

SEATTLE CHILDREN'S BELLEVUE CLINIC AND SURGERY CENTER

BELLEVUE, WASHINGTON

THE EFFICIENCY REVOLUTION

Seattle Children's and NBBJ's shared commitment to continuous performance improvement and integrated delivery shaved three months, 30,000 SF and \$30 million off its new Bellevue clinic, proving the theory that the highest quality care is also the most cost effective.



client VISION

To lessen patient load at its core hospital, Seattle Children's formed a plan to offer ambulatory surgical care at a series of regional centers, of which Bellevue is the first. Using Continuous Performance Improvement (CPI) and Integrated Project Delivery (IPD) allowed the client, design and construction teams to program more service in less space and build it more effectively.

design BREAKTHROUGH

Designed to serve lower-acuity patients, the patient rooms are flexible enough to serve multiple specialties. Using full-scale department prototypes allowed the staff to collaborate on room layouts, operational flow and travel times. A dual-circulation clinic model improved efficiency for the staff while offering a healthier, more pleasant experience for the patients.

organizational VALUE

Through a conscientious effort at increasing room efficiency and minimizing travel distances, the design effort achieved a 28% space savings, fitting 110,000 square feet of programming into 80,000 square feet. This savings was achieved without sacrificing the patient experience or the improved processes.

springboard INSIGHT

Applying CPI and IPD methods to design and construction efforts rewards all stakeholders. A critical step involves assembling a team that agrees to share the risks and rewards of implementing these new processes.



GETTING BETTER ALL THE TIME

Based on proven techniques from the manufacturing industry, the Continuous Performance Improvement (CPI) methodology was chosen by Seattle Children's to design a more efficient use of space. Weeklong training sessions were held for staff, which helped build a culture of learning that looks for opportunities to improve procedures and experiences.

The project was also one of the first in the U.S. to have the client, architect and contractors share risk and reward using an Integrated Project Delivery (IPD) contract. Having all parties, including subcontractors, work together throughout the design and build process enabled a mutual trust and collaboration that maximized the client's budget, reduced construction time and increased sustainable design opportunities.

The IPD process helped create an atmosphere of open communication and commitment to excellence among all

the project subcontractors. This led to a goal of reducing the typical number of Requests for Information (RFIs) from 750 to 450: the final number of RFIs was 40, entirely due to relationships built at the beginning.

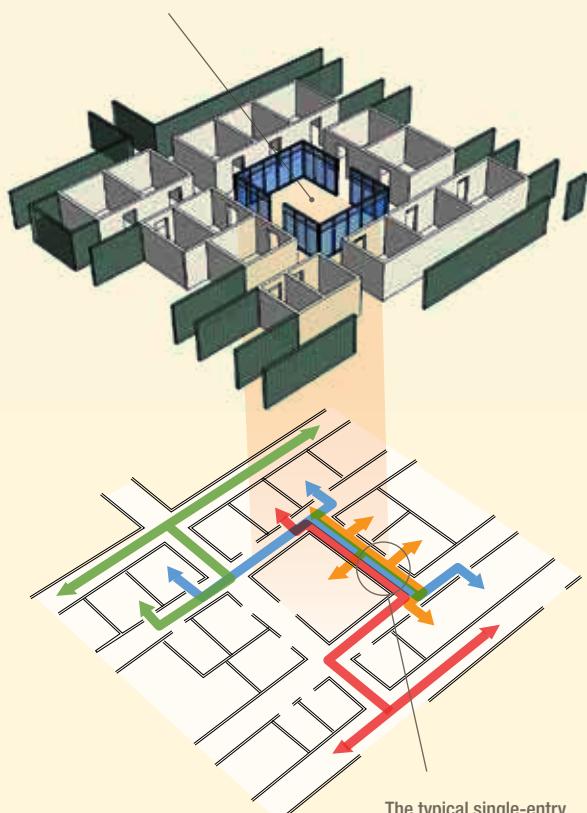
The increased communication facilitated by CPI and IPD enabled the teams to look for the most sustainable and efficient methods of construction. This commitment allowed the project to achieve LEED Gold certification and also led Seattle Children's to adopt a more green design approach on all subsequent projects. In addition, Seattle Children's enrolled in the Architecture 2030 Challenge, which has the goal of achieving carbon-neutral buildings by 2030.

TRADITIONAL FLOW

BEFORE CPI

Traditionally, all healthcare flows move through the same door into an exam room that is positioned around a staff work area. This results in congestion and compromises the optimal experience of staff, patients and families.

In this configuration, the staff area is much smaller and centralized. The sightlines to and from the exam rooms create a "fishbowl" effect.



