

LEED Certification Analysis

of SDSU's Engineering and Multi-Disciplinary Sciences Building

By - Tejaswini Hegade

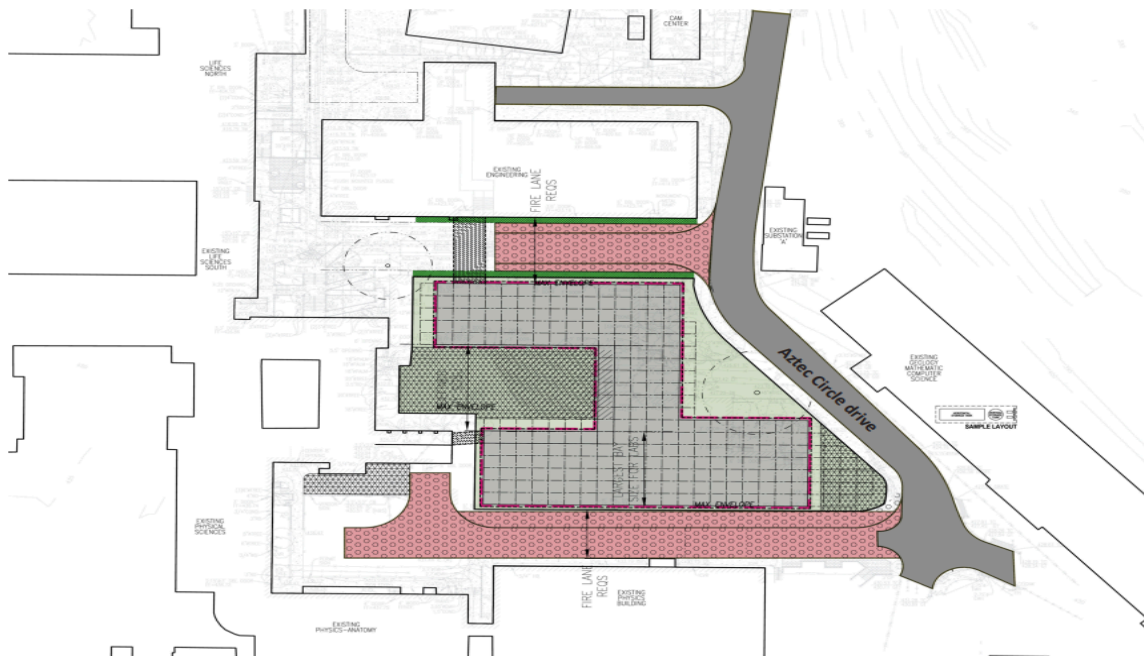
Introduction

As part of my work in sustainable building practices, I conducted a LEED certification analysis for the Engineering and Multi-Disciplinary Sciences Building at San Diego State University (SDSU). This assessment involved a detailed review of the building's sustainability features, compliance with LEED v4 requirements, and the scoring methodology used to evaluate its certification level.

Project Overview

The SDSU Engineering and Multi-Disciplinary Sciences Building serves as a hub for research and innovation, incorporating advanced design principles that promote sustainability. The university has taken significant strides to ensure that this building aligns with high-performance green building standards, emphasizing energy efficiency, water conservation, and environmental impact reduction. The project integrates ultra-low flow water fixtures, high-efficiency HVAC systems, and sustainable material selection.

Site



LEED Certification Breakdown

The LEED v4 certification system evaluates buildings based on various sustainability criteria, categorized into several sections, including Integrative Process, Location & Transportation, Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Environmental Quality, Innovation, and Regional Priority.

For this particular project, I analyzed each of these sections to determine the final LEED score.

Final Scorecard and Explanation

The final score breakdown is as follows:

- **Total Points Achieved:** 77
- **LEED Certification Level:** Gold (60-79 points required for Gold)

Below is the narrative explaining the point allocations:

Key Categories and Points Awarded:

1. Location & Transportation (15 Points)

- The project gained significant points for access to diverse transit options, bicycle facilities, and a reduced parking footprint, all of which support sustainable commuting practices.
- Green vehicle infrastructure was not included, which limited potential points in this category.

