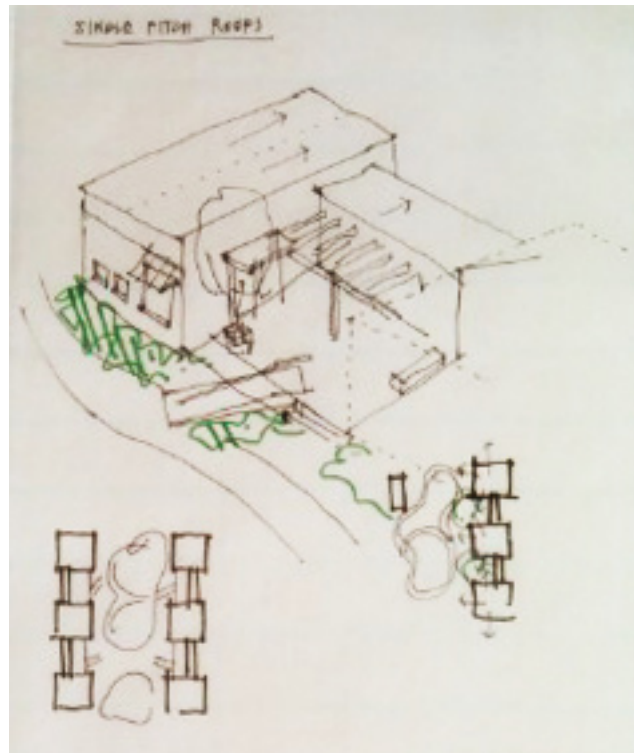


FINAL REPORT: Think Tank on Modular Design for Early Care and Education

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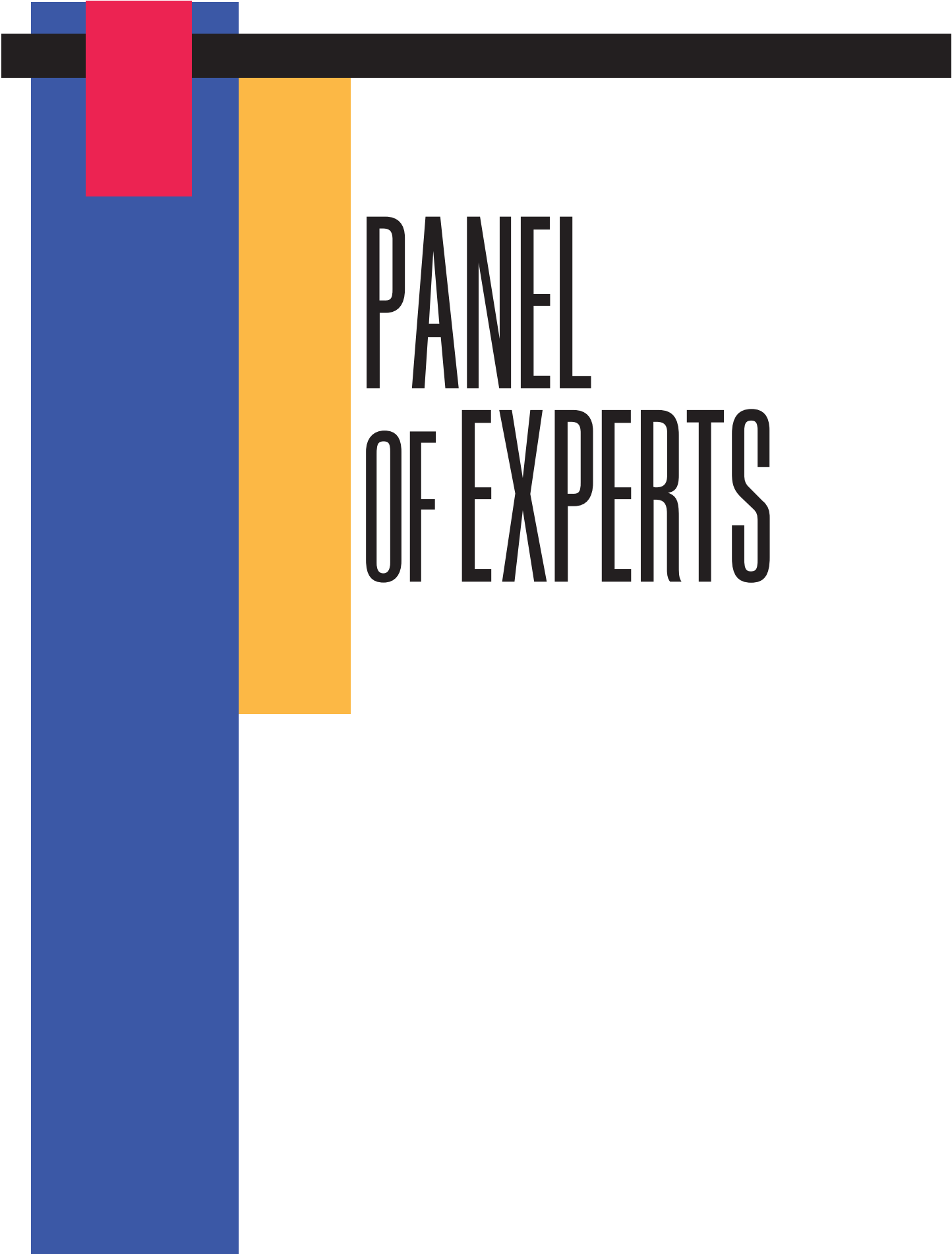
The *Think Tank* on Modular Design for Early Care and Education, held on March 3rd and 4th, 2003 at the Sierra Health Foundation in Sacramento, California was convened for the specific purpose of creating a distinct body of knowledge and recommendations for designing modular facilities. A multidisciplinary group of expert professionals participated in the *Think Tank* offering their knowledge, ideas, ingenuity, creativity, and experience. This Final Report summarizes their findings and offers significant guidelines for those developing early care and education facilities and those wishing to impact public policy decisions.