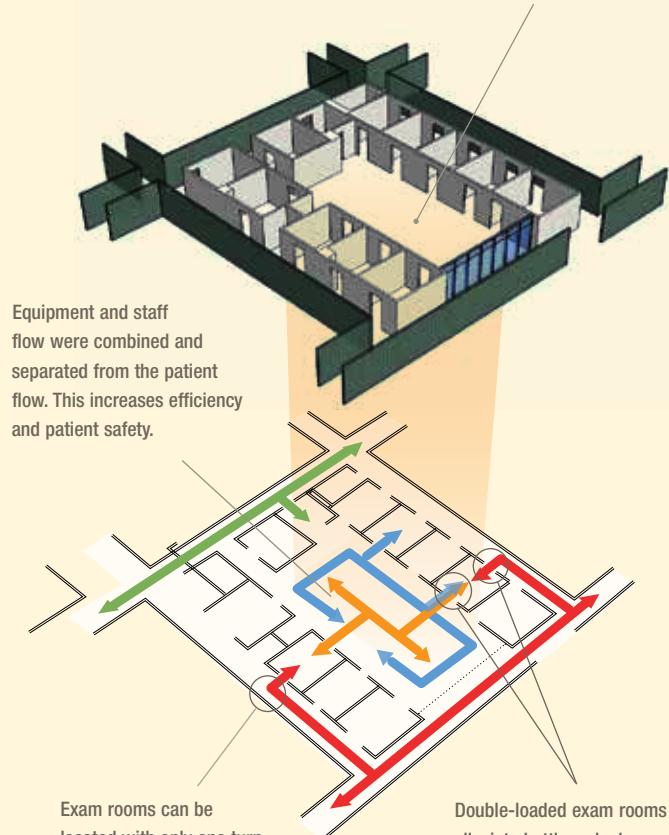
The typical single-entry point to an exam room creates congestion from all flows entering and exiting.

OPTIMIZED FLOW

AFTER CPI

Patients and families now have their own circulation. By giving staff a secondary entrance to the exam room, their immediate environment can store equipment and supplies closer to the point of use within a secluded "teaming area."

A larger, private teaming area maintains sightlines and increases collaboration and free exchange of information.



CONTINUOUS PERFORMANCE IMPROVEMENT

CPI takes a holistic look at the "flows of healthcare" with the goal of identifying the safest, most efficient and family-friendly experience. By evaluating these flows early in the process, the design team selected smarter solutions and integrated them faster and cheaper than a traditional hospital project of this kind.

At Seattle Children's, some flows are parallel to others, so the traditional seven flows are simplified to four.

- 1 patients + families
- 2 physicians + staff
- 3 supplies
- 4 equipment + information



The image shows the interior of Seattle Children's Bellevue Clinic and Surgery Center. The space is modern and airy, featuring large windows and a warm color palette of orange, wood, and white. In the foreground, a group of people are seated around a dark wooden table in a waiting area. One person is standing behind the table, possibly a staff member. The background features a large orange wall with the text "Seattle Children's" and "Bellevue Clinic and Surgery Cent". The ceiling has several large, round, white pendant lights.

Seattle Children's Bellevue Clinic and Surgery Cent

PATIENTS AND FAMILIES FIRST

As one of the first medical centers in the country to apply the rigor of CPI to healthcare, Seattle Children's Bellevue is designed to strip away inefficiencies. The time saved allows caregivers to spend more time with patients.



FULL-SCALE, RAPID PROTOTYPING: TESTING FOR EFFECTIVENESS

Medical buildings often have standard benchmarks — basing the number of examination rooms, for example, on the expected volume of patients. Instead of following these standard benchmarks, the team used CPI to map out common paths that patients, staff members, supplies and information would flow through. They worked in an empty office building, using 8,000 square feet to build out full-scale mock-ups of surgical suites, recovery rooms, anesthesia areas and waiting rooms.

The team designed multiple iterations to reduce walking and wait times by grouping similar facilities together and creating dual-purpose rooms. Fifty clinic staff members then played various scenarios to test the design's effectiveness.

