

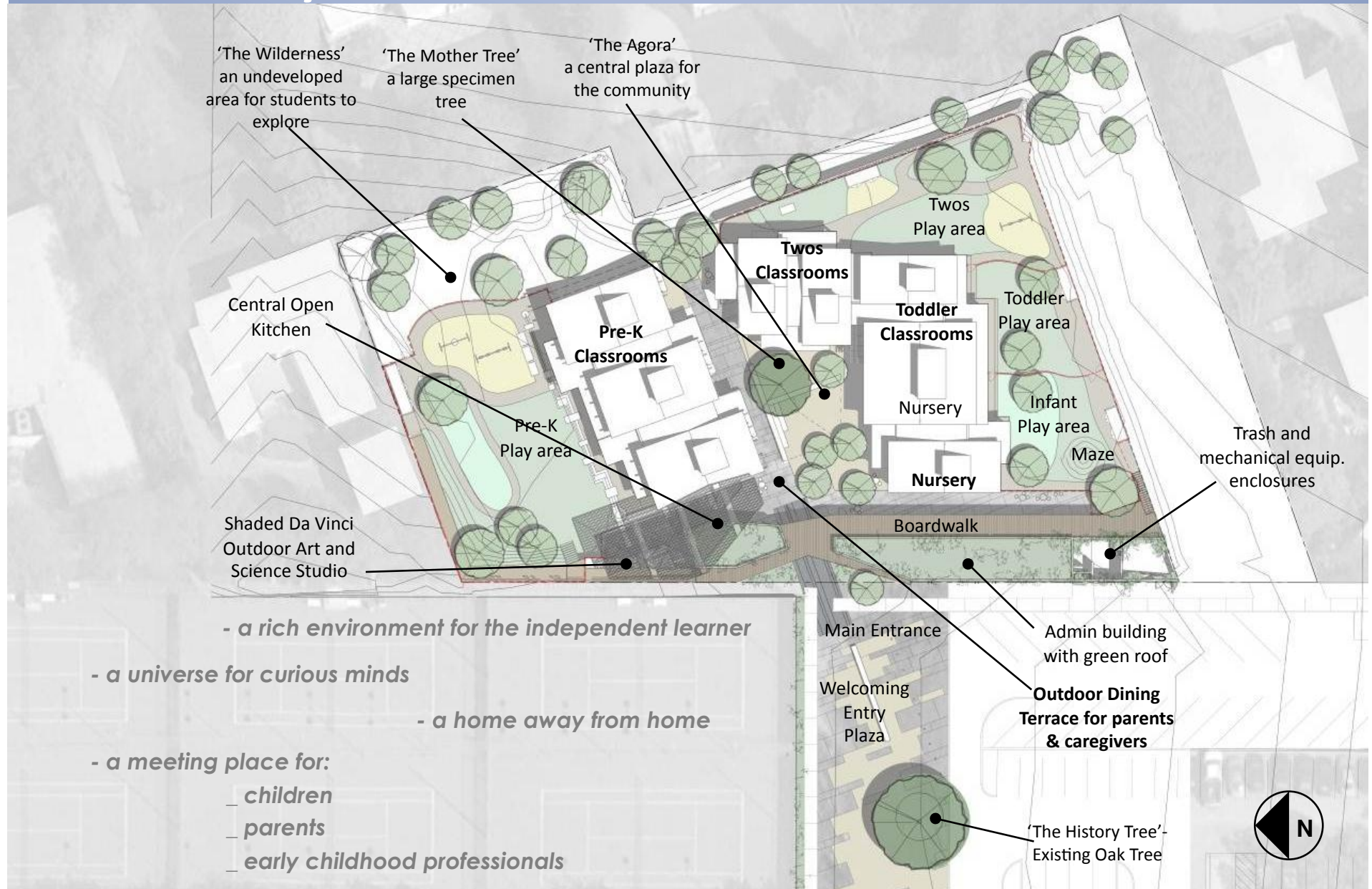
2013 Exhibition of School
Planning and Architecture
California Institute of Technology
Child Care Center
(Nursery to Pre-K)
Pasadena, California
Building Concept Design Entry

Early Childhood & Pre-K School



Pre-K Play area looking west

Early Childhood & Pre-K School



Agora Views:

Top: view from entry to 'Agora'

Bottom: plan diagram of "Agora"

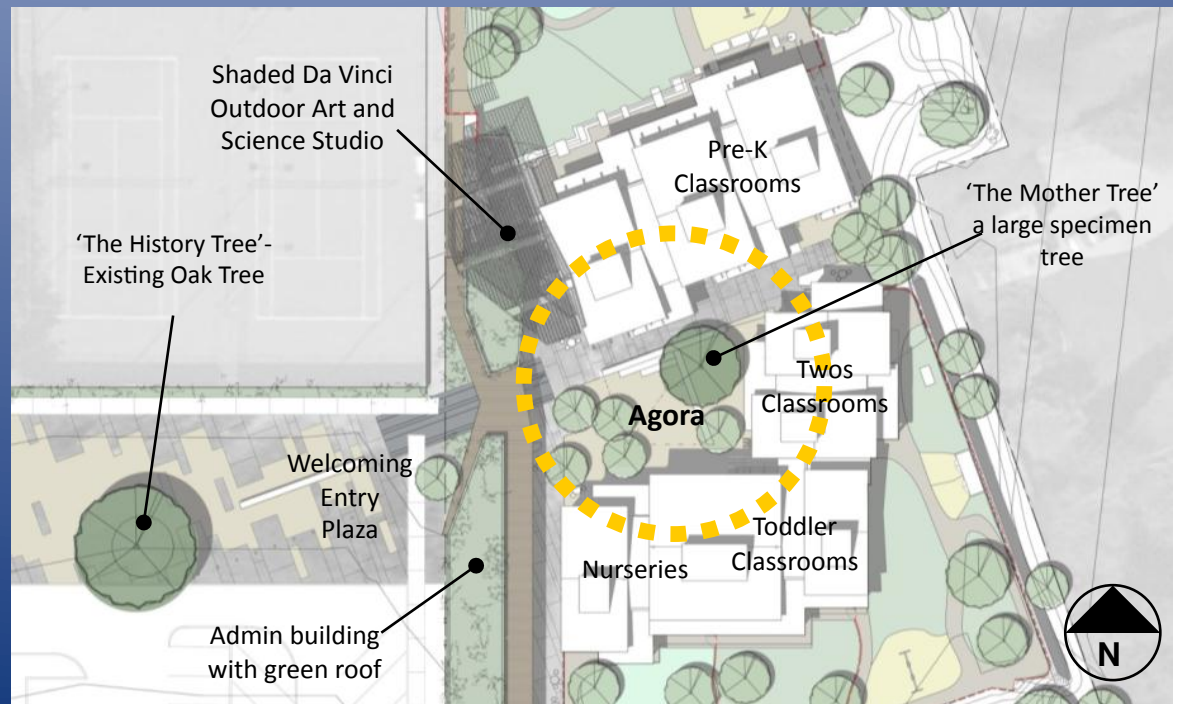
Community Environment:

The *Welcoming Entry Plaza* provides a space for parents and teachers to linger on their way in and out to the village-like school. To the left of the entry, is the shade canopy of the *Da Vinci Art and Science Outdoor Studio*. The older children can look down from a viewing platform slightly raised above the parking area to view both arriving and departing parents and the activity of the science pavilion.

Passing the open, welcoming reception area to the right, parents and children enter the '*Agora*' - a courtyard surrounded by 'houses' containing classrooms and commons areas. It is a meeting place for parents, caregivers, administrators and children. '*The Mother Tree*' is a special gathering place within the Agora. It is a place for story telling and small meetings. Around it is a grove of smaller trees with low benches, tables and chairs.



*The 'Agora' –
a central plaza for community.*



Outdoor Community Environment Views:

Top: Porches connect classrooms and provide outdoor learning space for independent, group and wet/messy learning activities

Bottom: Shaded Outdoor Da Vinci Art & Science Studio adjacent to Pre-School Yard

Community Environment: *Continued...*

From just inside the gate to the “Agora”, you can see the bungalow style front porches of all the classrooms of every age group that create an intimate child-friendly scale. The porches provide a clear sense of arrival for each ‘house-like’ classroom, with benches to sit on during the transition upon arrival. Each classroom has a glass entry door with each age group’s animal icon that identifies it to help children develop their way-finding skills.

As part of the village concept, the classroom bungalows have been arranged in a spiral from the youngest – infants and toddlers through the two’s to the preschoolers. Their outdoor play areas can be occupied separately, but are joined together to provide a larger, more flexible space for the more adventurous and active toddlers, with the infants settled in a more protected corner.

An open connection between classrooms and yards

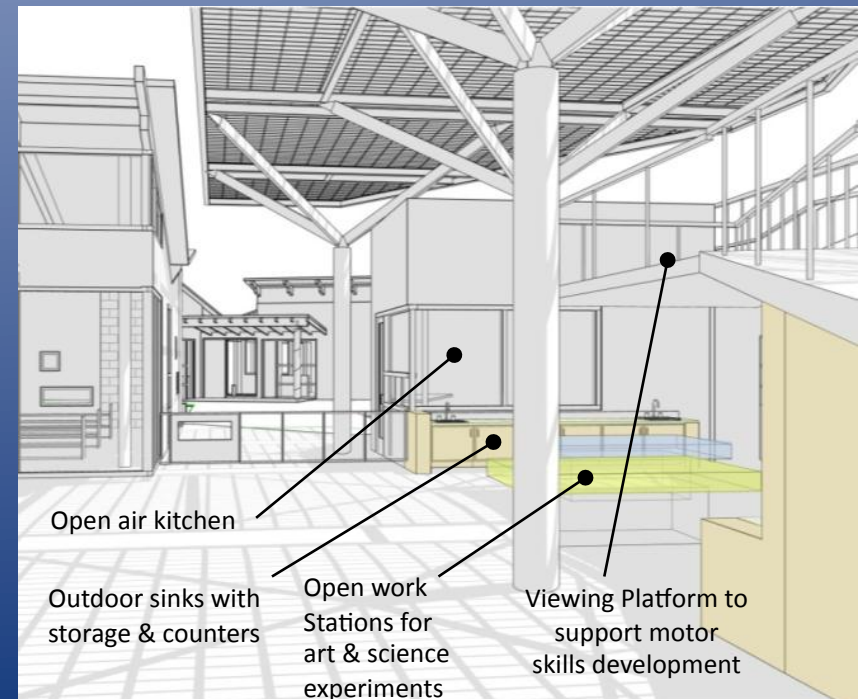


- large sliding doors open corners
- separate doors for restroom access
- good sight lines into classrooms and restrooms

A comfortable place to say Good Bye for the day



- benches
- good bye window
- views into classrooms



Learning Environment Key Goals:

- Embody **the spirit of scientific inquiry** that drives the college campus within the new childcare center.
- Recognize and accommodate children as **independent learners**.
- Support **age-appropriate academics** as part of the learning experience.
- Preserve the **residential atmosphere** that is a hallmark of the current Children's Center and establish a comfortable, nurturing "**home away from home**".
- Create a **seamless indoor / outdoor environment** that challenges and supports children, allowing them to experience something beyond their everyday experience.



Home-like Classrooms:

A light filled classroom with a vista to nature is part of the home-like learning environment. Furnishings and finishes in a variety of non-primary colors and textures as well as thematic murals contribute to an environment for educational effectiveness. Personal storage cubbie zones act as a transition space in between classrooms and allow teachers to see across them to collaborate more easily.

