USGBC LA

U.S. GREEN BUILDING COUNCIL LOS ANGELES

2021 Sustainable Innovation Award
Case Study

Billie Jean King Main Library

Project of the Year + Health & Wellbeing

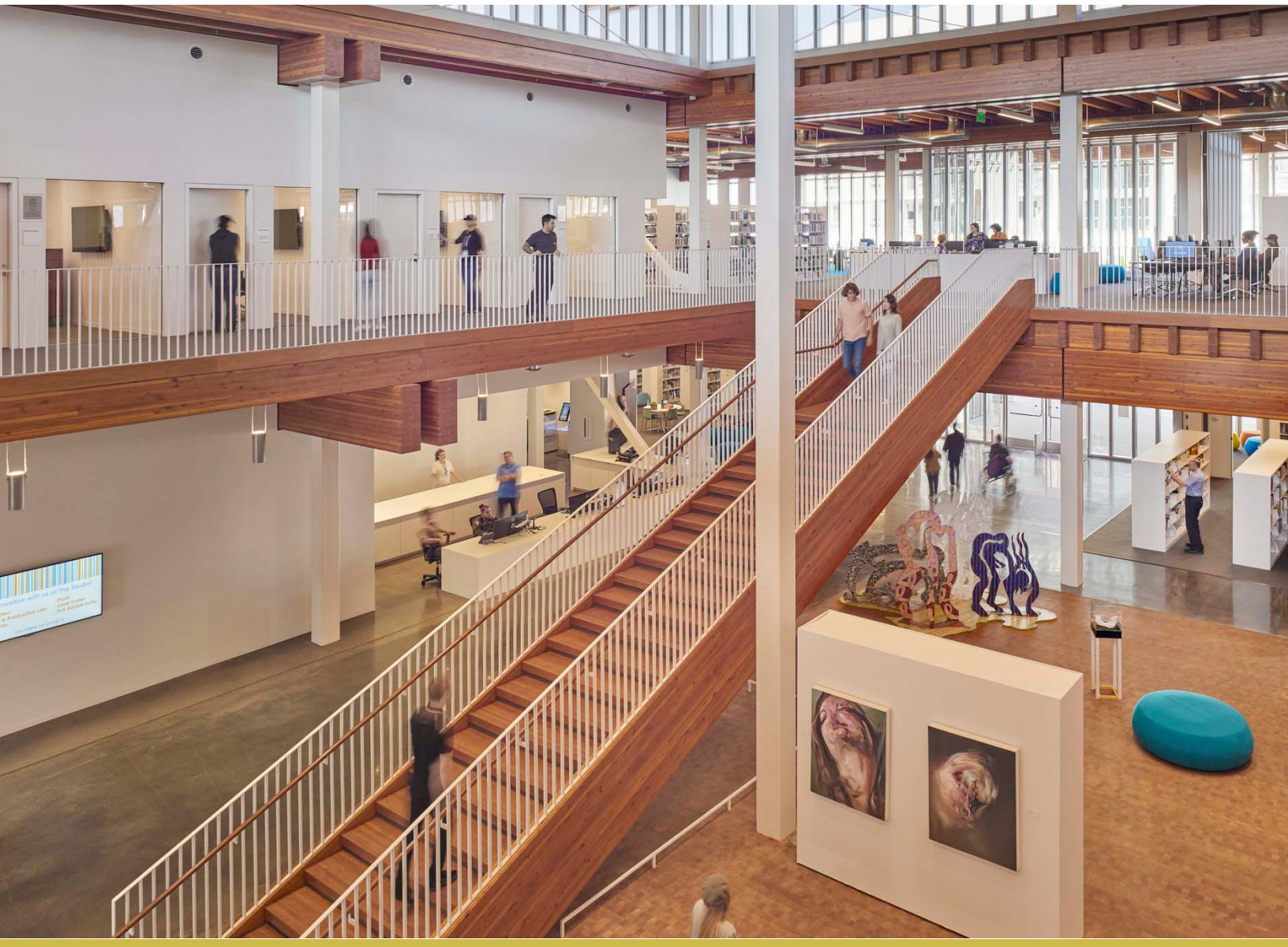
INTRODUCTION TO SIA CASE STUDY

USGBC-LA's Annual Sustainable Innovation Awards (SIA) were created to recognize project teams that go above and beyond standard practices and use innovative strategies that can serve as a model for future sustainable design and construction. The awards offer prestige and affirmation of the project team's commitment to a sustainable built environment and evaluate merit-based sustainable strategies that demonstrate exemplary performance beyond certification credit achievement.

In addition to being recognized by the local green building industry at the awards ceremony, awarded projects that received the highest award category - Project of the Year - are also showcased to the broader sustainability community audience through these case studies publicly available on the USGBC-LA marketing channels.

PROJECT DESCRIPTION

Positioned at the heart of Downtown Long Beach, the Billie Jean King Main Library connects the city's past to its present while providing valuable municipal and community services. The building welcomes more than a thousand daily visitors and offers a variety of amenities and activities that foster community connection, learning, and creative collaboration.The Library is located adjacent to the new Lincoln Park; it was imagined as a pavilion within the Park, welcoming people from all parts of the city. From the early conceptual stages the design team shared a vision of the new library and park as a place for the neighborhood to gather. The intent was to create a building not just to keep books, but a space alive with activity—a warehouse of knowledge and a unique community center.



GENERAL PROJECT INFORMATION

Project Name
Billie Jean King Main Library

Owner
City of Long Beach

Project Type
New Construction

Primary Building Use
Library (100%)

Project Size (Square Feet)
93,500

Project Area (Square Feet)
213,865

Location Context
Long Beach, California

Certification Achieved
LEED BD+C NC (New Construction)
Platinum, BD+C, Platinum

SIA Category Awarded
Sustainable Innovation Strategies in Health & Well Being

