Welcome

Walt Kanzler is a licensed Architect and LEED Fellow with over 25 years of experience in the Real Estate, Facilities, Design & Construction Industry. Walt has worked in both public and private organizations and is currently working with UC San Diego on a significant capital program totaling over \$10 Billion. UC San Diego is transforming the campus with new and renovated facilities including transit, health care, housing, academic and research buildings, and mixed-use facilities to address future enrollment growth demands aimed at ensuring enhanced student experience, expanding research prowess, and improving the delivery of advanced healthcare. Walt's team ensures that the projects adhere to campus guidelines and coordinates unique project requirements with the goal of providing the best overall value for the University.



Walt Kanzler AIA LEED Fellow Senior Director, Project Quality Management



Agenda

- 1. UC Sustainable Practices Policy
- 2. UC San Diego Green Buildings
- 3. Embodied Carbon
- 4. Type 1 L Concrete



University of California

Policy on Sustainable Practices Green Buildings





Policy History

University of California – Policy on Sustainable Practices



Sustainable Practices

Responsible Officer:	EVP – Chief Financial Officer
Responsible Office:	ES – Energy & Sustainability
Issuance Date:	3/10/2022
Effective Date:	3/10/2022
Last Review Date:	2/16/2022
Scope:	All Campuses, Health Locations, and the Lawrence Berkeley National Laboratory

Contact:Matthew St. ClairTitle:Director of Sustainability, UCOPEmail:Matthew.StClair@ucop.eduPhone:(510) 287-3897

 In 2004 as a graduate student, Matthew St. Clair our current Chief Sustainability Officer and the University of California led a student campaign for the University of California system to adopt a comprehensive green building and clean energy planning policy. The University of California then hired Matt to implement this policy.

- The policy has grown to not only include LEED certified Green Buildings but also 8 other policy areas that are reviewed annually.
- https://policy.ucop.edu/doc/3100155/Sustainable
 <u>Practices</u>

Green Buildings



Sustainability Reporting - UC System Wide Green Buildings

UNIVERSITY Sustainability OF Annual Report CALIFORNIA 2022

OVERVIEW V INVESTMENTS V ACADEMICS V POLICY PROGRESS V UC LOCATIONS V Q

Green Building

LEED CERTIFICATIONS



The University has <u>408 LEED-certified green building projects</u> (35 million square feet). During fiscal year 2021-22, UC added 25 new LEED certifications, including 5 LEED Silver and 20 LEED Gold buildings.

• UC system has 408 LEED certified projects totaling 35 million square feet.

 UC San Diego currently has 50 LEED certified projects on campus for a total of ~6,125,000 square feet.



Planning, Design and Construction Website

LEED-Certified Projects	×	an a							
← → C O Not secur	re plandesignbuild.ucsd.e	du/projects/leed.html						☆	
👯 Apps 👂 Pandora Plus -	Listen 🏾 🌒 e-Builder Members	i U - Mar Higher Education U - 🗢 UCSD Organi	zation 🤄 🌎 🤞	-Builder Home 🛛 🚺	Home Anthen	Blue 🔥 3DR Site S	can Make Payment		
PLANNING, DESIGN AND CONSTRUCTION UC San Diego						Diego			
Planning	Design & Construction	Consulting & Contracting Opportunities	Projects	News & Alerts	Contact	RMP Home		Q -	
HOME / Proj	ects / LEED-Certified Projects								
Project	ts	LEED-Certified Projects							
Featured	Projects	As of September 2017, UC San I Gold, 6 Silver and 6 certified. In	 As of September 2017, UC San Diego has completed 32 <u>LEED-certified</u> buildings and renovations on campus – 3 Platinum, 17 Gold, 6 Silver and 6 certified. In addition, three proejcts are pending certification. 						
LEED Co	dified Drojecto	See Green Building for more inf	See Green Building for more information about our sustainable building practices.						
LEED-Certified Projects		Platinum	Platinum						
Visioning Videos + Expand All									
		Charles David Keeling	Charles David Keeling Apartments – Revelle College Housing						
Construct	tion Project Map	Health Sciences Biome	 Health Sciences Biomedical Research Facility II 						
		 Marine Ecosystem Ser 	Marine Ecosystem Sensing, Observation and Modeling Laboratory (MESOM)						
		+ Expand All							
		Gold							
		+ Expand All							
		64 Degrees – Revelle Plaza Café Renovation							
		Altman Clinical and Tr	 Altman Clinical and Translational Institute (ACTRI) 						
		Blake Hall Renovation	 Blake Hall Renovation 						
		Central Research Serv	Central Research Services Facility						
		Galbraith Hall Renova	Galbraith Hall Renovation						
		Jacobs Medical Center	r Central	Utilities Plan	t				





https://plandesignbuild.ucsd.edu/design/leed/index.html

LEED Rating System –

Building Design and Construction Categories



Location & Transportation



Water Efficiency



Integrated Process



Sustainable Sites



Indoor Environmental Quality



Energy & Atmosphere



Materials & Resources





Innovation in Design

Regional Priority

 $\underline{UC\,San\,Diego}$

Green Building Features



Marine Conservation & Technology Facility –

Building Reuse

- Building Reuse
 - Maintain existing floors, walls, and roof of historic 1961 building
- Floors/Roof
 - Precast concrete C channels
- Walls
 - Existing cast-in-place concrete walls
 - Historic blue mosaic tile
- Vertical Circulation
 - Existing concrete stairs and elevator shaft