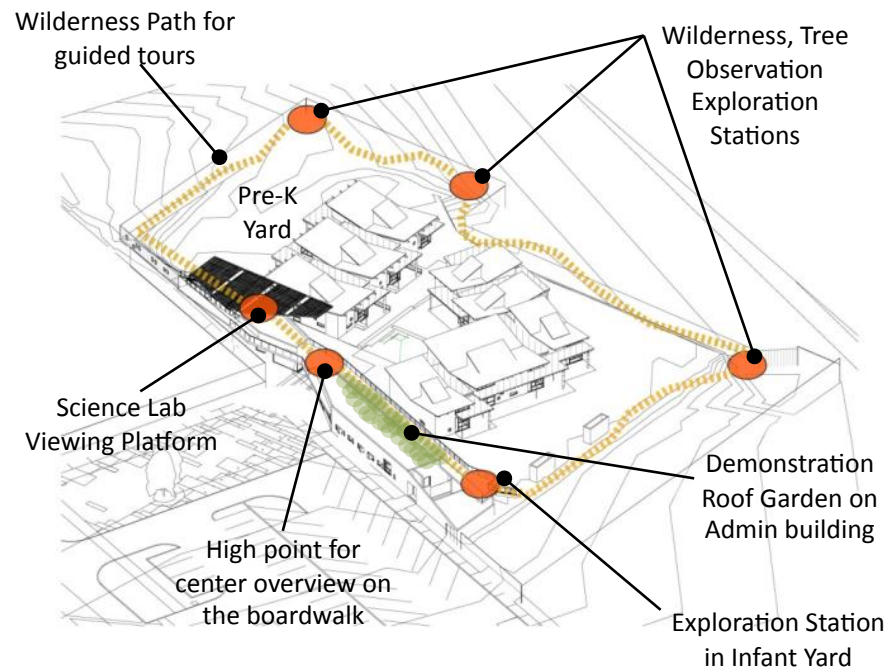
Learning Environment: *Continued...*

All yards have varied elevations for motor skill development, outdoor art areas, structured and un structured activity areas. Beyond the fenced areas are the less structured zones defined by trees and shrubs, gullies and boulders. These 'natural' areas are interconnected by a path of trails which create a complete circuit around the perimeter of the site and provide an opportunity for supervised exploration.

The path traverses the lowest gullies and highest platforms on the site, allowing children, caregivers and parents to *completely experience the building as teacher and the environment as instructor* and allow learning through observation and action in many different and enriching ways.

The preschoolers, with the largest outdoor play space requirements face north into a sweeping play area which is anchored at one end by the Science Lab and the other by an undeveloped, wilder patch of garden available for occasional, supervised exploration.

The boardwalk is the highest part of the exploration station diagram allowing students to take in the site and develop their cognitive mapping skills



Exploration Station Circuit Diagram

Physical Environment:

The houses which contain the classrooms of each age group are conceived of as high performance, sustainable learning environments which maximize glare free natural light, coming from three or more sources; are finished in sustainable, non-toxic materials, are acoustically balanced for audibility and diffusion to avoid unwanted reverberations and echo, and allow maximum freedom of movement from inside to outdoor play spaces year round.

For a good part of the year, these rooms can take advantage of natural ventilation through operable windows providing cross ventilation and clerestories, which allow warm air to rise and escape during the summer months.

Natural light and ventilation come from a variety of operable sources – glazed front doors and sidelights, special viewing panels in thick walls – low down for the children, clearstories up at the roof and large sliding glass panels which connect the classrooms to patios and outdoor play areas beyond.



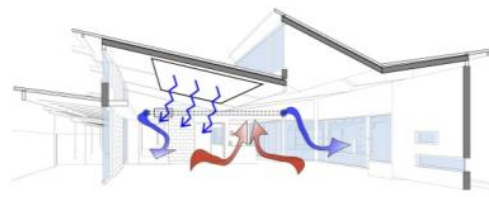
Natural ventilation
intake low, exhaust high



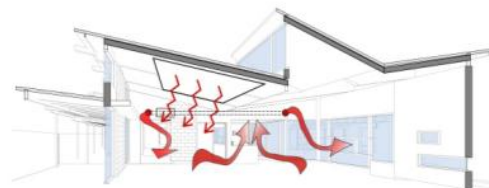
Natural ventilation
with fan assistance



Natural ventilation
with fan assistance and
radiant cooling



Mechanical ventilation
with fan coil unit located over
restroom and radiant ceiling
panels in cooling mode



Heating Mode
a hybrid of fan coil unit and
radiant ceiling panels

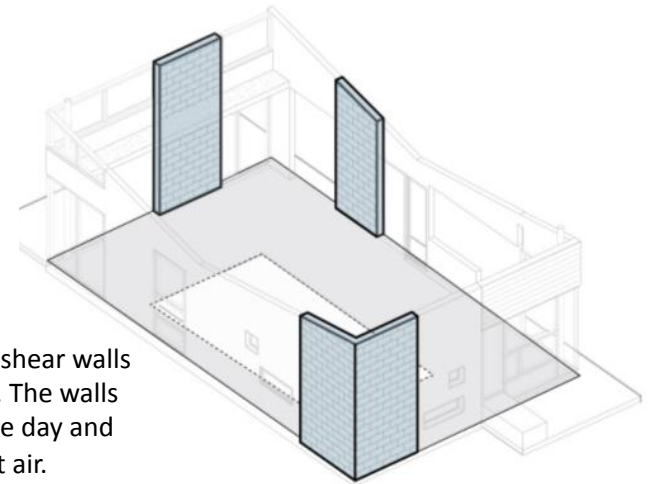
Thermal Comfort Modes

Physical Environment : *Continued...*

The walls have a variety of finishes which reflect sustainable strategies – tackable cork linoleum surfaces which are environmentally and acoustically friendly, plaster to reflect light, concrete block to provide thermal mass so the buildings absorb the cool of the night and offset cooling requirements as the days warm. Some of the windows equipped with patterned perforated screens are left open at night to cool the interior and take advantage of the thermal mass of walls and concrete floors.

