



DESIGN CONSIDERATIONS - CHILD CARE FACILITIES

TRAINING | 10.23.2024

Dorman Associates
ARCHITECTURE + INTERIORS



LIIF Early Care and Education

Low Income Investment Fund (LIIF) Early Care and Education

Low Income Investment Fund (LIIF) has been a leading Community Development Financial Institution since 1984, committed to supporting and uplifting communities across the United States.

LIIF Early Care and Education seeks to support child care providers and the development of child care facilities that promote the health, well being and sustainability of the children, families and communities that we serve.



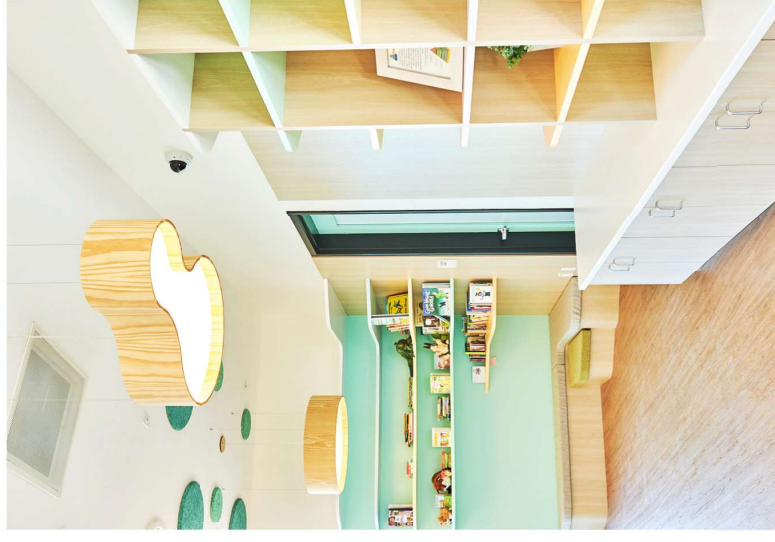


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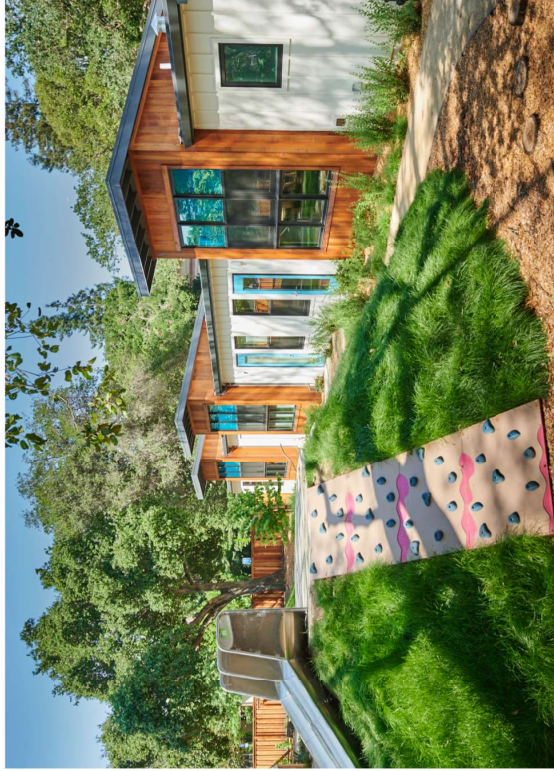
- BASICS OF DESIGN FOR CHILDREN
- BASICS OF INTERIORS

3. IMPROVEMENTS:

- SMALL CHANGES, BIG IMPACT
- LARGER SCALE CHANGES
- REMODEL FOR QUALITY

4. PLAY AREAS

5. HEALTH, CLIMATE & RESILIENCY



INTRODUCTIONS



Chris Dorman
AIA



Ava Rahimi Farab
ASSOC.AIA, LEED AP BD+C, WELL AP

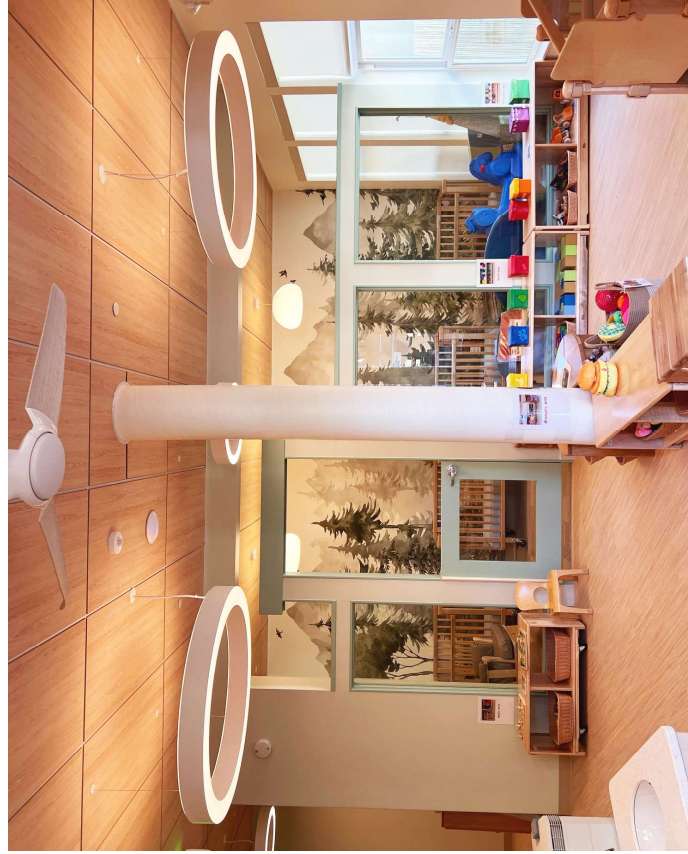
FUNDAMENTALS

BASICS OF DESIGN FOR CHILDREN

ESSENTIALS & BEST PRACTICES

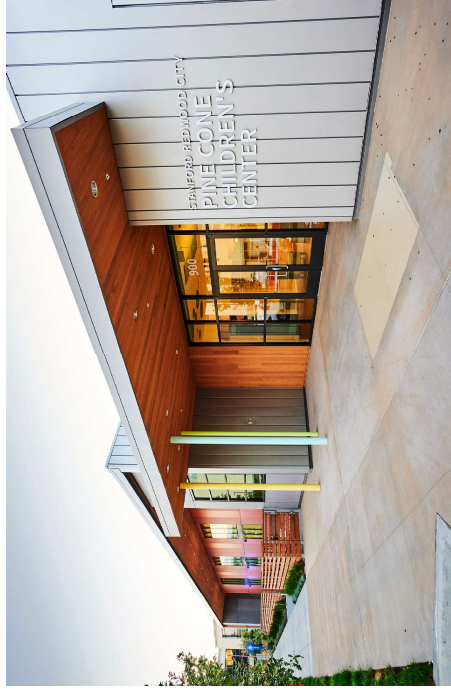
BEST PRACTICES

1. MOVEMENT
2. COMFORT
3. COMPETENCE
4. CONTROL



BEST PRACTICES

- LEVEL INDOOR-OUTDOOR ACCESS FOR CHILDREN
- ACCESSIBLE ENTRY FOR ADA & STROLLERS
- SECURE SINGLE-ENTRY CENTER



BEST PRACTICES

- NATURAL LIGHT
- WINDOWS AT THE LEVEL OF CHILDREN



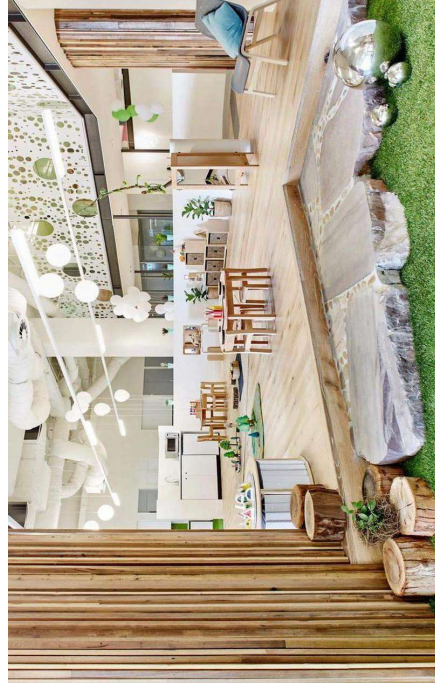
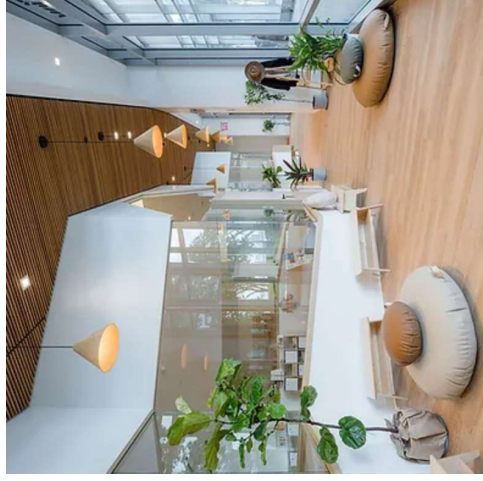
FUNDAMENTALS

