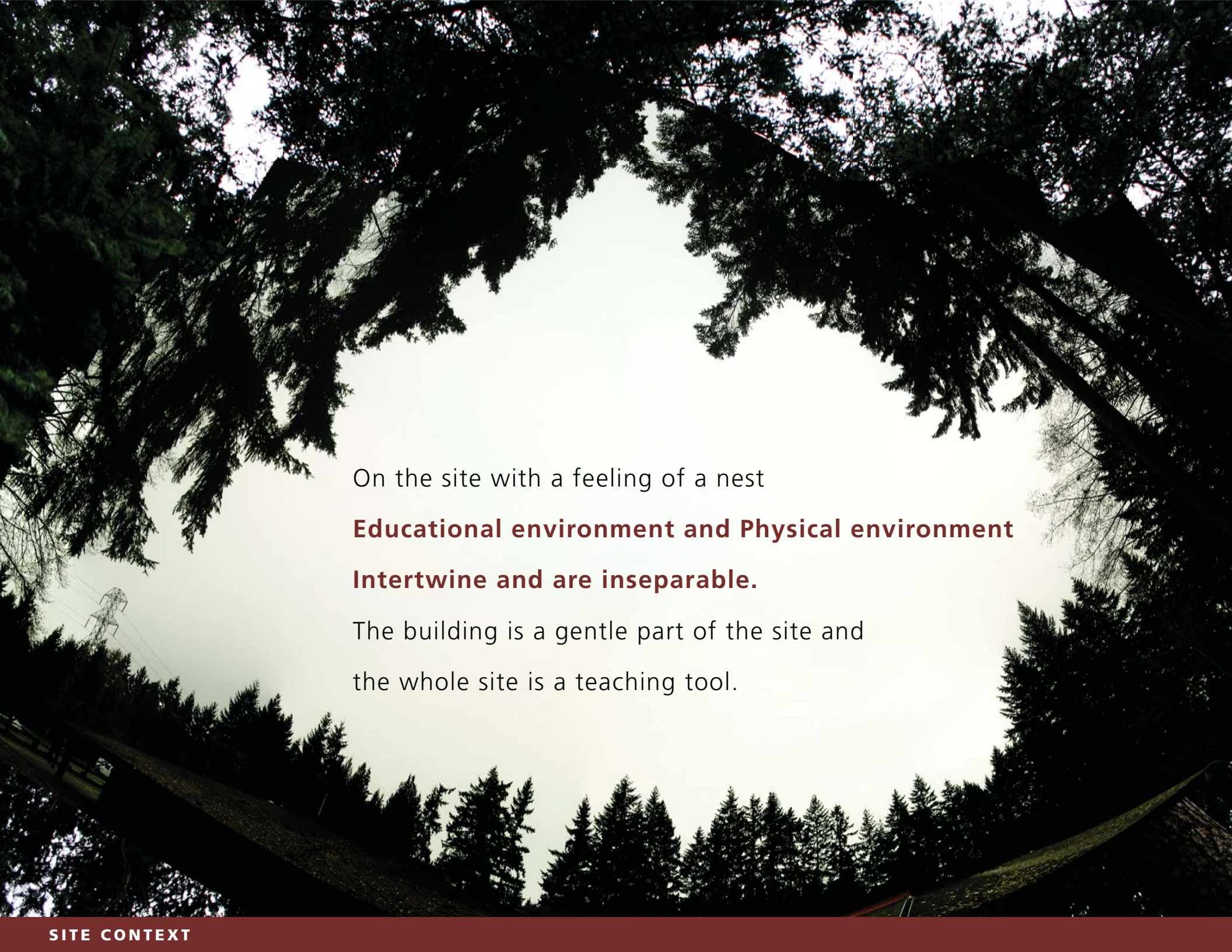


# Cherry Crest Elementary School

*a place to learn and grow in the shadow of tall trees*



South Elevation seen through the trees



On the site with a feeling of a nest

**Educational environment and Physical environment  
Intertwine and are inseparable.**

The building is a gentle part of the site and  
the whole site is a teaching tool.

# Unique Site Context

The special qualities of the site have long informed education and culture at Cherry Crest. These qualities set everyone's expectations to the achievement of exceptional opportunities.

Programming and goals developed in direct response to the beauty of the site





Entry to the site is a very hidden place in the long established residential neighborhood

Programming and Goals developed to project the “cultural and social heart” of this community.

*“We love our site, we do not love our current building”  
- community input*



Original school was a 45,000 SF one story building with very little connection to the outside



Wooded perimeter creates strong sense of enclosure and oasis.

## Scope:

- › 76,950 SF Replacement elementary school
- › 650 students
- › 10 acre site (5 acres dedicated to greenspace)
- › Adjacent 5 acre Park

## Budget:

- › Construction budget: \$24,000,000
- › Construction cost: \$22,838,769

## Philosophical Intent:

- › Welcome the community to the school
- › Extend learning beyond the classroom and across the site:

*Learning should happen everywhere*

# Participatory Design Process:

**It was paramount to the District to have a broadly inclusive planning process.** The District's desire was to engage all stakeholders and, from this diversity of input, to craft a single narrative that would be embraced by everyone. The community and their design committee were the authors of the themes of **connection to the site, collaboration, and learning can happen anywhere.**

Steering committee planning meetings included the following:

- › *Establishing lofty goals*
- › *School planning exercises*
- › *Discussing education philosophies*
- › *Discussing the best use of the site*
- › *Discussing students' experiential learning*
- › *Discussing formal and informal learning*
- › *Evaluating design explorations from the students' perspectives*





100 kW photovoltaic array produces energy that often goes back to the grid.