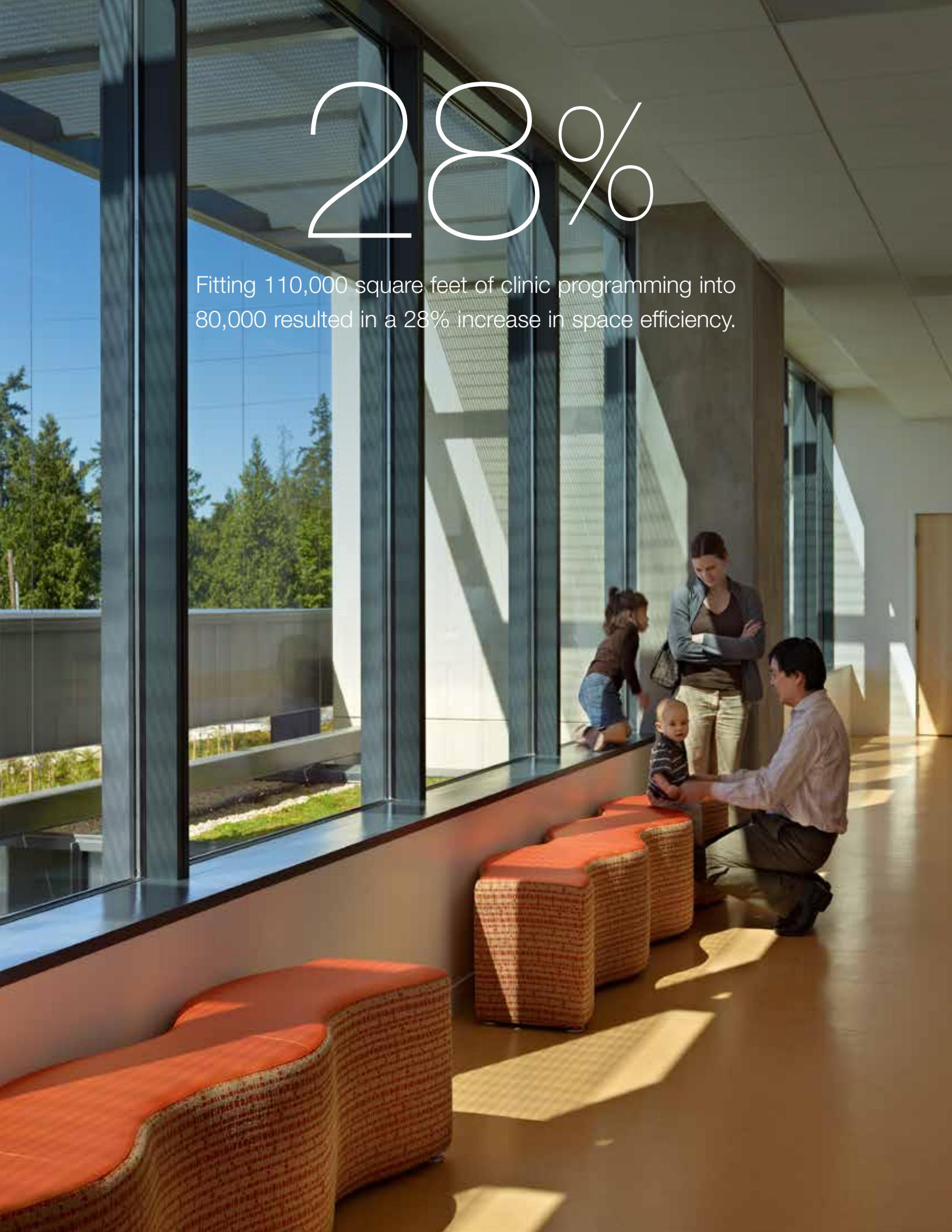
A key decision was made to move from single- to double-loaded exam rooms. This allowed immediate improvements

in experience for both staff and patients, separating “on stage” areas where patients don’t see equipment, supplies and other patients, from “offstage” areas where the staff can operate at maximum efficiency. Attaching induction rooms (where anesthesia is administered) directly outside the ORs allows family to be with patients until immediately before surgery. The OR can be prepped during this interval, lowering costs and increasing throughput.

