



The CARITAS Project Generative Space Awards, 2014

Nanaimo Regional General Hospital
Emergency Department and Psychiatric Services



Photo by Artez Photography

Project Overview and Major Project Generative Highlights

The CARITAS Project in describing Generative Space says: “*Imagine living in a world that naturally provides us — each and every one of us — with all the environmental conditions that create an experience of flourishing. Imagine our living spaces being like this, or our workplaces, or even our communities*”.

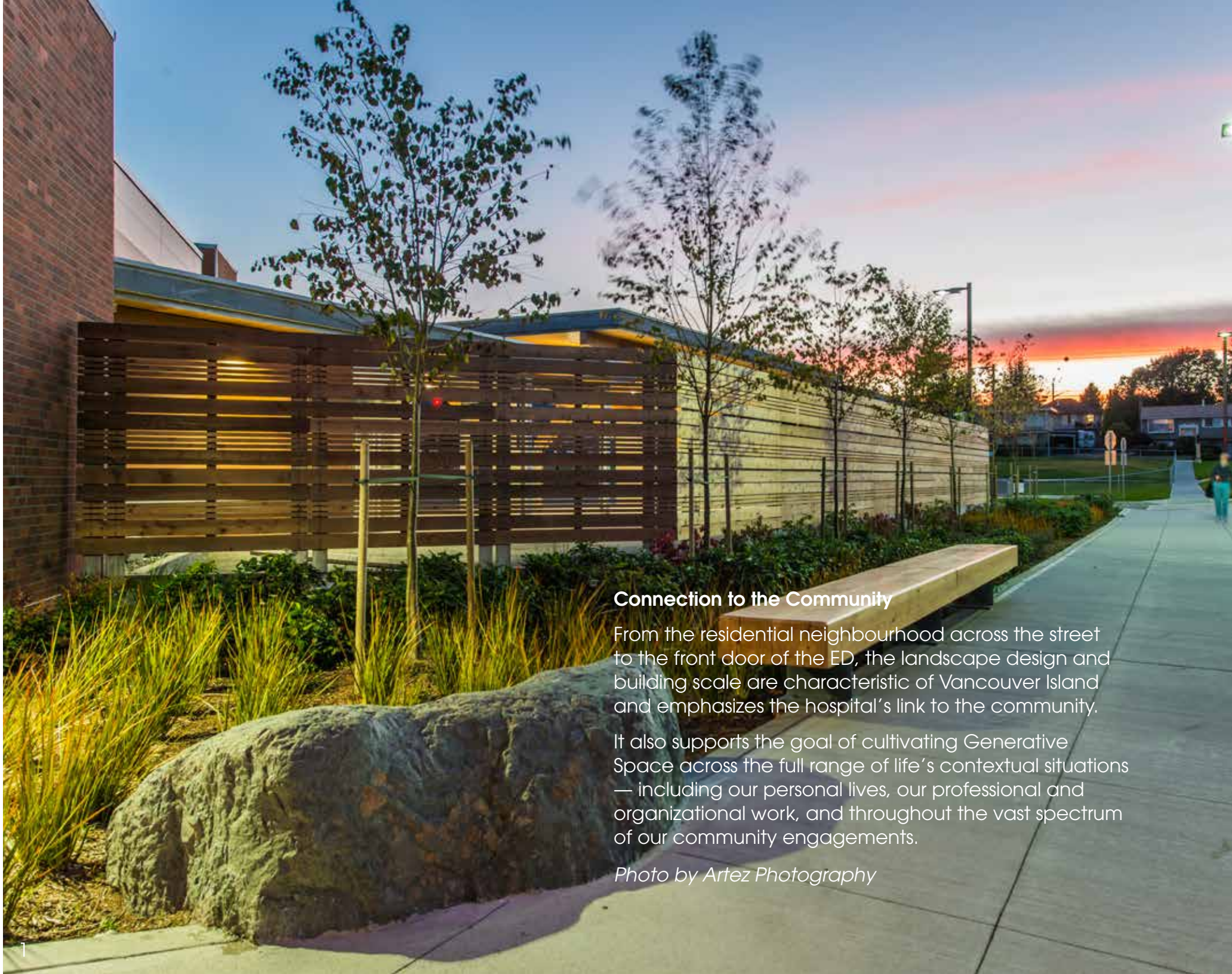
The project presented here does exactly that. Sparked by the challenge to create an “environment that staff would want to come to on their day off”, the new Emergency Department and Psychiatry Services at Nanaimo, BC, Canada may be the first in the world to include nature imbued courtyards within actual patient treatment zones. The project established design goals and objectives, and sustainability strategies to achieve a LEED® Gold solution around the values of Timely, Respectful, Quality Care, and A Place People Would Want to Come to Work. Documented evidence supports a flourishing environment for patients, families, visitors, staff, and community.

Preface

The project is located in Nanaimo, British Columbia, Canada; a city of 80,000 people located on the east coast of Vancouver Island. The hospital serves a broader population of 250,000 – 300,000 island residents, with a growing geriatric population. Nanaimo Regional General Hospital is a 280-bed full service community hospital which is moving towards becoming a Tertiary Care & Regional Trauma Centre. It is a member of the Vancouver Island Health Authority and is part of the publicly funded provincial healthcare system.



Photo by Dr. Drew Digney



Connection to the Community

From the residential neighbourhood across the street to the front door of the ED, the landscape design and building scale are characteristic of Vancouver Island and emphasizes the hospital's link to the community.

It also supports the goal of cultivating Generative Space across the full range of life's contextual situations — including our personal lives, our professional and organizational work, and throughout the vast spectrum of our community engagements.