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PANEL OF EXPERTS

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The following multidisciplinary group of expert professionals participated in the *Think Tank* offering their knowledge, ideas, ingenuity, creativity, and experience:

Architects

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Bill Gould, Bill Gould Design, Inc., Los Gatos, California
Paulett Taggart AIA, Paulett Taggart Architects, San Francisco, California
Janice Vascott, Architect, Janice Vascott Architects, Santa Fe, New Mexico

Landscape Architects

Anne Nelson, Landscape Architect, Cerrillos, New Mexico

Modular Manufacturers

Don Curtis, Senior Project Manager, Enviroplex, Inc., Stockton, California
Frank Lewis, President, SARAMARK, INC., San Jose, California
Rick Torres, Executive Director of Marketing and Sales, American Modular Systems, Manteca, California
Joe Sublett, President, Enviroplex, Inc., Stockton, California

Manufactured Housing Development Consultant

Steve Hullibarger, President, The Home Team, Fair Oaks, California

Child Development Experts

Shareen Abramson, Ph.D., Director, Joyce M. Huggins Early Education Center, CSU, Fresno
Londi Carbajal, Co-Executive Director, Santa Fe Children's Museum, Santa Fe, New Mexico
Sandy Hill-Binkley, Early Childhood Specialist, Community Development Institute, Evergreen, Colorado
Susan Wood, Executive Director, Children's Center at Caltech, Pasadena, California

Childcare Modular Facility Managers

Wendi Mahaney, Program Director, Child Development, Inc., Irvine, California
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Contractor/Developer

Steven T. Frederick, President, STF Development, San Jose, California

Naturalistic Playground Development Experience

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Municipal Child Care Coordinator

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Child Care Law Center

Ava Yajima, Staff Attorney, Child Care Law Center, San Francisco, California

Facility Financing

Claudia Siegman, Facilities Developer, Low Income Investment Fund, San Francisco, California
Carla Dartis, Program Officer, The David and Lucile Packard Foundation, Los Altos, California



EXECUTIVE SUMMARY

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The *Think Tank* on Modular Design for Early Care and Education, held on March 3rd and 4th, 2003 at the Sierra Health Foundation in Sacramento, California was convened for the specific purpose of creating a distinct body of knowledge and recommendations for designing modular facilities. This Final Report offers significant guidelines for those developing early care and education facilities and those wishing to impact public policy decisions.