BASICS OF INTERIORS

ESSENTIALS & BEST PRACTICES

BEST PRACTICES

- WARM & WELCOMING ENTRY SPACE
- ELEMENTS OF NATURE AND OUTDOORS
- NATURAL MATERIALS



BEST PRACTICES

- NATURAL LIGHT
- OPEN CLASSROOMS ALLOW SUPERVISION
- CALMING MATERIALS & COLORS



BEST PRACTICES

- AGE-APPROPRIATE TOILET AND DIAPER AREAS
- OPEN CLASSROOMS ALLOW SUPERVISION



BEST PRACTICES

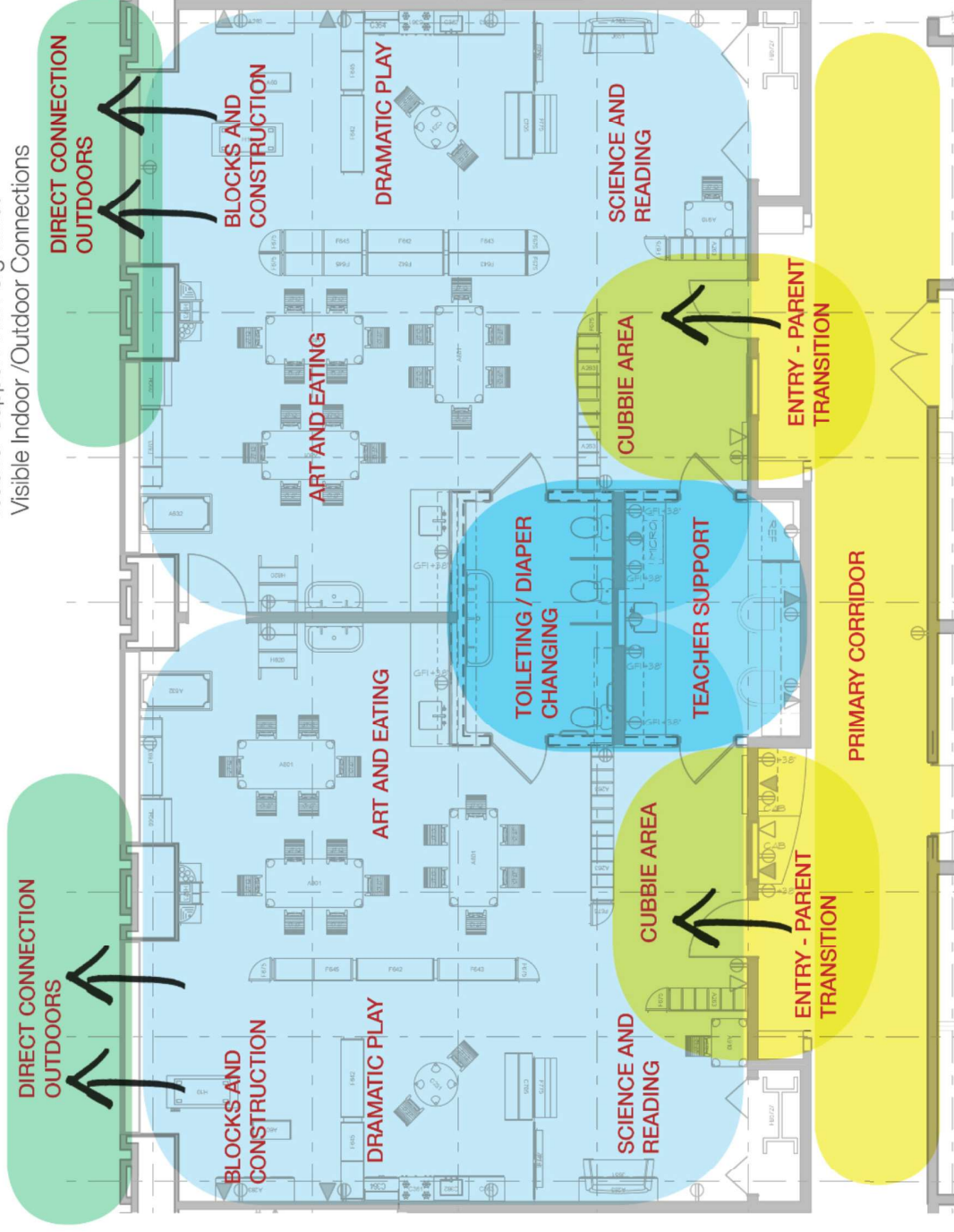
- SPACE ALLOWS FOR BOH NEEDED FOR A SUCCESSFUL CENTER
- STANDARD AND UP-TO-CODE MECHANICAL, ELECTRICAL AND PLUMBING EQUIPMENT

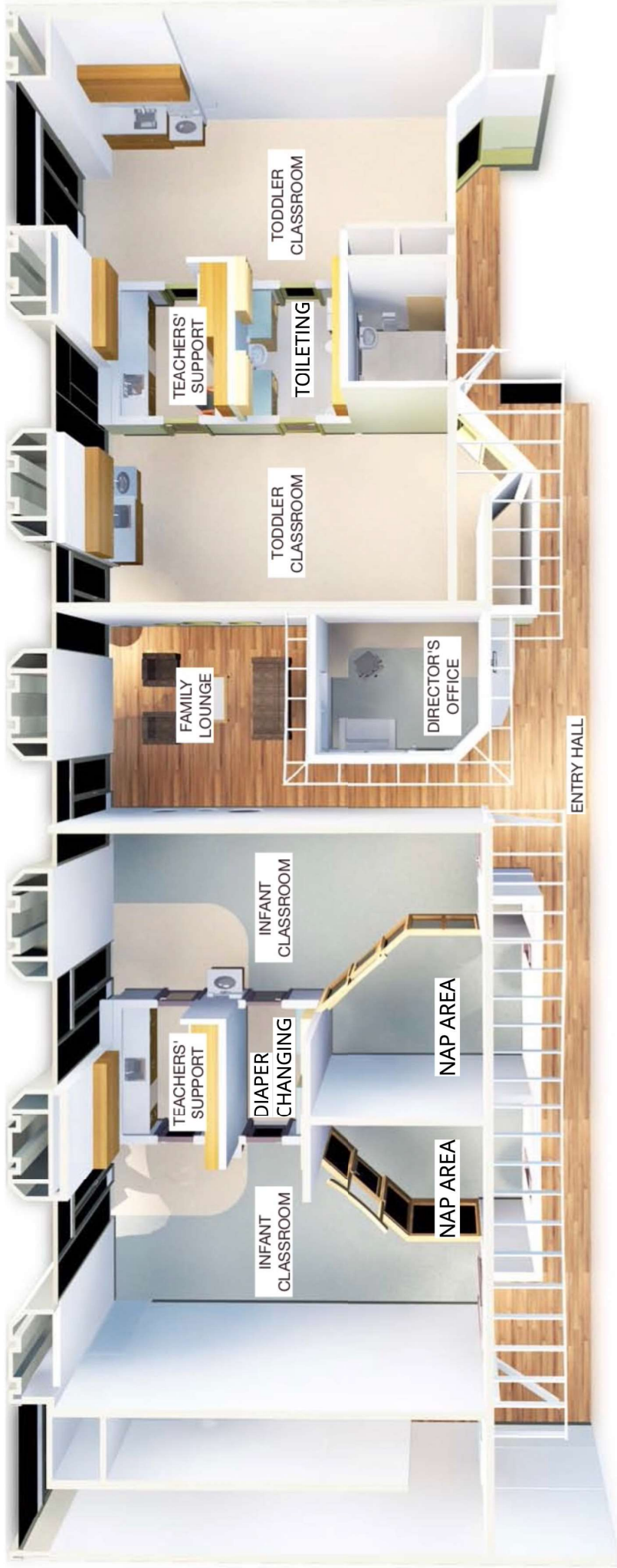


MANAGEMENT OF OBSERVATION - PROTOTYPICAL CLASSROOMS

Teacher Support With Sightlines

Visible Indoor /Outdoor Connections





DESIGN EXAMPLE



FINAL CLASSROOM

IMPROVEMENTS

SMALL CHANGES, BIG IMPACT

WHAT TO DO WITH SMALLER GRANTS?

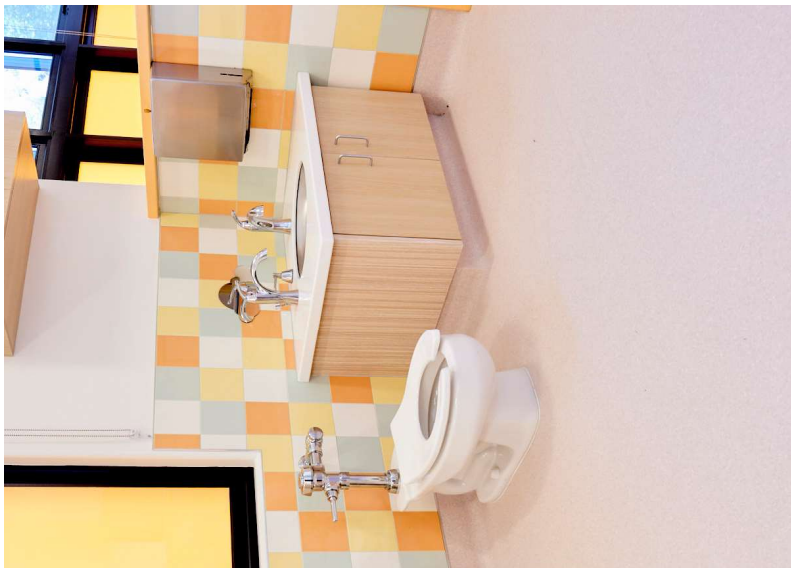
SMALL CHANGES

- ADD/ LOWER SINKS FOR CHILDREN
- INFANTS & TODDLERS AT 18" HEIGHT
- OLDER CHILDREN AT 22" HEIGHT
- ADD SMALL TOILETS FOR CHILDREN

BEFORE



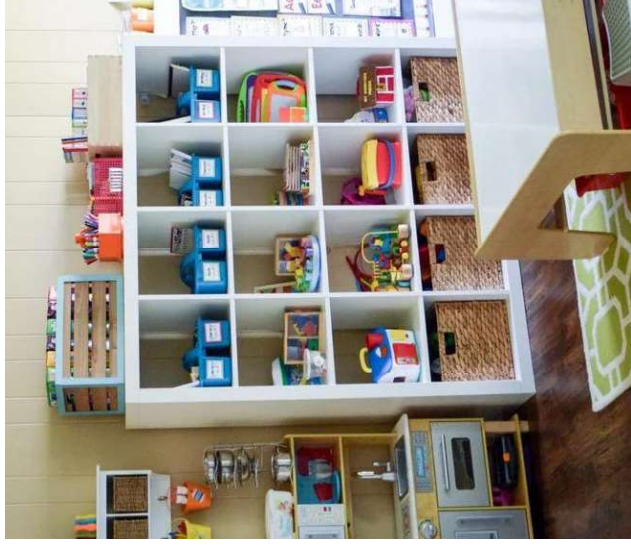
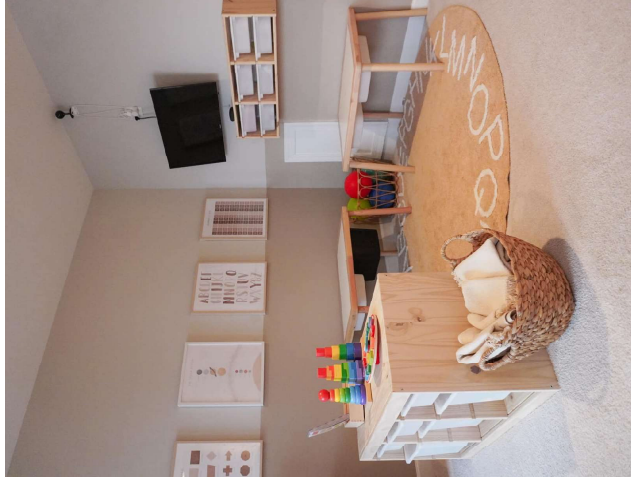
AFTER



SMALL CHANGES

STORAGE :

- FLEXIBLE AND MOVABLE OPTIONS
- USE SHORTER STORAGE TO DEFINE ZONES
 - USE BINS TO ORGANIZE
- SECURE LARGER UNITS TO WALL



SMALL CHANGES

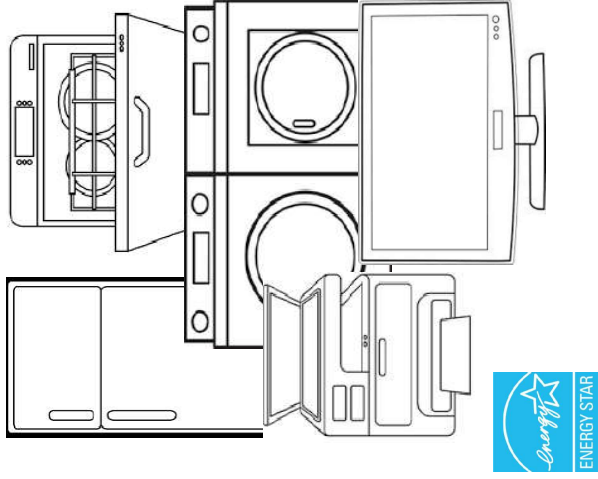
- NEW APPLIANCES : ENERGY STAR, HIGH PERFORMING
- * DISHWASHERS & CLOTHES WASHERS NEED SANITIZE CYCLE

- SHADES:

- * USE 1%-3% FOR PARTIAL SUN BLOCKING, USE BLACKOUT FOR LOCK-DOWN



Appliances Overview



FROM ELEVATE PRESENTATION FOR LIIF
REACH THEM @ ElevateNP.org

System Overview: Appliances in the building may include refrigerators, dishwashers, clothes washers, clothes dryers, stovetops, ovens and plug loads.

Goals: Increase energy efficiency and draw power only when in use.