## School District Goals

- > *energy efficiency*
- > *enhancing environmental curriculum through educational use of sustainability*

The District desired a school that was energy efficient and inexpensive to maintain and operate. The school is a model of a highly energy efficient building on a small site. Eighty-five 300 foot deep wells located under the playfield provide heating and cooling by means of the school's ground coupled heat pumps. Super-insulated walls, with both exterior rigid insulation and spray-foam insulation in the cavity, provide an effective air-barrier, and along with an average of 7 inches of roof insulation, a highly efficient building envelope. Supplementing these measures, and making this school one of the most energy efficient schools in the state, is a rooftop array of 434 photovoltaic panels providing 100 kW of power, or approximately ten percent of the building electrical demand. During the last year, the building operated at



## Site and Building as Teaching Tools – Interactive Sustainability

Each class is fitted with occupancy and light sensors and switch controls allowing the individual LED fixtures to be dimmed continuously by room or by zone. Energy use is monitored by classroom pod and displayed on a monitor in the lobby, encouraging positive competition between the students and teachers in each pod to monitor and use energy wisely.



Many conceptual design sessions included discussion about how students move through the building, how they can best discover the beauty of their site even while they are inside of the building.

Circular building circulation was selected by the committee because it provides the highest experiential quality for the students, in addition to the functional benefits for the school as a whole.

Location of the library on the second floor with the bay window was favored for the interaction with the learning stairs below, but it felt a little bit compressed when it was immediately over them.

It was a parent on the steering committee who suggested moving the library 8' northwards, opening a gap to the outside and creating a quintessential experiential moment as you enter the library.

Good ideas did indeed come from everywhere and the design team immediately recognized the perfect contribution of this idea.

*“Create a sense of being **on the site** as opposed to **in the building**”*





Early conceptual plans presented to steering committee and broader school community

## Community Involvement

The steering committee spent significant time discussing the ways to connect the school to its environment. Consideration continued in the broader school community meeting where the group discussed benefits of each presented concept. One of the highlights of these meetings was when a young student in the group said:

*"It would be so cool to get on the roof."*

The merit of the roof classroom was immediately understood by the whole school community and the preferred building concept was settled.



Key planning goals set by the steering team, school district, school community and design team:

› **Blend formal and informal learning**

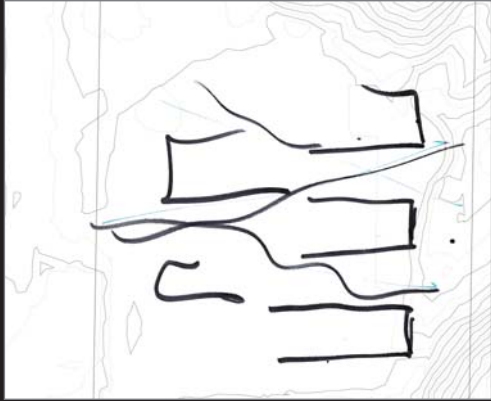
to provide a progressive 21st century learning environment

› **Enhance an environmental curriculum**

to take advantage of the unique beauty of the site by providing exciting outdoor educational opportunities,