Photo by Artez Photography



Project Description

The Nanaimo Regional General Hospital project includes a new Emergency Department (ED), a new Psychiatric Emergency Services department (PES) and a 6-bed Psychiatric Intensive Care unit (PICU). The existing ED was handling 57,000 visits/year and had become dysfunctional with insufficient and inadequate space, poor physical design to support functionality, poor access and patient flow, and lacked up-to-date information technology systems.

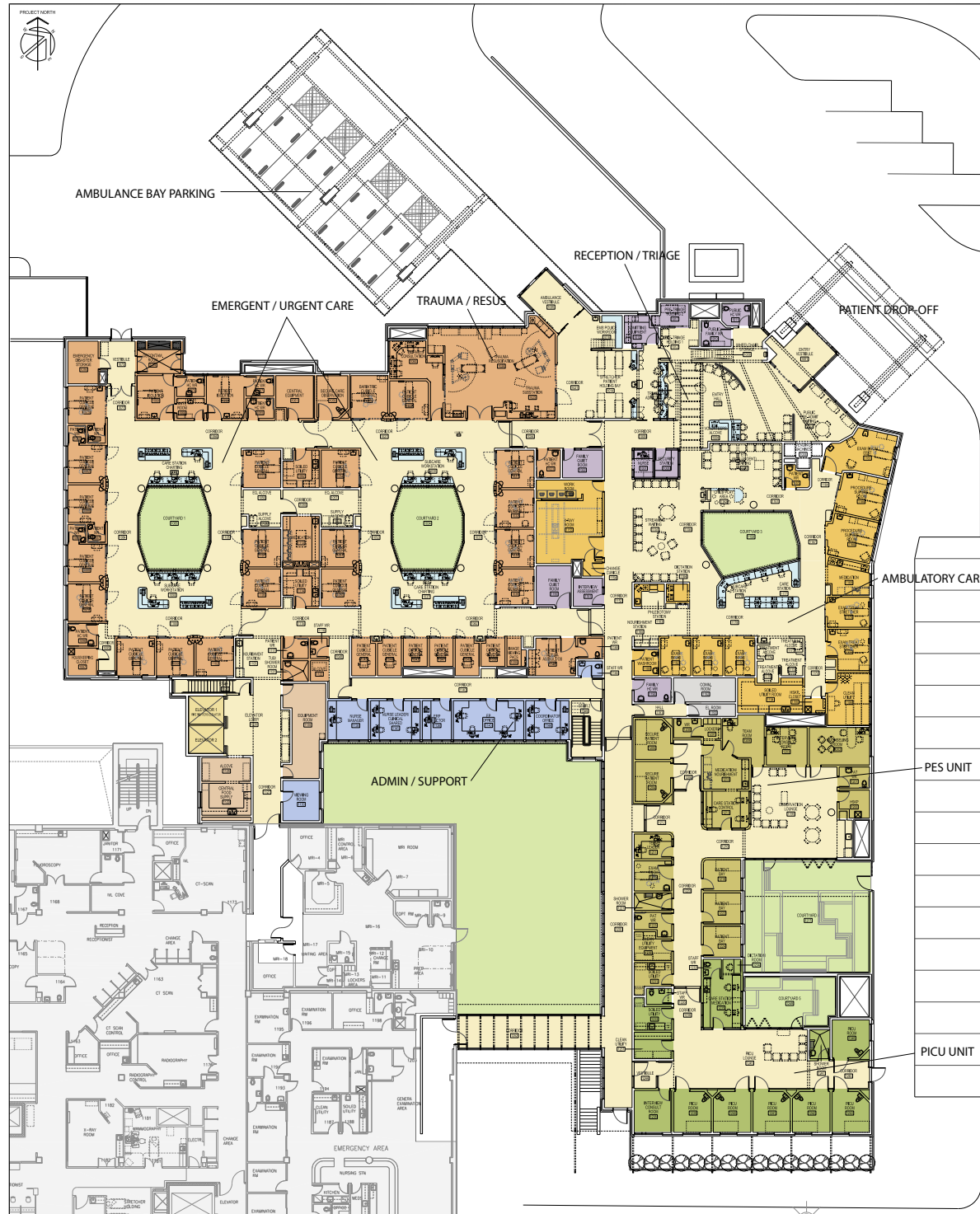
The new ED tripled the size of the department to 2,258 square meters, with psychiatry being 734 square meters. Total building area is 6,200 square meters (3,750 developed), and the rest left for future expansion. The project was completed in the fall of 2012 for a construction cost of \$25 million, with project costs of \$38.6 million.

This project is all about “break through” design solutions. The design response took advantage of the sloping site and focused on the Users’ desire to create a truly generative space. The project was designed around five small, highly visible, nature-filled courtyards within each patient care zone that relieve stress for both patients and caregivers while significantly reducing energy demands for lighting. The sloping site allowed for a 2-storey solution to this addition to the existing hospital. The main floor includes all the patient treatment spaces for all three components (ED, PES, PICU), while the lower floor includes the staff facilities, offices, building systems, and future expansion space.