Introduction

The benefits of early care and education have long been established. From early beginnings, with the Lanham Act of 1943 providing childcare for women in the defense industry to some of the first Head Start programs in the 1960's, California has been a leader in implementing programs for young children. Most recently, federal block grant funds for childcare have been augmented with funding as a result of the mandate for welfare to work programs. Proposition 10 funding resulting in the Children and Families initiatives in all counties in California has contributed even more funding and attention to the benefits of early care and education.

Yet, despite the increased funding and recognition of the need for quality early care and education programs, attention to appropriate facility development to house programs for young children has been sadly lacking. Often in the rush to provide environments and classrooms, programs for young children have been hastily placed in facilities not designed for caring for our youngest children. Such accommodations as church basements, warehouses, and Quonset huts have often been converted to provide spaces. Modular buildings have also been extensively accessed as an inexpensive and rapid solution to facilities for pre-kindergarten programs, especially in the wake of class size reduction and the return to primary grades of many elementary school classrooms that had been housing childcare programs.

Quality environments for children involve far more than a safe facility. "Children benefit from environments that not only provide basic care, but that also promote the development of cognitive, language, social and emotional skills, as well as health. Higher quality settings, in addition to having better health and safety practices, are also more likely to have caregivers who offer care that is more stimulating and supportive." (Child Trends Research Brief, 2001). In achieving the goals of school readiness, planners must recognize that a child's relationship to the spaces surrounding her contribute to opportunities for growth and development and to her caregivers' abilities to meet her needs for nurturance.

With continuing increases in California's population, the pressure for spaces for early care and education programs is mounting. "Early and extensive enrollment in child care has become the norm in U.S. society. Indeed, if children were only sporadically or briefly exposed to child care, it would not be the visible policy issue that it is today" (Shonkoff and Phillips, 2001). In California, the Joint Legislative Committee's final report, The California Master Plan for Education, emphasizes the importance of school readiness activities. Among the recommendations are: consolidating and expanding funding for infant and toddler services and enhanced developmental screening; voluntary access to formal preschool programs for two years prior to Kindergarten; and full-school day Kindergarten. Considering these recommendations coupled with the funded activities of many Children and Families First initiatives and the much discussed universal access to early care and education, one can only conclude that the issue of designing facilities to house early care programs requires urgent attention.

The *Think Tank* Purpose

Child care planners, designers, developers, and early child development experts have avoided the use of modular, prefab buildings unless greatly constrained by budget considerations. As a result, it is often children who are poor and/or disadvantaged minorities or 'at risk' that attend childcare center programs and Head Start programs in inadequate modular childcare buildings and outdoor areas. The design and use of these modular buildings too often hampers or presents barriers to the delivery of quality early childhood development programs. As a result, the infants and children who most need quality childcare are shortchanged.

It is essential that during this time of rapid facility development that specific attention be paid to creating facilities with a spirit of place. Such environments can inspire children, parents, staff and others who enter the spaces and communicate the importance and value that is placed on childhood. Achieving a spirit of place can be possible with modular facilities when the elements have been carefully planned and the impulse to plop a prefabricated building in place and open the doors is resisted.

"Many architects, child care professionals, and human resources personnel confronted with the task of providing a space for child care assume that there are 'accepted' ways to do it and exemplary facilities to emulate. This is, unfortunately, a false assumption. Often the elementary school is seen as the model, but elementary schools are not appropriate for babies who cannot talk, toddlers just learning to walk, or preschoolers who need to move in order to learn. Without a body of knowledge from which to draw, teams designing new centers have practically had to invent strategies for each new situation." (Olds, 2001).

This statement is even more valid when applied to the development of modular facilities. At the 2001 and 2002 Removing Barriers to Childcare Facilities Development Design Institutes, it became clear that there is both a dire need and interest in designing and enhancing modular buildings for early care and education that better support quality programs for young children. The *Think Tank* on Modular Design for Early Care and Education was convened for the specific purpose of creating a distinct body of knowledge and recommendations for modular facilities. The collective thinking of those assembled for the *Think Tank* have been summarized in this report to provide design and process guidelines for those developing modular facilities for early care and education and those wishing to impact public policy decisions.