Year
2021

PROJECT INNOVATION:

The Billie Jean King Library provides quality interior space maximizing natural light and creating an open plan to facilitate a flexible, multi-functional space that serves the diverse population of Long Beach and the library's patrons. The team focused on creating a sustainable, LEED Platinum Certified, timber structure that provides a light-filled, open, and warm interior environment for all. To achieve this vision, the glulam timber girders, joists, and plywood decking comprising the superstructure are intentionally left exposed, contributing to a captivating interior atmosphere. The building envelope, composed of unitized curtainwall system, is also designed to maximize daylight and views while mitigating glare and solar radiation.The library was designed with flexibility in mind, both for current users as well as future adaptation. The main atrium space is designed to regularly transform for a variety of gatherings, workshops, exhibits, and events. The plan is purposefully kept open to accommodate future changes in program.

IMPACT ON THE COMMUNITY:

The Billie Jean King Main Library and Lincoln Park revitalize the eastern parcel of the Long Beach Civic Center and replace a rapidly decaying library and park from the 1977 Civic Center development. The site dates back to the late 1880s and has transformed several times over the years, but always remained the home of the Public Library and Lincoln Park. However, in recent years, the 1977 library and park started to deteriorate at a rapid rate, becoming a sore sight for a city attempting to reinvent itself. The new library and park create a completely different environment. The library is surrounded by the landscape and becomes a pavilion in the park. It is designed to open the site and connect to its surroundings so that visitors are drawn in. The park seamlessly meets the surrounding city sidewalks with minimal topography that gently brings visitors up to the library. With the completion of the new Civic Center and the opening of the new library and park, the city will once again have a new and welcoming destination that will reintegrate the project site within the fabric of the surrounding neighborhood and make it a desirable place to be.