› **Exceptional community engagement**

to create a welcoming environment for the highly engaged community



Space Flow



Weaving

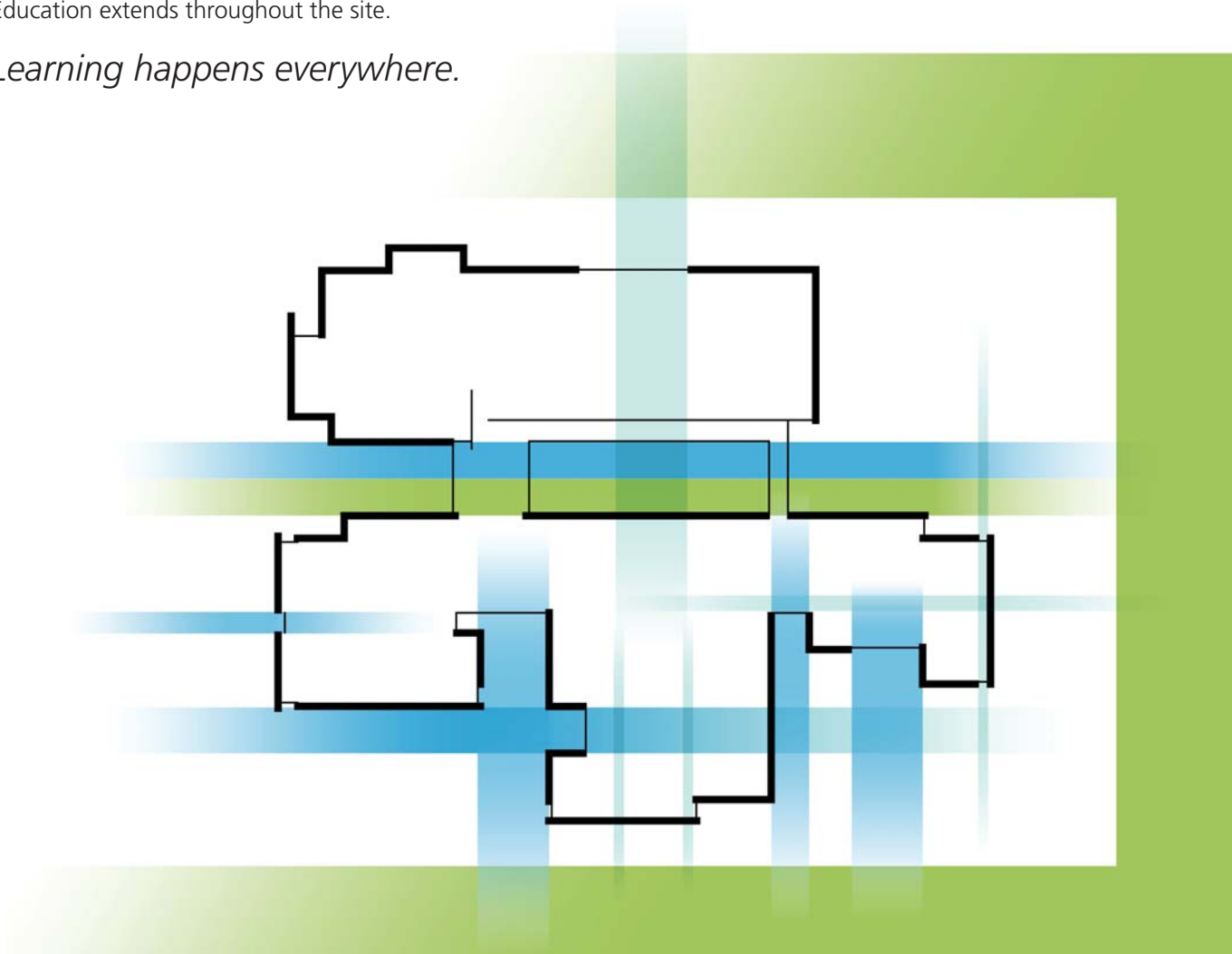


## Design Concept: Site Weaving

The design concept intertwines the site and building in a continuous flow; inside becomes outside and outside blends in through filtered light and layered views.

Education extends throughout the site.

*Learning happens everywhere.*



Site weaving happens through a wide spectrum of connections of different magnitudes, from major physical spatial relationships to personal framed views.

## Informal Learning

The building was programmed to maximize opportunities for learning outside the classroom. This included interior as well as exterior spaces with the goal: "Learning Happens Everywhere." Attention was given as well to the idea that learning happens in different sized groups and individually as well as recognizing the multiple modalities of learning.

The program provided for large group spaces such as the learning stairs and courtyard, team and small group sized spaces in the shared areas and outdoor wetlands and bridges, and small group or individual spaces. These latter are often found spaces; under stairs, at a bench, the library reading nook, and quiet but safe spaces that the students find for themselves.

Students conduct experiments on how long it takes a parachute to land from the stair landing. Teacher in white sweater measures the length and asks students questions after every run to figure out why one time duration was longer than for the other parachute.



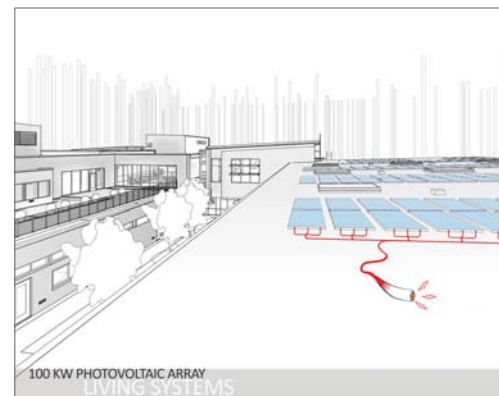
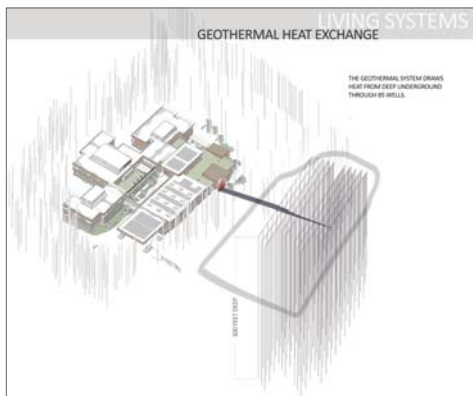
# Learning with the Environment

Sustainability plays a critical role, supporting both experiential and programmatic criteria. The design sets as its goal creation of a building and site that provide exceptional opportunities for environmental learning and connection to nature, both for students and those simply visiting the site.

The holistic design strategies used throughout the school result in excellent energy performance (EUI of 13.86 during this last year of operation). They also participate in the educational process. Signage throughout the site and building explains design strategies that help save energy. Storm water handling becomes an integral part of the daily experience of the school through the sounds of moving water and rain, while also providing educational opportunities at the green roof, water chains, and rain swales.



Outdoor classroom serves as a quiet nature observation area.