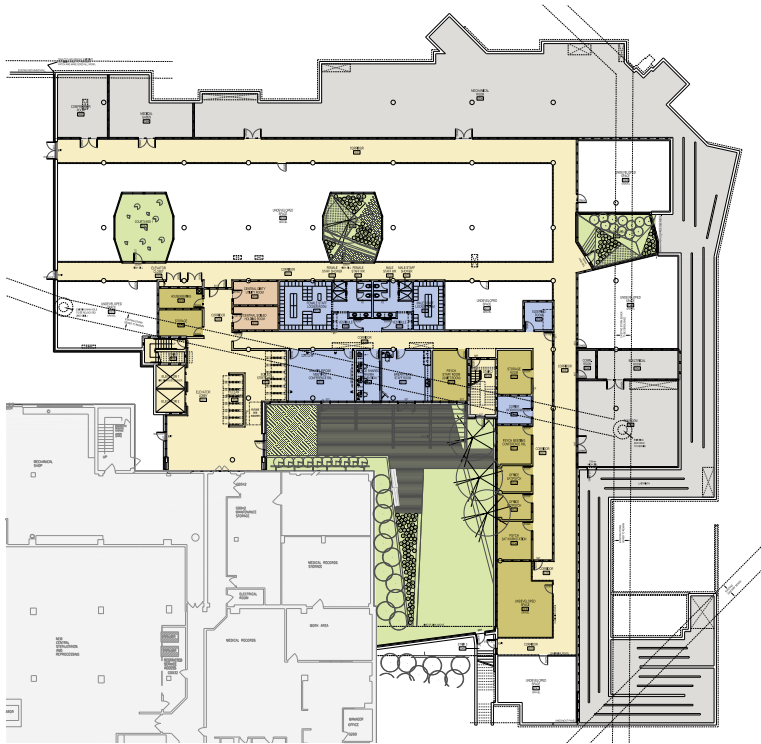
Stantec worked with the hospital to create innovative design solutions based on our participation in CARITAS’ Leading by Design project, research, sustainability, and lessons learned from European hospitals. At every stage of design Stantec had to demonstrate the potential cost benefit of these innovations on overall productivity gain. Through computer modeling and cost/benefit analysis, capital costs of the 5 courtyards and other design concepts were weighed against the potential operational savings on staff costs, medical errors, and improved clinical performance.

Two of the courtyards are located within the Acute/ Urgent Care treatment zones and one is within the Streaming or Ambulatory Care. Secure courtyards are located within both the PES area as well as the PICU, and the fifth courtyard is for staff.

Taking advantage of the growing body of Design research, the facility is highly functional, flexible, safe, and space efficient while achieving a level of daylighting and sustainable solutions unparalleled in a large ED in a modern hospital. Working with an integrated all-Stantec team, the courtyards are also used to draw air down into a thermal labyrinth to be tempered en-route to basement air handling units, achieving significant reductions in heating and cooling loads. By creating a Generative Space environment that was both physical and social, the experience of the participants fulfilled the functional requirements and that would also materially improve the health, healthcare, and quality of life for those working or being patients in the new Nanaimo facility.



Main Floor Plan



Lower Floor Plan

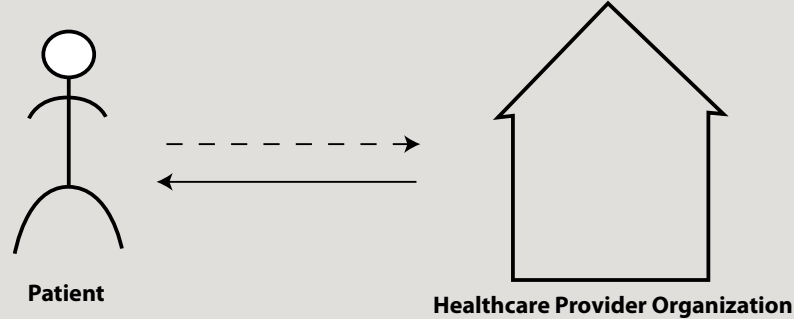


Emergent / Urgent
Care Zone

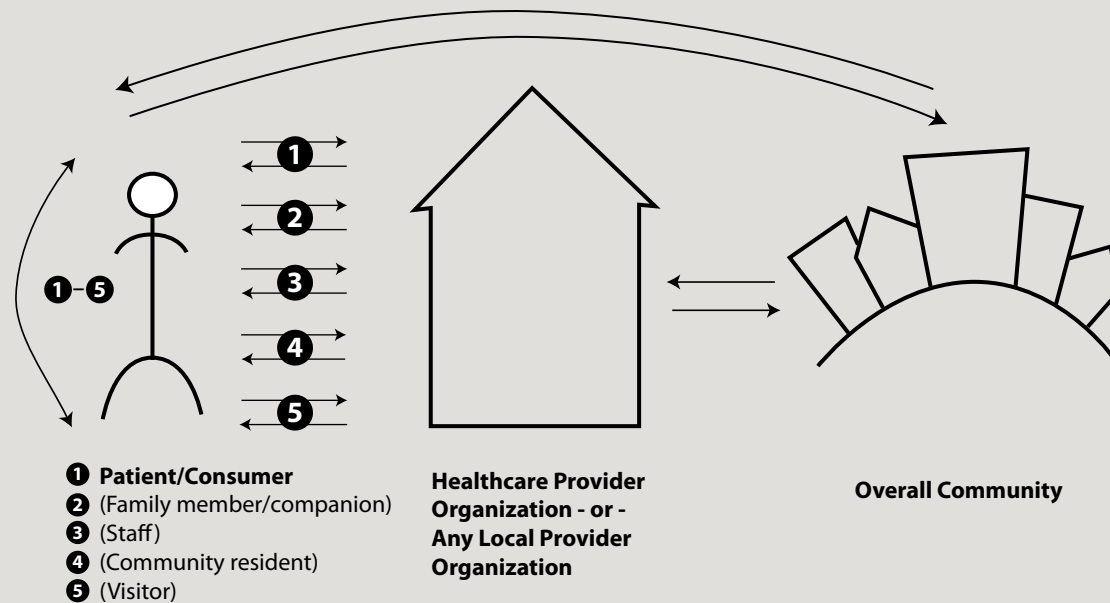
Exercising 'Health Design Leadership' to Cultivate a More 'Generative Space':

Toward a Care-Centered Model of Whole-Community Health, Healthcare, and Quality of Life

The Status Quo: Instrumental Transactions
(1+ arrow)



The New Paradigm: A Place to Flourish
(15+ arrows)



Generative space is an environment, a place — both physical and social — where the experience of participants fulfills the functional requirements of that space and it also materially improves the health, healthcare, and quality of life for those participating in that experience in a manner they can articulate in their own terms.