ENERGY AND CARBON REDUCTION SUMMARY

System Type: ELECTRICITY
Projected Usage (Annually): 31.79 kBTU/SF/YR
Predicted Reduction Against Benchmark: 63%

System Type: WATER
Predicted Reduction Against Benchmark: 42%

Benchmark EUI: 86 kBTU/SF/YR
Predicted Net EUI (Includes Renewables): 31.79 kBTU/SF/YR
Predicted Reduction From Benchmark: 63%

EMBODIED CARBON

Reusing the existing garage structure below the Library and utilizing mass timber for the primary structural system resulted in a lower embodied carbon number for the project. As means for comparison, the primary structure is approximately one-third the CO2-eq PSF that would have resulted from a conventional concrete building atop a new concrete parking garage of similar size.

SITE / COMMUNITY GOALS

Site Microclimate

Long Beach, located in the coastal basin about 20 miles (30 km) to the south of downtown Los Angeles, has a coastally-influenced climate but is not as cool as Santa Monica, the Westside, or the South Bay during the summer. Long Beach sits on a south-facing section of coast and does not receive as much sea breeze cooling from the prevailing westerly/south-westerly winds. Long Beach's high temperature can compete with those of downtown Los Angeles.

Stormwater Management

The project captures and treats the 85th percentile rainfall on-site. The management of rainwater collected from the library and adjacent hardscape is integrated with the design of the new Lincoln Park. The landscape promotes biodiversity as it is comprised of a thoughtfully arranged variety of native California species that are water-wise and drought tolerant.

Outdoor Area Function

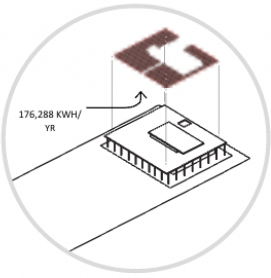
The library is surrounded by ample exterior space, shaded by the large exposed heavy timber overhangs, and is a landscape/hardscape designed to encourage visitors to linger outdoors. The exterior space to the south becomes a porch overlooking Lincoln Park and can transform into a stage for events held on the park's central lawn.

Other Innovative strategies

- The envelope is designed to maximize daylight and views while mitigating glare and solar radiation.
- The building design capitalizes on the use of extensive overhangs, which balance cooling and heating needs and provide excellent solar control.
- The design encourages the use of public transportation, bicycles, and walking. The Los Angeles Metro Blue rail line borders the property, offering connectivity and access.
- Quality interior spaces are provided by maximizing natural light and creating an open plan to facilitate a flexible, multifunctional space.

ENERGY & CARBON

176,288 kWh/year of Solar PV array, natural daylighting & efficient HVAC equipment reduce energy use by **63%***



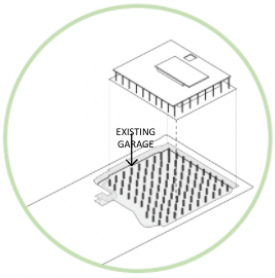
*below the ASHRAE 90.1-2007 baseline

MATERIALS & RESOURCES

Durable materials & mass customization of components result in **35 CO2eq PSF** - a total **61%** reduction in embodied carbon compared to typical new construction

WASTE

The reuse of **85%** of the existing garage reduces material waste by **65%**. **80%** of the building is wood which can be upcycled post building-life

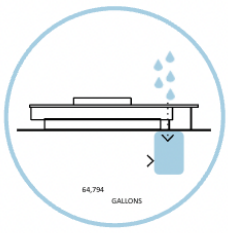


RESILIENCY

With its heavy timber construction, the library provides amplified resiliency in a seismically active zone

WATER

An integrated rain water storage system, drip irrigation & low flow fixtures saves **138,909** gallons of water, resulting in a **42%** reduction of total water consumption



MOBILITY

Pedestrian friendly sidewalks, accessibility to public transit & bicycle parking, awards the project a Walk Score of **96**, a Transit Score of **81** & Bike Score of **87***

*www.walkscore.com

LIVABILITY & WELLBEING

Exterior curtain wall design maximizes daylight & views while mitigating glare

ECONOMY & EQUITY

The development & construction of the library provided **30%** of local jobs while attracting over **1,000** visitors daily