The *Think Tank* Process

Distinguished experts representing a variety of professions were invited to participate in the *Think Tank* to offer their knowledge, ideas, ingenuity, creativity, and experience. Securing the participation of various categories of expertise was crucial to forming balanced multidisciplinary teams to develop design recommendations for enhanced modular buildings integrated with outdoor spaces. A profile of the categories of skills and expertise of the panel is as follows:

- Architects and Landscape Architect
- Modular Manufacturers and Consultants
- Child Development Experts
- Facilities Managers
- Contractor/Developer
- Playground Developer
- Children's Museum Director
- ADA expert from the Child Care Law Center

- Facility Financing expert from the Low Income Investment Fund
- Foundation Program Officer
- Municipal, State and Federal Agency Representatives:
 - City Child Care Coordinator
 - State of California Division of the State Architect
 - Community Care Licensing
 - California Department of Education, Child Development Division
 - United States Department of Health and Human Services, Headstart

The participants were organized into five groups to work on designing buildings and outdoor classrooms and play yards for modular child care centers. Each team had the benefit of the input of an architect or landscape architect, a childcare modular user such as a center director, and a modular builder/designer. To stimulate their thinking, participants heard and viewed the presentations on the following:

- the design process
- the architectural variety and cost range of existing modular childcare centers;
- the creation of program criteria for modular centers;
- the manufacturing process of modular and manufactured buildings;
- the design of naturalistic outdoor classrooms and play areas; and
- the design problems in modulares, offered by a panel of the childcare providers in attendance.

Each design team was asked to respond to the list of problematic design features encountered by the modular users panel by: (a) generating a list of initial design solutions, and (b) producing a visual rendering of their ideal modular site for childcare.

The *Think Tank* Final Results

The contents of the Final Report detail the thinking of the panel of experts. Specific design features and enhancements are listed as well as recommendations concerning the design process. The Design Enhancements are recommended as standard modifications in modular buildings used for early care and education. Such suggestions as an increase in number and size of windows throughout the building to allow for more natural light and installation at a variety of levels including low windows or portholes at the level of infant crawlers and toddlers provide a higher quality setting for young children. The creation of homelike building facades, courtyards, and defined entry paths that are child-scaled and child-friendly provide an inviting entrance to the facility. Enhancements such as covered front porches create a threshold of defined space to welcome children and families. The Design Process findings urge that an architect or design expert serve as an intermediary between the client and the modular building manufacturer and that multiple architectural solutions are presented to the *Problem Statement* so that the client is a chooser of solutions. Additionally, it is critical that the child care professional have an opportunity to work directly with the architect and manufacturer in this process.

Guidelines for outdoor areas and integrating indoor and outdoor activities through the use of outdoor classrooms are included. For example, the attachment of outdoor decking or porches with covered entrances/exits directly to the building enhance the appearance of the modular, provide shady outdoor classrooms, and offer a transition zone between indoor and outdoor areas.

A modular prototype integrated with the outdoor setting is currently under development through a collaboration of architect John Davis of R-2ARCH, landscape architect Anne Nelson, and consultants Gretchen Anderson, Ph.D. and Dianne Philibosian, Ph.D. It represents a site layout, customization and enhancement of modular buildings that

can provide pride of ownership and client satisfaction. It will be available through www.designchildcare.com beginning October 1, 2003.

Final recommendations offer suggestions for future activities. The convocation of the panel of experts for the *Think Tank* was the first time modular manufacturers, child care specialists, architects, and other allied professionals have come together to exchange information on the topic of enhancing modular facilities for early care and education. It was essential that the participants and each of the design work groups first go through a substantive transfer of knowledge process before the development of prototypical designs. As a result, it is recommended that further work continue to create several options of modular facility prototypes enhanced for early care and education. It is highly desirable that these future efforts result in the installation of a "model" modular facility to house a child care program and serve as a living laboratory of design. Finally, for policy makers, it is highly recommended that sales tax on modular facilities purchased for child care be waived. The savings for the client can provide resources to achieve some of the desired enhancements.

References

Child Trends Research Brief, School Readiness: Helping Communities Get Children Ready for School and Schools Ready for Children (October, 2001).

