

Seattle's Justice Center

Source: NBBJ Website

A **CASE STUDY** BY
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Silver



Certification

The Statistics

- **Seattle's Justice Center**
 - Downtown Seattle, WA
 - New construction of an entire city block
 - 1 of 3 blocks of Seattle's new Civic Center District
 - Adjacent to the New City Hall
 - 14-story building
 - 288,000 sq ft
 - Home of the Police HQ & County Courthouse
 - Completed October 2002
 - USGBC LEED-NC: Silver (33 points)



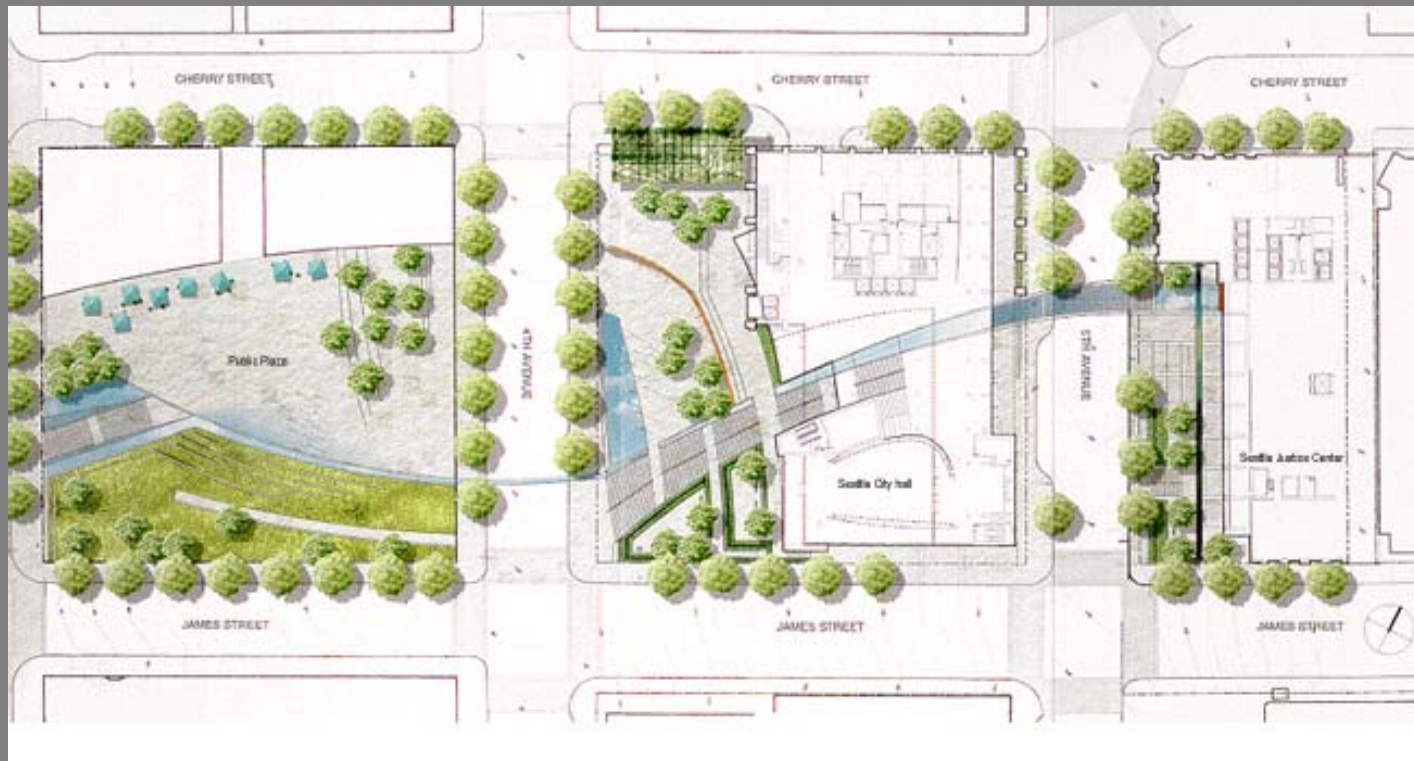


A B A C U S

Seattle Justice Center

Urban Context

- **Creating a New Civic Center District**
 - The City compiled 3 blocks for redevelopment
 - New City Hall
 - Justice Center
 - Public Plaza



Urban Context

- **Building Context**
 - The New City Hall is located on the middle block
 - Construction nearing completion
 - Justice Center located on eastern most block
 - Public Plaza fronts the City Hall
 - Context Notes:
 - High rise buildings lie to the north
 - 6-story parking structure behind



Urban Context

- Seattle Justice Center's Urban Context



Promoting Sustainable Design

- City of Seattle's support

“As part of an effort to promote **responsible building practices**, the City of Seattle **mandated** that the new Civic Center campus stand as a model for **sustainable building design**.”