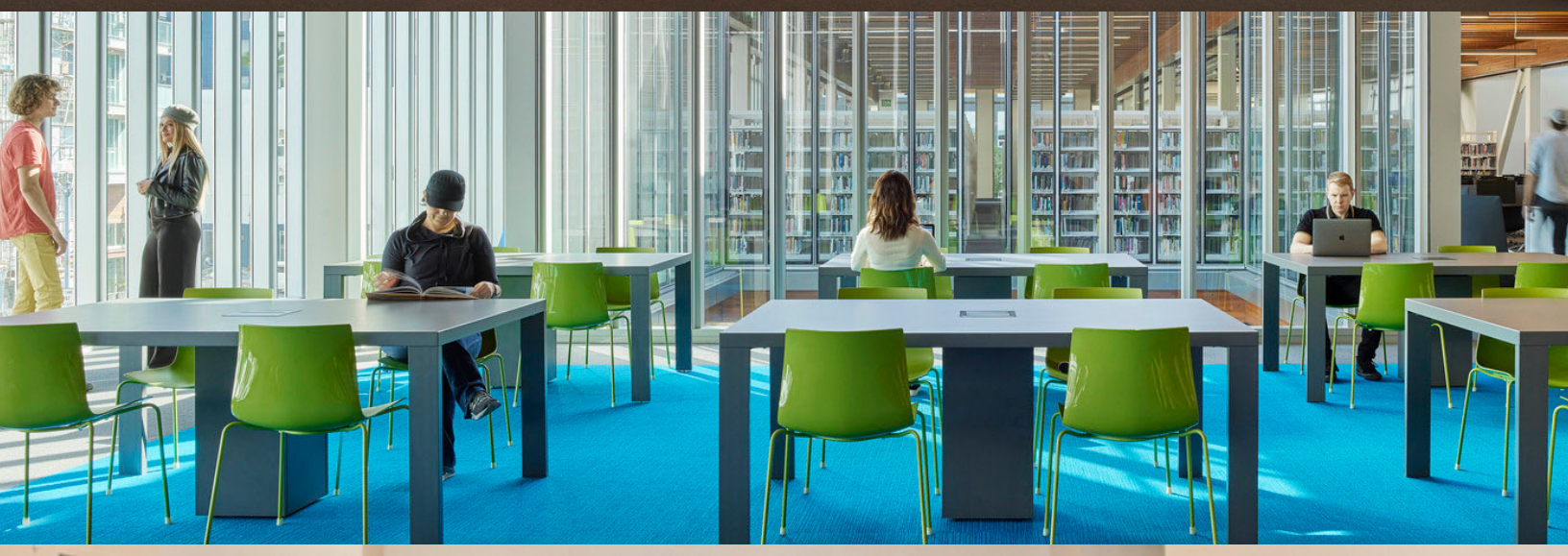
HERITAGE & IDENTITY

The development respects the **1901** dated deed to develop a library as a "Pavilion in the Park" & reflects the history & diversity of the City & Port of Long Beach