By its very nature, a generative space is a place that progressively and tangibly improves over time.

Progressive improvements contained in the New Paradigm diagram

The linked diagram characterizes the New Paradigm and the Status Quo. The New Paradigm indicates the tangible benefits that each stakeholder group receives from their relationship with the provider organization. The next five sections describe tangible benefits of these five groups.

This project truly is about Generative Space, both physically and socially. The experience of the participants fulfills the functional requirements of the space but it also materially has improved the health, healthcare, and quality of life for the patient and their families, for the staff, and visitors, and the broader Nanaimo community. Multiple innovations were realized through an intense and spirited collaboration of architects, clinicians and engineer, a process that inspired staff to create a new mission and value statement for their additions to the Nanaimo hospital.

Since opening in October of 2012, building and operational performance has been monitored closely, through interviews, surveys, and typical performance data. By its very nature, a generative space is a place that progressively and tangibly improves over time, and the Nanaimo project is continuing to evolve and improve. The purpose of cultivating generative space is to improve performance effectiveness, and as you will see in the following sections, this is certainly the case here. The results of these measures encourage, support, and reinforce increasing performance effectiveness in health, healthcare, and quality of life for those impacted and involved in the Nanaimo project.



Nanaimo Regional General Hospital is the single-busiest emergency department on Vancouver Island, serving over 57,000 patients annually. The new wing is highly efficient with streamlined processes to provide patients with a better experience,” said Don Hubbard, Vancouver Island Hospital Authority board chair. “The light-filled rooms, numerous windows, skylights and courtyards provide a calming setting for patients and their families.



Emergency Department Triage Area

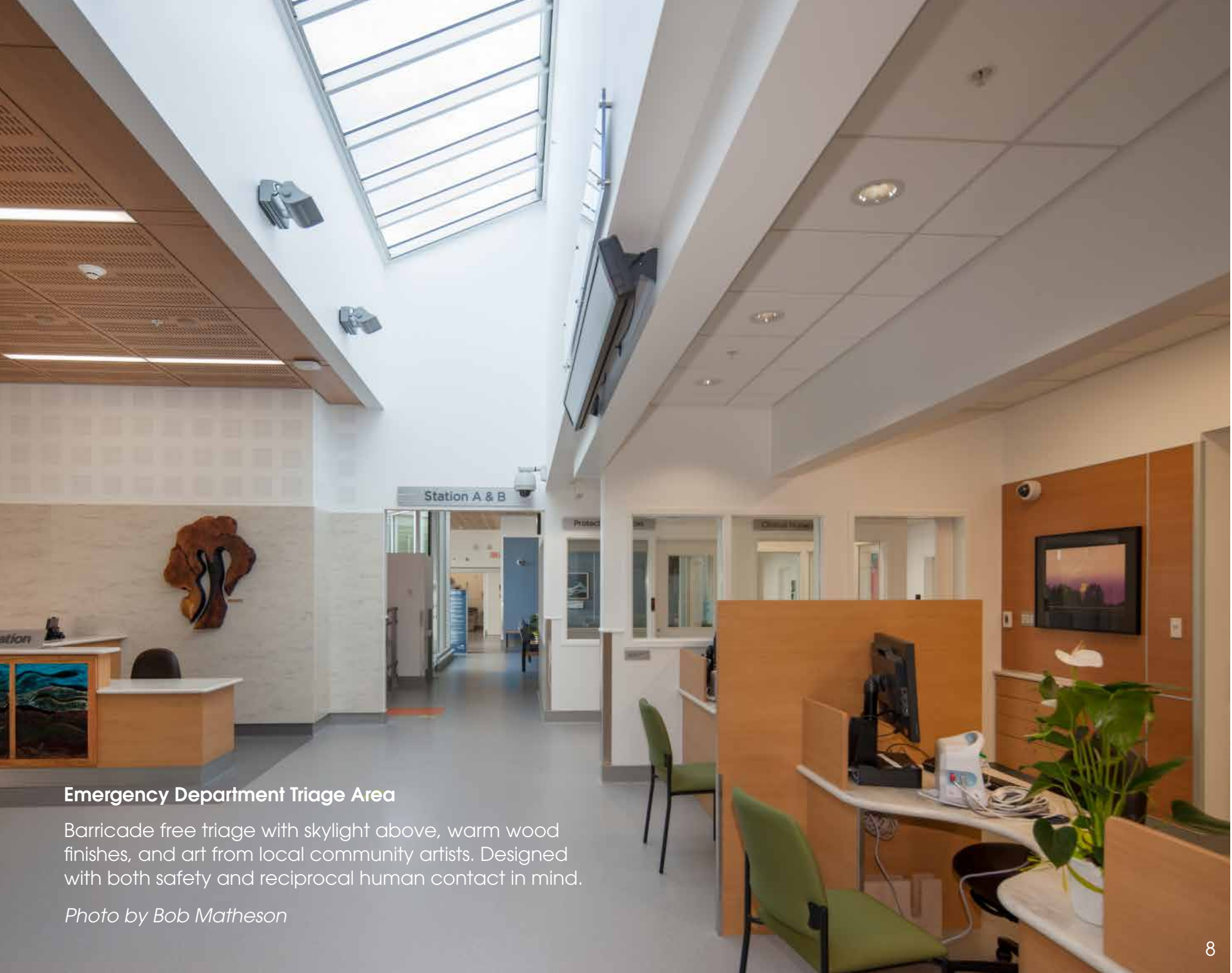
Patients are met by both a Triage nurse as well as a registration clerk; information only needs to be provided once. The design of the Triage area and the process was highly collaborative between staff, patients and designers.