Olds, Anita Rui. Child Care Design Guide (2001).

Shonkoff, J.P. and Phillips, D.A., Eds, From Neurons to Neighborhoods (2001) p. 297.

The California Master Plan for Education, California State Senate (2002) <http://www.sen.ca.gov/masterplan>.



DESIGN ENHANCEMENTS

DESIGN ENHANCEMENTS

Early childhood education experts recommended the following enhancements become standard in modular buildings used for early care and education:

FACILITY ENTRY

- ❑ Homelike building facades, courtyards, and defined entry paths that are child-scaled and child-friendly should be designed and installed on-site to create an inviting entrance to the facility. Enhancements such as covered front porches create a threshold of defined space to welcome children and families.
- ❑ Where possible, facilities serving multiple age groups should have a separate entrance directly to the infant program. This infant area should be situated adjacent to the administrative/reception area.

INDOOR/ OUTDOOR FLOW FOR CHILDREN'S AREAS

- ❑ Promote a maximum indoor/outdoor flow in the program by installing French doors or roll-up doors to the outdoors. Where possible, allow for the installation of screen doors.
- ❑ Attach outdoor decking or porches with covered entrances/exits directly to the building to enhance the appearance of the modular, to provide shady outdoor classrooms, and to offer a transition zone between indoor and outdoor areas. Attach shady overhangs, awnings or covers directly to the building.

OUTDOOR CLASSROOMS

- ❑ Outdoor spaces should include water, creeks, fountains, mud and dirt, sand, child-safe plant life, and varying ground elevations.
- ❑ Outdoor spaces should be programmed to provide shade, sun, and wind protection.

WINDOWS

- ❑ Windows throughout the building should be enhanced. They should be increased in number and size to allow for more natural light and be installed at a variety of levels including low windows or portholes at the level of infant crawlers and toddlers. "Bubble windows" (skylights installed into the wall) can provide "window seats" for young children. Most windows should open for ventilation and all windows must be double-glazed for safety and energy efficiency. Windows should be included in all interior and exterior doors and half-doors.
- ❑ Include window coverings in the standard order for the modulares.
- ❑ Within the facility, include interior windows to allow for light flow and to promote visual communication within the center. The interior windows should be installed at a variety of heights, including adult eye level, children's eye level, and at the level of infant crawlers and toddlers. A "goodbye" window is desirable.

CHILDREN'S BATHROOMS

- ❑ Within the modular, locate children's bathrooms for accessibility from both the indoors and outdoors. Provide a transition space from the outdoor area into the bathroom to minimize sand and dirt accumulation that could be tracked into bathrooms and classrooms. Install flooring with a texture that mitigates dispersal of dirt and sand accumulation.
- ❑ Children's sinks and toilets should be appropriate for child height to avoid use of dangerous steps for sink access. Ensure that the ADA standards applied are adapted

for young children. Use the guidelines from the State of California Division of the State Architect, "Table of Deviation from Adult Dimensions for Young Student Facilities."

- ☐ Install wider diameter pipes for toilet drainage to mitigate frequent stoppage from toys and articles flushed in the toilet.
- ☐ Include floor drainage in the bathrooms to prevent flooding in the event of overflowing sinks and toilets.

SEAMS AND FLASHING

- ☐ Ensure roof seams/flashing and floor/foundation seams/flashing do not separate and are constructed to protect against leaks.

CONSTRUCTION MATERIALS

- ☐ Sustainable, non-toxic materials should be used throughout the facility. Install blown cellulite (non-toxic) insulation rather than fiberglass.
- ☐ Ensure that flooring installed can be easily cleaned and that there are areas free from wall to wall carpeting for children's "wet" activities and eating areas.
- ☐ Add acoustical baffling in all interior areas.
- ☐ Utilize alternatives to ceiling tiles, which gray and appear dirty within a short period of time.
- ☐ Install higher quality fixtures, finishes and hardware, especially more resilient floor covering.
- ☐ Include more effective drainage and plumbing systems. Plumbing fixtures should be heavy-duty, commercial grade.