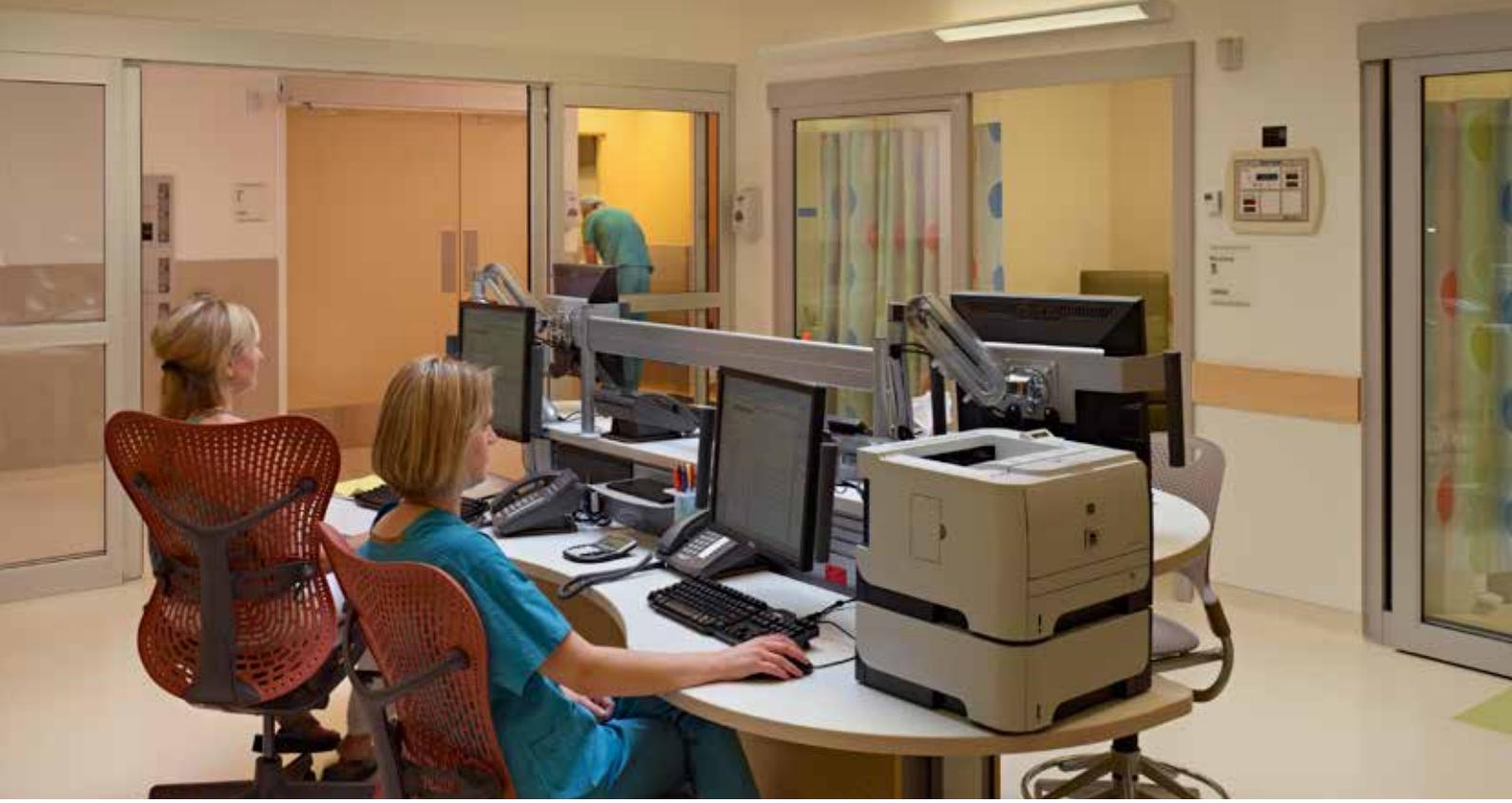
The final design reduces walking distances and wait times for patients by grouping related facilities together and creating rooms that can be used for more than one purpose. The hospital was able to shave 30,000 square feet and \$30 million off of the new building.

28%

Fitting 110,000 square feet of clinic programming into 80,000 resulted in a 28% increase in space efficiency.



"The clinic team room design has had a major impact on my clinic flow. I no longer run an hour behind—I have everything I need, and all my staff are right at hand." —ORTHOPEDIC SURGEON, SEATTLE CHILDREN'S



LEVEL 1



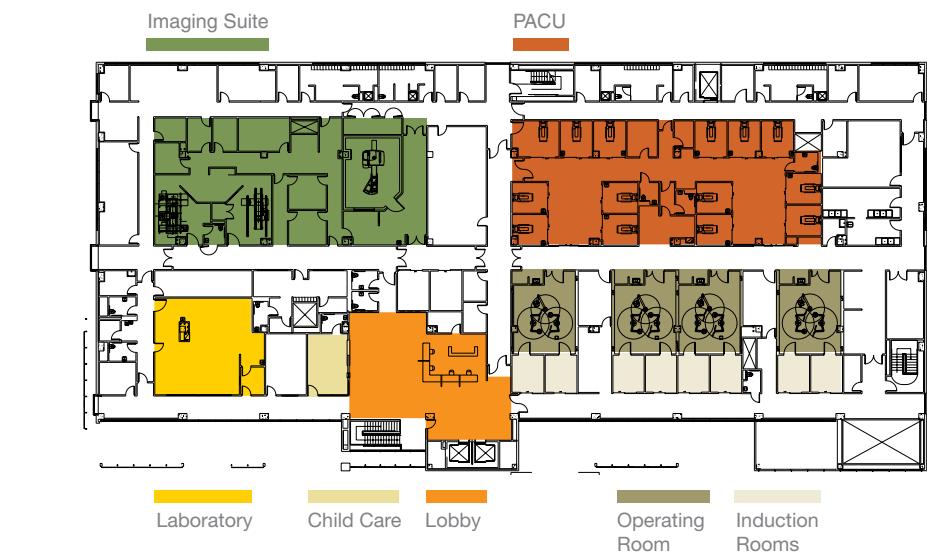
WAITING AREAS
Applying CPI to healthcare flows resulted in less space needed for waiting areas. The dramatically smaller main lobby waiting area has only 30 seats.

CAFE
A coffee bar and outdoor garden give visitors and patients a place of respite.

WAYFINDING MADE EASY
Wayfinding was simplified through visual cues such as brightly colored hallways and unique illustrations on each exam room door.

CLINIC AND EXAM ROOMS
A centralized team area allows greater visibility and proximity to exam rooms.