The patient experience at Nanaimo is based on a physical and social environment that has been designed to be integrated and self-reinforcing. From the moment a patient enters the building beneath the beautiful wood canopies into a sky lit triage area, the message is *“we are here to help you”*.

// You’ll notice one of the unique factors about the ED design is our triage area. We’ve actually made a very conscious decision to not barricade the area in behind glass, and this was a very thoughtful decision. What we did need to do, was maintain a distance for infection prevention and control; and we needed to make sure our practitioners could actually get out of the way if there was somebody that was angry. What we have actually found, and what we believed in the prior research, was that by actually not

having a barricade, people want to talk to us and the staff actually have to touch the patients. The nurses and the physicians are not getting up and going around the triage desk to the front and putting themselves at risk, they’re actually still behind a barrier that was designed specifically to sit in a certain way for both the patient and the nurse to allow for egress. The nurse has five exits out, if they need to get out and the patient is on the other side of the desk, which does not allow them to come over with all the equipment. So it was a very thoughtful decision and what we have found is actually our patients appreciate that a whole lot more.

- Suzanne Fox, MSN, RN, Director Emergency Service & Trauma Care, Vancouver Island Health Authority



Emergency Department Triage Area

Barricade free triage with skylight above, warm wood finishes, and art from local community artists. Designed with both safety and reciprocal human contact in mind.

Photo by Bob Matheson

The design of all patient treatment spaces were the result of research and collaboration to determine the best environment to treat patients in the most effective way; while allowing the patient to feel safe, calm and relaxed while in what is normally a very scary situation for them and the families. Every treatment space is filled with daylight including the exam treatment spaces and the Trauma/ Resuscitation room. The high wood ceilings and views to nature for patients create a calmness not seen in most ED's elsewhere.

Special attention has been paid to the individual treatment bays; each one is private, and the traditional privacy curtains which can be an infection risk in hospitals, are a huge source of bugs and germs in hospitals have been replaced with electronic glass. Custom designed hand sinks also were designed to maximize their use by staff in the presence of the patient, and displacement ventilation and fresh air is brought in throughout the departments.



Trauma Room

This room is filled with daylight and has a very adaptable and flexible set up to allow for handling any kind of major trauma; and 2 patients at a time. In the rear of the photo you can see the sliding doors into the doctors' huddle area which is separate yet part of the Trauma room.

Photo by Bob Matheson



Patient Space

A typical patient treatment space, with a view out towards the daylit courtyard. The window above the custom designed hand wash sink is from the decentralized Nurse touch-down space.

Photo by Corey Stovin

Treatment Rooms

Treatment rooms are paired with a Nurse touch-down space between them. Through construction of mock-ups during design, users came up with a unique way to arrange the stretchers in the paired rooms to allow what they felt was the best same handed access to the patient.

This pair of photos illustrates the effectiveness of the electronic glass to provide privacy. In addition to these rooms receiving daylight from the interior courtyards, they also have an exterior window as well.

Photo by Bob Matheson





Psychiatric Patient Area

The entire wall of the psychiatric area, opens up allowing access to a private and secure courtyard. *(photo was taken prior to installation of the exterior furniture)*

Photo by Bob Matheson

The Psychiatric treatment areas are spacious and feature the same quality finishes and features seen throughout the project. Both have secure courtyards with water features and large opening exterior walls to blend the inside with the outside, and create calm, relaxing place to treat patients who are suffering from mental illness.



The Psych Emergency Services; the change here is phenomenal. This was a population of patients that were being looked after in a space no bigger than my office. In the old department up to 5, 6, 7 of those people a day would be coming through, and now with the new Psych Emergency Services area, that's completely changed.

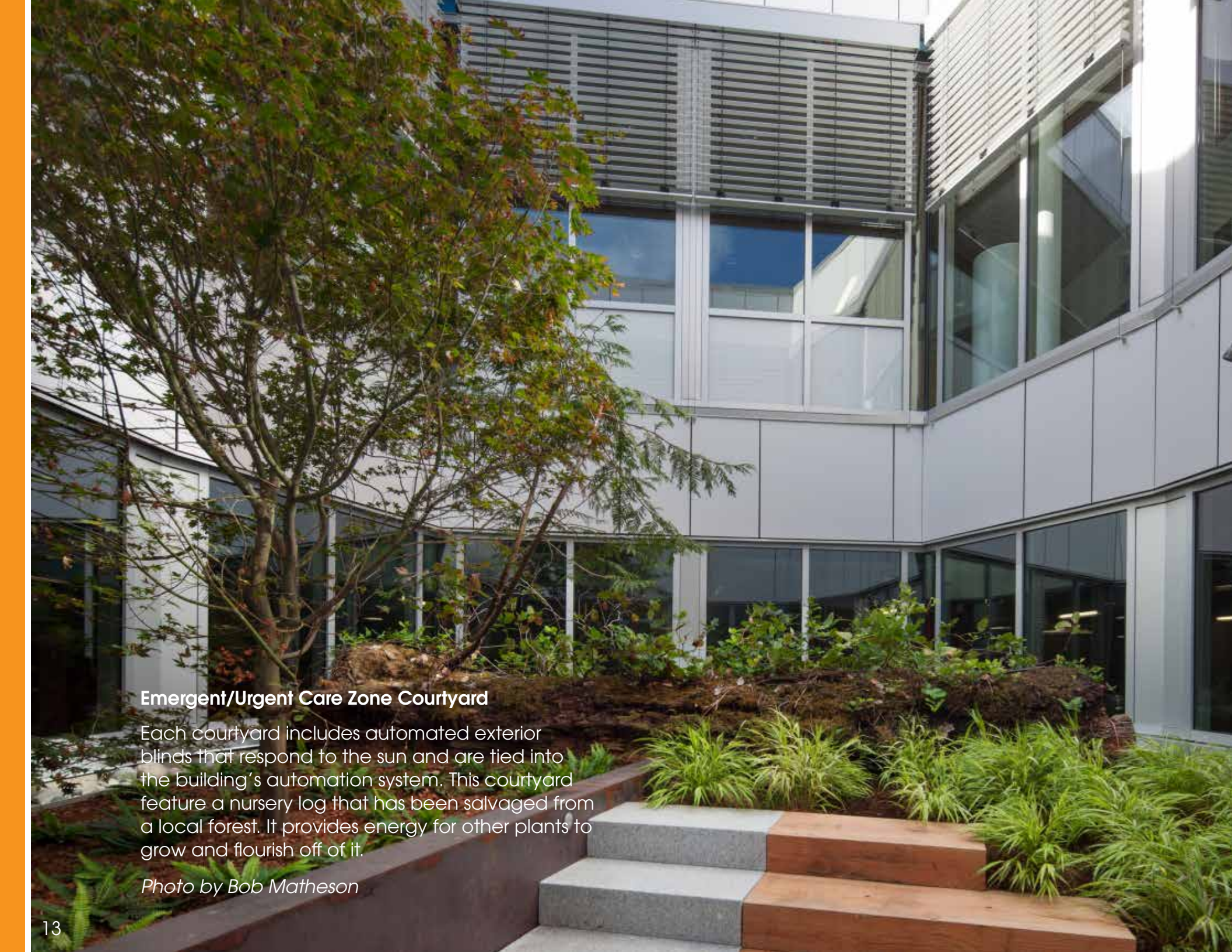
- Dr. Drew Digney, Site Chief for Emergency and Trauma Services Nanaimo Regional General Hospital