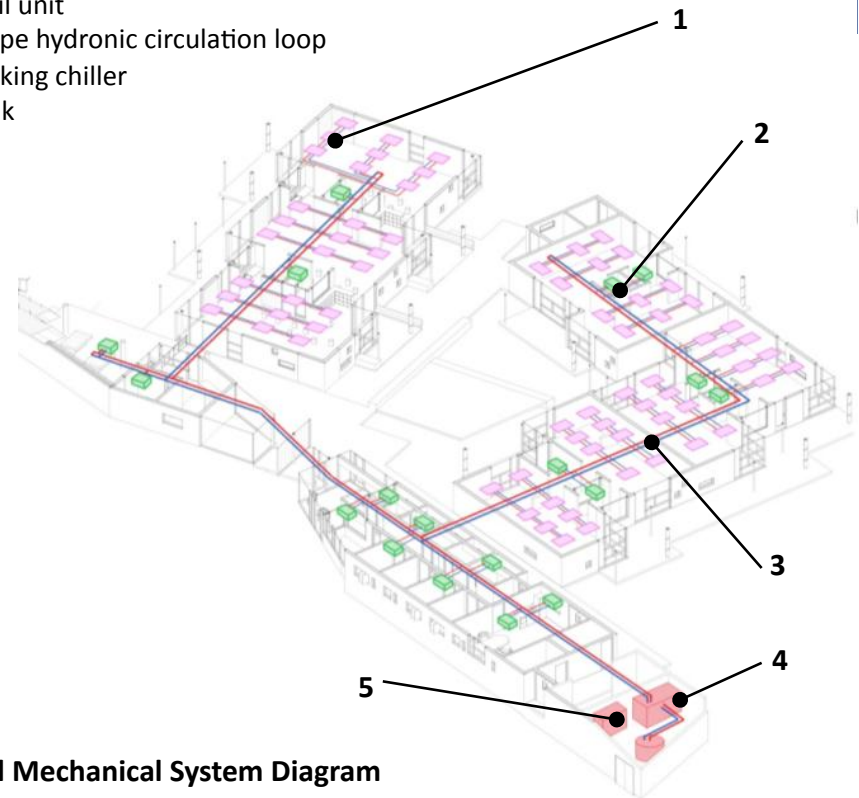
Radiant steel panels hung from the ceiling provide heating or cooling according to need. Taking advantage of either a high efficiency central chiller, using ice storage to offset high energy usage in combination with pumps and small boilers or solar thermal panels (rooftop installation at each classroom) to provide both heating and cooling of water for the radiant ceiling panels, the radiant system can operate with the doors to the play yard wide open while still maintaining energy efficiency. With active on-site alternate energy sources, the operation of radiant systems can be carbon neutral.

Thermal Mass



The mass of the masonry shear walls is exposed on the interior. The walls will absorb heat during the day and release it to the cool night air.

- 1- Radiant Ceiling Panel (Architectural Chilled Sail)
- 2- Fan coil unit
- 3- Two pipe hydronic circulation loop
- 4- Ice making chiller
- 5- Ice tank



Overall Mechanical System Diagram

Planning Process: Narrative

The following checklist of items act as design guidelines to ensure the planning of the school can create the best environment for children to learn. The diagram on the right maps how some of these items are addressed in the Pre-K Classrooms which each have different themes so a child moves from room to room throughout the day, yet still has his/her own personal storage and home base room.

Social Play Space

- Children have several opportunities for social play throughout the space

Storage

- Storage is adequate and accessible to children

Furniture

- There is a great variety of easy-to-move, size-appropriate furniture.

Gross Motor Skills

- There is a dedicated play space for children both in- and out-of-doors

Restorative Spaces

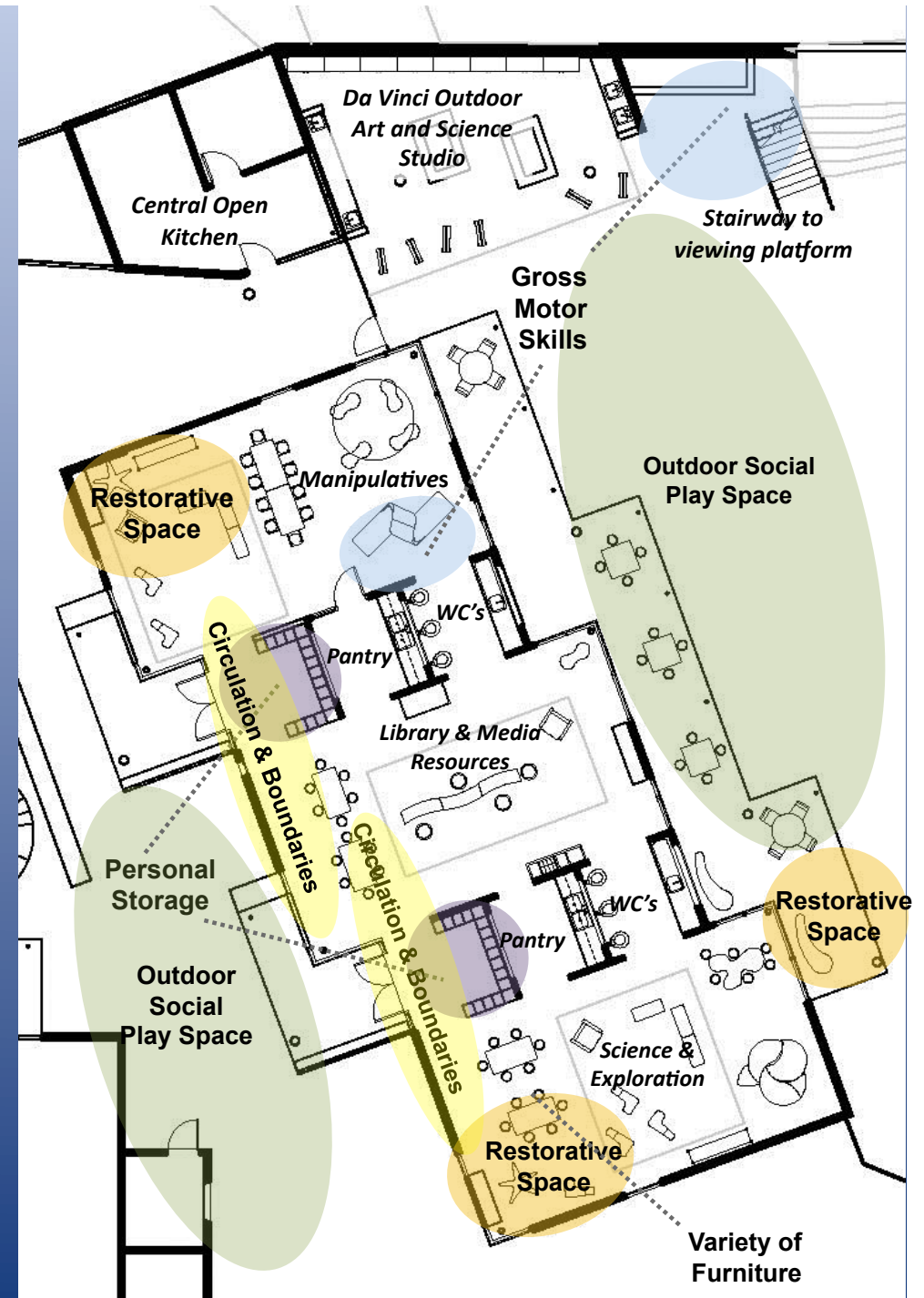
- There are a few spaces for children to relax and restore