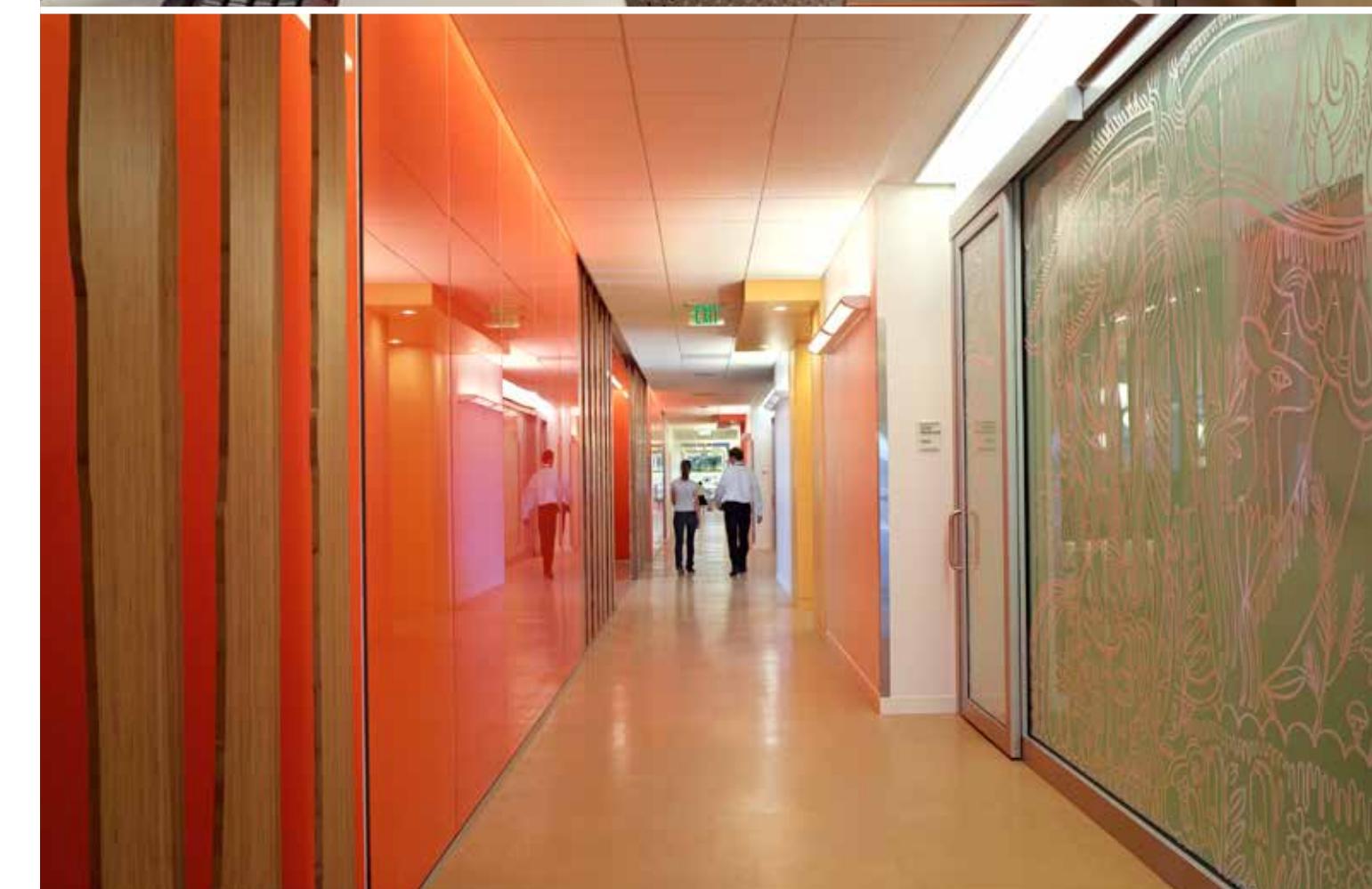
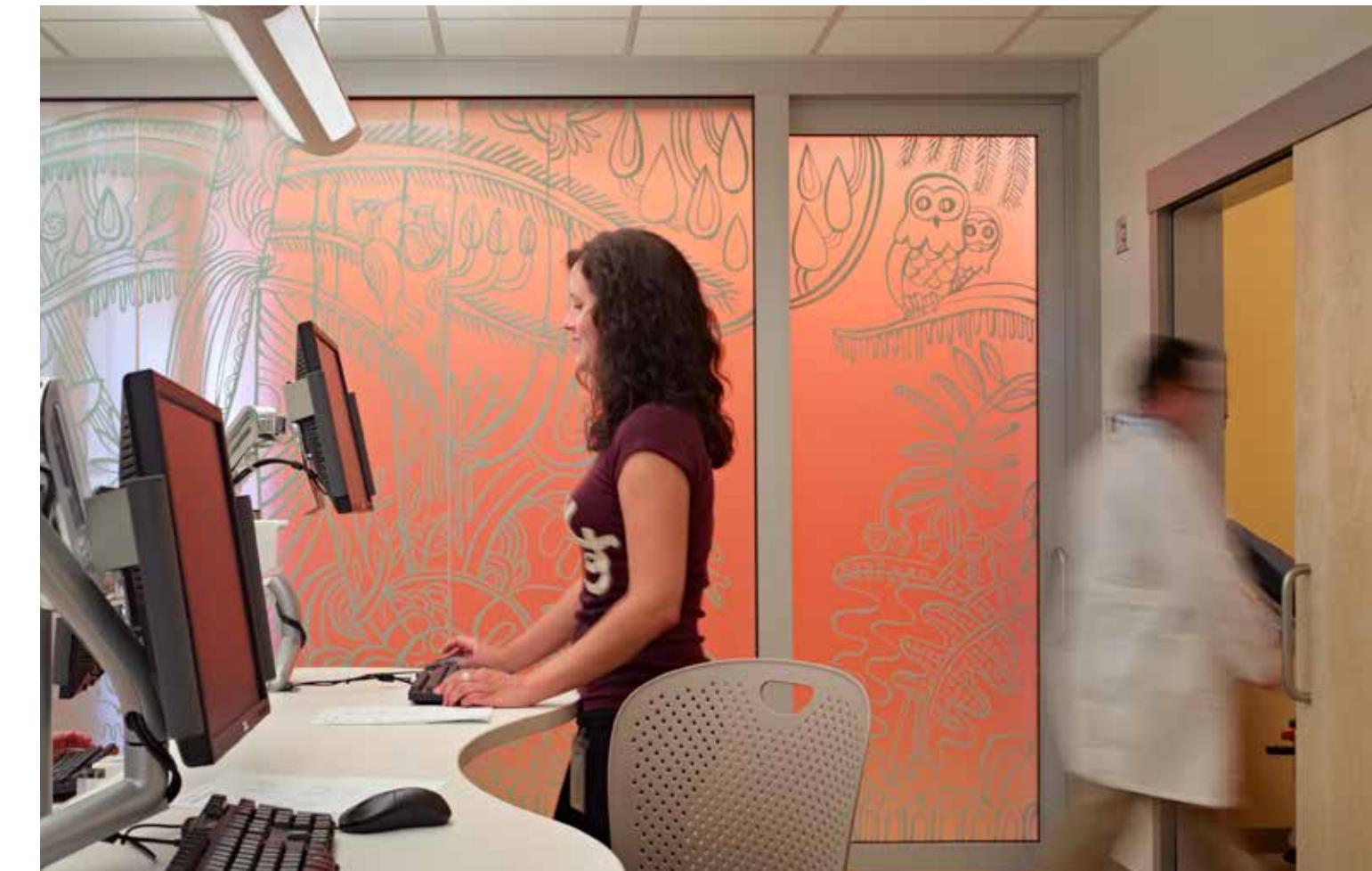
SPORTS MEDICINE GYM
The full-size gym facility allows for a full range of motion and normal sporting movements, helping young athletes recover faster and avoid future injuries.