HEATING, VENTILATION, AND AIR CONDITIONING

- ☐ Include commercial grade HVAC systems with separate zones for multiple age-groups and sun-facing sides of buildings.
- ☐ Ensure that under flooring has enhanced ventilation and moisture control systems. This is especially important when wood foundations rather than cement slabs are used.

MAINTENANCE

- ☐ Include options for planned maintenance. Maintenance schedules and instructions should be posted within the facility. Maintenance agreements with the manufacturer should be offered as part of the purchase price.

LIGHTING

- ☐ Include options for indirect and incandescent lighting with less fluorescent lighting throughout the facility. Dimmers/adjustable lumens should be provided. There should be no bulbs with direct visual contact; options for task lighting should be included.

ELECTRICAL/TECHNOLOGY

- ☐ Locate electrical outlets and switches strategically. Two outlets on each wall are needed at both higher and low to floor levels. At a minimum, there should be one electrical outlet and switch per every 14 feet of linear wall so that use of extension cords can be avoided. All outlets must be protected from children.

- ☐ Include computer and telephone outlets in all classrooms and offices.

DESIGN CONSIDERATIONS

- ☐ Ensure that the facility designed and ordered is large enough to allow for all of the required activities and provides adequate storage. Special attention should be given to including administrative spaces such as entry areas, spaces for parent-child transitions, parent information areas, conference rooms for confidential meetings with parents, staff lounge, etc.
- ☐ Install wainscoting with either carpeting or washable surface suitable for exhibiting children's art.
- ☐ Provide for movable interior division of spaces, which can be adjusted as program needs change.
- ☐ Create modular interiors that have diverse configurations, such as a floorplan with angles/curves/nooks.
- ☐ The square footage per child should exceed minimum licensing standards. 50-85' square feet per child indoors and 100 square feet per child outdoors are recommended.
- ☐ Additional counter space should be included in each classroom. Install an adult height sink with multiple compartments and a child height low trough sink in each classroom.
- ☐ Locate the staff lounge near the classrooms.
- ☐ Use muted non-primary colors throughout the facility.
- ☐ Consider installing modulars at ground level to avoid additional expense of ramps and stairs.
- ☐ Consider constructing pitched frame roofs to avoid flat roof problems such as leaking and settling.

KITCHENS

- ☐ Include full residential kitchens with double refrigerators and washer/dryer hook-ups. Sinks should have multiple (3) compartments.
- ☐ Ensure kitchens are of adequate size and furnishings to accommodate the number of children in the center.

DIAPERING AREAS

- ☐ Install diapering tables with stairs for toddlers and 2 year olds.
- ☐ Install diaper disposal chutes to the outside for infant and toddler programs.

STORAGE

- ☐ Increase the availability of storage (cabinetry). Include cabinets in above sinks and toilets in children's bathrooms. Ensure that cabinet doors are secured with built-in locks and flush hardware.
- ☐ Include a large storage room accessible from both indoors and outdoors.



DESIGN PROCESS

DESIGN PROCESS

Think Tank participants identified the following issues and problems associated with the Design Process of Modulares used for early care and education:

- ☐ Childcare clients fail to base their design ideas and requirements on adequate research, a mission statement, a business plan, construction and operating budgets, project feasibility analysis, site feasibility analysis, and a market analysis—all of which are needed before even rudimentary design sketches begin.
- ☐ The truncated design processes most typical of modular childcare facilities are problematic: Childcare Clients need to utilize a design process to form a “*Big Idea*” and a “*Problem Statement*” that will guide the entire design in all its stages.
- ☐ The client’s *Problem Statement* should specify the characteristics of their overall concept (*The Big Idea*) that results in architectural solutions to communicate those characteristics.
- ☐ An architect or design expert must serve as an intermediary between the client and the modular building manufacturer and present multiple architectural solutions to the *Problem Statement* so that the client is a chooser of solutions.
- ☐ Child care clients must provide detailed *Program Criteria* to architects or intermediaries. It is preferred that a representative from the child care provider or an early care and education consultant work directly with the architect to ensure appropriate interpretation of child development principles through all phases of the design process.
- ☐ Clients must “claim their space” by specifying square footage ratios that significantly exceed licensing standards to modular manufacturers.
- ☐ The modular manufacturer should be a member of each design development team.
- ☐ The Division of the State Architect or any local/municipality review agencies should require the participation of an architect or early care and education design consultant on the design development team for each facility project.
- ☐ The configuration (adjacencies) of modular buildings is critical to the overall design and functioning of the facility--particularly in supporting the indoor/outdoor classroom approach.
- ☐ Exterior amenities and outdoor spaces must be programmed with the building itself and not as an afterthought. Outdoor spaces should be programmed as ‘outdoor learning environments’ or ‘outdoor learning landscapes’ or ‘outdoor classrooms’.
- ☐ Circulation outdoors is as important as indoor circulation as a design parameter.
- ☐ If outdoor classrooms are fully developed, the usable space in the center is increased and the relative cost of the project is decreased.
- ☐ Customization and enhancements of modular buildings are directly related to pride of ownership and customer satisfaction.
- ☐ Architects and their clients should tour the factory of the modular manufacturer they have selected or are considering.