Benefits of Upgrades:

- ✓ Lower energy consumption and costs
- ✓ Increased awareness of usage behavior

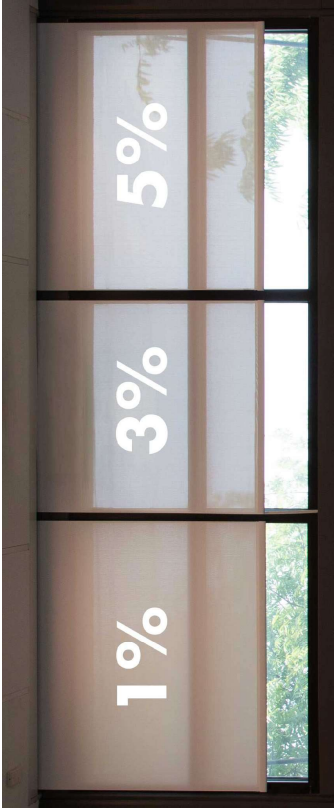
Key Considerations

- Use the [ENERGY STAR® product finder](#) to find the equivalent ENERGY STAR® rated mode
- Some utility program offer free kits including smart power strips
- Refrigerator maintenance: Clean coils at the back of the refrigerator
- Dryer maintenance: Clean vents on a regular basis

SMALL CHANGES

- SHADES:

- * USE 1%-3% FOR PARTIAL SUN BLOCKING
- * USE BLACKOUT FOR LOCKDOWN ON DOORS & PUBLIC WINDOWS



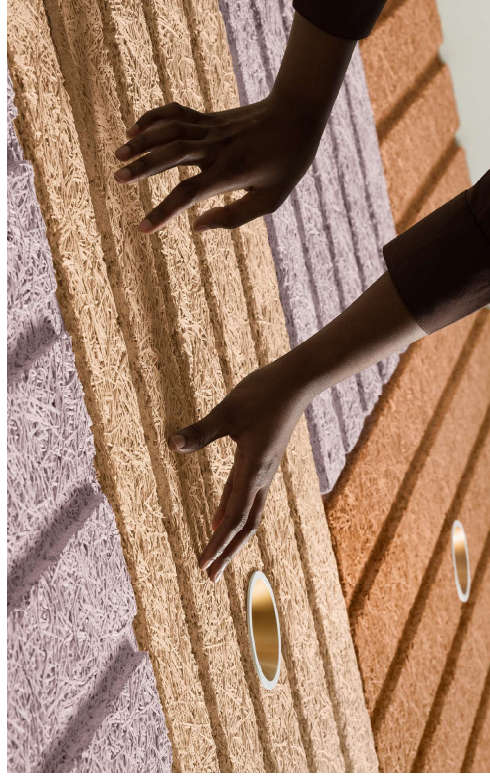
SMALL CHANGES

ACOUSTICS

- AIM FOR PANELS WITH NRC OF 0.80 OR HIGHER
- ADD PANELS TO CEILING & TOP OF WALLS



ACOUSTIC DROPPED CEILING
ARMSTRONG, MARS OR SIMILAR BRANDS



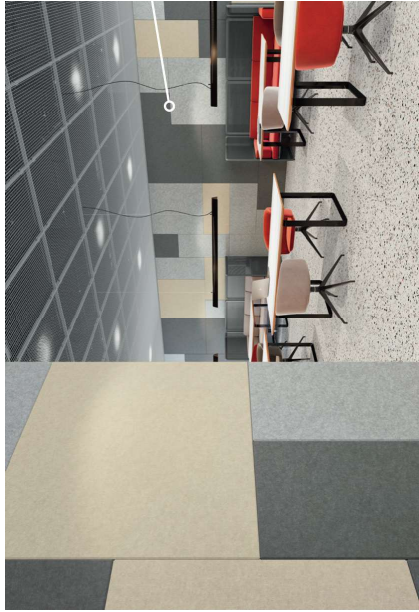
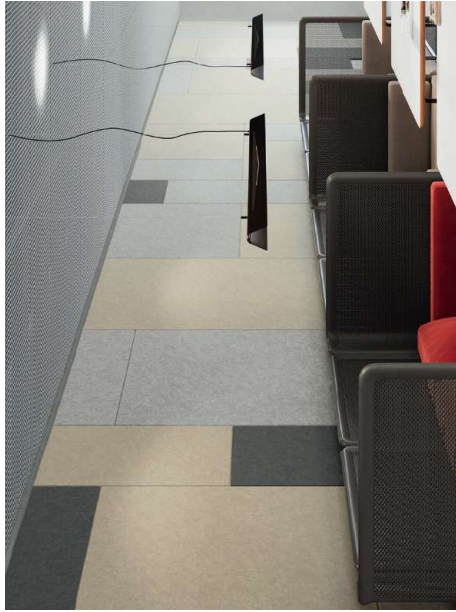
ACOUSTIC PANELS (WALL & CEILING)
TECTUM, BAUX

ACOUSTIC BAFFLES
ARMSTRONG

SMALL CHANGES

ACOUSTICS

- WALL PANELS
- SOME OPTIONS ARE PINNABLE



ARMSTRONG FELTWORKS ACOUSTICAL WALL PANELS



MUFFLE ACOUSTICS LIMITED
MUFFLEPINBOARD FELT ACOUSTIC PINBOARD



FELT RIGHT
PHASE FELT WALL TILES

IMPROVEMENTS

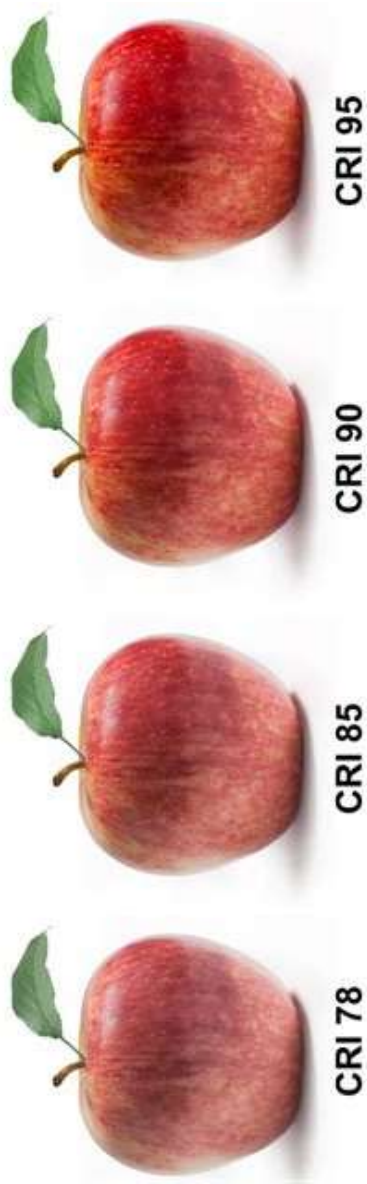
LARGER SCALE CHANGES

SYSTEMS AND ENVIRONMENTAL COMFORT

LARGER SCALE CHANGES

- LIGHTING

* CHOOSE WARMER TEMPERATURE LIGHT COLORS: 3000 KELVIN
* CHOOSE CRI 90 +



LARGER SCALE CHANGES

- LIGHTING

* CHOOSE WARMER TEMPERATURE LIGHT COLORS: 3000 KELVIN

* CHOOSE CRI 90 +



Lighting: Key Considerations

Upgrade to LED Bulbs & Fixtures

- Lighting efficiency should be balanced with color rendering (lighting reflects object's true color) and color temperature (warmth or coolness of the lighting, measured in kelvin) as the amount of as these can impact occupant mental and physical health. It's recommended to test several different lights with vendors to decide on the preferred lighting temperature.
- For outdoor lighting, consider Dark Sky compliant fixtures or shielding to minimize light pollution.
- Many utility programs offer free kits including LED bulbs.

Install Lighting Controls

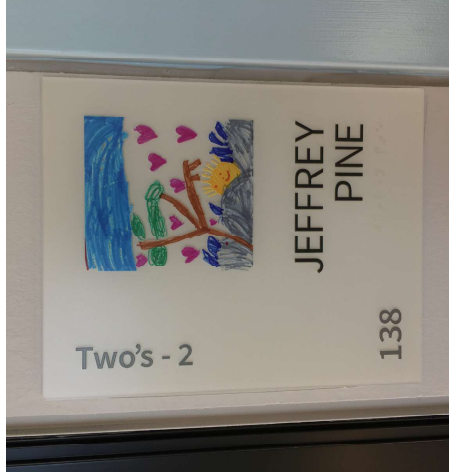
- Fail on, dimming and auto on/off should be considered for each lighting context given any safety and/or security concerns and the amount of ambient light during daylight hours.

FROM ELEVATE PRESENTATION FOR LIIF
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LARGER SCALE CHANGES

- SIGNAGE

CLASSROOM ENTRIES



SIGNAGE FROM EXTERIOR



Building Envelope: Key Considerations

Air Sealing

- Air sealing and insulating the building envelope affects building ventilation as well as heating and cooling system performance.
- Consult building professionals during envelope upgrades to ensure proper building ventilation is achieved, which may require the addition or improvement of mechanical ventilation strategies.

Replace Windows

- Ensure that a high-quality window installer is hired. Installation methods are key to proper air sealing of new windows.
- An excellent time to replace windows is when replacing siding or exterior cladding material.
- Reference ENERGY STAR for selection criteria based on climate zone:
https://www.energystar.gov/products/residential_windows_doors_and_skylights/key_product_criteria

Learn more about health and safety considerations at [Pre-Retrofit Assessment of Walls, Windows, and Doors](#) | [Building America Solution Center](#) ([pnnl.gov](#))

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Heating & Cooling Overview

Goals: Reduce energy consumption used for heating and cooling and provide opportunities for electrification and decarbonization.

Benefits of Upgrades:

- ✓ Improve occupant comfort
- ✓ Electrification upgrades integrate with onsite renewable energy generation systems
- ✓ Electrification reduces carbon emissions over time

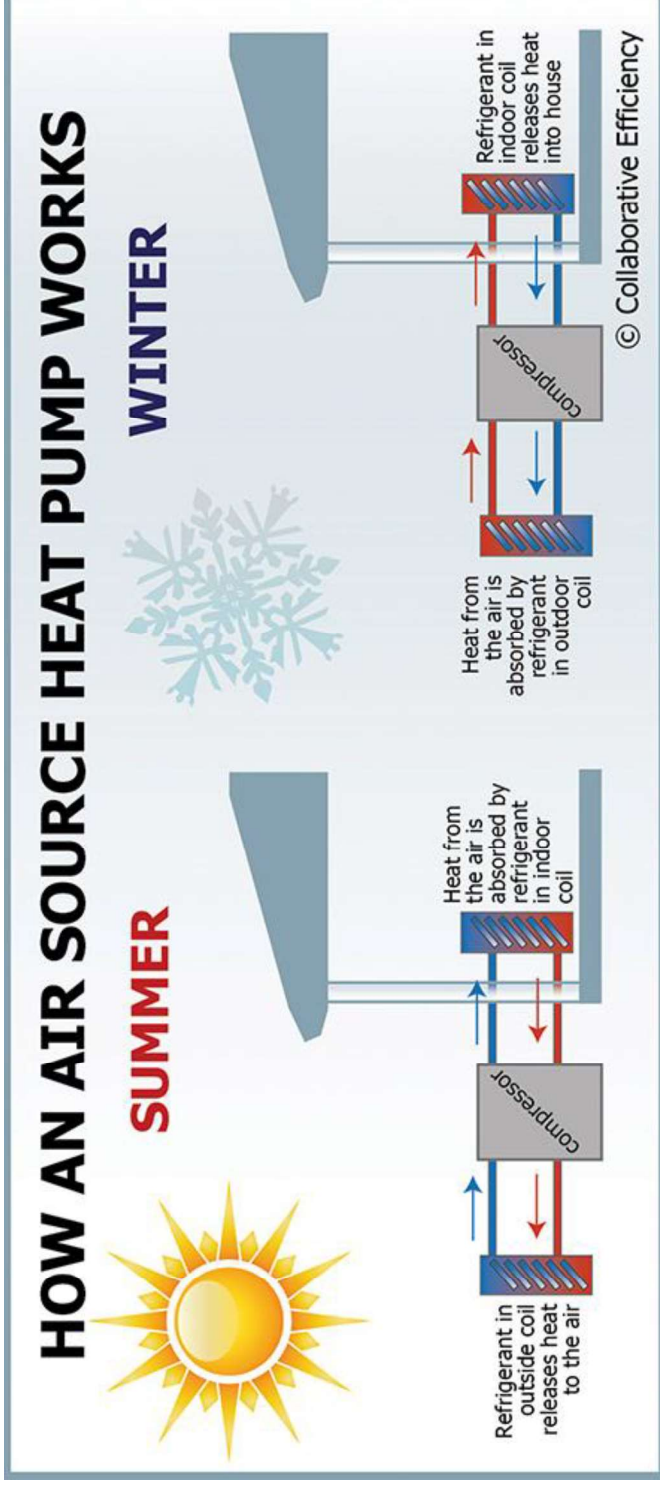
Key Considerations

- Consider replacing existing heating and cooling systems with high efficiency electric heat pumps
- Consider installing all-electric or heat pump water heaters