- 14 buildings designed/constructed to a LEED rating
- Justice Center – 1st building to achieve certification
- Not only is the City mandating green buildings be constructed, they are closely monitoring the construction process as well as evaluating the completed building's performance.

“[A] commissioning agent was hired very early in the process to ensure the **LEED building components and techniques** were installed and installed correctly.”

Promoting Sustainable Design

- **Justice Center Sustainable Design Goals**
 - Developed in cooperation with NBBJ, the project's architecture and design firm
 - 1) To achieve a LEED silver certification
 - 2) To make the project's sustainable features visible to its public users
 - 3) To set an example for good building practices that others can follow

Site Design

- **Green Strategies for Site Design**
 - Property Evaluation
 - Assess property for integration with local community and regional transportation corridors
 - Responsible Planning
 - Ensure that development fits within a responsible local and regional planning framework
 - Properties with Excessive Impacts
 - Avoid contributing to sprawl
 - Support for Appropriate Transportation
 - Design development to have pedestrian emphasis rather than automobile emphasis
 - Provide safe access for bicyclers and pedestrians
 - Provide storage area for bicycles
 - Provide vehicle access to support car and vanpooling
 - Provide for electric vehicle charging
 - Property Selection Opportunities
 - Select already-developed sites for new development

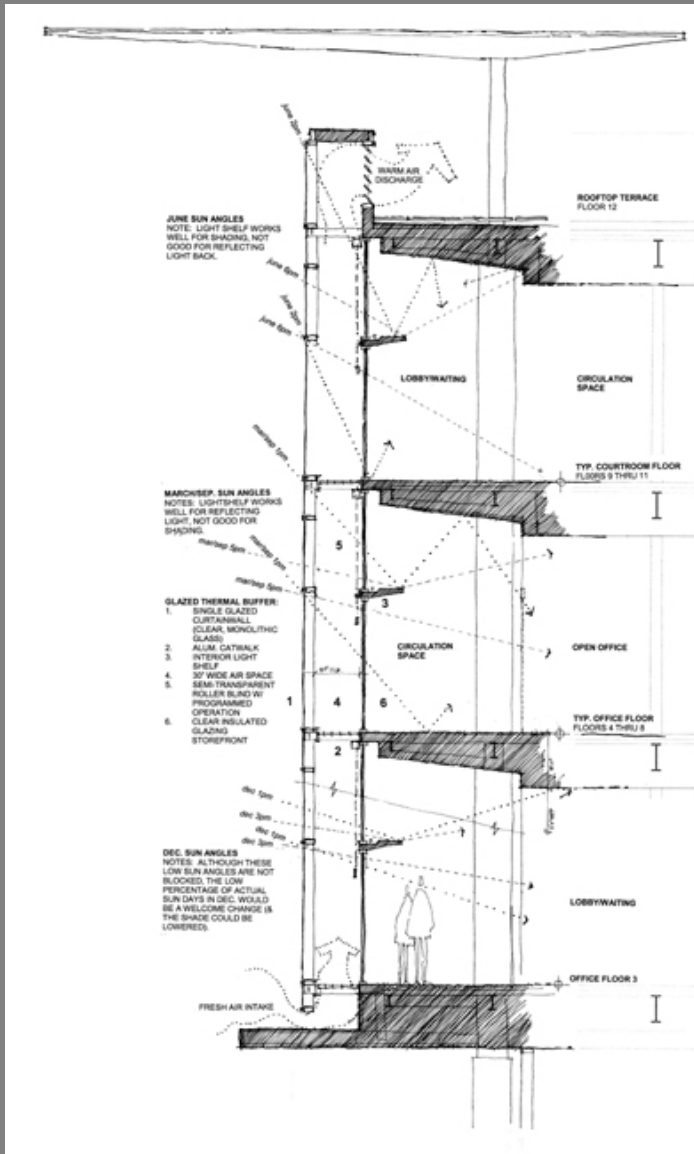
Green Design Elements

- Provided the project's budgetary constraints, only those green elements that met the three sustainable design goals were explored given their additional costs.
- As a result, three primary feature were selected that include:
 - Glazed thermal wall buffer
 - Roof garden
 - Water harvesting
- While many other smaller gestures were necessary for the building to obtain silver certification, only these three will be explored in this presentation
- Please see the USGBC website for additional information