- ☐ **Modular manufacturers need to provide a list of building specifications that are standard with an accompanying list of options and enhancements, each annotated with prices.**
- ☐ **Modular manufacturers should provide age-specific design packages, i.e., infants, toddlers, pre-school, kindergarten, and school aged.**
- ☐ **Modular manufacturers should provide tenant improvement packages and their pricing that can be added over the life-time of a facility.**
- ☐ **The “piggy-back” bid and contract process should never be substituted for a design development process.**




DIAGRAM OF DESIGN PROCESS



A DESIGN PROCESS

1. THE PROBLEM STATEMENT

- 
- MISSION STATEMENT
 - FEASIBILITY AND MARKET STUDIES
 - LICENSING CODES, Titles V and 22
 - OPERATING & CONSTRUCTION BUDGETS
 - BUSINESS PLAN
 - MODULAR BUILDINGS SPECIFICATIONS
 - SITE ANALYSIS
 - PROGRAM CRITERIA

2. THE BIG IDEA



3. SOLUTIONS TO THE PROBLEM STATEMENT

4. SCHEMATIC DESIGN PHASE

5. DESIGN DEVELOPMENT



GUIDELINES FOR NATURAL PLAY YARDS

GUIDELINES FOR NATURAL PLAY YARDS

**By Anne Nelson, Landscape Architect
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Space should be allocated for the following activities:

- ❑ Sand Play – Deep sand, dug into grade, 24" minimum, large area to allow for use of big shovels, shaded, with water nearby**
- ❑ Mud play – At natural low point, away from daily use area. Perhaps mud play is limited to rainy weather. (Most teachers are not that crazy about daily mud play.)**
- ❑ Water – Yard hydrants or other frost-proof connections, located throughout playground for easy water play, cleaning, wet sand, wading pool filling, etc...**
- ❑ Zone for trikes and other wheeled vehicles, some slope (challenge) is good, but not so much that this cannot double as ADA access. Add speed bumps, tunnels. Keep trike path away from areas for quiet focused outdoor activity.**
- ❑ Dance, singing require power for music and an open space – have plenty of outdoor plugs.**
- ❑ Easily accessible storage for outdoor equipment near areas of use. This should be sized to accommodate trikes and other wheeled vehicles (strollers for infant-toddler programs) and all the loose parts (boards, boxes, large hollow blocks, portable climbers and tunnels, tarps, sand toys, water toys, gardening tools, etc....) It is nice (and rare) when this is incorporated into the building design.**
- ❑ Table activities will include snacks and lunch, art projects. Need shade. Tables should be sized for preschoolers. Painting easels can be on fences or freestanding in art zone.**
- ❑ Woodworking benches and tools are more likely to be used in a controlled-access environment with good storage.**
- ❑ Climbing structure with accessible safety surface. Focus on climbing and balance, upper body activities rather than slides and tunnels, panel activities. Tree trunks dug into the ground, horizontally and vertically can be used for balancing and be placed within the safety zone to soften the feel of the plastic-metal climber.**
- ❑ A quiet place for circle time, reading, with grass, shaded by trees.**
- ❑ A gardening area for fruits, flowers, vegetables. Separate from rest of playground with fence.**
- ❑ Shade is critical. Pre-manufactured metal and polyethylene structures work well if you need to cover a large, tall space (like a climbing structure/safety zone). Smaller ramada-like structures are good for gardening areas, sand and mud play areas, quiet areas. Materials vary regionally, in the southwest juniper is used for the posts and fir or aspen for the cross pieces (densely placed). Adding grapes and other vines is great.**
- ❑ Have space for family activities (parent meetings, "graduations", family nights) to be held outside.**

