



SAN DIEGO COMMUNITY COLLEGE DISTRICT



State of Design Build at the San Diego Community College District - 2012

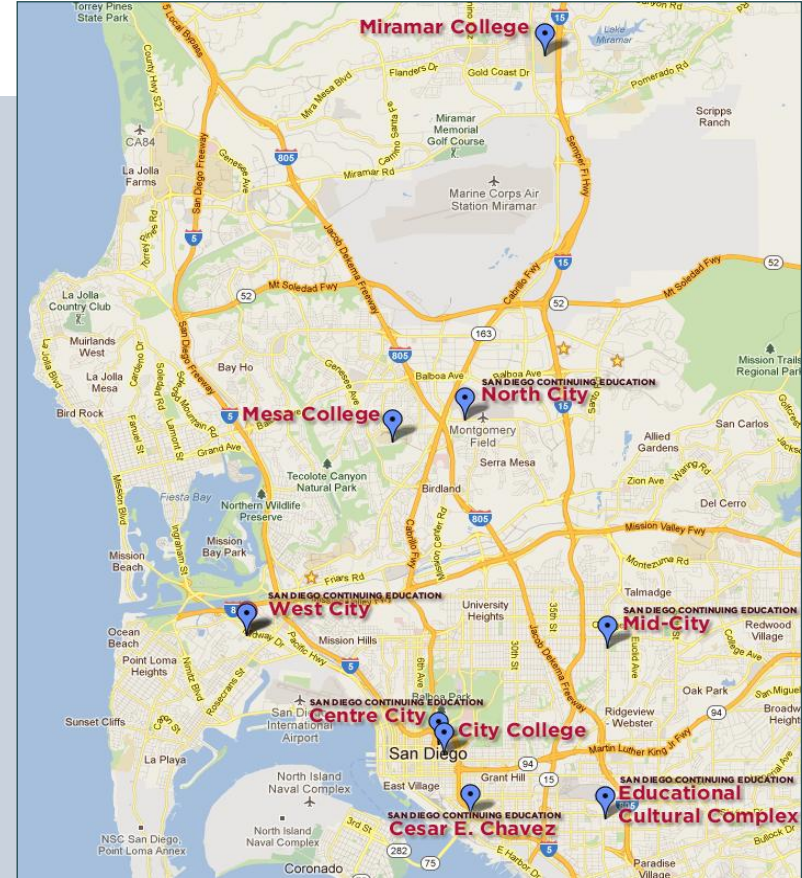


**Presented to Design-Build Institute of America - Western Pacific Region
September 18, 2012**

San Diego Community College District (SDCCD)

Overview

- The Second Largest Community College District in California
- Sixth Largest in Nation
- Three Colleges - City, Mesa and Miramar
- Six Continuing Education Campuses
- District Square Footage - 2,218,031



City College



Mesa College



Miramar College



Continuing Education

San Diego Community College District Overview

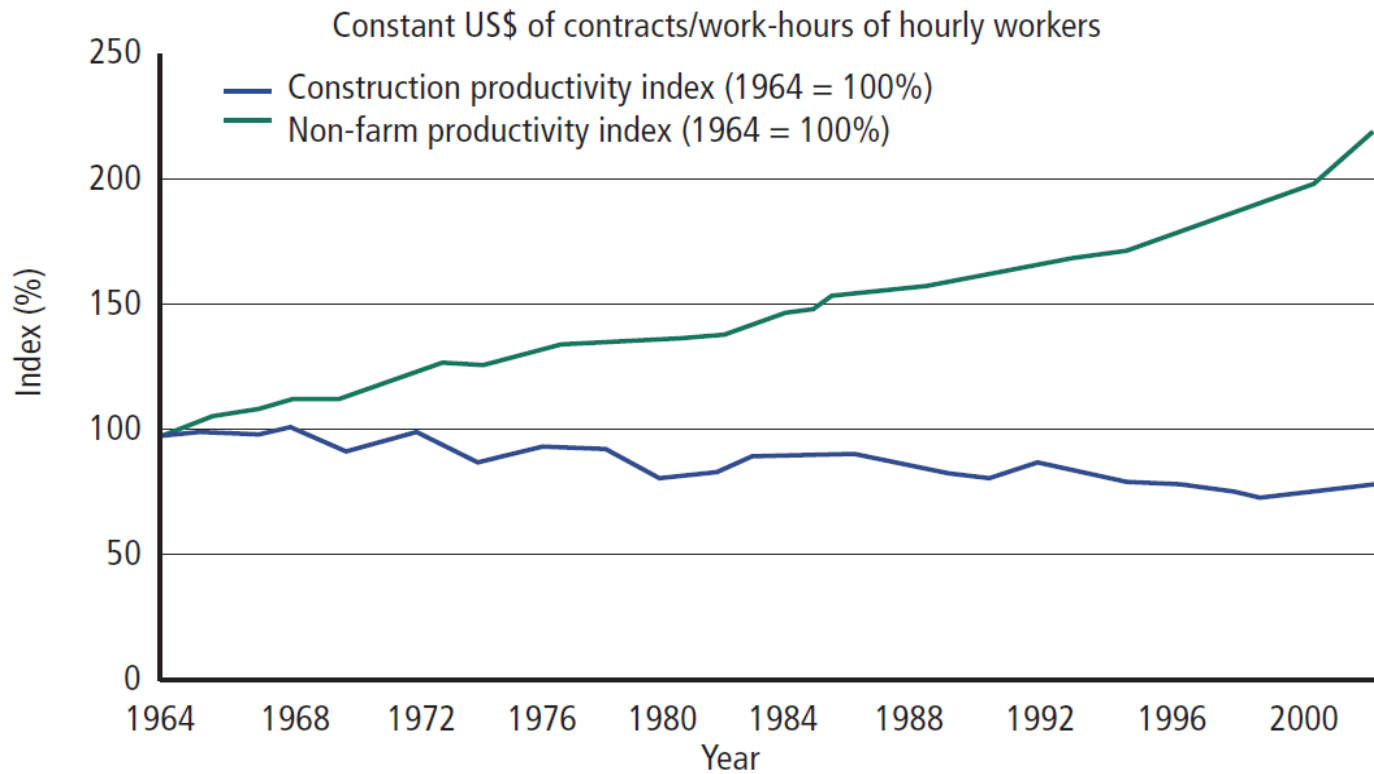
\$1.555 billion construction bond program provides for 80+ projects at City, Mesa and Miramar Colleges, and six Continuing Education campuses:

- State of the art teaching and learning facilities
- Major renovations and modernizations
- Campus-wide infrastructure projects
- Green Building Policy
- \$264 M in current Design/Build projects



Construction Productivity in the U.S.

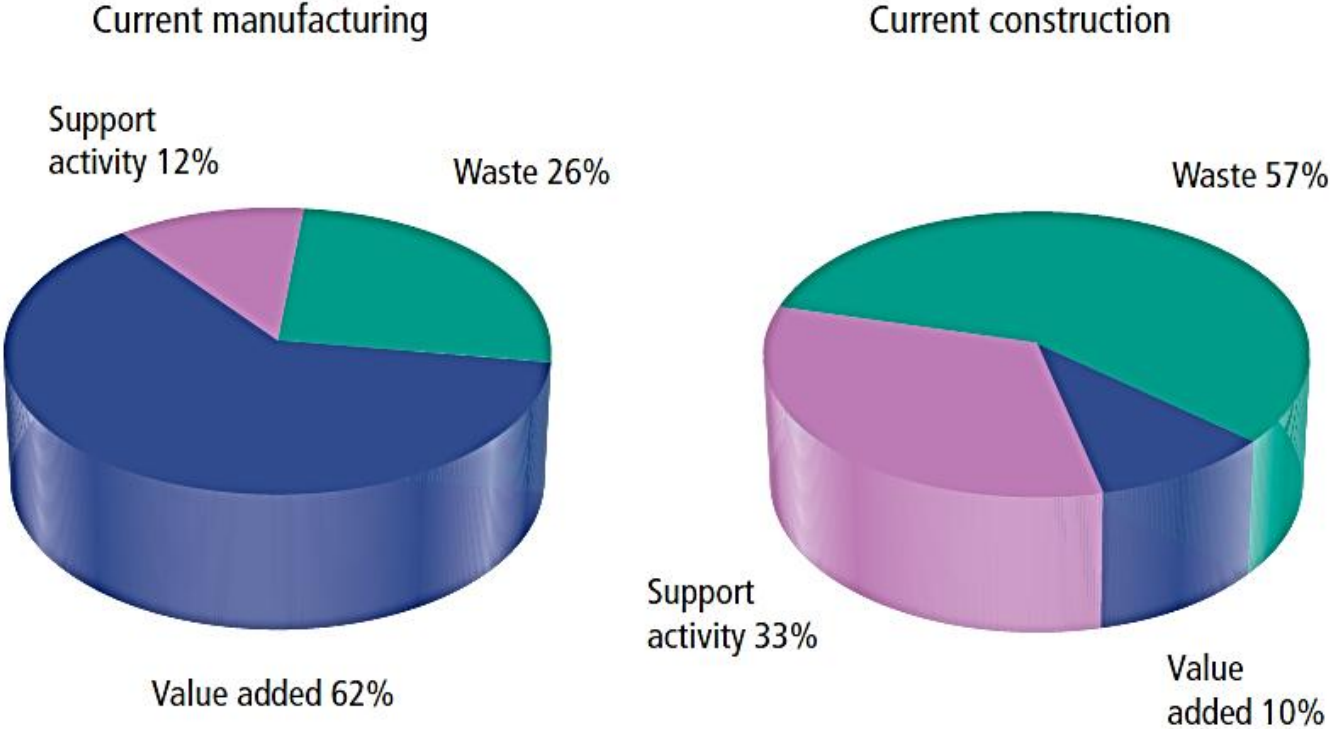
Construction and Non-farm Labor Productivity Index (1964-2003)



Source: U.S. Department of Commerce, Bureau of Labor Statistics

San Diego Community College District Construction Waste in the U.S.

Tremendous Waste in Construction



Source: Construction Industry Institute™.

San Diego Community College District

Total Cost of Ownership

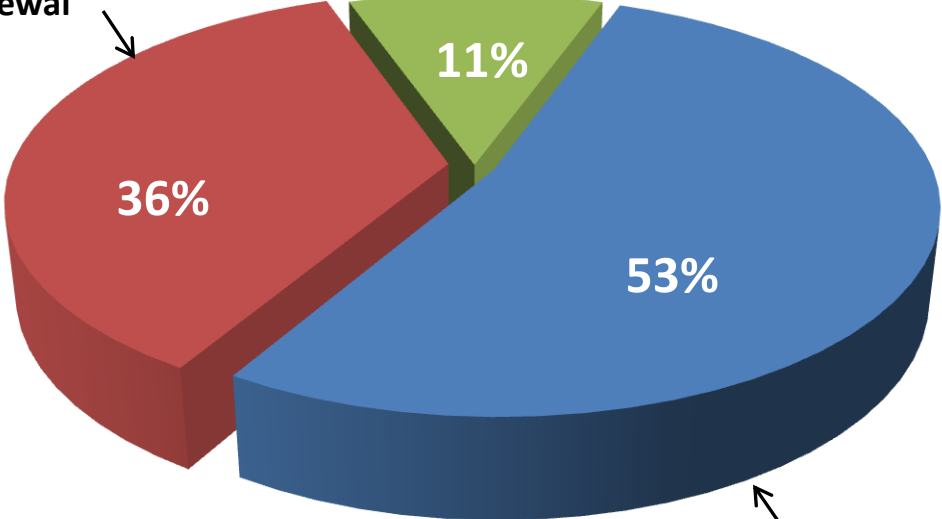
- 50-year design life
- 100,000 square foot classroom building
- Design and construction cost - \$30 million
- Capital Renewal: 2% of current replacement value (APPA benchmark)
- O&M Budget \$5.69/square foot
- Inflation: 3%