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Heat Pump Technology – Space Heating



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Filtration: Key Considerations

- Filter performance is standardized by the MERV rating (Minimum Efficiency Reporting Value). Filters with higher MERV ratings capture smaller particles from the air more efficiently. It's recommended to assess the conditions of existing filter(s) (if applicable) and record the type(s) of filters and the MERV rating, if documented on the filter.
- MERV 13 filters are often recommended as best practice, but each system needs to be assessed to determine if MERV 13 filters are feasible for existing or new conditions. Systems typically come with factory provided filters, which have MERV ratings of 8 or less.
 - Some filters do not have a MERV rating, such as washable filters that commonly come with mini-split heat pumps. However, manufacturers often provide filter upgrade package options.
- Filters come in a variety of types and configurations: standard fiberglass media or pleated filters, electronic filters or electrostatic filters, bipolar ionization, and UV.

Note: It's recommended to always consult with a professional and to only use validated solutions which provide evidence that the proposed technology is effective and safe for the application. Always follow manufacturer installation and maintenance instructions for filter cleaning and/or replacing schedules and procedures.

Resource: <https://www.ashrae.org/technical-resources/filtration-disinfection>

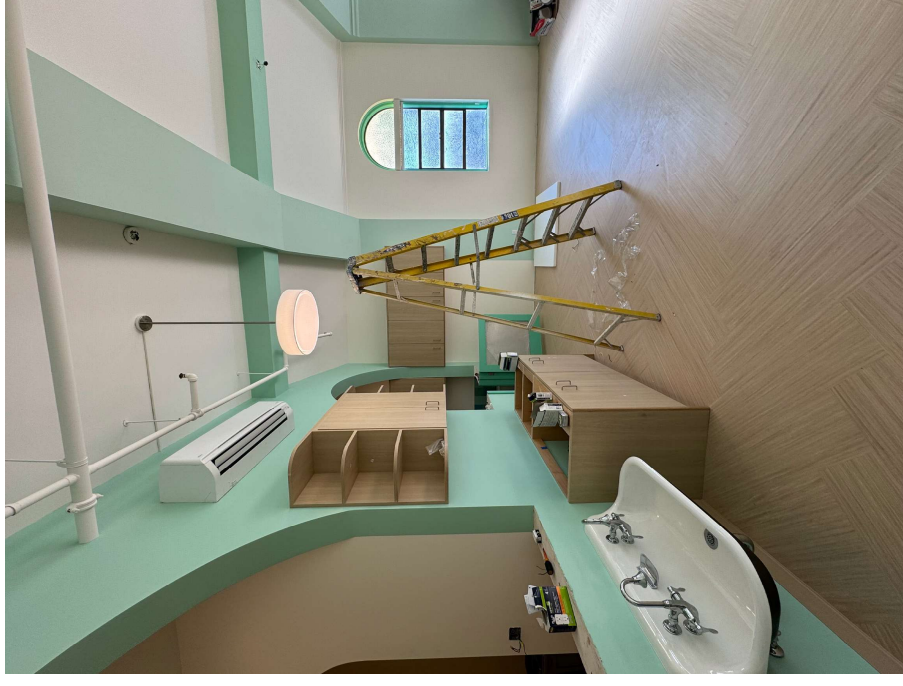
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IMPROVEMENTS REMODEL FOR QUALITY

LASTING CHANGES THAT IMPACT QUALITY

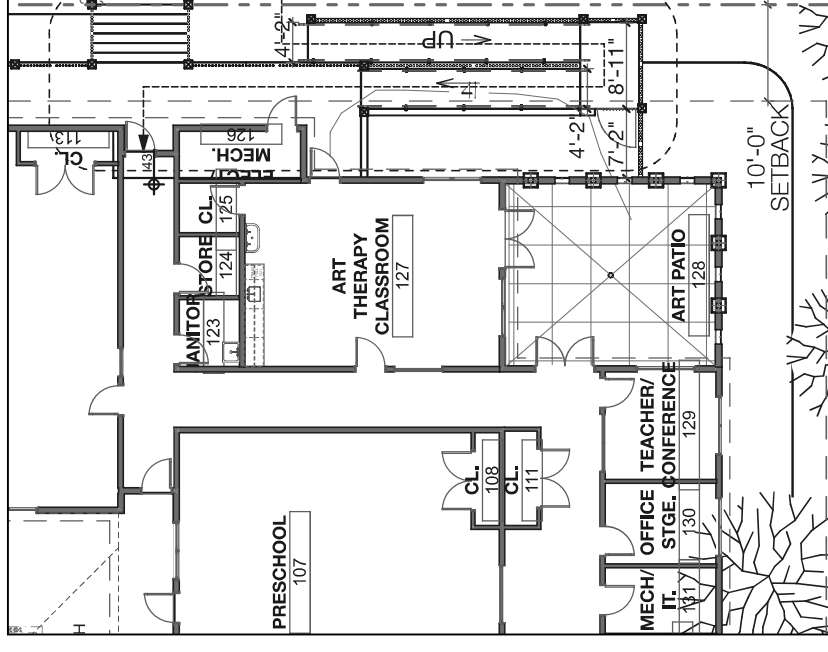
BEST PRACTICES

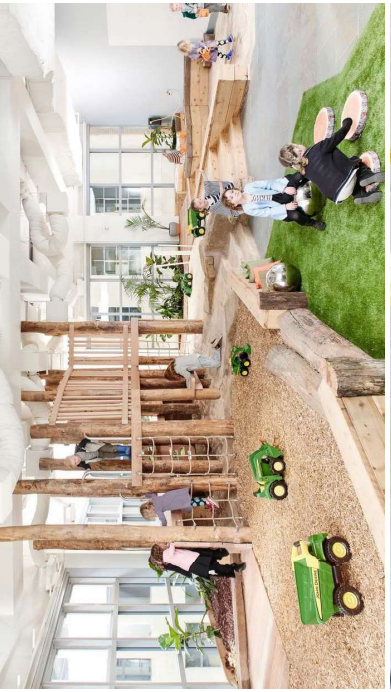
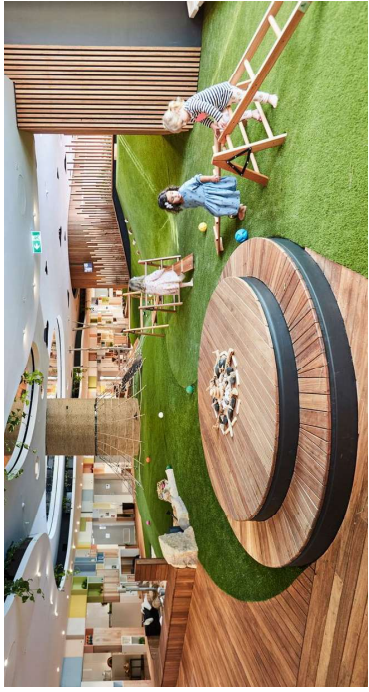
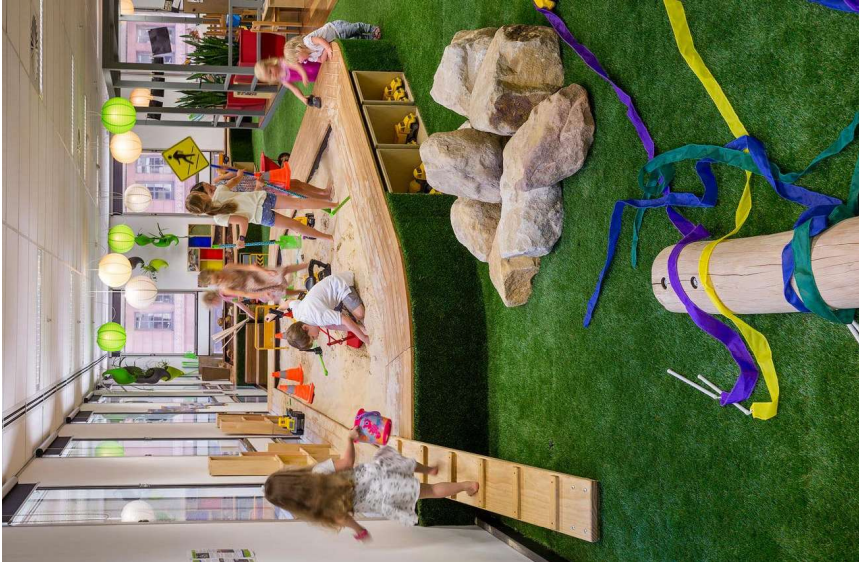
- TOILETS IN THE CLASSROOM
- CREATE OPENING IN THE WALL FOR CHILDREN BATHROOMS