North Torrey Pines Living & Learning Neighborhood



Embodied Carbon <35% 52.1 kg-CO2e/sf Baseline 86.2 kg CO2e/sf



DESIGN FOR RESOURCES

Resource-Responsible Construction

NTPLLN's building materials are in keeping with UC San Diego's distinct architectural vernacular. Concrete structures and wood panels have limited additional finishes and substrates. Exterior fiber cement panels used throughout the campus feature irregular joint patterns designed to minimize waste and can be downcycled after use. **35% less embodied carbon** than the average education project





EMBODIED CARBON



Embodied carbon

Types of Carbon in Buildings



Embodied Carbon

The emissions from manufacturing, transportation, and installation of building materials.

Operational Carbon The emissions from a building's energy consumption

https://www.carboncure.com/



Embodied carbon

To address embodied carbon, a number of organizations including <u>Architecture</u> <u>2030</u>, <u>Structural Engineers 2050</u> <u>Challenge</u> (SE2050), the <u>Carbon Leadership Forum</u>, and the <u>World Green Building Council</u> have jointly taken on a mission to eliminate <u>embodied</u> <u>carbon</u> from buildings by the year 2050.

The California Building Code is including limits for embodied Carbon and other Greenhouse gas emissions for building materials in the next code cycle.

Buy Clean California has been in place for several years and tracks and limits Steel, Glass and Insulation Global Warming Potential (GWP) in New Buildings

Total Carbon Emissions of Global New Construction from 2020-2050

Business as Usual Projection



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Embodied carbon – Buy Clean California

The **Buy Clean California Act (BCCA)** (Public Contract Code Sections 3500-3505), states the Department of General Services (DGS), in consultation with the California Air Resources Board (CARB), is required to establish and publish the maximum acceptable Global Warming Potential (GWP) limit for four eligible materials.

The BCCA targets carbon emissions associated with the production of **structural steel** (hot-rolled sections, hollow structural sections, and plate), **concrete reinforcing steel**, **flat glass**, and **mineral wool board insulation**. When used in public works projects, these eligible materials must have a GWP that does not exceed the limit set by DGS.



 UC Systemwide participates in Buy Clean California following the Public Contract Code as a state agency.



Type 1L Concrete





UC SAN DIEGO TYPE 1L CONCRETE PRESENTATION

UC SAN DIEGO FRANKLIN ANTONIO HALL CENTER FOR NOVEL THERAPEUTICS TATA HALL





MOCK-UPS AND DESIGN

MCARTHY.

•We will pour many type of concrete mock ups, SOG, small wall panels, large wall panels, full design mock-up. This will help us review various items,

- -plywood selection, reactions to different glues in the plywood, type of laminate face
- -Slump, self-consolidating, flow-ability, vibration techniques, lift lines
- -Slab set times for finishing considerations
- -Finishers manpower and equipment
- -Temperatures of concrete for IOR acceptance

•UCSD and design team need to be flexible to approve mix designs that deviate from specifications historical data might be limited, mock up samples, getting design team to approve spec deviation

•Fly ash and slag will cause color variations and inconsistencies

•Column edges, wall seam layout, tie hole type and layout are all decisions made during the mock up process -We prefer chamfer due to two piece form work required for sharp corners, added cost -Concrete sharp corners look good but can spall during normal building operations, end use should be considered

-Panel seam reveals can be costly







PLACEMENT, TEMPERATURE AND CURING

•Deck Curing is time sensitive, combination of cure seal and wet cure to ensure controlled temperature and curing -cure blankets or carpet pads used (ensure no dyes or staining possible)

-E-cure or Atlas Quantum Cure are compatible with flooring finishes and are preferred

-Type 1L can gain full strength in one week, this can help overall schedule by removing shoring and starting other trades earlier

•Wall Curing

-no cure seals used

-strip early spray water on it for first full shift, this will help color consistency and limit cracking

Night pour advantages

-Cooler temperatures -Better service (less traffic) -Better site logistics

·Day pour disadvantages,

-possible need for chilled water or ice (\$15+/- per yd)
-possible need for admixtures to slow rate of hydration (price varies)
-with sun hitting concrete, set time and workability can be greatly effected
-proper manpower will also be required to minimize finish imperfections

DECK POUR SEQUENCE









UC San Diego

FORMWORK BEST PRACTICES



Universal Forest Products, Inc.

Pre-Fabricated Radius Forms

-Each form was CNC milled and sheeted by UFP with plywood of our choice -Price offset by less site labor

•Site logistics is critical for panel fabrication and storage

•Cemex is supplier of choice because they have reliable track-able service, modified mix designs, and they are a sole source for type 1L in the region





MECARTHY.





ATLAS CONSTRUCTION SUPPLY, INC.

PERI

UC San Diego

QUESTIONS?













MCCARTHY.

UC San Diego

Thank You!

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