Total Cost of Ownership

Total Cost of Ownership

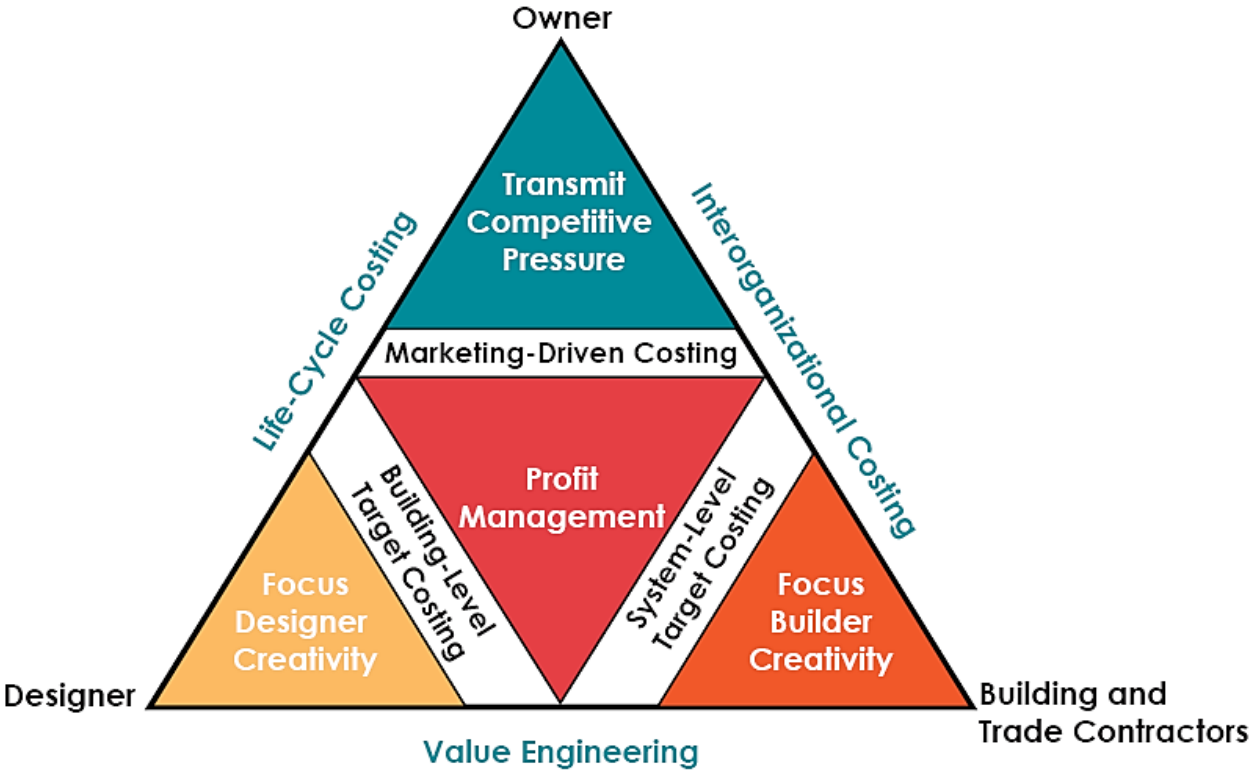
Save 5% in Cap. Renewal



Save 10% in O&M

Savings			
D&C:	\$30M	<u>Total</u>	<u>NPV</u>
Cap. R.:	\$101M	\$ 5M	\$1.1M
<u>O&M:</u>	<u>\$149M</u>	<u>\$15M</u>	<u>\$3.4M</u>
Total:	\$280M	\$20M	\$4.4M

Target Costing



The Target Costing Triangle
(After Cooper and Slagmulder, 1997)

San Diego Community College District

Design/Build Overview

- **As of January 1, 2008, Community Colleges can use design build under SB614.**
 - Must be at least \$2.5M in value
 - Requires project-specific Board resolution
- **Need to evaluate the project based on five minimum criteria.**
 - Price (10%)
 - Technical Experience (10%)
 - Life cycle cost over 15 years (10%)
 - Skilled Labor Force (10%)
 - Safety Record (10%)



SDCCD Design/Build Selection Criteria

Price accounts for 20% (200 points) of total ranking.

Non-Price Factors will account for 80% (800 points) of the total ranking:

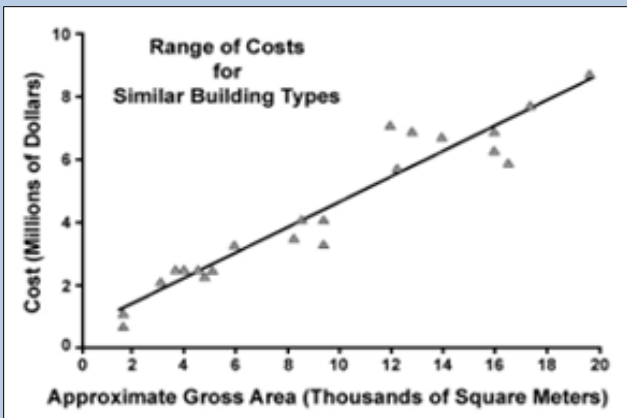
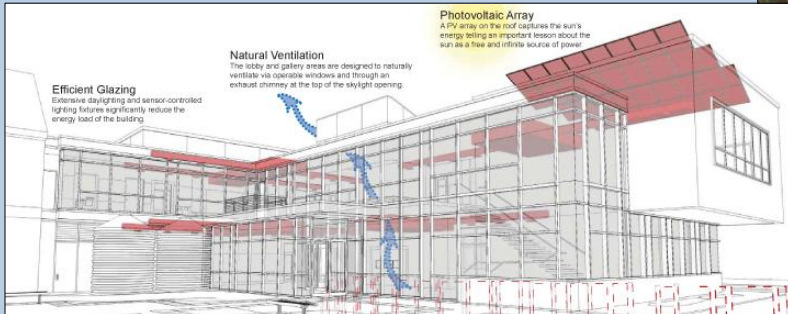
- Technical Expertise (20% - 200 points)
- Design Excellence (20% - 200 points)
- Life Cycle Costs (10% - 100 points)
- Safety Record (10% - 100 points)
- Skilled Labor Force Availability (10% - 100 points)
- Subcontracting Outreach Plan (10% - 100 points)



San Diego Community College District

Target Costing – Project Budget Development

- Space Programming
- Efficiency
- Targeted Cost Per Sq. Ft.



		2024 ASF	Quantity	Extended 2024 ASF	Extended 2007 ASF	Variance	2007 Room Nos., Comments
LIFE SCIENCES	32-Seat Dry Lecture/Lab-Biology	1,600	x 1.0	1,600	836	764	supplements A202
	32-Seat Wet Lab-Biology/Botany	1,728	x 1.0	1,728	1,092	636	supplements A210
	32-Seat Wet Lab-Biotech/Microbiology	1,728	x 3.0	5,184	2,048	3,136	supplement A204, A231
	32-Seat Wet Lab-Physiology/Anatomy	1,728	x 3.0	5,184	1,834	3,350	supplement A226, A206
	32-Seat Lecture/Dry Lab-Life Science (computer)	1,600	x 1.0	1,600	1,053	547	supplements A207
	Prep/Stg/Lab Tech Rm (1 per 2 wet labs; 7 wet labs total)	800	x 4.0	3,200	1,232	1,968	supplement A203, A205, A226A
	Storage	1,200	x 1.0	1,200	0	1,200	supplements A206A, A209, A211
	Marine Biology/Oceanography Lab	500	x 1.0	500	0	500	Aquarium
	Microbiology Culture/Autoclave Room	200	x 1.0	200	0	200	
	Biology/Anatomy Dissection Room	200	x 1.0	200	0	200	
		20,596		8,095	12,501		
PHYSICAL SCIENCES	32-Seat Wet Lab-Chemistry	1,728	x 4.0	6,912	3,018	3,894	M201, M202, M203
	Chemistry Lab Instrument Room (1 per 2 labs)	250	x 2.0	500	180	320	M220
	Chem. Prep/Storage/Lab Tech Rm (1 per 2 labs)	800	x 2.0	1,600	1,337	263	M216, M217, M218
	Hazardous Chemicals Storage Room	175	x 1.0	175	120	55	M219
	32-Seat Lecture/Dry Lab-Physics, Physical Science, Geography, Geology	1,600	x 4.0	6,400	2,014	4,386	M204, M205
	40-Seat Lecture/Dry Lab-Geography	2,000	x 1.0	2,000	0	2,000	
	Physics/Physical Science/Astronomy Prep/Stg/Lab Tech Rm	1,600	x 1.0	1,600	1,059	541	M214, M215, M215A
	32-Seat Computer Lab-GIS, Physics, Chemistry	1,600	x 2.0	3,200	0	3,200	
100-Seat Planetarium	2,500	x 1.0	2,500	0	2,500		
		24,887		7,728	14,669		

How to Discourage Pricing Gaming

- Target costing (e.g., design to budget and create value)
- Pricing elements to include design fees, preconstruction services, general conditions staffing costs, general requirements and OH&P on target project construction cost

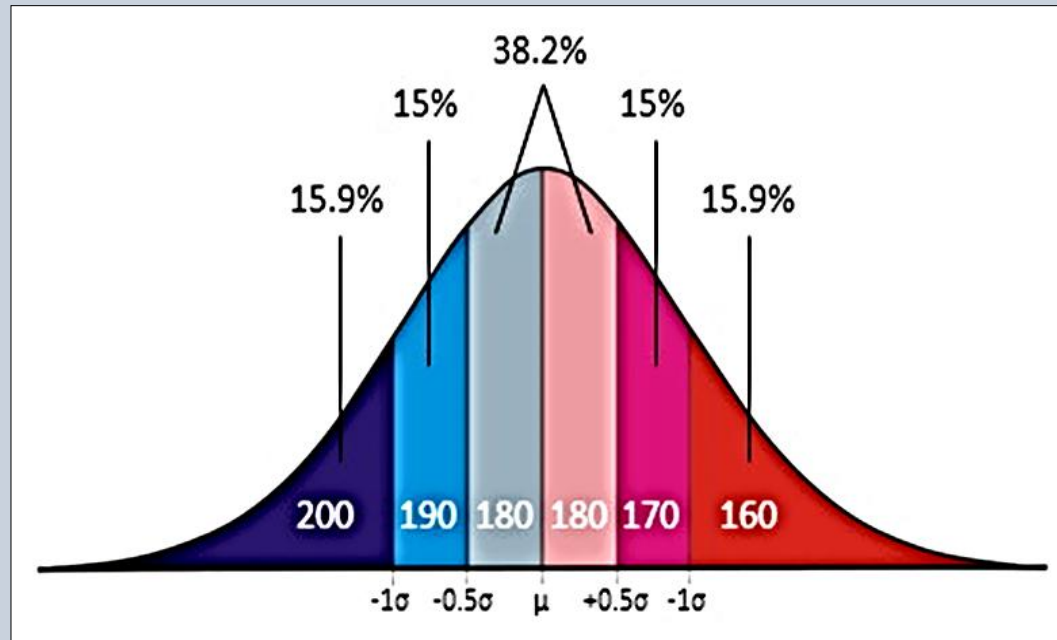


Design/Build Proposal Ranking Methodology

The ranking of Design/Build price proposals will be based on point totals. The highest point totals will be ranked “most advantageous” and the lowest point totals will be ranked the “least advantageous” in the following manner:

Design Fees (including Preconstruction Services) + General Conditions Cost + (OH&P% x \$43,000,000) = **Proposer's Price**

- 200 points = -1σ
- 190 points = $1\sigma - 5\sigma$
- 280 points = $+/- .5\sigma$
- 170 points = $0.5 - 1\sigma$
- 160 points = $>+1\sigma$



How to Facilitate Design Excellence

- Foster collaborative behaviors of design/build team
- Provide high level programming needs
- Set building space efficiency targets
- Set-Based design or designing by advantages
- Set of District standards that are only truly standards that are not needed



San Diego Community College District

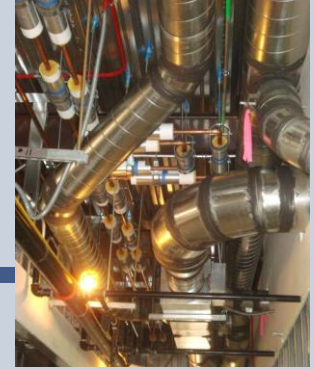
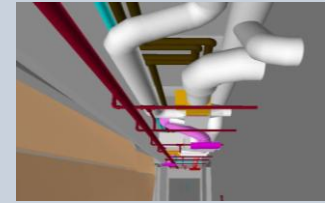
Set-Based Design and Life Cycle Cost Analysis

Miramar College Cafeteria and Bookstore						
Options	OPTIONS	Annual System Energy Cost	Annual System Maintenance Cost	Annual Water Usage Cost	Total Annual Operating Cost	System Installation Cost
1	VAV WITH REHEAT	\$126,488	\$15,400	\$1,735	\$143,623	\$3,462,000
2	GROUND SOURCE HEAT PUMP	\$135,285	\$19,100	\$0	\$154,385	\$4,196,000
3	COMBINATION VAV WITH REHEAT (49.1%) / CHILLED BEAM (50.9%)	\$119,865	\$12,700	\$1,664	\$134,229	\$3,767,147
4	COMBINATION VAV WITH REHEAT (42.1%) / CHILLED BEAM (40.9%) / DISPLACEMENT VENTILATION (17.0%)	\$124,759	\$13,300	\$1,643	\$139,702	\$3,794,725
5	COMBINATION VAV WITH REHEAT (84.3%) / DISPLACEMENT VENTILATION (15.7%)	\$129,601	\$15,600	\$1,675	\$146,876	\$3,536,348

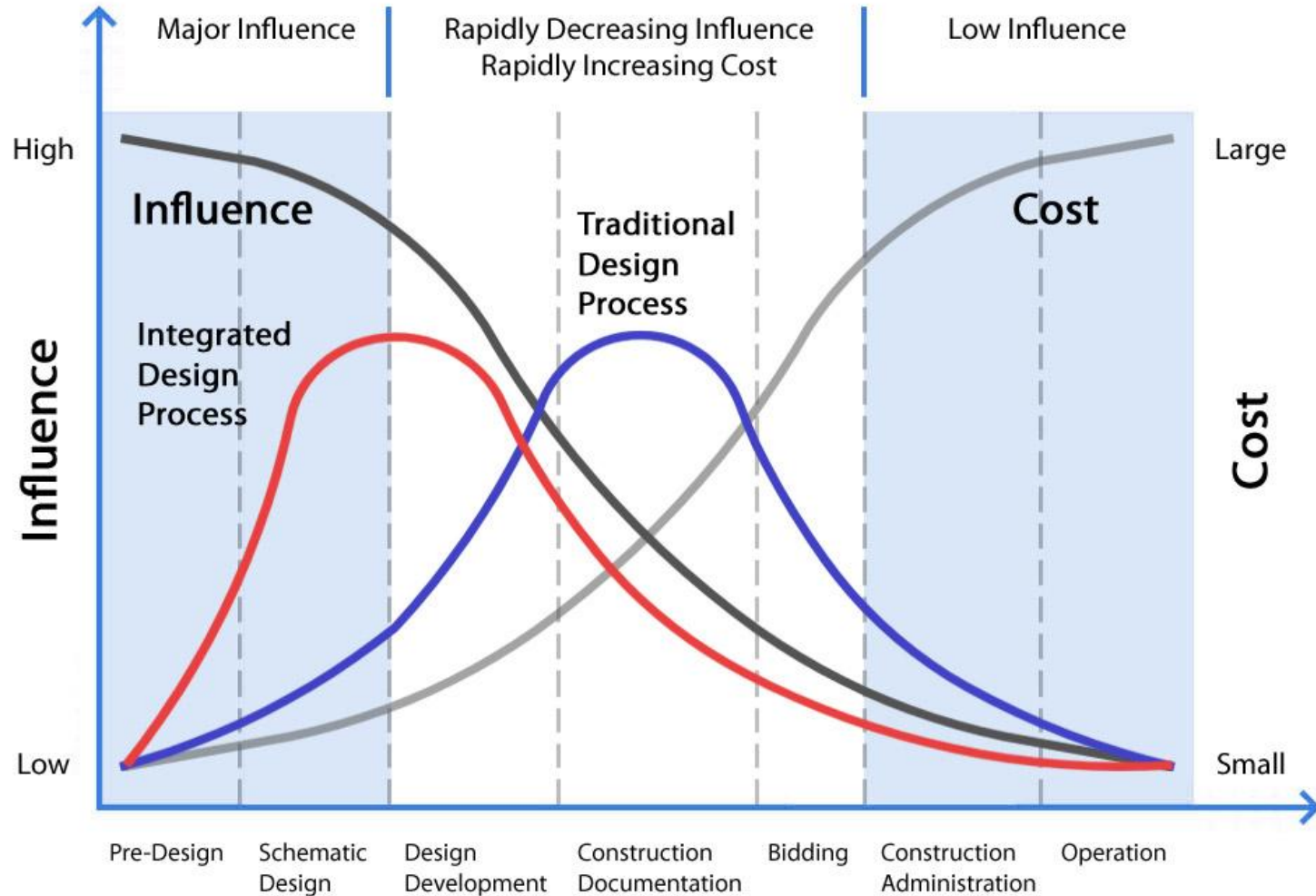
Note: A Negative (-) Payback indicates that this option will not pay for itself.