Privacy

- Space provides some opportunity for privacy

Ownership

- Children have ownership over storage and work spaces



Planning Process: *Checklist continued...*

Personal care

- Access to child-sized restrooms and wash areas within the space and in outside play areas

Color, Material, Texture

- Variety of color and material including thematic murals
- Furnishings provide diversity of color and texture

Environmental Control

- There are some opportunities for children to manipulate furnishings and their environment

Adjacencies

- Adjacent activity areas are compatible

Circulation & Boundaries

- There is enough space between activity areas for children to navigate without disrupting

Lighting

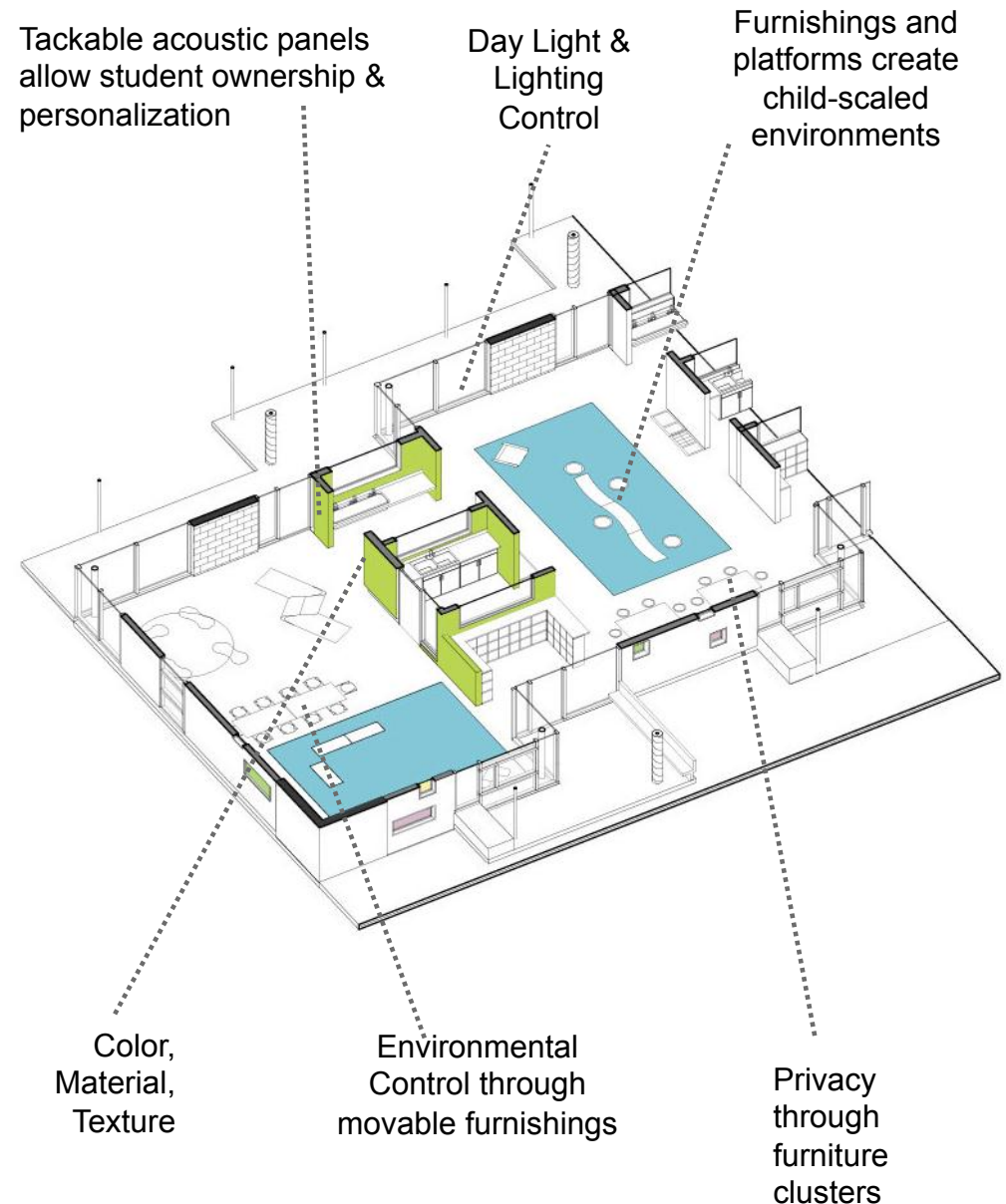
- There is a variety of lighting and access to natural daylight