Psychiatric Courtyards

These are landscaped, secure, and feature water falls.

Photo by Artez Photography



Emergent/Urgent Care Zone Courtyard

Each courtyard includes automated exterior blinds that respond to the sun and are tied into the building's automation system. This courtyard feature a nursery log that has been salvaged from a local forest. It provides energy for other plants to grow and flourish off of it.

Photo by Bob Matheson



I think this project has actually brought a new light to how ED's need to be built. In our organization for sure. Our previous CEO, Howard Waldner, actually told me once this is the most beautiful ED he has ever seen, and he has seen many; from Australia to Scotland to England to the USA. It has brought this team together in a much different way. They believe in a place that they designed, that

they built. Our patients are amazed at how beautiful it is, and how it's calming and clean. And we've seen significant reductions in our infection control rates because of the way we now do business. We have private rooms for our patients that have their own bathrooms for some of them. It really has brought our community together in a different way.

- Suzanne Fox

Emergency Department Team Bases

Team bases utilize flexible, modular furniture solutions that allow for easy modifications as needs change. Views from team bases are into the courtyard, patient treatment rooms, and to the next care module. The nine foot high wood ceilings throughout add to the sense of calmness one feels in this ED.

Photo by Bob Matheson



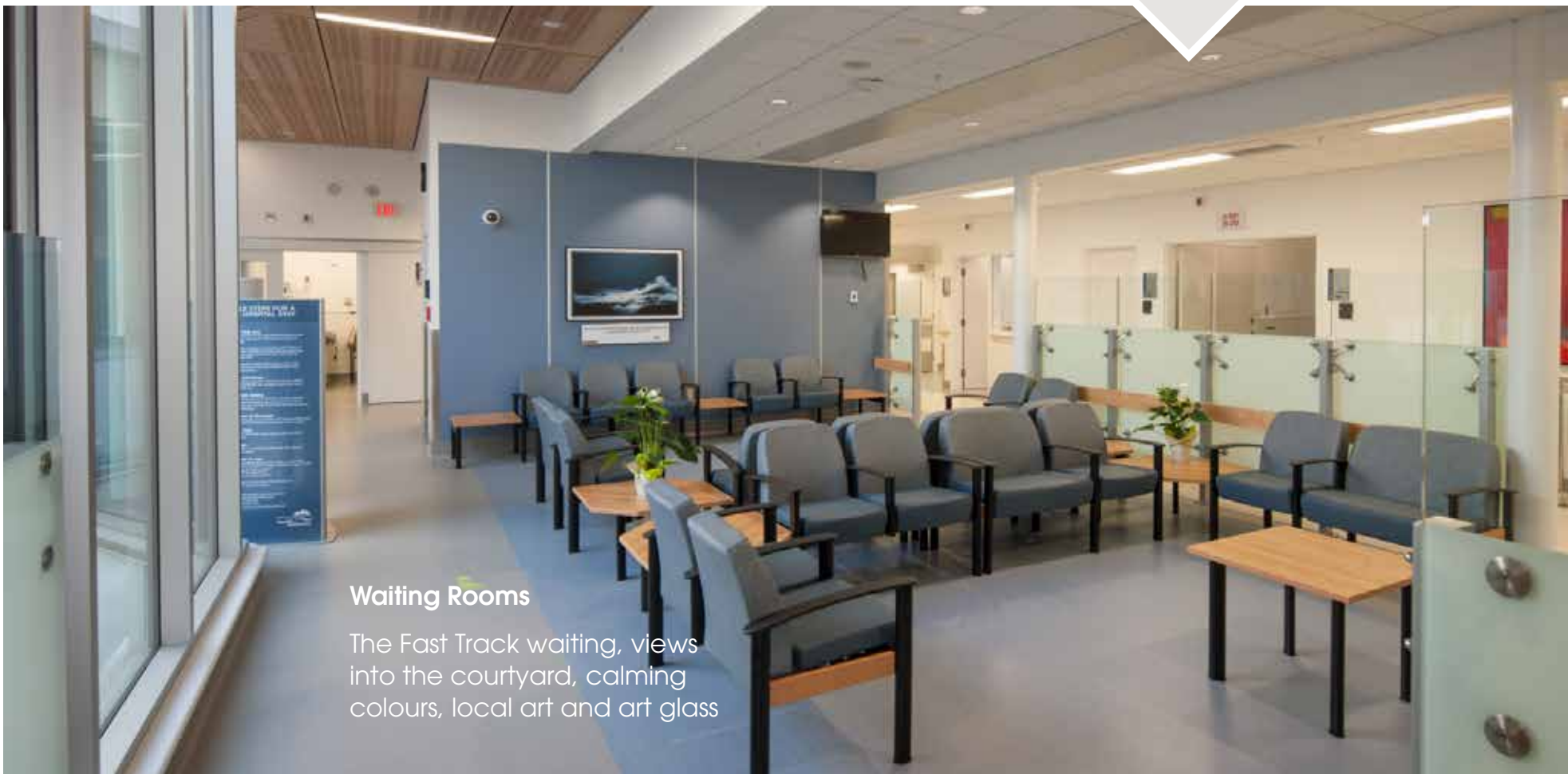


Lounge Area

Views from the Psychiatric Intensive Care Unit's lounge area onto its secure courtyard and calming waterfall.

(left) Photo by Artez Photography

(bottom) Photo by Bob Matheson



Waiting Rooms

The Fast Track waiting, views into the courtyard, calming colours, local art and art glass

Ambulatory Care Waiting Room

This waiting room is for children and their families and include views into the courtyard, a wonderful humourous painting of a dog, children's furniture and a Snoezelen* bubble tube so their relaxation may be enhanced.

Photo by Bob Matheson



An Art Contest

"We are so pleased to have walls dedicated to art and invite artists to submit pieces that celebrate life, are uplifting, inspiring or humorous in nature," said Dr. Tom Dorran, Executive Medical Director for Emergency Services.

The departments have all been designed with the family in mind. With 100% private treatment spaces, the family is welcome at the bedside. Waiting areas have views into the courtyards and feature art by artists from the local community.



In terms of the surroundings that people find themselves in, I've had nothing but compliments in terms of how nice it is and "wow, isn't this great!". In a funny way, it almost fills them with a little bit more sense of security and confidence in what we're doing. When the place looks professional, looks clean, hasn't got stuff piled up everywhere, and people bumping into each other. In terms of your experience and how well you think you're getting looked after; that piece is definitely taken care of.

- Dr. Drew Digney

* Snoezelen or controlled multisensory environment (MSE) is a therapy for people with autism and other developmental disabilities, dementia or brain injury. It consists of placing the person in a soothing and stimulating environment, called the "Snoezelen room".

Staff Lounge

Staff lounge with opening windows and access to their courtyard.

Photo by Artez Photography





Workshops

Users lay out their ideas at the opening workshops.