How to Facilitate Design Excellence

- Established BIM standards that are empowering not prescriptive
- Set sustainability goals
- Agree to GMP at completion of design submittal to permitting authority
- Facilitate end user input and facilities priorities into the design process without sacrificing design/build financial margins



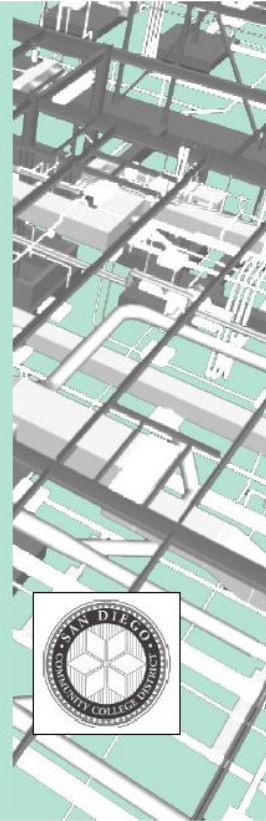
MacLeamy Curve – Integrated Early Design



San Diego Community College District BIM Standards

San Diego Community College District
BIM Standards for Architects,
Engineers & Contractors

VERSION 2.0



<http://public.sdccdprops-n.com/Design/SDCCD%20-%20Building%20Design%20Standards/SDCCD%20BIM%20Standards%20Version%202.pdf>

San Diego Community College District

BIM Clash Detection

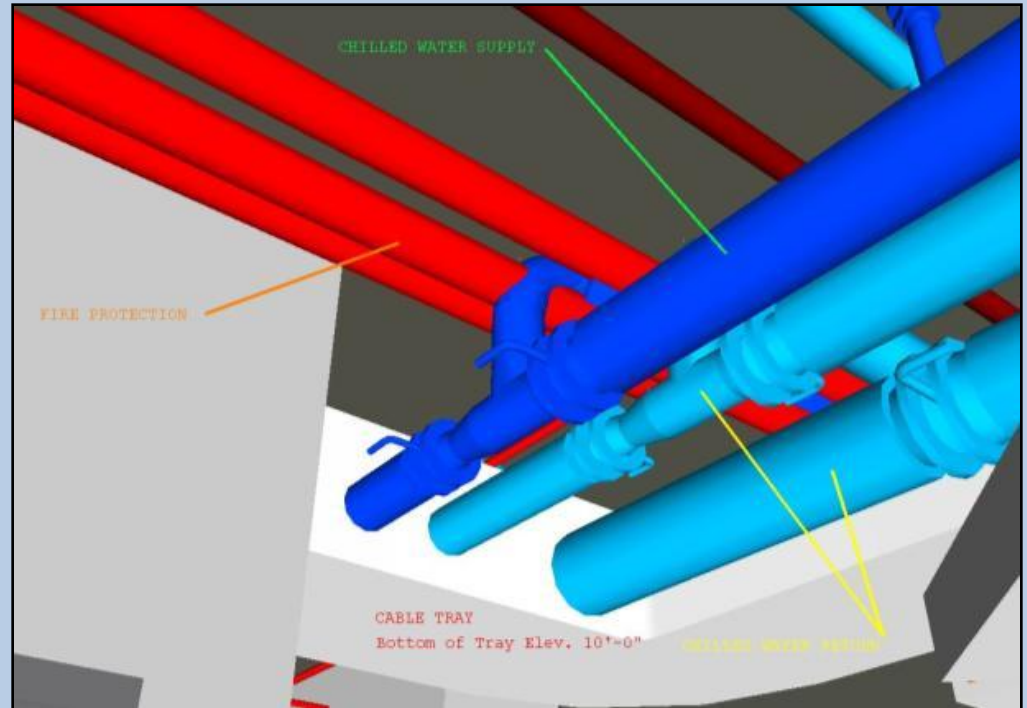


■ Building Construction

Mechanical piping hits cable tray and fire protection piping in ceiling space

■ Survey Average Results

- *Man-hour Savings = 61*
- *Delay Savings = 3 Days*
- *Cost Savings = \$30,349.00*



- **Number of Clashes Shown in Example = 9**
- **Savings per Clash Resolved = \$3,372.00**

San Diego Community College District

Completed Design/Build Projects

Miramar College Police Station

Project Budget: \$17.9 million

Construction Start: Summer 2010

Completion: October 2011

Project provides new headquarters for Miramar College Police and also provides new multi-level parking structure. The Police Station was awarded a LEED Platinum – the first for SDCCD.