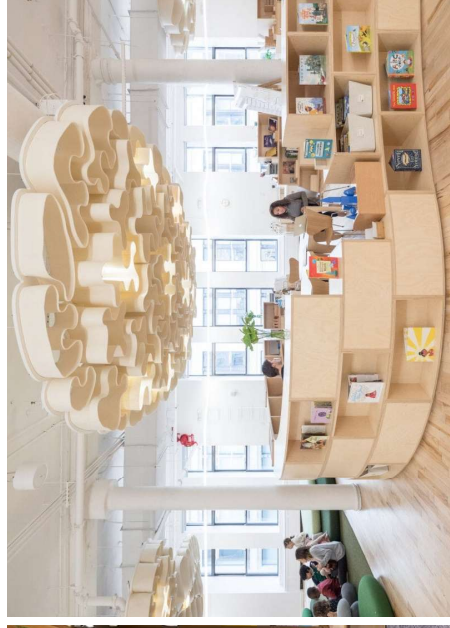
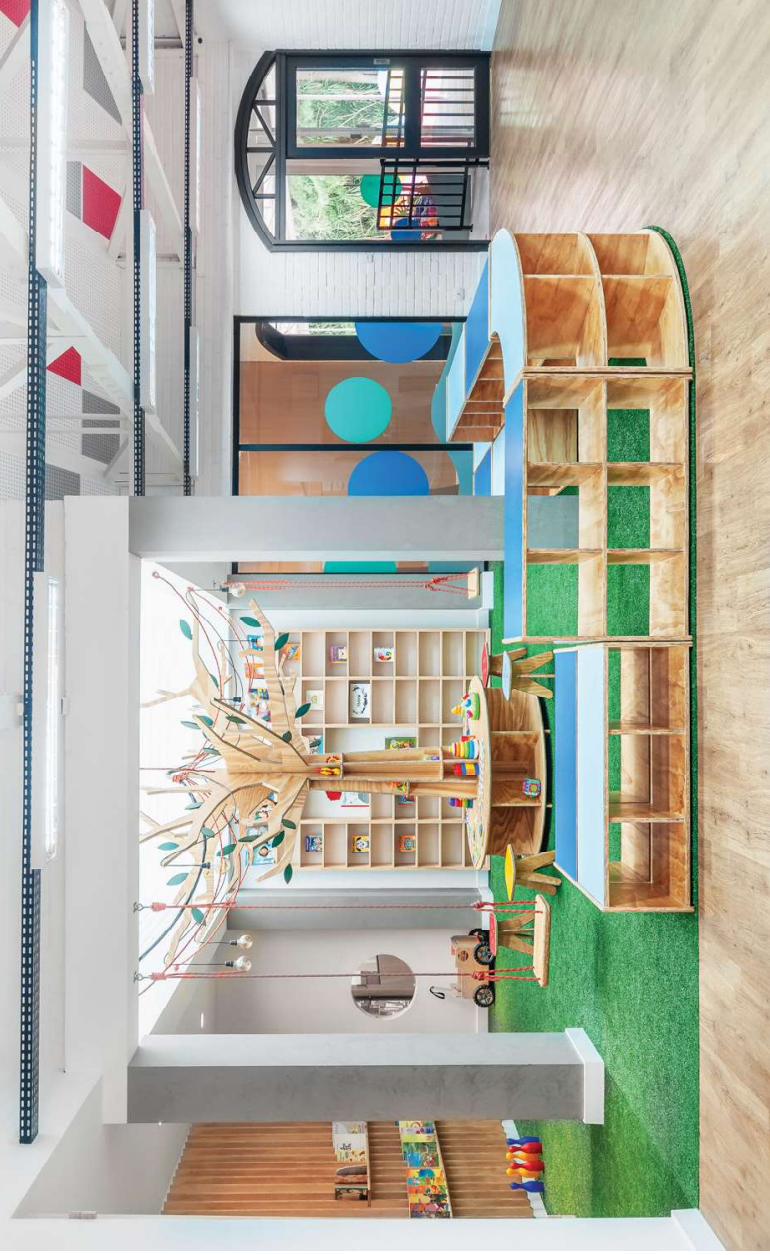
BEST PRACTICES

- ADDITIONAL SPACES THAT ALLOW CHILDREN TO LEAVE THE CLASSROOM AND LEARN IN A NEW ENVIRONMENT





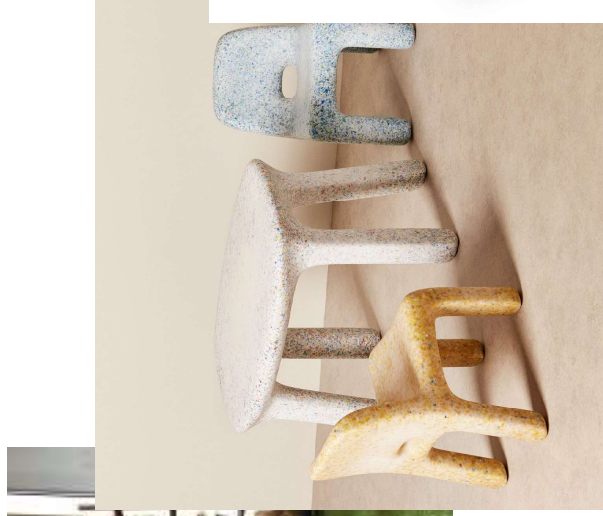
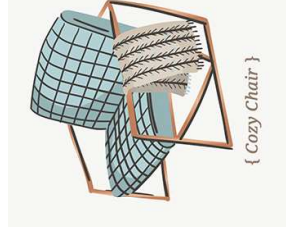
INSPIRING IMAGES
NATURAL INDOORS



INSPIRING IMAGES
DEFINITION OF THE SPACE

CIRCLE TIME/ READING CORNER:

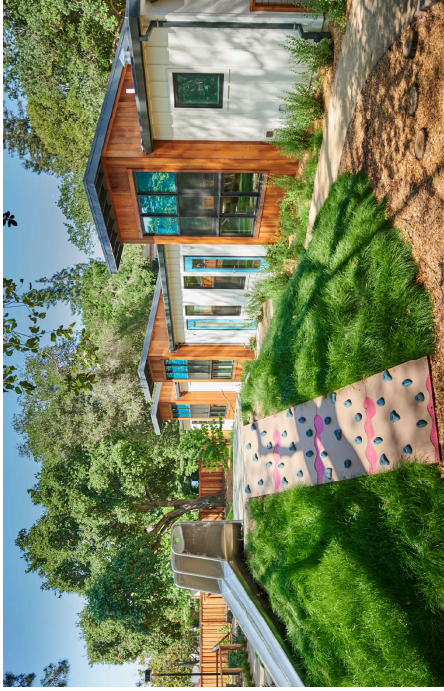
- BOOKCASES ON ALL SIDES
- QUIET, COZY, SAFE
- FEELINGS OF HYGGE, BEING IN A CABIN, SHELTER, WARMTH

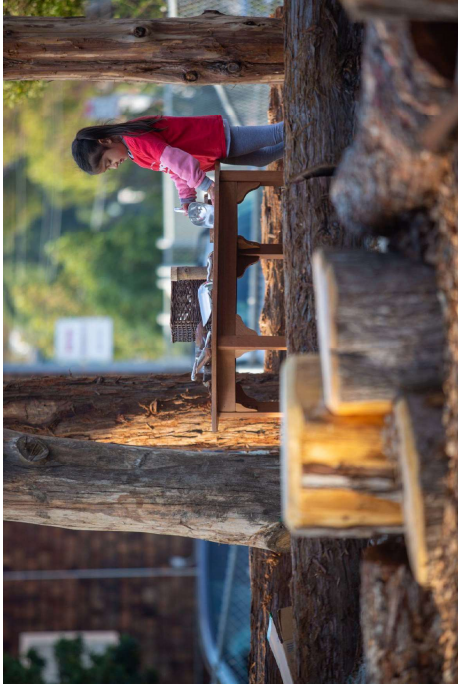


PLAY AREAS

BEST PRACTICES

- NATURE-BASED OUTDOOR SPACE
- PLAY YARD IS ANOTHER CLASSROOM
- PLAY SPACE IS AGE-APPROPRIATE AND ENCOURAGES EXPLORATION

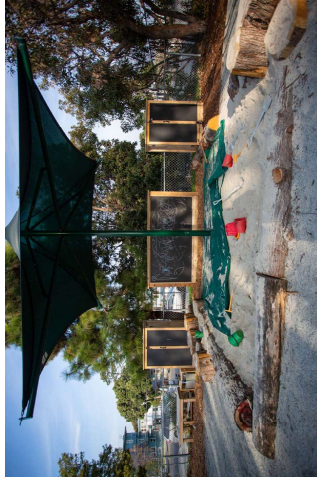
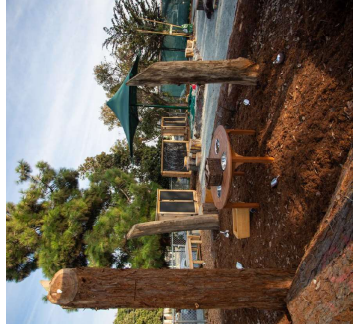
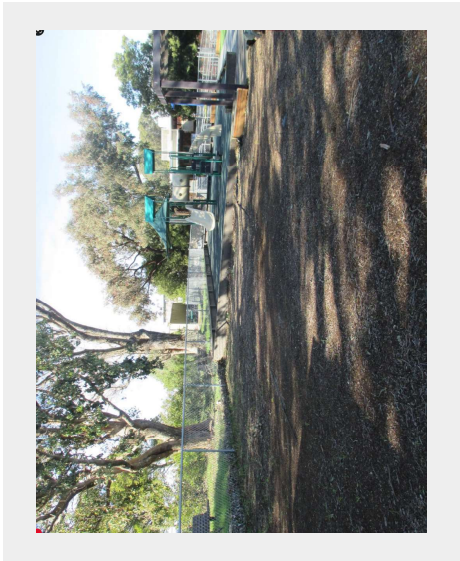




Connecting Children with Nature | 2021



Early Childhood Center Before & After



PLAY AREA ELEMENTS

- SAND PLAY (DRY & WET)

- CLIMBING & MOTOR SKILLS

- SHADE

- FLEXIBLE AREAS

- MUD PLAY/ MUD KITCHEN

- TRIKE PATHS

- STORAGE

- PLANTING & TREES

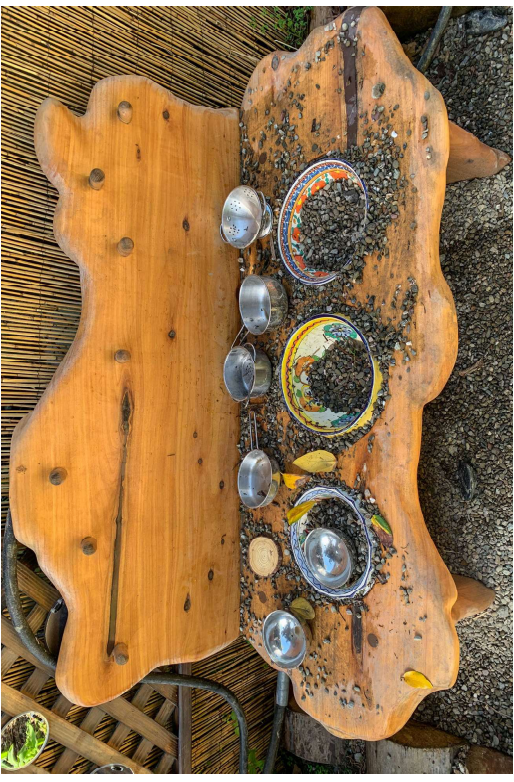
- EDIBLE GARDEN

- POLLINATOR GARDEN

- HUTS & HOUSES

- ART

- STEM



PLAY AREA ELEMENTS

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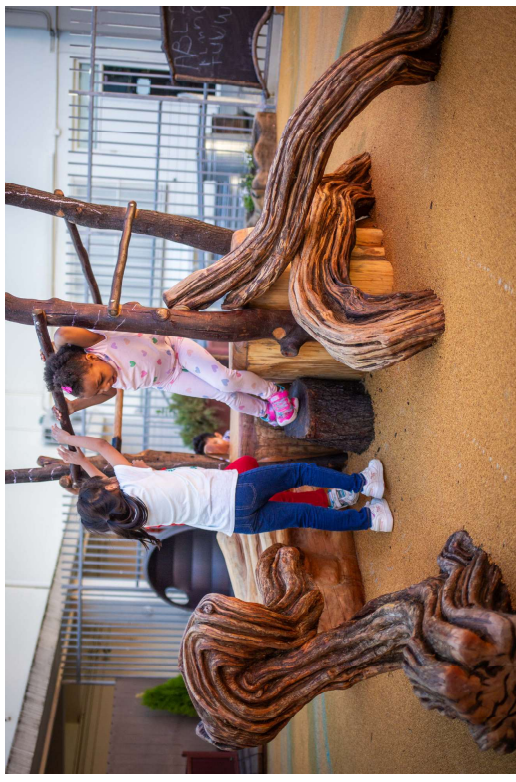
- EDIBLE GARDEN

