion – 85,000 SF

Addition





Original + Expansion

Outdoor Pool

Addition





Fitness Center

Racquetball Courts

Part III

Renovation Timeline

- Master plan
- Programming
- Fundraising
- Basic services (design)
- Construction
- Phasing

- 3 4 months
- 2 3 months
- 3 30 months
- 8 12 months
- 12 30 months
- 9 15 months



Construction Cost – New



- Foundation \$10-\$40/SF (\$25/SF)
- Structure \$30/SF
- Exterior Walls \$26/SF
- Roofing \$10-\$24/SF (\$16/SF)
- Interior Walls/Finishes \$24/SF
- Specialties & Equipment \$8/SF
- Elevator \$1/SF
- 🖬 Mechanical \$30/SF
- 🖬 Electrical \$18/SF

\$160/SF - \$200/SF

Construction Cost – Renovation



- Roofing \$10-\$24/SF (\$16/SF)
- Interior Walls/Finishes \$24/SF
- Specialties & Equipment \$8/SF
- Elevator \$1/SF
- Mechanical \$30/SF
- 📕 Electrical \$18/SF
- Demolition \$2-\$8/SF (\$5/SF)
- Abatement \$4-\$6/SF (\$5/SF)
- 🖬 Exterior Windows \$7/SF
 - Seismic Upgrades \$17/SF
 - Retrofit Factor \$25-\$35/SF (\$30/SF)

\$93/SF - \$178/SF

Renovation Costs

GYM RENOVATION	14,000 SF
ITEM	COST
Demolition	\$28,000
Abatement	\$56,000
Floor	\$126,000
Wall Finish	\$14,000
Ceiling Finish	\$21,000
Doors/Windows	\$168,000
Bleachers (2,000)	\$220,000
Athletic Equipment	\$112,000
Mechanical	\$420,000
Electrical	\$252,000
Retrofit	\$140,000
GC OH & P	\$225,000
Total (\$127/SF)	\$1,782,000





Renovation Cost

Construction Inflation



Renovation Cost

Project	Completed	Total Area	Construction Cost *	Unit Cost
Mount Union University	2009	140,543 SF	\$15,645,003	\$111/SF
Colorado State University	2010	175,343 SF	\$29,187,272	\$166/SF
Georgia Tech	2004	300,659 SF	\$52,169,953	\$174/SF
Earlham College	1999	106,000 SF	\$19,195,593	\$181/SF
Marietta College	2003	141,000 SF	\$25,910,776	\$184/SF
University of Missouri	2005	283,579 SF	\$52,040,915	\$184/SF
Georgia Southern University	2007	152,255 SF	\$34,498,499	\$227/SF

New Construction:\$160/SF - \$200/SFRenovation:\$93/SF - \$178/SF

* All costs adjusted to national U.S. average, current year 2011

Why Not Renovate?

- Does not support current/future programs
- No historical value
- No architectural value
- Insurmountable physical constraints
- Major structural problems
- Threat to public safety

- Cost prohibitive
- Low donor interest
- Out of balance with new construction (2:1 rule)



Summary

- Numerous opportunities exist
 - Renovation/Restoration/Adaptive Reuse/Retrofit
- Additions are a key component
- Not just for old buildings
- Wide range in cost
 - \$93/SF \$178/SF
- Project success requires a consistent balance of quality between new and old
- Every project is different and requires a unique approach

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Swimming Pools

- High Volume Space
- Code Non-Compliance
 Major Expense
 - Pool Tank Dimensions
 - Deck Dimensions

- Limited Pool Expansion





Racquetball Courts

- Abundant Supply
- High Ceiling Space
- No Exterior Windows
- 20' X 40' Dimensions
- Potential Adaptive Reuse
 - Multi-Purpose Space
 - Specialty Space
- Structure is Major Factor
- Glass is Critical



Look Familiar?




Look Familiar?



Look Familiar?



Look Familiar?



Renovation Cost

Deferred Maintenance

Renovation