2. Sustainable Sites (12 Points)

- Credit was given for efforts to restore habitats, manage rainwater effectively, and reduce heat island effects through reflective roofing and landscaping.
- The project included native landscaping to support local biodiversity.

3. Water Efficiency (12 Points)

- The project successfully implemented outdoor and indoor water use reduction strategies, cooling tower water use management, and advanced water metering.
- Some additional water reuse strategies, such as greywater treatment, were not implemented due to cost constraints.

4. Location & Transportation (15 Points)

- The project gained significant points for access to diverse transit options, bicycle facilities, and a reduced parking footprint, all of which support sustainable commuting practices.
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LEED v4 for BD+C : Schools



LEED v4 for BD+C: Schools Project Checklist

Student Name: Tejaswini Hegade

Project Name: SDSU Engineering and Multi-Disciplinary Sciences Building

Date: 10/15/2023

Y ? N

1	Y	Credit	Integrative Process	1
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12	2	1	Location and Transportation	15
0	Y	Credit	LEED for Neighborhood Development Location	15
1	Y	Credit	Sensitive Land Protection	1
2	Y	Credit	High Priority Site	2
5	Y	Credit	Surrounding Density and Diverse Uses	5
4	Y	Credit	Access to Quality Transit	4
1	Y	Credit	Bicycle Facilities	1
1	Y	Credit	Reduced Parking Footprint	1
1	Y	Credit	Green Vehicles	1

8	3	1	Sustainable Sites	12
Y	Y	Prereq	Construction Activity Pollution Prevention	Required
Y	Y	Prereq	Environmental Site Assessment	Required
1	Y	Credit	Site Assessment	1
2	Y	Credit	Site Development - Protect or Restore Habitat	2
1	Y	Credit	Open Space	1
3	Y	Credit	Rainwater Management	3
1	1	Credit	Heat Island Reduction	2
1	Y	Credit	Light Pollution Reduction	1
1	Y	Credit	Site Master Plan	1
1	Y	Credit	Joint Use of Facilities	1

10	2	0	Water Efficiency	12
Y	Y	Prereq	Outdoor Water Use Reduction	Required
Y	Y	Prereq	Indoor Water Use Reduction	Required
Y	Y	Prereq	Building-Level Water Metering	Required
2	Y	Credit	Outdoor Water Use Reduction	2
5	2	Credit	Indoor Water Use Reduction	7
2	Y	Credit	Cooling Tower Water Use	2
1	Y	Credit	Water Metering	1

20	10	1	Energy and Atmosphere	31
Y	Y	Prereq	Fundamental Commissioning and Verification	Required
Y	Y	Prereq	Minimum Energy Performance	Required
Y	Y	Prereq	Building-Level Energy Metering	Required
Y	Y	Prereq	Fundamental Refrigerant Management	Required
6	Y	Credit	Enhanced Commissioning	6
10	6	Credit	Optimize Energy Performance	16
1	Y	Credit	Advanced Energy Metering	1
2	Y	Credit	Demand Response	2
2	1	Credit	Renewable Energy Production	3
1	Y	Credit	Enhanced Refrigerant Management	1
1	1	Credit	Green Power and Carbon Offsets	2

6	3	4	Materials and Resources	13
Y	Y	Prereq	Storage and Collection of Recyclables	Required
Y	Y	Prereq	Construction and Demolition Waste Management Planning	Required
3	2	Credit	Building Life-Cycle Impact Reduction	5
1	1	Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
2	Y	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
2	Y	Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2	Y	Credit	Construction and Demolition Waste Management	2

14	1	1	Indoor Environmental Quality	16
Y	Y	Prereq	Minimum Indoor Air Quality Performance	Required
Y	Y	Prereq	Environmental Tobacco Smoke Control	Required
Y	Y	Prereq	Minimum Acoustic Performance	Required
2	Y	Credit	Enhanced Indoor Air Quality Strategies	2
3	Y	Credit	Low-Emitting Materials	3
1	Y	Credit	Construction Indoor Air Quality Management Plan	1
2	Y	Credit	Indoor Air Quality Assessment	2
1	Y	Credit	Thermal Comfort	1
2	Y	Credit	Interior Lighting	2
2	1	Credit	Daylight	3
1	Y	Credit	Quality Views	1
1	Y	Credit	Acoustic Performance	1