Scale

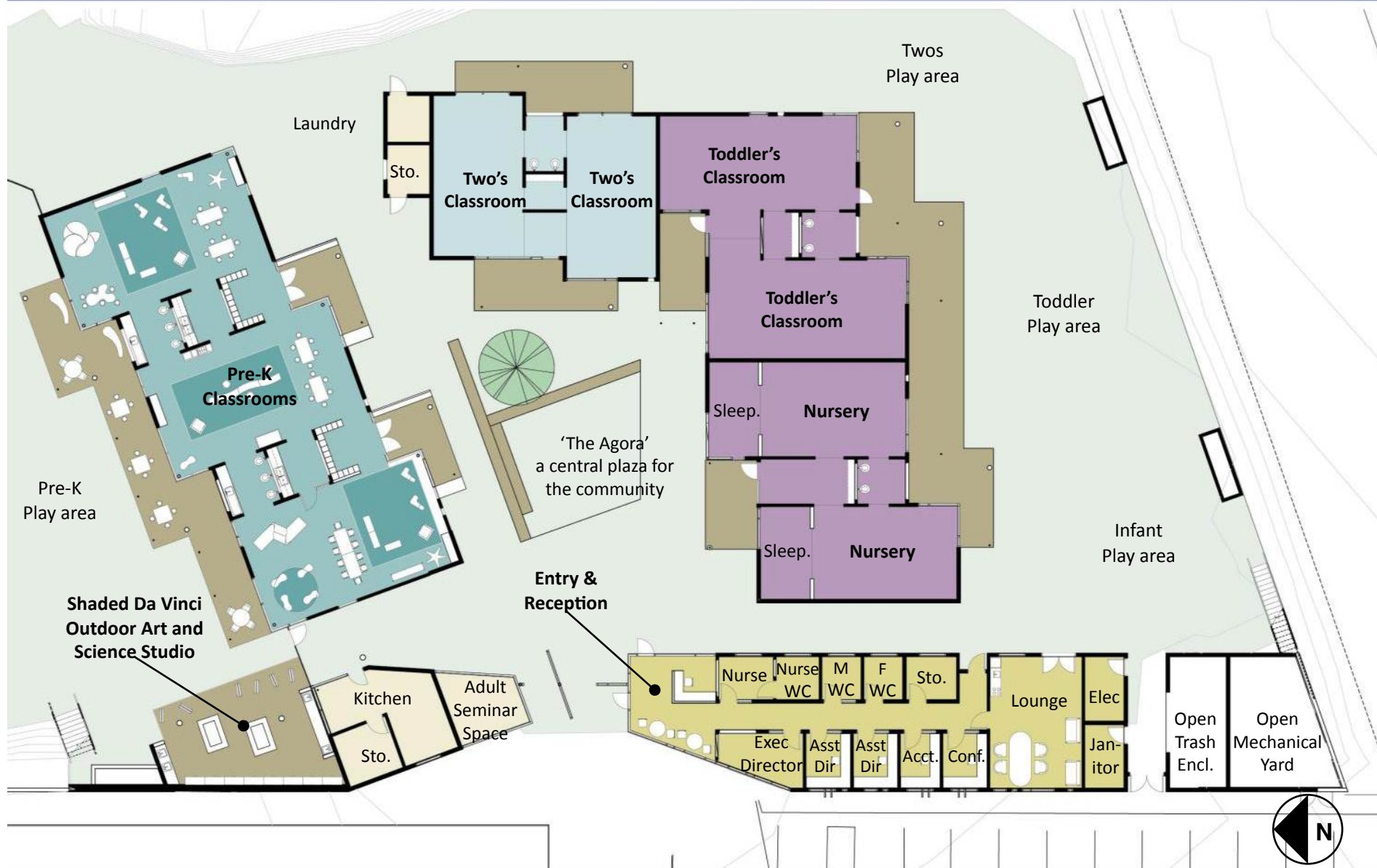
- All furniture and learning materials are at appropriate heights for children
- Small platforms create level changes throughout the spaces

Personalization

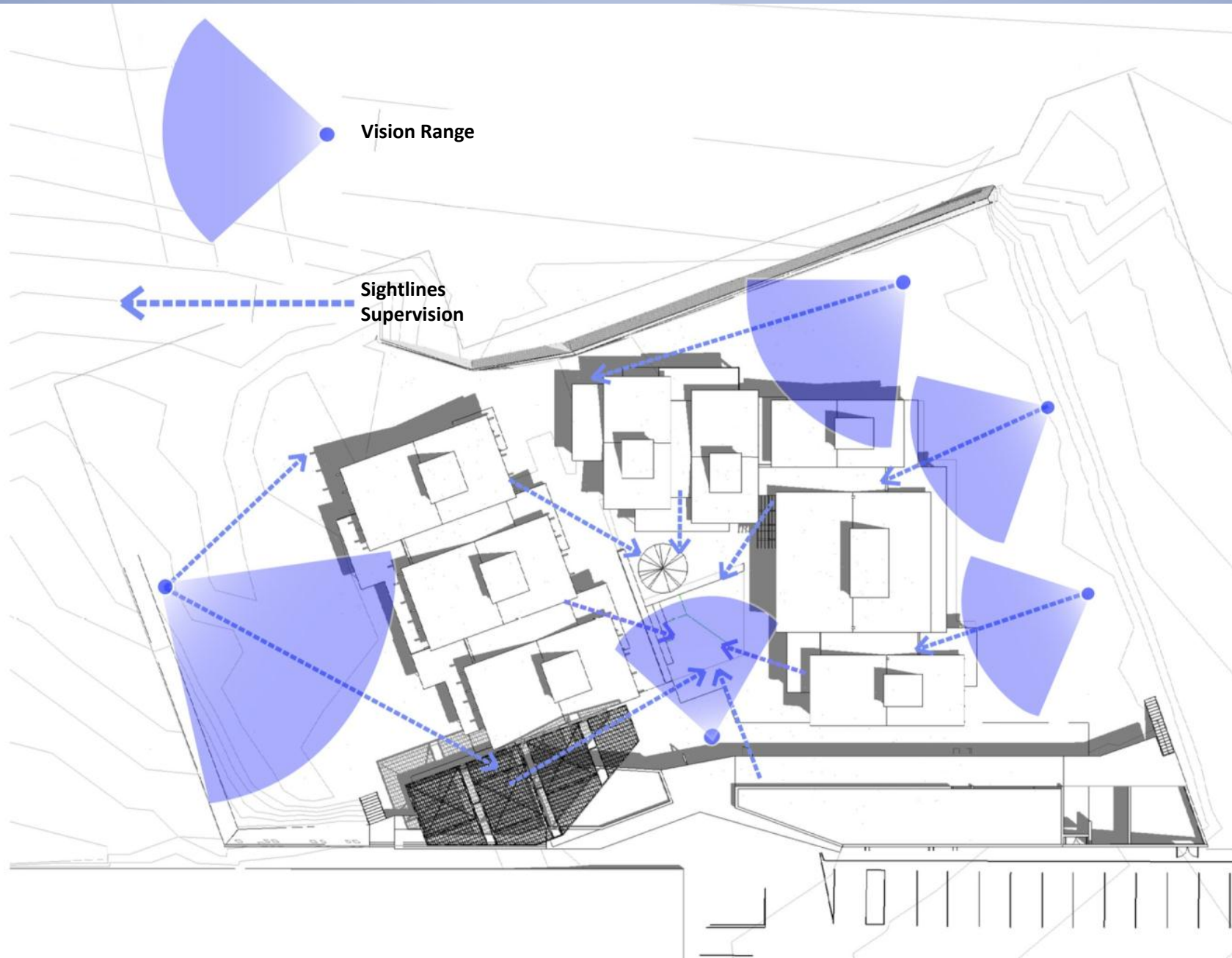
- Children have opportunities to display work and achievements