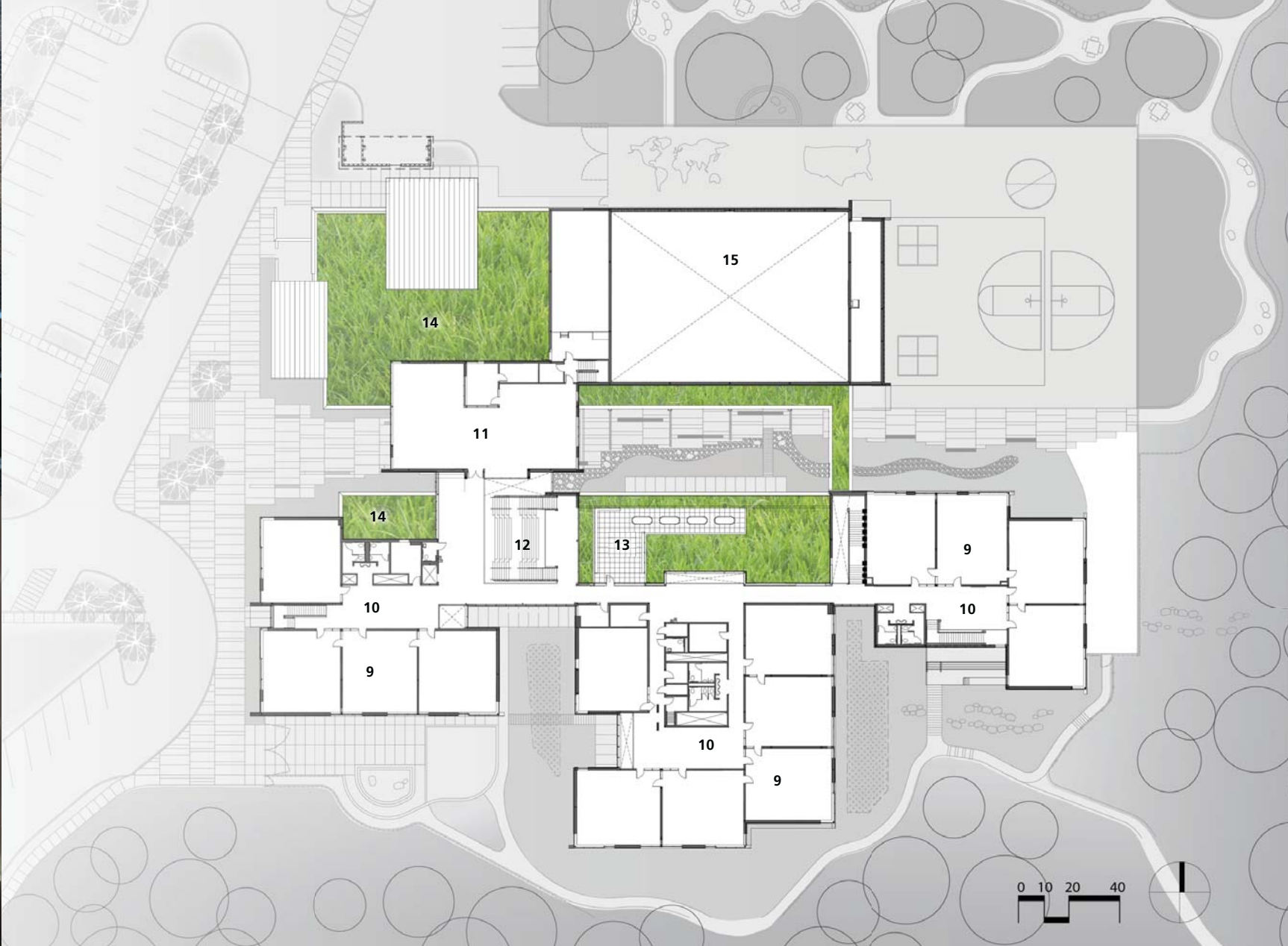


First Floor

- |                    |                                |                           |
|--------------------|--------------------------------|---------------------------|
| 1 Administration   | 8 Kindergarten                 | 14 Green Roof             |
| 2 Stage            | 9 Classroom Pod                | 15 PVs on Roof (100 kW)   |
| 3 Cafeteria        | 10 Shared Space                | 16 Rain Garden            |
| 4 Gym              | 11 Library                     | 17 Outdoor Learning Steps |
| 5 Music            | 12 Learning Stair              | 18 Outdoor Play Area      |
| 6 Art              | 13 Green Roof/Learning Terrace |                           |
| 7 Early Child Care |                                |                           |