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- HUTS & HOUSES

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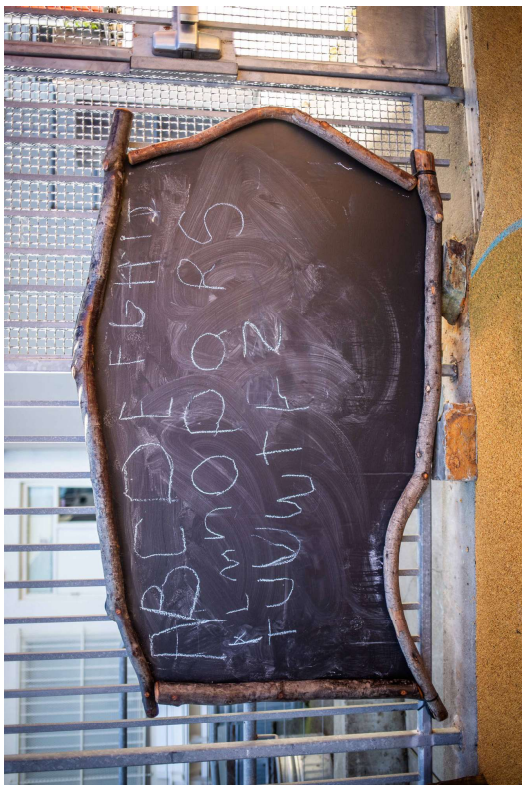
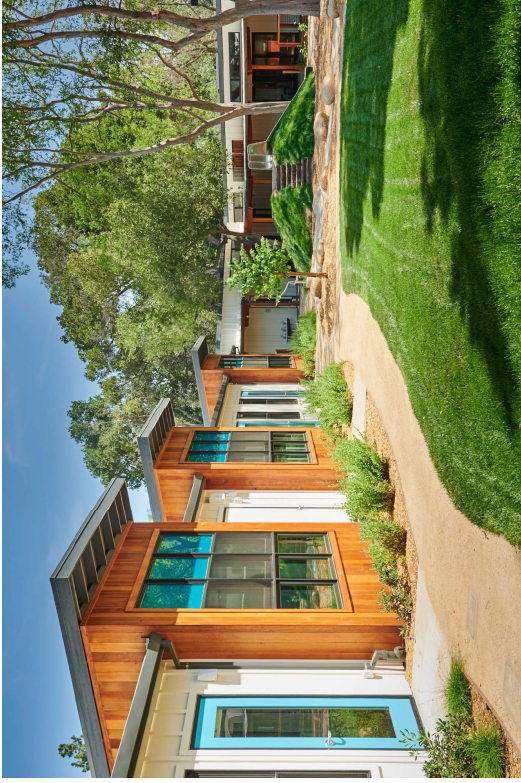
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SURFACE MATERIALS

TURF

PAH:

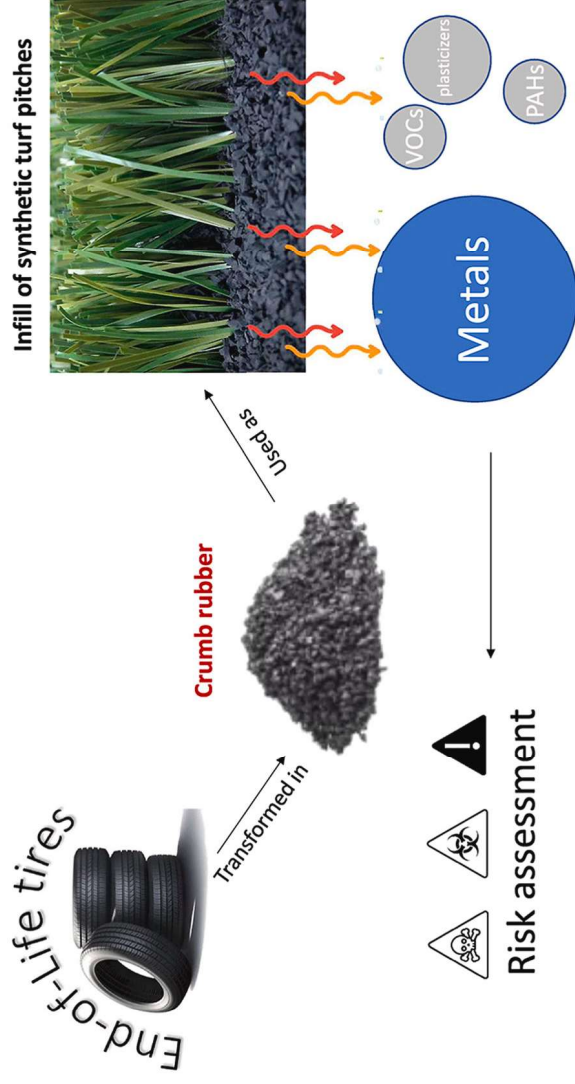
- Polycyclic aromatic hydrocarbons (PAHs) are a group of persistent organic pollutants that can be found in artificial turf. PAHs are known carcinogens and can also be neurotoxicants, mutagens, and endocrine disruptors.

VOC:

Volatile Organic Compounds (VOCs) are chemicals that can off-gas from turf materials. Some VOCs are linked to respiratory issues, skin irritation, and other health problems.

Phthalates:

These chemicals are used to soften plastics and can be found in the plastic backing of the turf. They have been associated with hormonal disruptions, developmental issues, and reproductive toxicity.



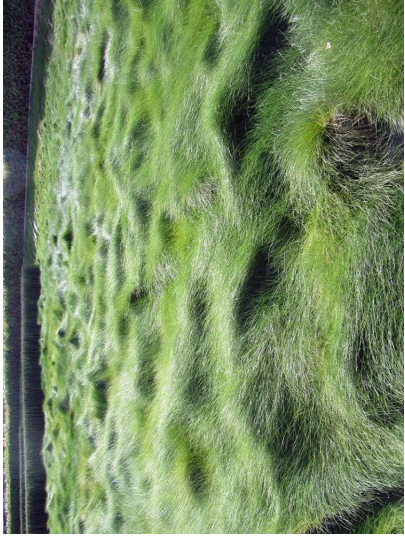
SURFACE MATERIALS

FALL ZONE:

SAND, MULCH, ENGINEERED WOOD FIBER (FIBAR) , POURED-IN-PLACE CORK (CORKEEN), PEA GRAVEL

NON-FALL ZONE:

NO-MOW GRASS, CONCRETE, DECOMPOSED GRANITE (DG), PAVERS, DECKING



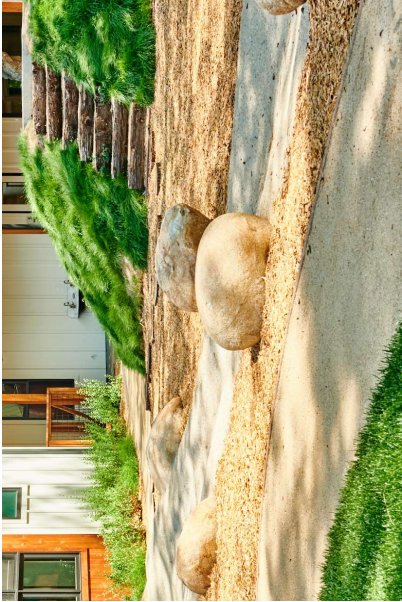
NO-MOW NATIVE GRASS



SAND



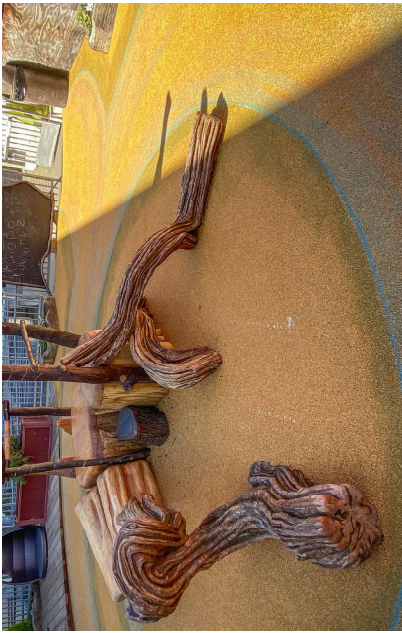
MULCH + DECKING



DG + MULCH + NO-MOW GRASS
+ PEA GRAVEL (STABILIZED)



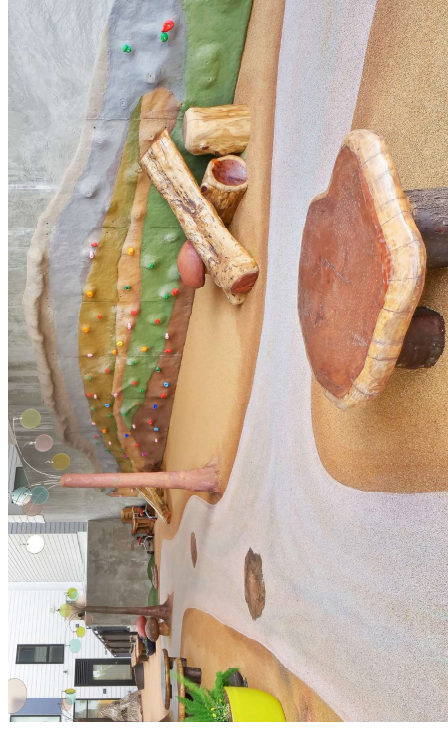
FIBAR + STUMPS + PEA GRAVEL



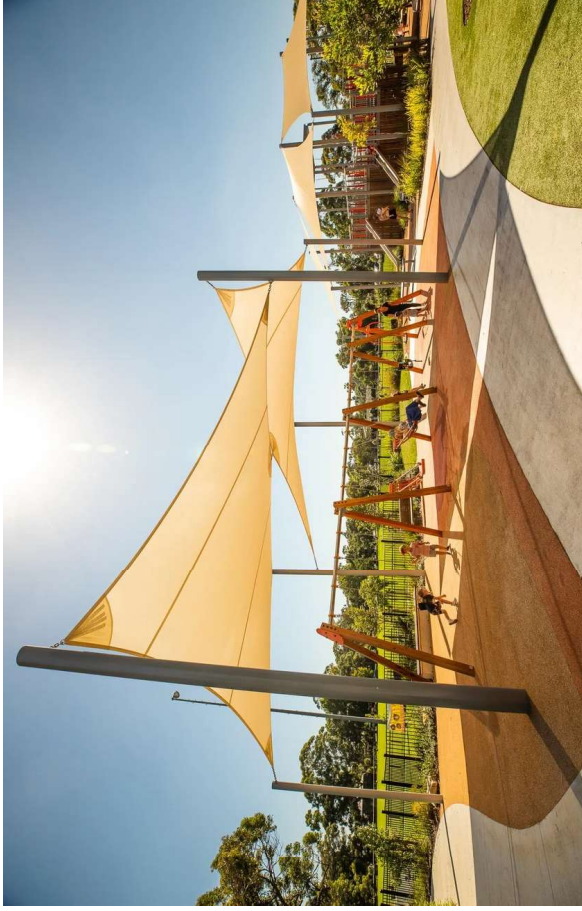
POURED-IN-PLACE CORK (PARTIALLY PAINTED)