Design/Builder Team:

McCarthy Construction

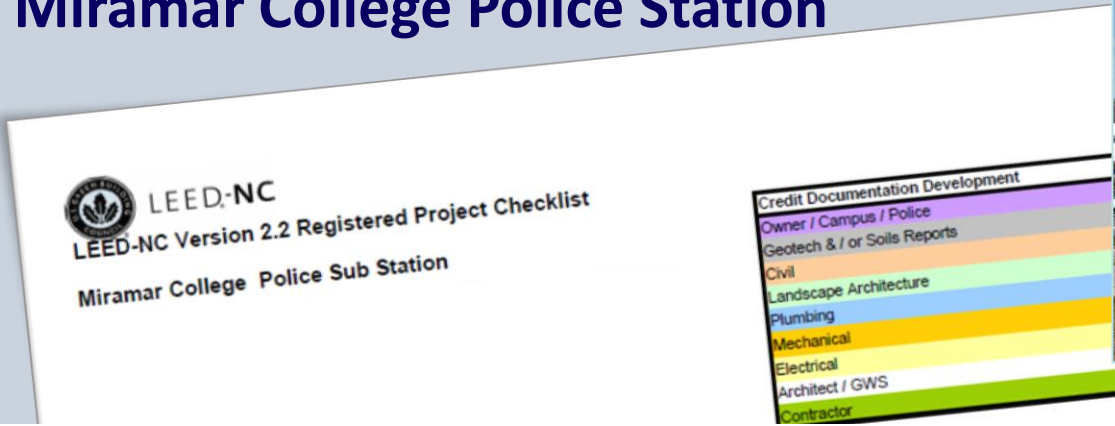
Harley Ellis Devereaux

International Parking Design (IPD)



San Diego Community College District Completed Design/Build Projects

Miramar College Police Station

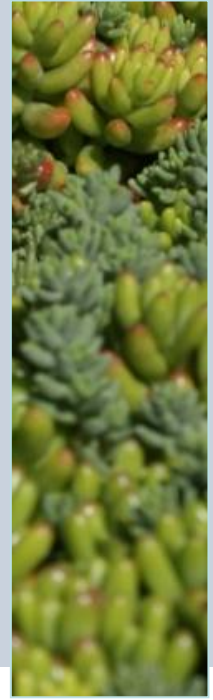


Yes ? No c - credit verified during construction d - credit verified in construction documents

5				Innovation & Design Process	5 Points
1			d	Credit 1.1 ID: Education Outreach, interactive kiosk and signs	1
1			d	Credit 1.2 ID: 40% water conservation	1
1			d	Credit 1.3 ID: Use of Cradle to Cradle certified products for 2.5% of material cost	1
1			c	Credit 1.4 ID: 95% diversion from landfill - Construction Waste Management	1
1			c	Credit 2 LEED® Accredited Professional	1

Yes ? No

56				7	Project Totals (pre-certification estimates)	69 Points
					Certified 28-32 points	Silver 33-38 points
					Gold 39-51 points	Platinum 52-69 points