4	2	0	Innovation	6
3	2	Credit	Innovation	5
1	Y	Credit	LEED Accredited Professional	1

2	1	1	Regional Priority	4
1	Y	Credit	Regional Priority: Specific Credit	1
1	Y	Credit	Regional Priority: Specific Credit	1
1	Y	Credit	Regional Priority: Specific Credit	1
1	Y	Credit	Regional Priority: Specific Credit	1

77	24	9	TOTALS	Possible Points: 110
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Certified: 40 to 43 points, Silver: 50 to 53 points, Gold: 60 to 73 points, Platinum: 80 to 110

5. Location & Transportation (15 Points)

- The project gained significant points for access to diverse transit options, bicycle facilities, and a reduced parking footprint, all of which support sustainable commuting practices.
- Green vehicle infrastructure was not included, which limited potential points in this category.

6. Sustainable Sites (12 Points)

- Credit was given for efforts to restore habitats, manage rainwater effectively, and reduce heat island effects through reflective roofing and landscaping.
- The project included native landscaping to support local biodiversity.

7. Water Efficiency (12 Points)

- The project successfully implemented outdoor and indoor water use reduction strategies, cooling tower water use management, and advanced water metering.
- Some additional water reuse strategies, such as greywater treatment, were not implemented due to cost constraints.

8. Energy & Atmosphere (31 Points)

- A significant portion of the score came from optimizing energy performance, enhanced commissioning, and renewable energy production, ensuring long-term sustainability.
- Although on-site renewable energy is incorporated, the project did not achieve full credits due to limitations in total energy offset.

9. Materials & Resources (13 Points)

- The building materials were selected based on life cycle impact reduction, environmental product declarations, and responsible sourcing of raw materials.
- Construction waste diversion and regional material sourcing contributed to the total points achieved.

10. Indoor Environmental Quality (16 Points)

- Enhanced indoor air quality strategies, use of low-emitting materials, and thermal comfort measures contributed to a healthy indoor environment.
- Some additional points for daylighting and acoustic performance were not fully achieved due to spatial constraints.

11. Innovation (6 Points)

- The project incorporated innovative sustainability strategies and had LEED-accredited professionals involved in the process.
- Some exemplary performance credits were awarded based on high-efficiency building systems.

12. Regional Priority (4 Points)

- Specific credits were awarded based on the regional environmental priorities identified for the SDSU area, including stormwater management and alternative transportation accessibility.

Project Impact Insights

Environmental Impact

- The building significantly reduces energy consumption through high-efficiency HVAC systems and optimized lighting solutions.
- Water conservation strategies contribute to substantial potable water savings, particularly through ultra-low flow fixtures and cooling tower management.
- Waste diversion efforts during construction minimized landfill impact by incorporating recycled and regionally sourced materials.

Occupant Benefits

- Improved indoor air quality ensures a healthier work and study environment for students and faculty.
- Thermal comfort enhancements maintain optimal indoor temperatures year-round.
- Acoustic performance improvements create an ideal learning atmosphere, particularly in research and collaboration spaces.

Long-Term Sustainability Goals

- The project supports SDSU's broader climate action plan, reinforcing its commitment to sustainable campus development.
- The building's energy-efficient design reduces operational costs, ensuring long-term sustainability.
- Serves as a benchmark for future sustainable buildings at SDSU and other academic institutions.

Conclusion

The Engineering and Multi-Disciplinary Sciences Building at SDSU exemplifies the university's commitment to sustainability. Through strategic planning and innovative design, the project achieved a LEED Gold certification, ensuring it meets rigorous environmental performance standards. This analysis not only helped refine my understanding of LEED certification but also demonstrated the importance of integrating sustainability into construction projects.

This experience has been an invaluable addition to my portfolio, showcasing my ability to conduct detailed sustainability assessments and contribute to green building initiatives.