ECOLOGY

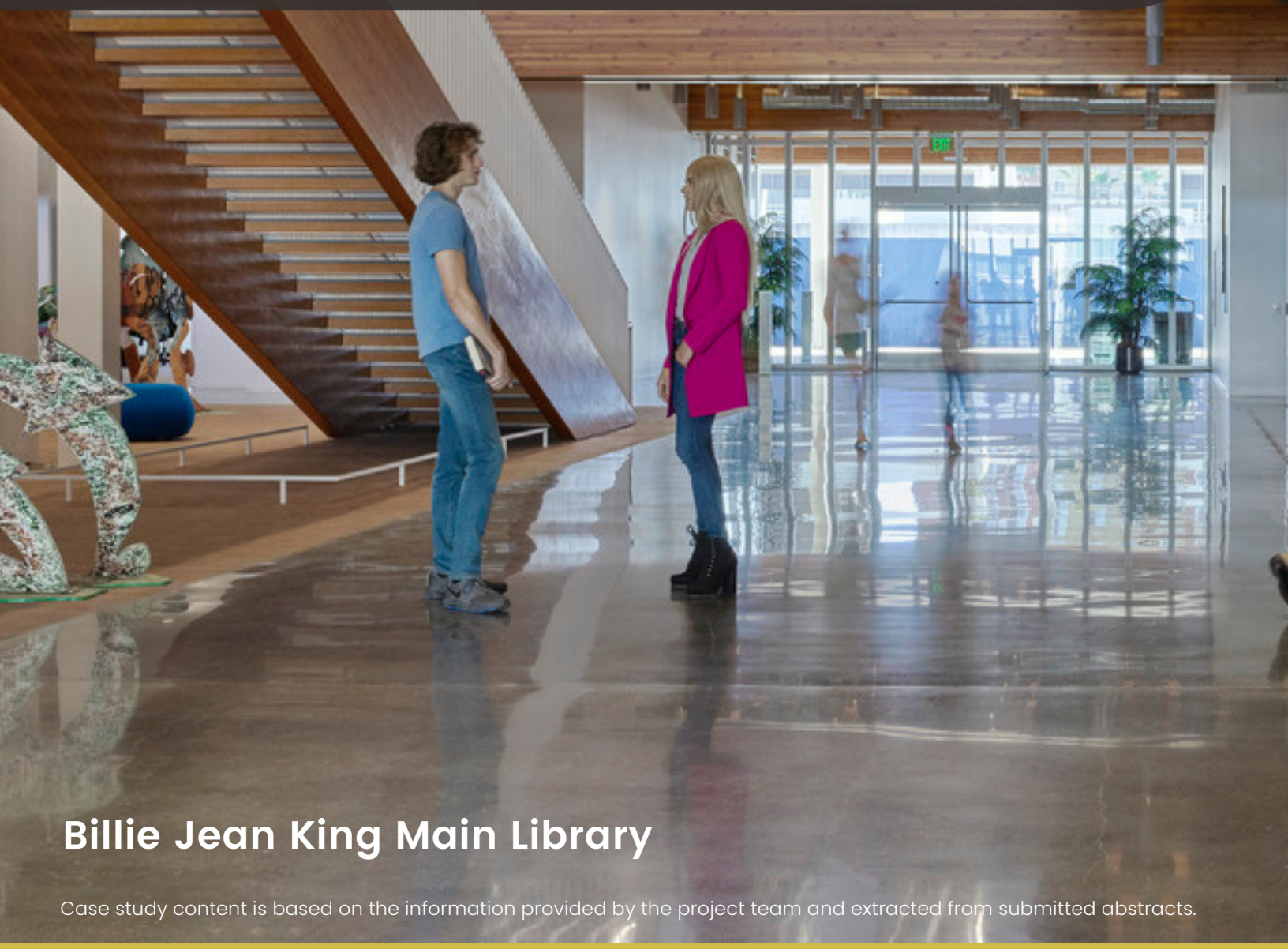
The site consists of **47%** native planting & **53%** drought tolerent planting & is developed on a Brownfield site

Metrics are an approximation



PROJECT TEAM

Architect: Skidmore, Owings & Merrill
Structural Engineer: Skidmore, Owings & Merrill
Civil Engineer: KPFF Consulting Engineers
MEP Engineer: Syska Hennessy Group
Library Programming: Linda Demmers
Landscape: Gustafson Guthrie Nichol
Lighting: HLB Lighting Design
Acoustics: Newson Brown AcousticsFire/Life
Safety: Jensen HughesVertical
Transportation: Syska Hennessy Group
Roofing/Waterproofing: Curtainwall Design
Consulting Wood Scientist: Ron Anthony
Parking: International Parking Design
Operations and Maintenance: Johnson Controls
General Contractor: Clark Construction Group
Project Financier: Plenary Group
Project Developer: Edgemoor Infrastructure & Real Estate
Photography: Benny Chan/Fotoworks



Billie Jean King Main Library

Case study content is based on the information provided by the project team and extracted from submitted abstracts.