SURFACE MATERIALS

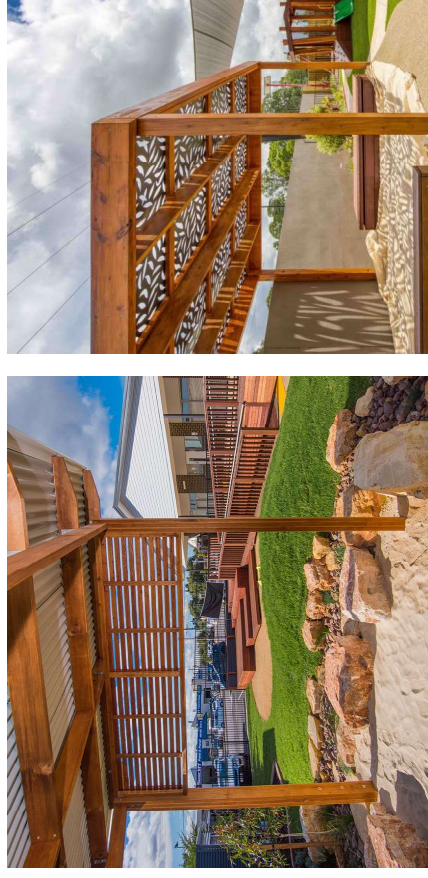
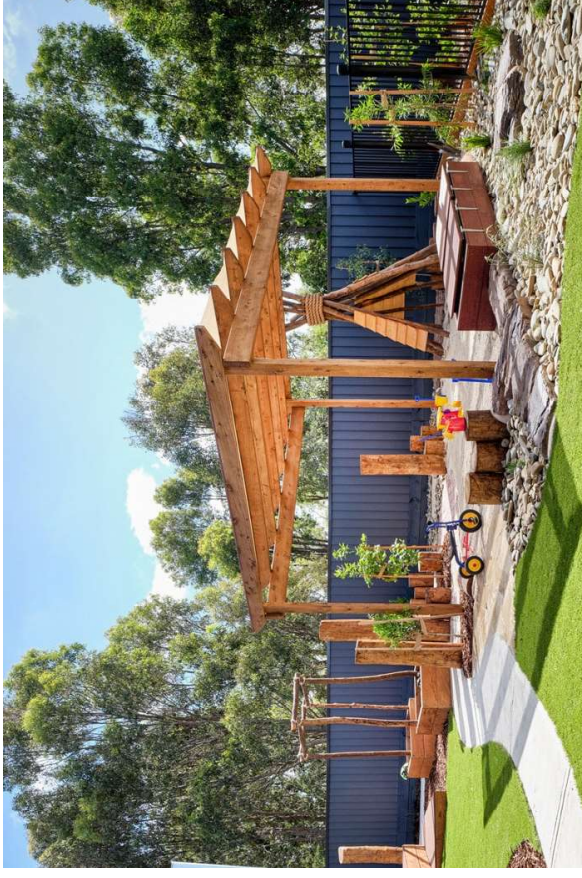
CORKEEN



SHADE



SHADE SAILS
- LIGHTER COLORS
- BREAK-AWAY DEVICES



RETRACTABLE SHADES



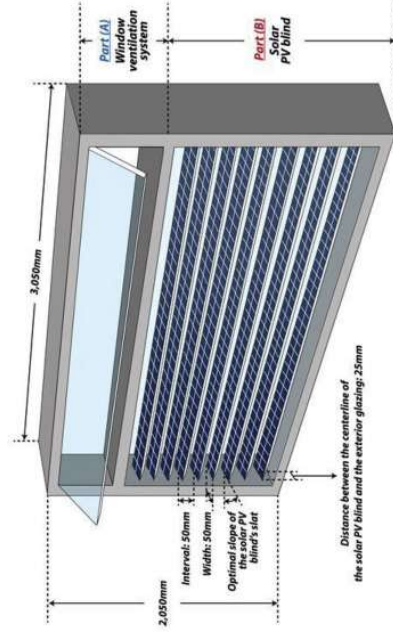
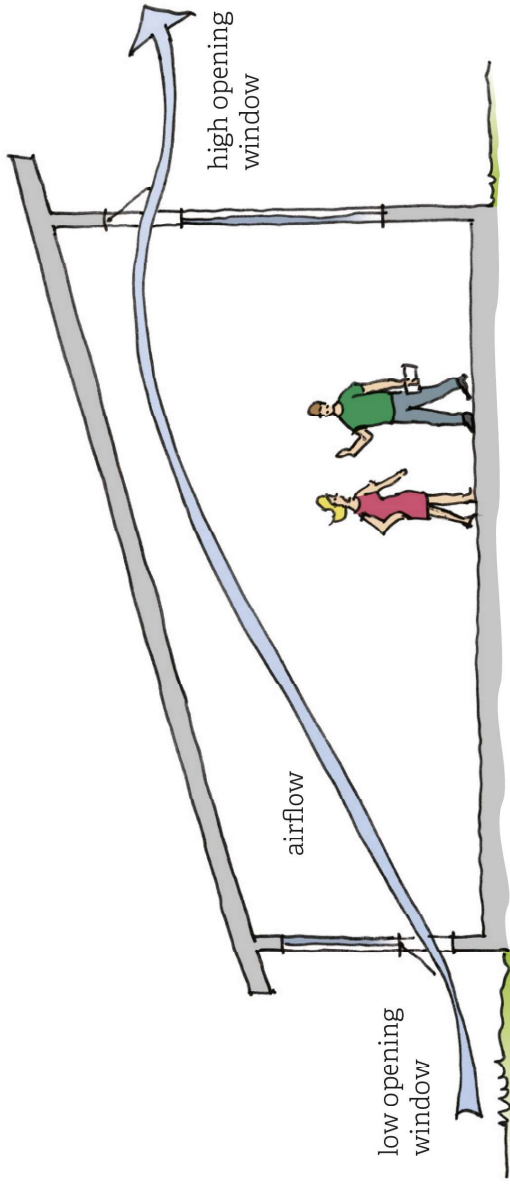
PRE-FABRICATED OR SITE-BUILT PERGOLAS

HEALTH & CLIMATE

BEST PRACTICES & STANDARDS

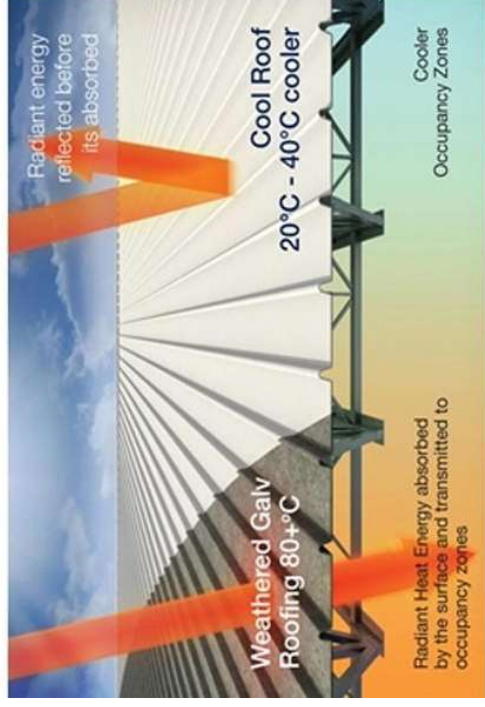
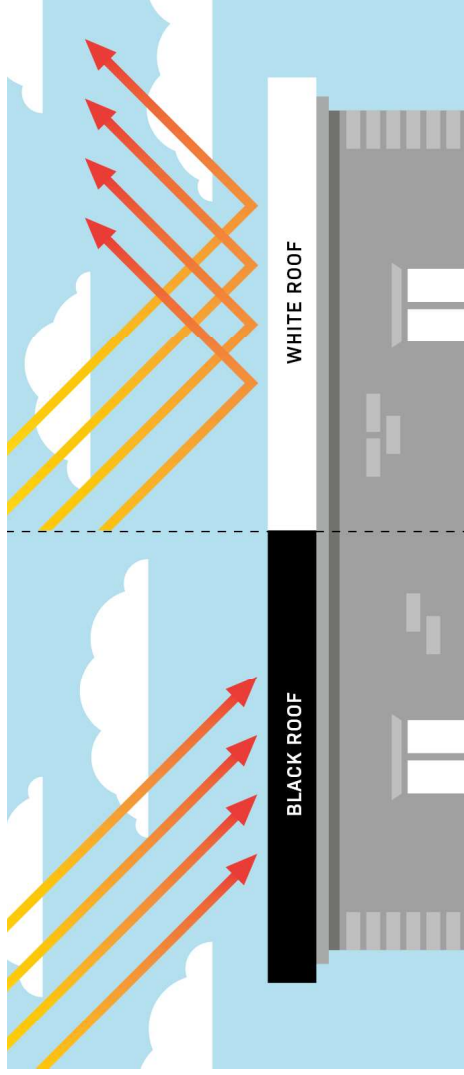
PASSIVE COOLING

- HUMAN COMFORT
- CROSS VENTILATION
- NATURAL VENTILATION DEVICES
- CEILING FANS



PASSIVE COOLING

- BUILDING EXTERIOR PAINT
- BUILDING ROOF PAINT



GREENING CHILDREN'S SPACES 10 small STEPS TO TAKE NOW

1. Change your furnace air filter. Use HEPA rated filter whenever possible.
2. Install water filters throughout center.
3. De-clutter shelves to remove habitat for dust, and mites. This will reduce allergy symptoms and increase life cycle of furnace.
4. Open your windows to increase natural ventilation and air movement within the classroom. *Install screens where needed.
5. Install 2 foot long horizontal trellis or awning above South facing windows to block intense Summer sun.
6. Decrease use of bleach in your cleaning routine. Use natural cleaning products. Eg Method, Seventh Generation, Clorox 'Green Works'.
7. Start to phase out your plastic toys! California has recently passed legislation to ban products made with PHTH (plastic softeners). PHTH have been shown to be immune inhibitors, and children are particularly susceptible to their effects. Phase out plastic bottles, nipples and pacifiers. Phthalate ban in children's products now in force in California http://www.contracostimes.com/search/ci_11347577
8. Change existing incandescent light bulbs, and fluorescent tubes to 'Full Spectrum' compact fluorescent bulbs, tubes.
9. Promote an Adult visitor shoe free environment in Infant/ Toddler spaces. *If possible, caretakers should have inside and outside shoes. This will reduce harmful chemicals, fertilizers, and oil products from collecting on classroom floors, or provide booties as an option.
10. Install flow reducers in all existing faucets. This will promote water saving.

Green website resources:

US Green Building Council - LEED standards
Green Guard - Indoor air quality information
California High Performing Schools

GREEN BUILDINGS UPGRADING FACILITIES

1. Replace existing windows with energy efficient double glazed, low E operable windows. Install additional windows to promote natural cross ventilation.
- *Avoid vinyl products.

2. Increase window openings so that sill height allows children to see through window.

3. Replace existing interior & Exterior classroom doors with full light glazed doors.

4. Replace existing vinyl sheet or tile flooring with natural, low VOC products, Eg. Linoleum.

5. Replace existing carpet with low VOC products. If possible use carpet tiles with integral rubber backing.

6. Use 0 to low VOC paints, sealers, adhesives, and stains. This limits volatile organic compounds that often off-gas for months after installation.

7. Use energy efficient light fixtures with multi-stage, or dimming ballasts. Include occupancy sensors where feasible.

8. Install ceiling fans to aid natural ventilation and circulation.

9. Install large capacity water filtration system that serves the entire center.

10. Select replacement cabinetry that uses: Low VOC sealers, adhesives, and stains. *Avoid plastic laminate when possible.

11. Select replacement countertops materials which have natural, low VOC, or recycled content.

*Follow previous 'Green Classrooms' suggestions.

THE NEW GREEN FACILITY IDEAS FOR NEW FACILITIES

1. Use Passive Solar methodologies to maximize natural heating, lighting, and ventilation.
2. Consult local zoning and building codes for LEED, and CHPS requirements.
3. Employ radiant heating in the classrooms.
4. Design roof for possibility of future water catchment and solar panel systems.
5. Use insulation that has low VOC, and recycled content.
6. Notes about play area designs. Maybe we can check with Miller Co for suggestions: Avoid plastic climbing structures. Resilient poured surface, and artificial turf may contain lead, check with manufacturer.
7. Refer to CHPS website: <http://www.chps.net/states/california.htm> for information regarding safe and green material choices.