Photo by Stantec



Staff

This really is a place people want to work.

Photo by NRGH

This project encourages, supports, and reinforces the flourishing of stakeholders like few others built today. The staff set some very demanding design objectives at the opening project workshop, and these have been met. From spaces that are more efficient for them to treat patients, to spaces that allow them to work a 12 hour shift with a view to nature, and the smell of fresh air, to the amenities of their staff room, a relaxation room with massage chairs, to their courtyard. All these allow the staff to truly flourish. This all has come about from a highly collaborative design process.



The experience was great, it was a lot of work but we certainly have got a great product at the end of it. I think we started off with some core values and some core goals and we stuck through that as a team- both Stantec and VIHA. I think at the end of the day that's what came through. That's what the staff when we had our large big meeting at the beginning all told us, and that's what we have. We have a place that's confidential. We're trying to provide the timely care. It's certainly got lots of light, and it is a place where people want to come to work. It's been great!

- Dr. Drew Digney



The daylight and the courtyards were put in place for our patients and staff.

One of the unique factors of this ED is the daylight and the courtyards that we've put in place for our patients and our staff. Testimonials are telling us that they love being able to see outside and know what time of the day it is. I would say that the staff is enjoying the light, being able to see outside, and their courtyard which is actually where they have their lunch and their breaks, which is a huge benefit to enabling them to get away from their workspace and be in nature. One hundred percent if we did this process again, we would do courtyards. It has probably been one of the biggest wins for this ED and I'm happy to say many, many other people in the province who are looking at building ED's have actually come to see the uniqueness of this one. So my hope is that we've actually set a new standard for ED design not just in Canada, but Internationally. This has proven itself to be a department where people want to come to work.

- *Suzanne Fox*





Staff Courtyard

The staff courtyard, filled with light, colour and nature.

Photo by Artez Photography





Sustainability

Sustainability features of daylighting, automatic exterior solar shading, wood ceilings, and the displacement ventilation diffuser “towers” can be seen in this photo.

Photo by Bob Matheson



Building on British Columbia’s Wood Culture

Wood and the forests of British Columbia are a part of our culture. They are at the heart of our past, present and future.

Wood architecture and construction is in our communities -- where we live, work and play. Its versatility, character, and individuality are unmatched -- wood is a natural, renewable resource that’s good for the environment and British Columbia’s many lifestyles.

Photo by Artez Photography

This project really had a number of communities, three specifically. One was the community that existed and became stronger through the project which was the Community of the Clinicians. The second was the community that was created of the Stantec Design Team and the Users; together they created a new community. And the 3rd community is that of Nanaimo, that not only has a new medical facility to meet their growing needs but a culturally-sensitive environmental design that will be sustainable for them for many years to come.