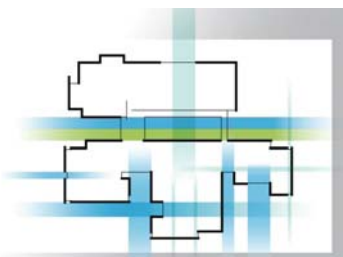


Indoor / Outdoor Connection

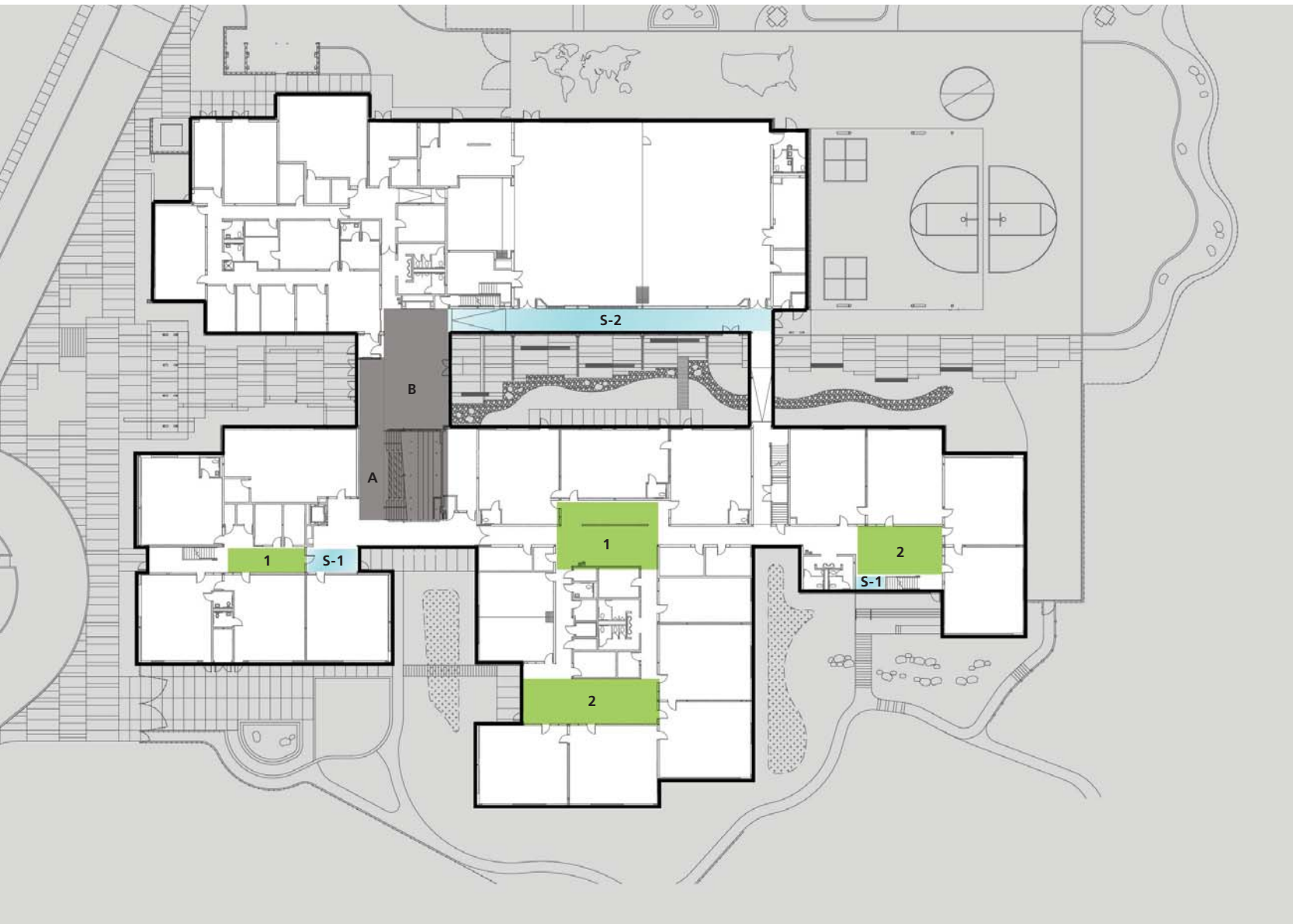


## Second Floor

- |                    |                                |                           |
|--------------------|--------------------------------|---------------------------|
| 1 Administration   | 8 Kindergarten                 | 14 Green Roof             |
| 2 Stage            | 9 Classroom Pod                | 15 PVs on Roof (100 kW)   |
| 3 Cafeteria        | 10 Shared Space                | 16 Rain Garden            |
| 4 Gym              | 11 Library                     | 17 Outdoor Learning Steps |
| 5 Music            | 12 Learning Stair              | 18 Outdoor Play Area      |
| 6 Art              | 13 Green Roof/Learning Terrace |                           |
| 7 Early Child Care |                                |                           |



Indoor / Outdoor Connection



### Learning Opportunities

- 1 Small group shared spaces
- 2 Large group shared spaces

### Learning & Socializing

- A Learning Stair
- B Entry / Lobby

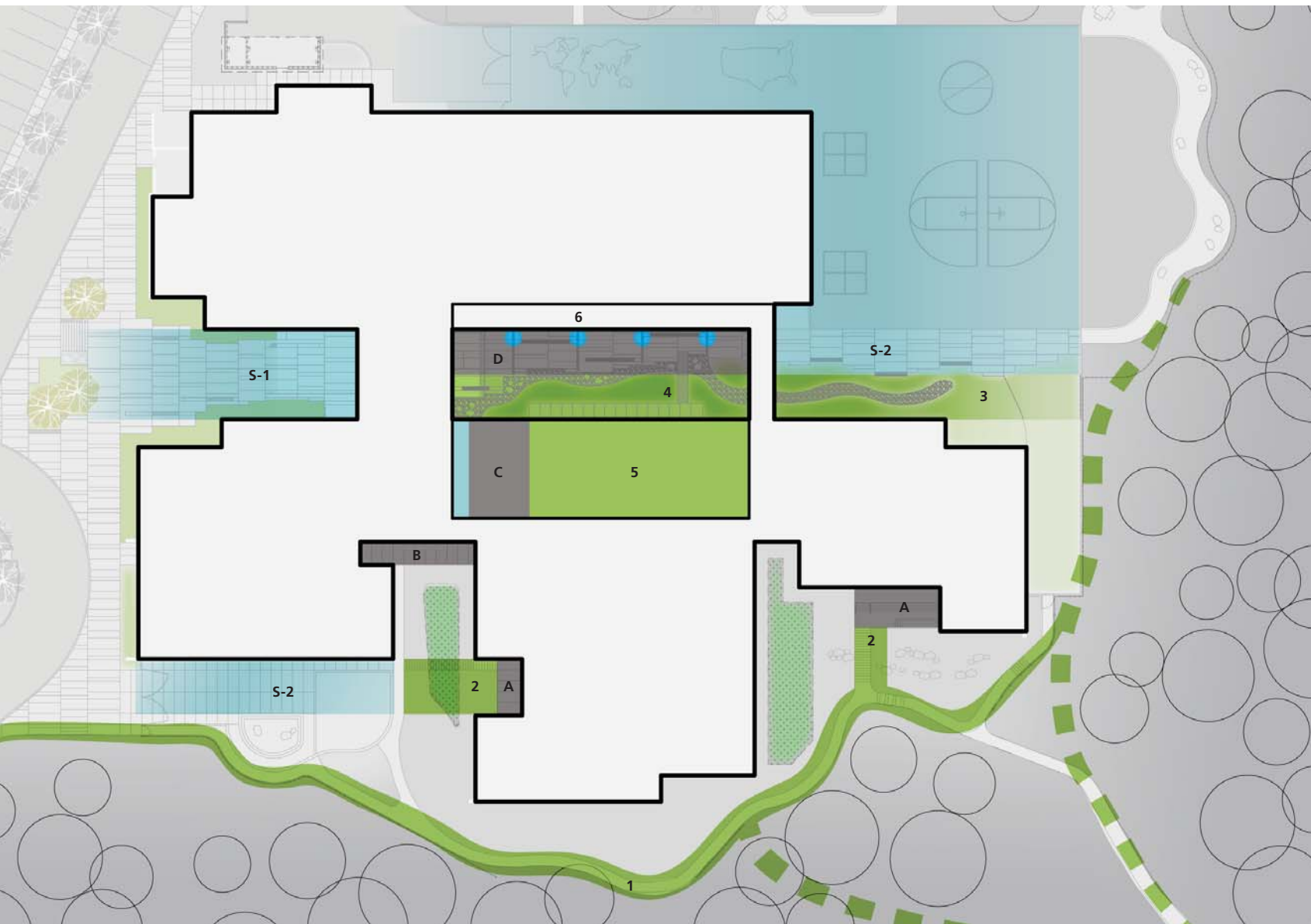
### Serendipitous Encounters/ Informal Learning