Floor plan

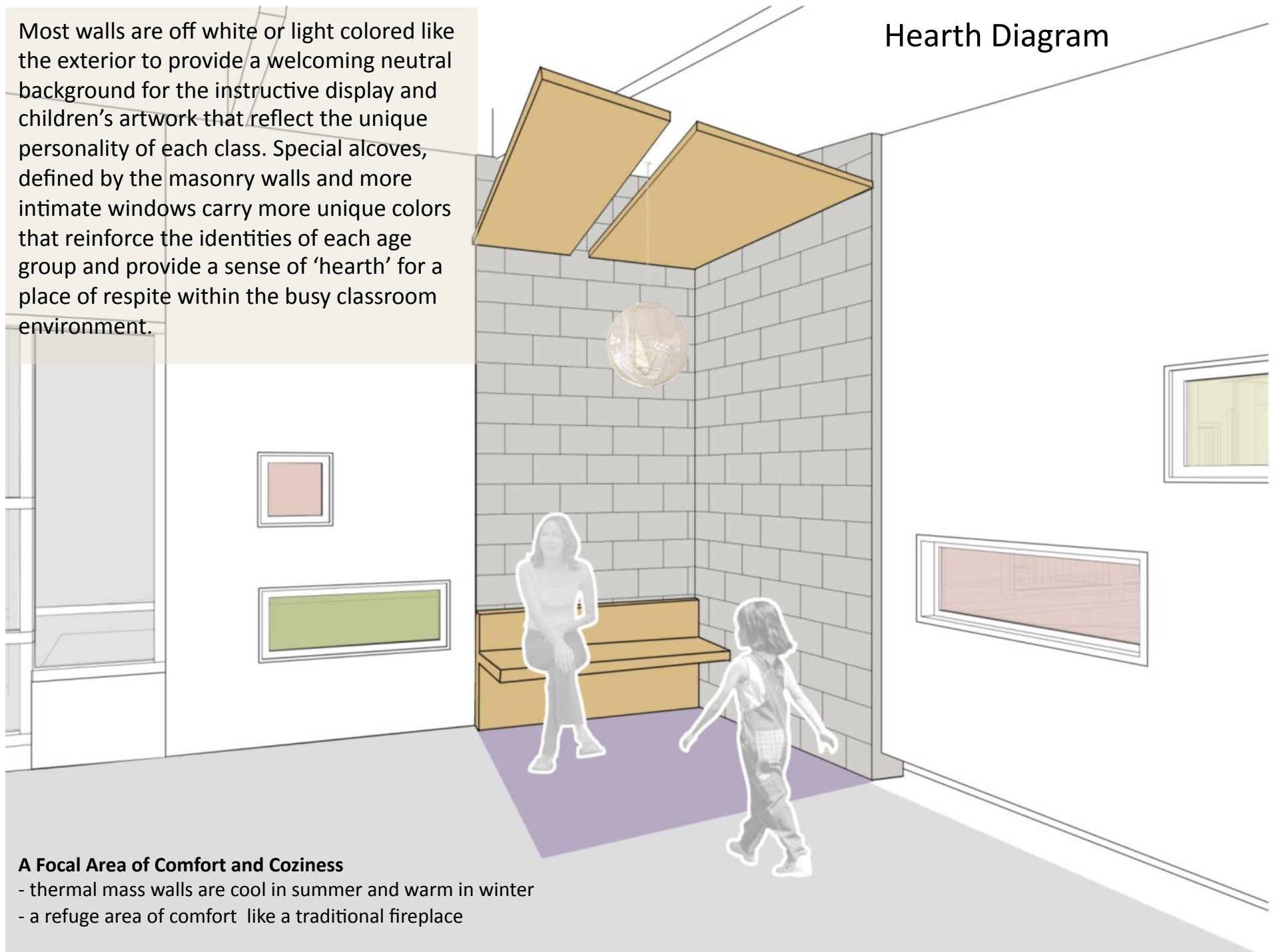


Visibility & Supervision Diagram



Most walls are off white or light colored like the exterior to provide a welcoming neutral background for the instructive display and children's artwork that reflect the unique personality of each class. Special alcoves, defined by the masonry walls and more intimate windows carry more unique colors that reinforce the identities of each age group and provide a sense of 'hearth' for a place of respite within the busy classroom environment.