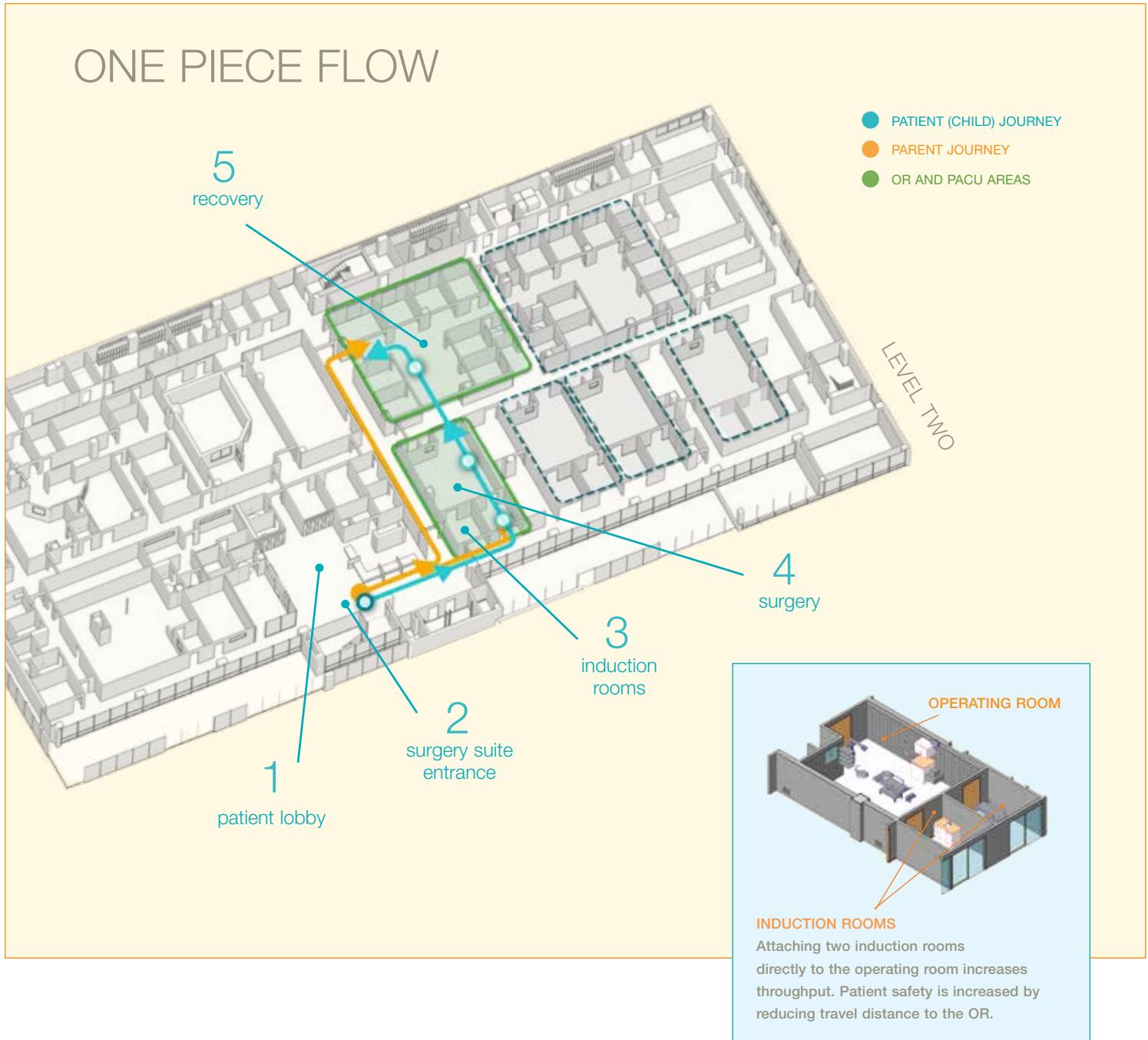
LEVEL 2

FROM ZERO TO TWENTY

The interior artwork reflects the flora and fauna of the Pacific Northwest landscape. The ultimate goal of the artwork is to create a comfortable, engaging and positive environment for patients of all ages, cultures, genders and abilities.



ONE PIECE FLOW



PEACE OF MIND

The project team gave a lot of thought to the experience of taking a child into surgery. The “one piece flow” design concept creates a parent journey focused on easing the mind through use of daylight and calming views and by allowing parents to stay with their child for as long as possible (including anesthesia).

One of the most significant outcomes of CPI was the decision to connect induction rooms to the operating room. The idea, which was developed during prototype testing, gives peace of mind to parents who can accompany their child until the time of surgery.

Not only are parents with their child longer, the location of the pre-operating rooms maximizes safety and diminishes the risk

of infection by eliminating the time consuming journey from traditional hospital room to the OR. Anesthesiologists can now sedate patients directly outside the OR, dramatically reducing fees and increasing throughput.