Sustainability features included:

- Daylight and nature (targeting all LEED® and GGHC daylighting credits)
- Fine-grained daylight-responsive lighting controls
- Automatic Exterior Solar Shading
- Displacement Ventilation
- Natural ventilation (User controlled in many locations)
- BMS controlled natural ventilation (Education spaces and lounges)
- Thermal labyrinth with night flushing
- High efficiency heat-pump based thermal transfer
- Storm and reverse osmosis (R.O.) process water irrigation
- The use of BC Wood

Welcome



Around the same time (2007) we started the design and the talk about this new building, we in the Nanaimo Emergency Department, were a little bit lost on why we came to work every day. And in that process, the Nanaimo Emergency Department staff with myself and Dr. Drew Digney as leads decided we needed to sit down and decide what our philosophy was about why we came to work. And with that, it started with the word “welcome”. We knew we needed to welcome the community here and the staff came up with their own vision which was “welcome to the Nanaimo Emergency Department a place that cares for its community and a place where people want to work”. That in itself gives me goose bumps to this day because it actually does set a tone for why we’re here.

The new philosophy was based on these 12 words:

Empathy

Respect

Advocacy

Enthusiasm

Excellence

Communication

Collaboration

Initiative

Integrity

Leadership

Diversity

Timeliness

The project explored new methods of collaboration for both the Designers and the Clinicians. Starting with the first workshop, through field trips to look at other facilities, to sitting side by side during all day design meetings.

- *Suzanne Fox*



Landscaping

Natural bio-swales used for water retention line the sidewalk up to the new ED.

Photo by Artez Photography





Community Integration

The new ED greets its neighbours with low scale, crafted fences and landscaping.

Photo by Artez Photography

Canopies

Large wood canopies are used over both the walk-in entrance and the ambulance entrance shown in this photo.

Photo by Artez Photography



Stantec senior architect Ray Pradinuk and Dr. Drew Digney working on the design of the patient treatment rooms.

Photo by Bruce Raber



Staff in their old ED advising Stantec on what it is they want.

Photo by Bruce Raber



Listening and collaborating; the key to designing a Generative Space.

Photo by Bruce Raber



“ One of the most important things from a clinician’s perspective is having an architect listen to what the practitioners need. I felt very blessed through this project to have Stantec beside us. Because as we were talking, our architects in the room were maneuvering rooms and changing things in the moment. For the staff to be able to tangibly see what they could. Every single thing we threw at Stantec, every single thing that this team threw at them, they came back with an answer and were able to come through with it. And I really believe in my heart that we have to work as a team. Architecture companies need to listen to the practitioners because they’re doing the work, and we have to listen to their expertise of how they can make it even better. So there was not a better formed relationship, I know this team that sat and lead the project felt blessed that we had the architects we had in Stantec.

- Suzanne Fox





Given the nature of this project the “visitors” really are the patients and their families who are described above. One would not really expect to see visitors in an Emergency Department who were not family. A visitor that the Stantec design team bumped into on a recent visit said it best when he discovered these were the architects; “*The design is beautiful and the service has increased immensely!*”

Triage Entrance

Upon entering the ED, visitors and patients are greeted by a volunteer at the information desk, and straight ahead is the Triage Desk.

Photos by Artez Photography



One of a series of questions in the survey issued to staff and visitors completed in April 2014.

How would you assess the quality of the environment within departments relative to staff and patient needs?

There is plenty of daylight throughout the facility.

There are good views outside of the facility.

The interior feels very connected to natural elements outside the facility.

The interior is very comfortable most of the time.

The facility provides good air quality with sufficient air circulation.

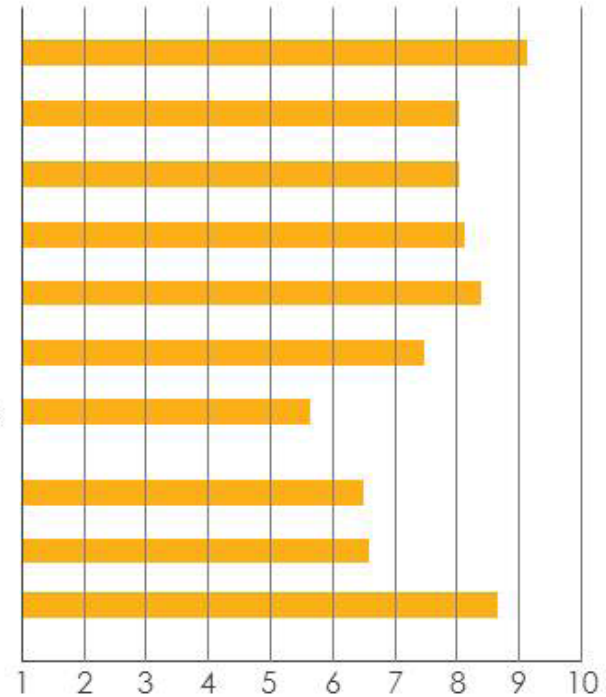
The temperature in the facility is generally comfortable.

The facility allows occupants to control conditions within their immediate environment.

Noise levels within the area do not disrupt patients.

Noise levels within the area do not disrupt staff.

The interior is attractive in appearance.



The Results

Since the project opened in October 2012 there has been rigorous measurements and documentation of the results/ outcomes of improved health, healthcare, and well-being; looking back also against the established goals and methodology.

The results after being open for one year told us:

- Total Encounters/ED Activity current vs. prior year-to-date is up +5% - “build it and they will come!”
- C-defficile infections have been reduced in half
- Sick time for staff is much less than previous year
- Overtime by year-end will be about 1/2 million dollars less than last year.
- Staff Time Loss Injuries rate has improved
- Patient rating of perceived care was very good by 90 % of patients and families surveyed
- Patient rating of feeling around privacy in the ED was rated positive by 75% of patients surveyed
- Patient rating of the courtesy of the ED staff was rated positive by 90% of patients surveyed
- Energy saving measures is saving estimated 1.1 million kilowatt hours of electricity per year, enough to power 100 homes for a year.

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