- S-1 Individual learning space
- S-2 Sun hall

## Expanding Curriculum: Indoor Learning

The school was programmed to expand learning opportunities outside the classrooms across the whole building





### Learning Opportunities

- 1 Nature walk: planting, forest, ecosystem
- 2 Bridges over raingardens: storm water treatment, water ecosystem
- 3 Landscape field: planting, irrigation, evaporation
- 4 Creek, planting, water paths – natural storm drainage
- 5 Roof terrace/garden: green roof, storm rain evaporation, forest observation
- 6 Rain chains

### Learning & Socializing

- A Outdoor steps/platform
- B Quiet bench
- C Roof terrace
- D Courtyard

### Serendipitous Encounters/ Informal Learning

- S-1 Entry Courtyard
- S-2 Play Area/Gathering Space

## Expanding Curriculum: Outdoor Learning

The site was programmed to expand learning opportunities across the whole site.





**KEY GOAL:**

## › Blend formal and informal learning

The school fosters collaboration and user interaction at all levels. The weaving of spaces and the varied qualities of these spaces encourage a variety of educational opportunities while putting learning on display. Observation of their peers by students and teachers builds interest and initiates collaboration.

Adaptability was an important goal in the design of the informal learning spaces.

The roof plaza can accommodate staff for lunch, or a class for hands on activities. The Learning Stairs have been used for musical performances and by the homework club. They have hosted student presentations, and groups of visitors. Shared spaces and quiet corner benches alike are well utilized not only during school hours, but also after hours when the building remains quite active with school clubs and other activities.



Learning stairs and the lobby have been used for a variety of group sizes and purposes

**KEY GOAL:**

## › Blend formal and informal learning

The schools' educational culture includes a lot of outside involvement, such as short notice presentations from guest speakers and impromptu whole class gatherings and events. It was critical to have a space for such activities, which could include 60-100 students, without disrupting other scheduled programs.

The Learning Stairs have seen all kinds of use, including an after hours harp recital.



## Shared Spaces

Shared spaces have connection with the outside both for daylighting and for educational purposes. On the lower floor, teachers can take students outside on the bridges and paved areas to enhance the environmental curriculum.





## Shared Spaces

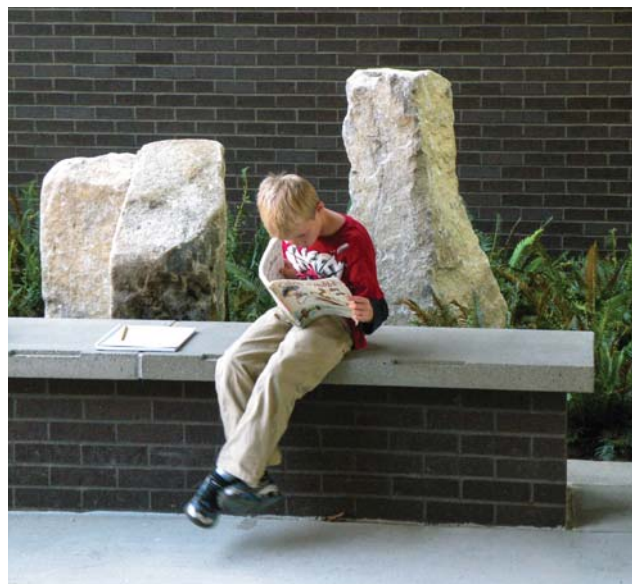


Sizes, adjacencies and transparency of spaces forming the pod provide ample flexibility for small groups and project based learning. Students and teachers are encouraged to collaborate in varied settings, including outdoors.

## Individual Spaces

The library nook provides an area of quiet and refuge while maintaining a connection with the activities of the school

In spite of being deep in the space, there is a strong visual connection to the wooded perimeter.



Individual spaces, both programmed and serendipitous, happen across the whole site







After hours students in the Boys & Girls Club program personalize the courtyard for their use