*Follow previous 'Green Classrooms' & 'Green Re-models' suggestions.

TAKING GREEN IDEAS OUTSIDE INCORPORATING NATURE

1. Start a vegetable garden: Use raised beds or posts. * To avoid unsafe soils, plant only non-edible plants in the native soil. Resource: *Occidental Arts & Ecology, School Garden training.*

class activities, collect kitchen scraps.

- a. Compost & Worm bins: Integrate with class activities, collect kitchen scraps.
- b. Harvesting and cooking activities.

2. Start a Butterfly garden: This provides habitat for native insects, and promotes pollination for the garden and predator insects for integral pest management.

Must Read: Last Child in the Woods, Richard Louv

Garden resources:

Occidental Arts & Ecology: <http://www.oaec.org/>
UC Santa Cruz Farm & Garden: http://casfs.ucsc.edu/education/garden_classroom.html

Thank You

Chris Dorman, AIA

cd@dormanassociates.com

Ava Rahimi Farab, ASSOC.AIA, LEED AP BD+C, WELL AP

af@dormanassociates.com

PRINCIPLES IN PRACTICE

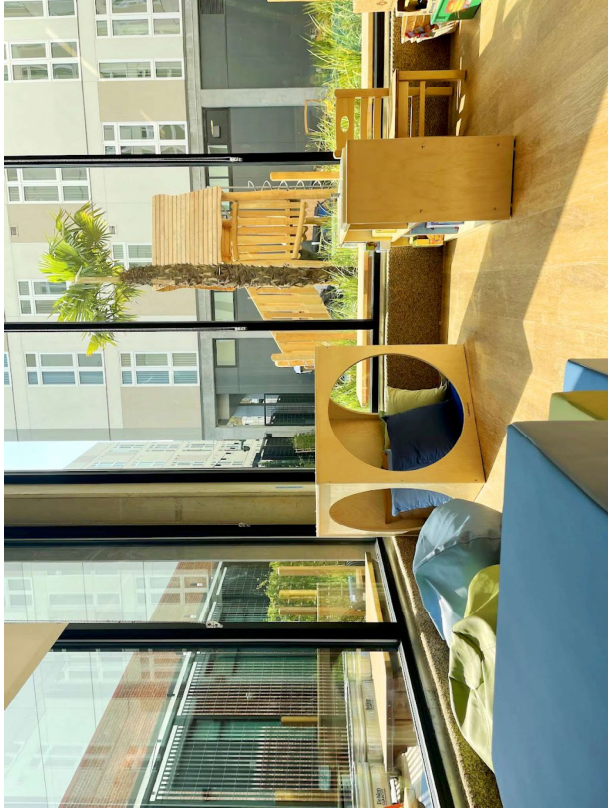
EXAMPLE PROJECTS



PROJECT EXAMPLE



PROJECT EXAMPLE





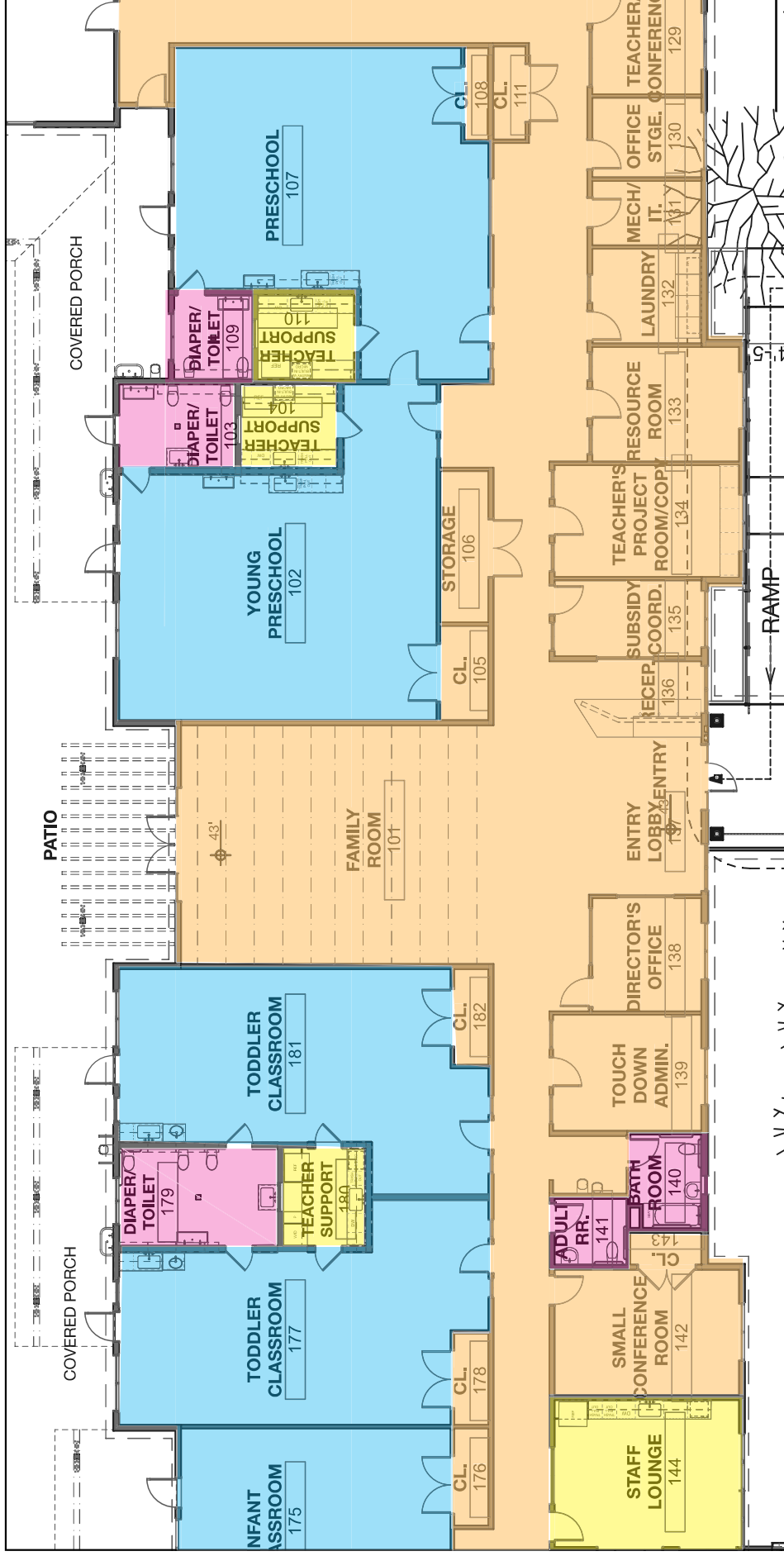
EXAMPLE SPACE: INFANTS' CLASSROOM AT
CHILDREN'S CENTER OF THE
STANFORD COMMUNITY

CHILDCARE REQUIREMENTS, NAEYC BEST PRACTICES, AND THEIR COST IMPLICATIONS

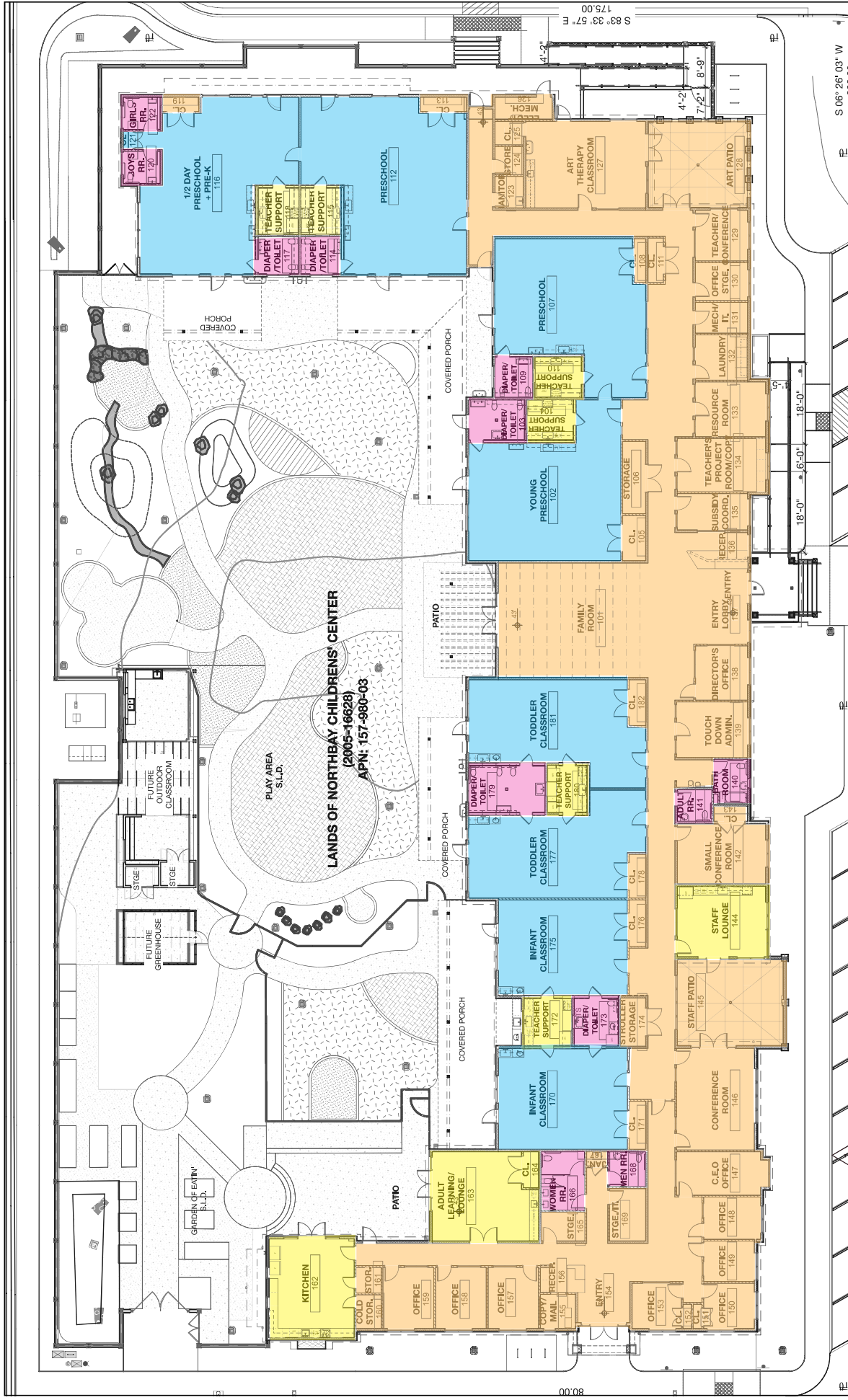
BEST PRACTICES

- CALIFORNIA LICENSING FOR CLASSROOM: 35 SF/CHILD
- LIIF/NAEYC BEST PRACTICES FOR CLASSROOM: 50 SF/CHILD
- CALIFORNIA LICENSING FOR OUTDOORS: 75 SF/CHILD

- SQUARE FOOTAGE SHOWN DOES NOT INCLUDE
- CLASSROOM
 - TEACHER SUPPORT
 - TOILET/DIAPER
 - ADMIN + ADDITIONAL AREA



SQUARE FOOTAGE PER CHILD
LICENSING VS. BEST PRACTICES



CHILDCARE CENTER EXAMPLE
COST DRIVERS