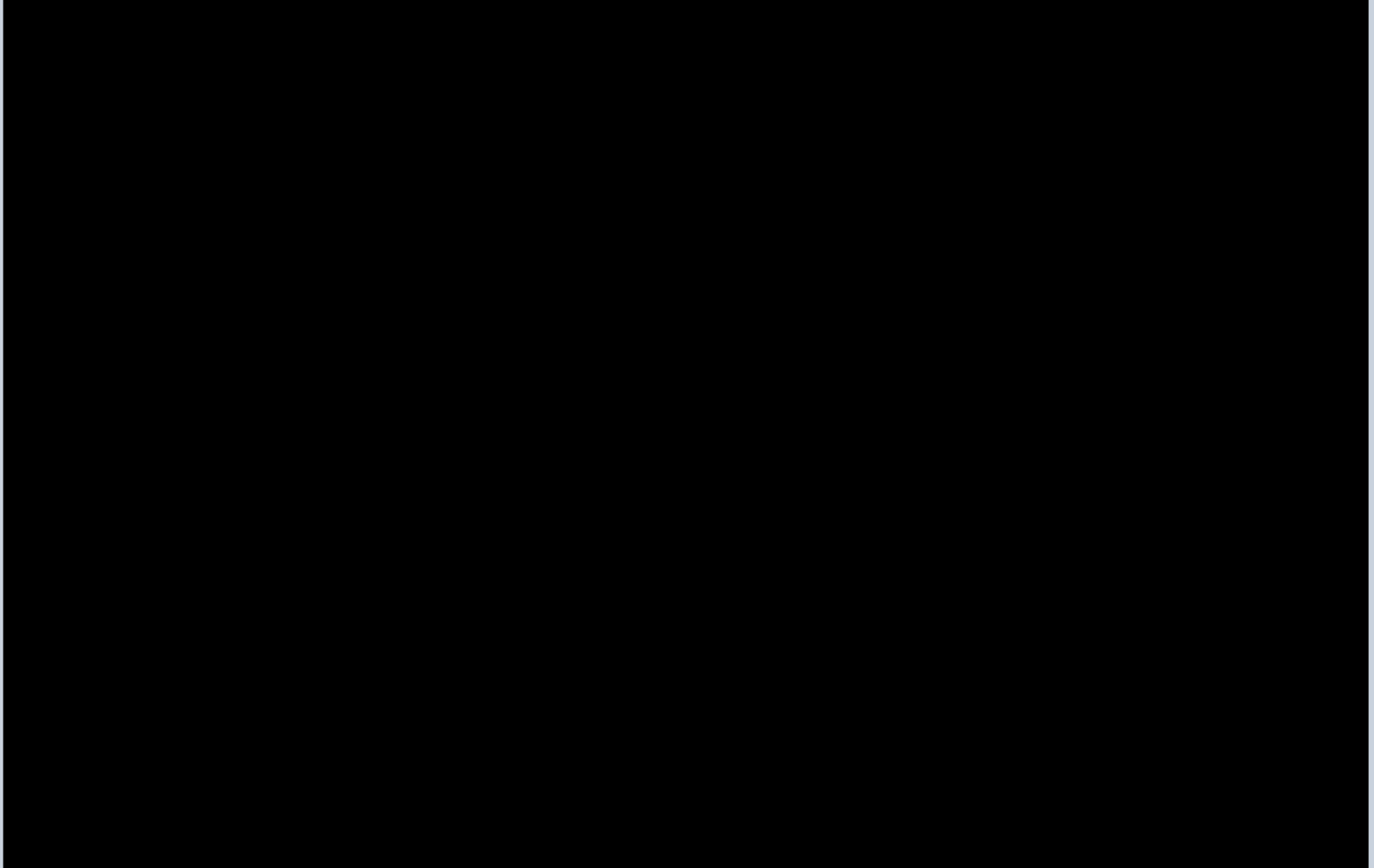


LEED Platinum!!!



San Diego Community College District

Completed Design/Build Projects



San Diego Community College District

Completed Design/Build Projects

Mesa College – Central Plant

Budget: \$5.5 million

Construction Start: March 2010

Completion: February 2011

The new Central Plant will provide heating and cooling for five buildings. New sub-grade chilled and hot water pipes will extend from the facility to the western part of the campus.

Design Build Team

Jackson & Blanc

DEC Engineers

Mele Amantea



City College – Central Plant

Budget: \$8 million

Construction Start: December 2009

Completion: December 2011

The new Central Plant will distribute conditioned hydronic water to virtually the entire campus as well as provide electrical equipment to power the campus.

Design Build Team

Mele Amantea

DEC Engineering

University Mechanical

San Diego Community College District Completed Design/Build Projects

City College Math & Social Sciences

Project Budget: \$80.9 million (incl. land acquisition)

Construction Start: January 2011

Completion: August 2012

Project involves land acquisition and construction of new 72,000 sq. ft. classroom and laboratory building. It will include the District's Corporate Education Center, Military Education, a Family Health Center and a six-story parking structure with 400+ stalls. Tracking LEED Silver.

Design Build Team:

Sundt, Roesling Nakamura Terada



San Diego Community College District
Design/Build Projects in Design

Miramar College – Science Building Expansion

Budget: \$31.7 million

Estimated Construction Start: June 2013

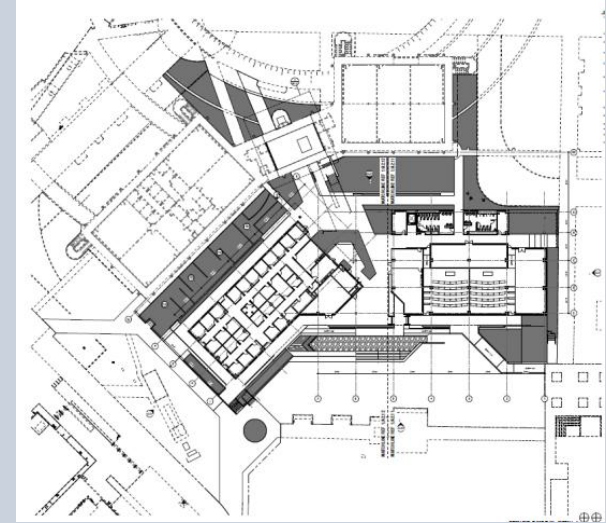
Targeted Completion: August 2014

The new 50,000 SF addition includes new classrooms, faculty offices, and laboratories for chemistry, physics, astronomy, geology, microbiology, anatomy, marine biology, biology and lab preparation rooms. The roof level includes a greenhouse and observatory. Tracking LEED Silver.

Design Build Team

Marlene Imirzian Architects

DPR Construction



San Diego Community College District

Design/Build Projects in Design

Mesa College – Cafeteria/Bookstore/Stockroom

Budget: \$45.7 million

Estimated Construction Start: Feb. 2014

Targeted Completion: May 2015

This 65,000 ASF building will house the campus's Food Services facility, a bookstore and the stockroom. Tracking LEED Gold. Let's add sustainable features Listing.

Design Build Team

The Legacy Collaborative

Integrated Project Delivery Team



San Diego Community College District Design/Build Projects in Design

Mesa College Fitness Center

Budget: \$10.4 million

Estimated Construction Start: June 2014

Targeted Completion: June 2015

The Fitness Center will be approximately 25,000 gross square feet facility to house Mesa College's Health Service program and Physical Conditioning program.



Design Build Team

Balfour Beatty

gkkworks



San Diego Community College District
Design/Build Projects in Design

Mesa College – Social Behavioral Science Building

Budget: \$36.9 million

Expected Construction Start: January 2013

Targeted Completion: May 2014

The Social and Behavioral Sciences building will consist of approximately 66,000 GSF of new laboratories and classrooms for the Behavioral Sciences and Social Sciences programs. The building will include labs for the Psychology and Speech programs. Tracking LEED Gold.

Design Build Team

Joseph Wong Design Associates

Swinerton Builders



San Diego Community College District
Design/Build Projects in Design

Miramar College Fire Science/EMT Training Facility

Budget: \$16.5 million

Estimated Construction Start: Dec 2012

Targeted Completion: April 2014

The Fire and EMT Training Facility will consist of approximately 22,900 SF to serve as a classroom and active training center for the Fire Science and Emergency Medical Training (EMT) programs. The facility will have labs, support space, equipment staging, classrooms, offices and an outdoor training area.

Design Build Team

gkkworks

Swinerton Builders



San Diego Community College District
Animation – Miramar College Fire Science/EMT Complex



San Diego Community College District

Design Excellence in Design/Build Delivery

Questions?

David Umstot, PE

Vice Chancellor, Facilities Management

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