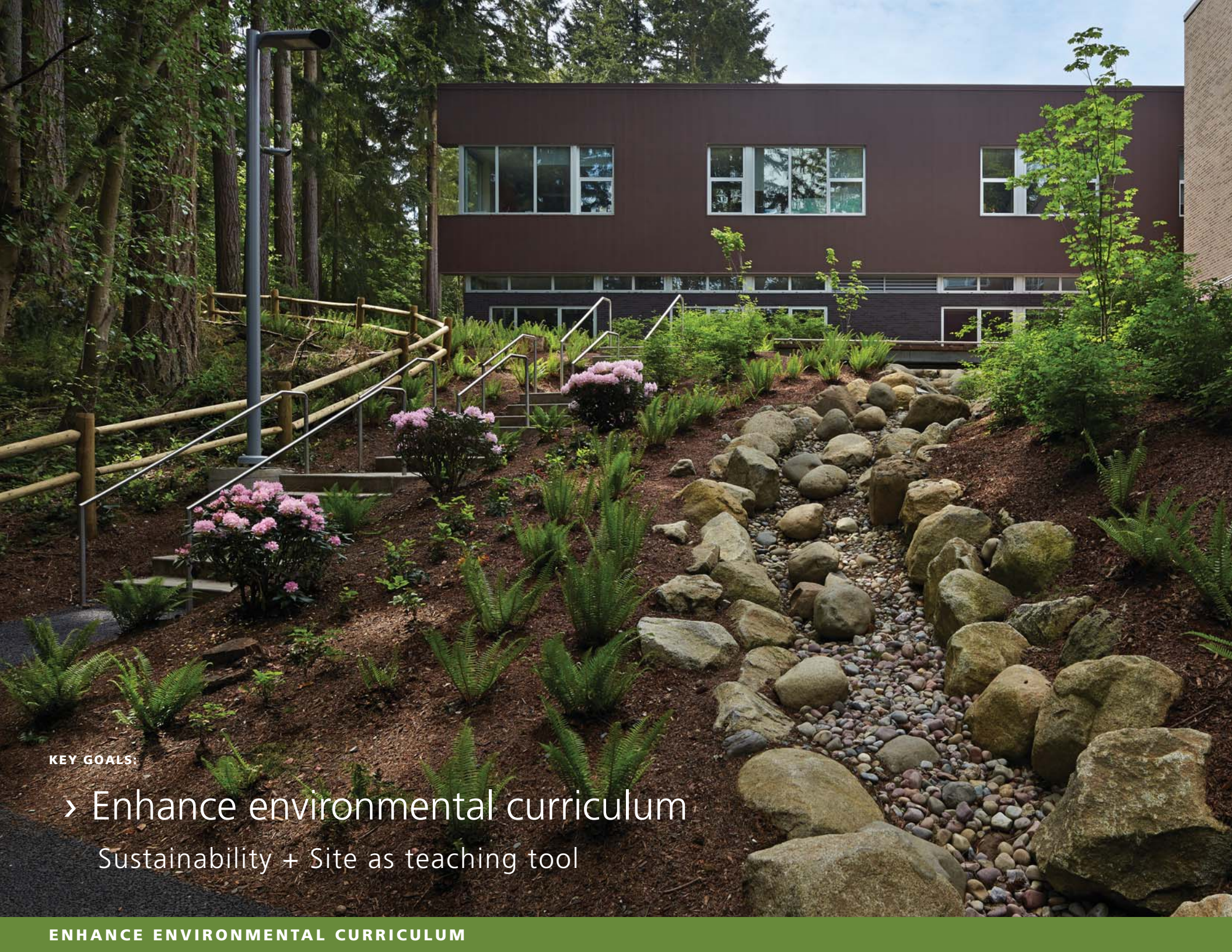
“While I was at the school observing school use, I witnessed a group of kids entering the courtyard. I was surprised by the enthusiasm of a young student leading several of his classmates and yelling,

*‘Onto the bridge!’*

They have personalized this place for their learning task.”

STEERING COMMITTEE GOAL:

*Learning should happen everywhere*



KEY GOALS:

- › Enhance environmental curriculum  
Sustainability + Site as teaching tool

# Enhance Environmental Curriculum:

## Sustainability

Students have embraced the sustainable strategies visible in the design.

At the school grand opening, student ushers enthusiastically explained the concept of raingardens to their grandparents.

A bridge over the rain garden is a teaching moment. Relocated stumps preserve the memory of lost trees.





## Site and Building as Teaching Tools + Interactive Sustainability



Planter use has increased every year.

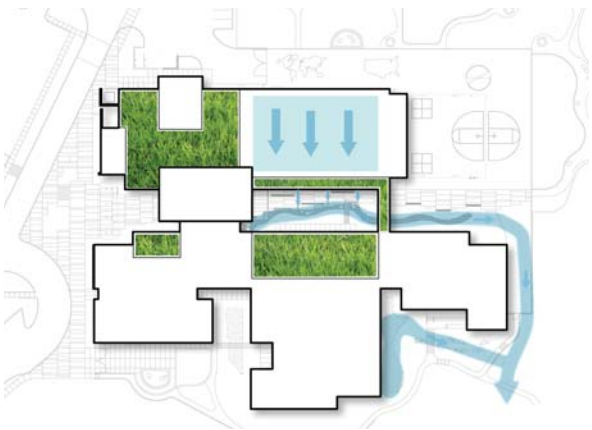
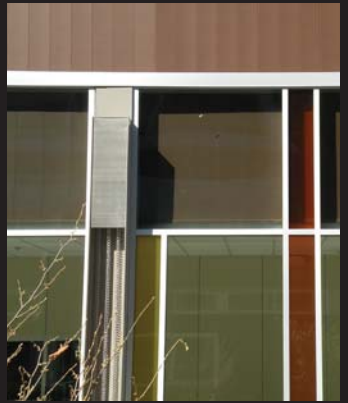


Teachers have added movable outdoor furniture for their breaks and impromptu meetings.

**Roof Terrace** allows one to observe the full impact of the wooded perimeter. It is a space for relaxation, for quiet study or for meetings and impromptu collaboration.

Teachers have been gradually expanding learning opportunities on the terrace, from art drawing and nature observation to the use of planting beds and the green roof for environmental topics.





The Path of Water is an integral part of the site and building experience. From the green roofs to the creek in the courtyard, the path of water is woven into the natural drainage of the site.



**KEY GOAL:**

› Exceptional community engagement

The mass of the building is broken down to a scale relating to the surrounding residential neighborhood and creating a welcoming face for the community.



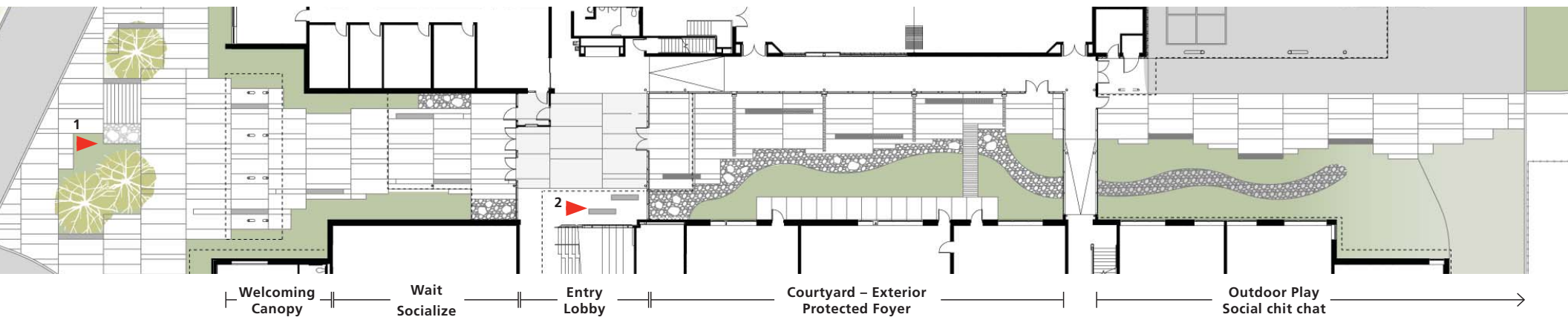
1

## Welcoming Community Use

Continuity of the space flow was a critical part of the site and building design.