Glazed Thermal Wall

- **Glazed Thermal Wall Buffer (Curtain wall)**
 - Most prominent energy-efficient feature?
 - Maximizes exposure to natural light
 - Relieves heat gain
 - Reduces lighting & cooling costs
 - The curtain wall solved the day lighting problem that resulted from the adjacent buildings and parking structure
 - The second layer of glazing, offset 30", significantly increased the thermodynamics of the expansive glazing
 - Created a flue in which air movement is controlled by louvers at the top
 - Winter – closed as to provide insulation
 - Summer – open as to allow for ventilation

Glazed Thermal Wall



Glazed Thermal Wall



Water Conservation & Use

- **Green Strategies**

- Development Impacts
 - Limit parking area
- Runoff Reduction
 - Design a green roof system
- Rainwater Collection
 - Collect and store rainwater for landscape irrigation
- Demand for Irrigation
 - Select plants for drought tolerance
- Hot Water Delivery to Fixtures
 - Specify on-demand hot-water recirculation system to avoid water waste
- Water-efficient Mechanical Equipment
 - Design cooling towers with delimiters to minimize evaporation

Roof Garden

- Green Roof Benefits
 - Decreases the building's heat gain
 - Plant material and soil act as insulation
 - Aesthetics
 - Surrounding buildings overlook
 - Roof deck access
 - Reduces heat island
 - Absorbs/retains rainwater
 - Filters air pollutants



Water Harvesting

- “As a result of Seattle’s damp climate a water harvesting system was developed that captures rainwater from a green roof, the roof rain leaders, and the paved plaza.”
 - Collected water is stored in a harvesting tank below the entry plaza
 - Used for bathroom flush water
 - Used with the automated drip-irrigation system
 - Makes use of soil-moisture sensors
 - Annual rain inflow into the cistern 44,458 cubic feet
 - 2,250 cubic feet per year will be used for irrigation

Building a Working Knowledge

- Let History Serves as your Guide
 - To prevent making mistakes that others have made the design team reviewed projects that contained the principle green elements they were looking to incorporate into the building
 - The decision to achieve LEED certification was made very early on
 - A design team with green building experience was compiled
 - The construction of green components was very carefully reviewed
 - Failure to properly install may negate any long-term benefit
- Learning from Seattle's Justice Center
 - The building is be carefully evaluated and studied
 - Solar gain and energy consumption is being tracked
 - Gray water use is being monitored

Building a Working Knowledge

- Miscalculations
 - The double curtain wall cost in excess of \$300,000 more than standard curtain wall
 - While it has increased energy efficiency, the gains have been small
 - Glare has been a problem as a result of the large expanse of glass
 - Shades have been installed, but have not solved all of the problem
 - Proper solar orientation would have reduced glare
 - The orientation of the curtain wall does not maximize solar gain
 - Site externalities did not allow for an alternate orientation
 - The jury is still out as to the efficiency of the curtain wall and water harvesting system
- Through its design and construction, the Seattle Justice Center has not only advanced the design and construction professions' knowledge of green buildings and their components, but has, equally importantly, created another case study that can be physically experienced by its users including the general public, helping to further increase the demand for sustainable buildings.

Sources

- U.S. Green Building Council Website, *LEED Certified Project Case Study – Seattle Justice Center - Overview*, <<http://leedcasestudies.usgbc.org/overview.cfm?ProjectID=225>> 2003
- Seattle Daily Journal of Commerce Online Edition, *Special Feature: Seattle Justice Center*, <<http://www.djc.com/special/justicecenter/>> October 22, 2002
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- Building Magazine, *New Construction Awards 2003: Seattle Justice Center, Seattle, WA*, <<http://www.buildings.com/Articles/detail.asp?ArticleID=1583>> October 2003
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- U.S. Green Building Council Website, *LEED Certified Project Case Study – Seattle Justice Center – Land Use and Community*, <<http://leedcasestudies.usgbc.org/landuse.cfm?ProjectID=225>> 2003

Additional Photos