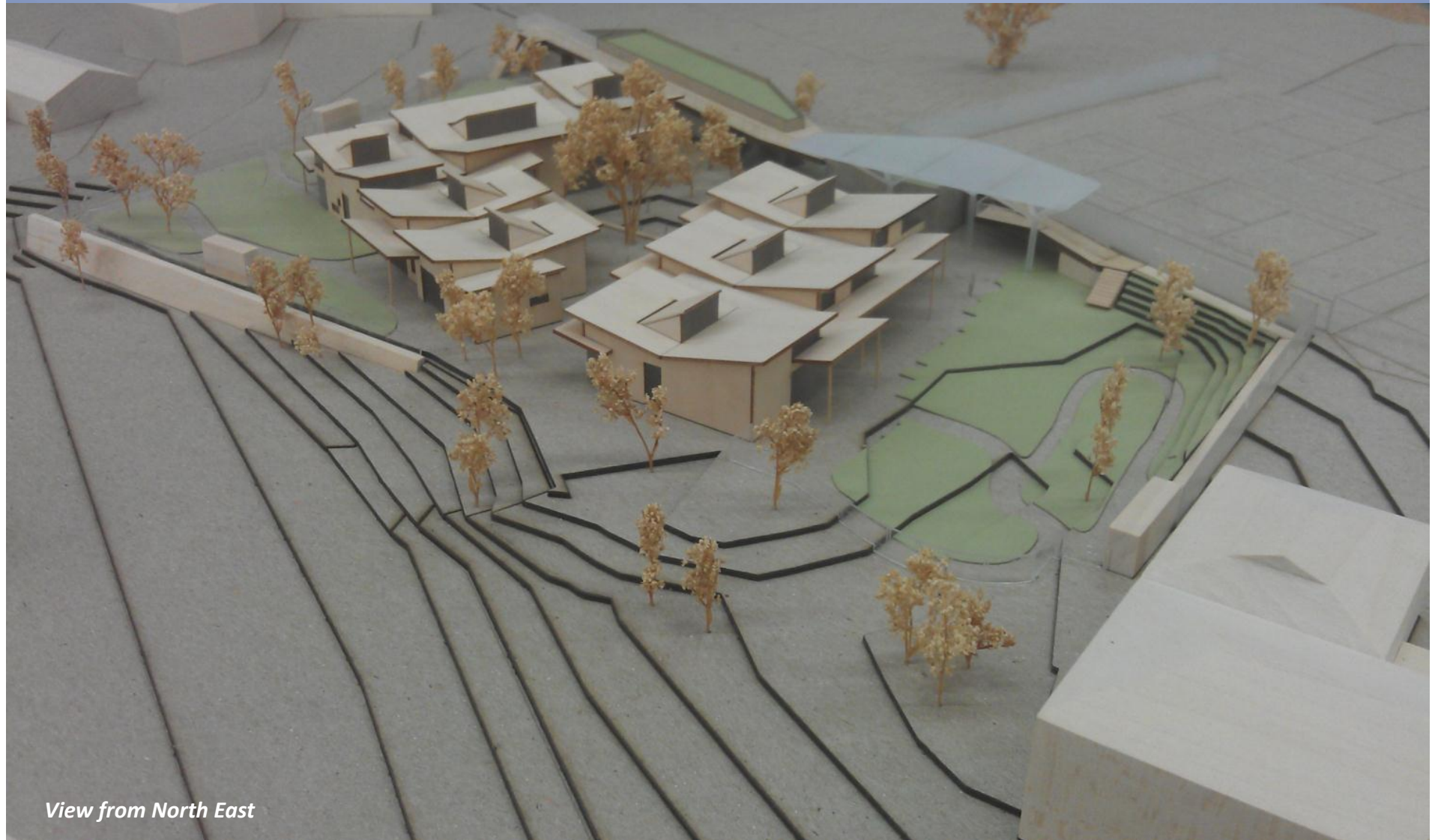
Hearth Diagram



A Focal Area of Comfort and Coziness

- thermal mass walls are cool in summer and warm in winter
- a refuge area of comfort like a traditional fireplace

Massing Model



View from North East

Welcoming Entry



Main Entry on West

Exhibition of School Planning and Architecture

Project Data

Submitting Firm :	Harley Ellis Devereaux
Project Role	Architecture & Mechanical, Electrical, Plumbing Engineering
Project Contact	John R. Dale, FAIA, LEED AP
Title	Principal
Address	601 South Figueroa Ave. Suite 500
City, State or Province, Country	Los Angeles, CA
Phone	213.542.4500

Joint Partner Firm:	
Project Role	
Project Contact	
Title	
Address	
City, State or Province, Country	
Phone	

Other Firm:	Child Educational Center, Caltech
Project Role	Child Development / Outdoor Classroom Expert
Project Contact	Eric M. Nelson, M.A.
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Address	140 Foothill Blvd.
City, State or Province, Country	La Canada, CA 91011
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Construction Firm:	DPR Construction
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City, State or Province, Country	Pasadena, CA 91105
Phone	626-463-1265

Exhibition of School Planning and Architecture

Project Details

Project Name	California Institute of Technology Child Care Center
City	Pasadena
State	California
District Name	California Institute of Technology
Supt/President	Professor Jean-Lou Chameau
Occupancy Date	Design competition (not applicable)
Grades Housed	Nursery (infants) to Pre-K
Capacity(Students)	128
Site Size (acres)	1
Gross Area (sq. ft.)	10,250
Per Occupant(pupil)	77 s.f.
gross/net please indicate	10,350 s.f. gross / 9,895 s.f. net
Design and Build?	yes
If yes, Total Cost:	\$5M (project cost), \$4M (construction cost N.I.C. FF&E)
Includes:	Everything except site dev't & freestanding FF&E
If no,	
Site Development:	\$620,000
Building Construction:	
Fixed Equipment:	
Other:	
Total:	