2







The community started holding events before the landscaping was completed.

Community access to the school is also encouraged by the large accommodating public canopy at the front door, the lobby and the Learning Stair. Before and after school as well as during school hours, parents congregate in both indoor and exterior spaces to greet their neighbors.

The design provides ample opportunities for formal and informal community gatherings.



Parent-organized "passport club" event during the school day



The lobby and Learning Stairs are designed so that they can function together for multiple groups at the same time, giving the school and community an ability to react to the impromptu needs of the moment.

**KEY GOAL :**

## › Exceptional community engagement

The Learning Stairs and lobby have proved to be exceptional spaces for a variety of uses by a wider school community, for PTSA events and purposes, staff impromptu meetings and the occasional outside group visiting the school.



KEY GOAL:

## › Exceptional community engagement

The school's wider community enhances social and educational opportunities for the students. It is critical that the design provides spaces that can be flexible for many scheduled and impromptu uses.





## The school is an active community amenity long after the school day ends

The school encourages a wide variety of educational and community use, staying busy well into the evenings and accommodating daily community use of the site. The school includes an Early Learning Center that operates independently providing daycare services. A before-and-after care program is also provided at the school through the local Boys & Girls Club. Utilizing the Learning Stair space, the Cafeteria/Gym, Courtyard and the Art Room, they provide project, play, and homework/tutoring opportunities for the students.



The Learning Stairs being used by a visiting music ensemble



Community use by morning joggers.



Fields being used by community for youth sports teams.

## Community Site Use

Heavy community use of the site is not limited to school functions only. This use includes daily jogging and dog walking on the trail system, as well as evening and weekend use of the fields and the school playground areas and play structures.



New school design defines a clear neighborhood path around the building.

# The Results

To better understand how the new building is working for the District and all of the stakeholders, post-occupancy evaluations have been conducted by both informal and formal methods. Informal methods have included observation and discussion. Formal feedback was gathered through Post Occupancy Surveys. The surveys were designed to measure the accomplishment of the early planning goals.

Color glass changes on south facing wall allows learning about sundial in an informal setting





## Post Occupancy Surveys

At the end of the first year of occupancy, two formal online surveys were given to the building and District staff. The first survey solicited feedback on how well the design reflected the goals of each group and on how well the school facilitated their goals of collaboration and of learning outside the classroom. The second survey focused on the sustainable features, how they were working, and if teachers and facilities personnel understood and were using these systems properly.

A majority of the school's teachers responded to these surveys along with classified staff, custodians, district facilities personnel, and administrators. Survey feedback from all user groups was overwhelmingly positive with large majorities either agreeing or strongly agreeing with the following statements:

- › *The building truly reflects the culture and spirit of the school and community - 94%*
- › *There is a good amount of natural daylight in the building – 100%*
- › *The school building effectively supports teaching and learning – 86.7%*
- › *The site design effectively accommodates outdoor learning – 77%*
- › *The school is a fun place to work and learn – 96.5%*



## Informal Feedback

Informally, we have continued to visit the school on a regular basis to talk to and receive feedback from educational, administrative, and facilities personnel. We have also tracked the overall energy performance of the school, collecting data on annual energy production and calculating annual energy usage (EUI).

*“Today I walked Patrick to school, through the woods, and across the little meandering paths... and thought, only in the PNW with the support of an incredible school district like this, could a group of people do something like THAT to a school. It belongs in Sunset magazine.”*

— Parent of a Cherry Crest Elementary School student







## Summarizing lessons learned

Feedback from all users groups on the site has been overwhelmingly positive. Their satisfaction with the school is expressed in both their overall experience of being there, and the specific fulfillment of the goals for collaboration and expanding learning outside the formal classroom setting. The quality of daylighting and the connections between building and site are often cited as positive attributes of the school for teachers and students alike. Teachers also responded positively to the sustainability survey and indicated a real commitment to using the systems effectively. As a result of the sustainability post occupancy survey, the architects clarified the posted "Sustainable Use Guidelines" in each classroom and revisited the use of shading and lighting controls with the teachers.





**OVERALL IMPRESSION**



A community path along the wood's edge reveals a prospect opening, like a meadow along a mountain hike.



At one of the public meetings, a student asked,

“Could we have a treehouse  
in the woods?”

“I was the parent representative on the Cherry Crest design steering committee in 2010-2011. The process of developing the “right” building for our site and community was very collaborative. Design team enabled our group to feel engaged in the design process, even though most of us had limited design experience. They were very interested to learn about our school community and our neighborhood and spent many hours visiting the site, attending community meetings and exploring our wants and needs. We felt ourselves to be an essential part of the design team, as they were always respectful of our thoughts and ideas. We are all proud to have worked together with the design team to create the amazing building we now enjoy. ”

- Parent Member of Steering Committee





The school embodies the experiential quality of architecture. It is designed to make one feel not so much “in the building” as “on the site”. Building and site are woven, one into the other, in a pattern that slowly reveals itself as you move through the spaces. The school and site comprise an integrated experiential environment intended to stimulate both the curriculum and student engagement by offering a variety of unique learning spaces. These learning spaces differ in scale and character and encourage a unique overlap of educational and social, formal and informal interaction.