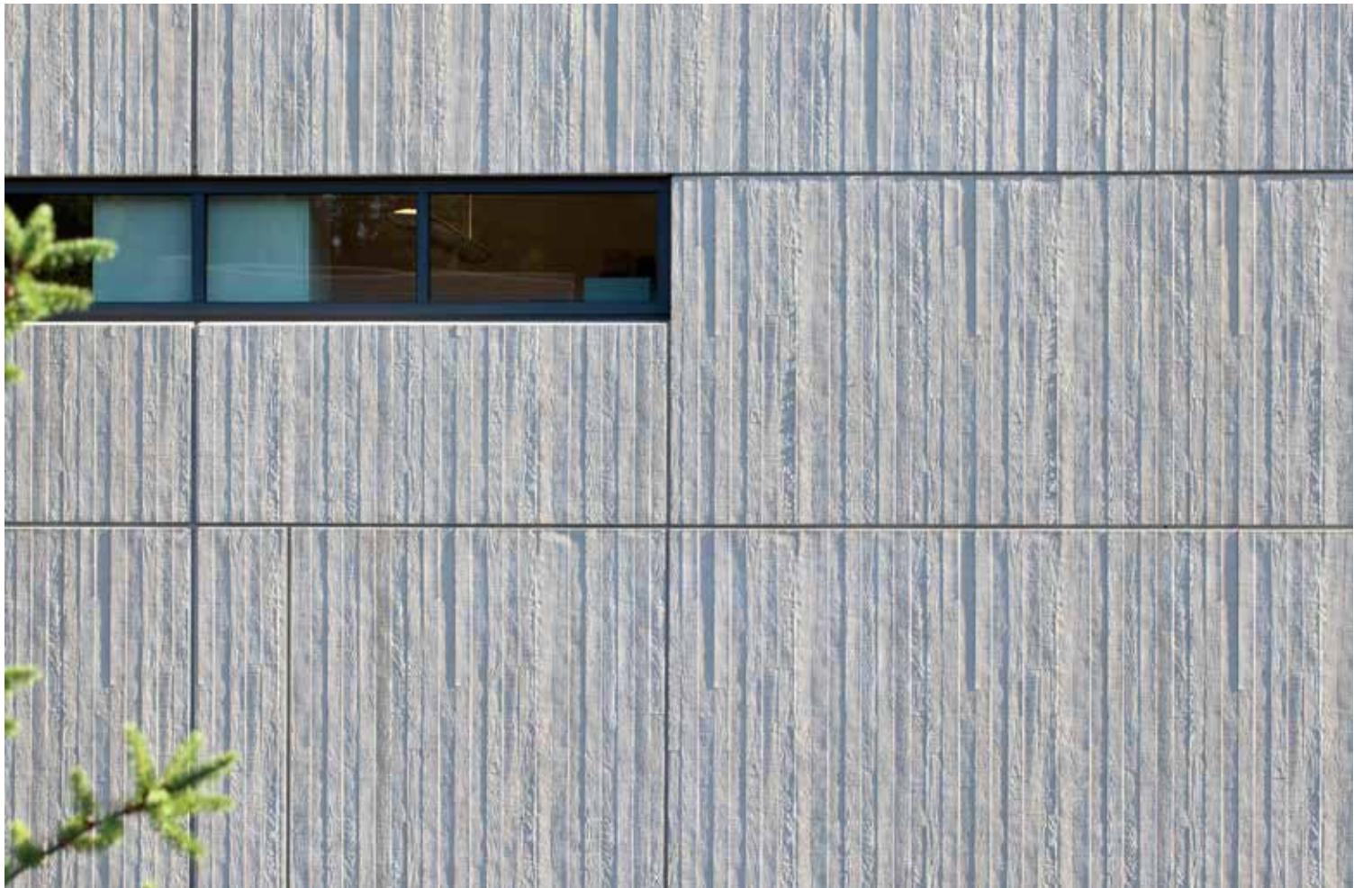
A more efficient approach to the PACU was its division into two clusters so one side can be shut down when it is not in use. A centralized staff zone in each recovery bay allows a greater line of sight. Skylights illuminate the team area, which does not traditionally have access to natural light.



The IPD process brought Puget Sound Energy, the local utility, to the table during the early design stages. This allowed the team to identify incentives that lowered energy costs by \$117,000 each year. The project achieved LEED Gold Certification.



Green roofs provide seasonal interest, as well as environmental benefits like reducing the amount of stormwater runoff. They help improve air quality by capturing airborne pollutants, and the temperature-moderating effects of green roofs can reduce demand on power plants, potentially decreasing the amount of CO₂ released into the air.



CLIENT
Seattle Children's

SIZE
80,000 SF

COMPLETION DATE
2010

NBBJ SERVICES PROVIDED
Programming, master planning,
full architectural services,
interior design, lighting design

AWARDS
American Institute of
Architects/ Academy of
Architecture for Health,
Healthcare Design Award, 2011

American Institute of Architects,
BIM Awards - Delivery Process
Innovation, 2011

Best of Year Nominee,
Healthcare, *Interior Design*
Magazine, 2010

Merit Award, AIA,
Seattle Chapter, 2010

InAward, Design in Healthcare
and InAward, People's Choice,
IIDA, Northern Pacific Chapter,
2010

PUBLICATIONS
"Benefits of Reinventing the
Wheel", *Structural Engineering
and Design*, February 2010

"Factory Efficiency Comes to
the Hospital," *New York Times*,
July 9, 2010

ABOUT NBBJ

NBBJ is an award-winning global design and architecture firm focused on helping clients capitalize on the relationship between people and the design of physical space to enhance organizational performance.

The world's leading healthcare providers trust NBBJ to deliver measurable and sustainable improvement in performance and care. Our teams have partnered with some of the leading healthcare institutions worldwide, including nine of the top 14 *U.S. News and World Report* Honor Roll hospitals. Within the architecture industry, NBBJ has been hailed as "Most Admired" by peers in *Interior Design*'s annual Healthcare Giants survey, and ranked as the second largest healthcare design practice in the world by BD World Architecture.

NBBJ's network of offices enables us to deliver quality projects that are regionally and locally appropriate. It allows us to act as a single creative force, leveraging the latest thinking from our NBBJ colleagues in other locations, bringing a rich blend of expertise to each project.

NBBJ SERVICES

Healthcare Consulting	Programming
Master Planning	Land-Use Planning
Architecture	Construction Administration
Interior Design	Retail Planning and Design
Financial Analysis	Lighting Design
Project and Cost Management	Facility Planning
Graphic Design and Signage	Change Management
Space Planning	Workplace Consulting