- ❑ **LOTS OF SHADE TREES** create a feeling of respect and nurturing, faith in the future. If water is scarce, catch and store rainwater in tanks or grade site so that rainwater goes to plantings.
- ❑ **Play houses, pre-manufactured or site built. Have two or three for a “village”.**
- ❑ **Large boulders can be used if they are buried so that only 18” are above grade and placed 6’ apart.**

(Note: Head Start and California Community Care Licensing requirement = 75 square feet/child minimum of outdoor play space)

PLAY YARDS

Written by Anne Nelson and Arina Pittman

"Play Yard" is the name Anne Nelson uses to describe spaces she and her design group create for young children. The name is a way of distinguishing these play spaces that focus on learning in the outdoors and interactions with nature from the typical image of sterile "playgrounds" made of mismatched prefabricated "play structures" surrounded by a chain link fence.

The play spaces designed and built by Anne Nelson's design group, based in Santa Fe, New Mexico, strive to become living laboratories: outdoor environments that honor and encourage the emotional, physical and cognitive development of children in child care.

The main goal in the design of play yards is to create places where children feel respected and trusted, where they can choose between privacy and solitude and a group activity, find areas for active or quiet play, observe things, interact with natural elements and, most important, create and define their own space. Play yards are built to accommodate outdoor learning through sand, water and mud play, gardening, and more as well as other activities that more typically take place indoors: napping, lunch, reading and story circles, drawing, science art and other activities.

Ideas of permaculture, sustainability, regional design and natural building are closely interwoven to inform the play yards' designs.

Permaculture design brings in the concepts of edge, biodiversity and designing for multiple functions. "Edge", in permaculture parlance, means a place where two or more mediums meet, for example grass and sand, or water and stone, creating some intermediate richer environment. "Increase edge" is one of the key imperatives of permaculture design. This approach is usually used when talking about gardens and orchards, as the combination of several ecosystems (edge) is more productive, resilient and biologically diverse. Amazingly enough, the edge works in social situations as well: sitting walls, steps, tiles, hedges, yard hydrants, bridges etc all create a multitude of edge effects, acting as nuclei of activities, play and learning. The edge concept helps to diversify the fabric of surfaces and objects on a play yard, and in turn allows children to conduct daily un-guided interpretations of their environment.

Ideas of biodiversity are reflected in planting plans, where plant and animal species interact in a cooperative effort of a small ecosystem. Naturally designed to grow food and fruit, children's gardens and orchards are fed by rainwater, and provide a subconscious connection between sky, earth and one's body.

Regional sensitivity suggests design patterns and building materials, different from play yard to play yard, depending on the culture of the surrounding communities. With the most focus placed on natural materials (wood, adobe, strawbale, and stone), some recycled materials are used as well, when the regional esthetic calls for them. For example, tire hills, sheet metal fences, and "Impact Posts" made from recycled automobile parts are incorporated into designs for reasons of affordability, durability or ease of construction by non-skilled parent and community volunteers.

Ideas of natural building contribute the elements most often missed in the constructed institutional environments: attention to detail, expressed manual craftsmanship, and individualized elements. Although the time and budget are always limiting we firmly believe that each play yard must have at least one small detail that invokes the universal

ideas of beauty: carving, mural, mosaic, fine quality stone work or something else that makes the place unique. The size is usually minimal, but the hope is that such a detail conveys the messages beyond words.

Sustainability, a complex concept, includes continuity of play yards over time. As we have learned, only through community involvement can we create a successful play yard, where the weeds get picked, plants watered, sidewalks swept clean and piglets or bunnies brought to visit the children. The parents and children often participate in the building of the play yards, donating certain building materials, plants, labor and craftsmanship.

A SANTA FE EXAMPLE

Our most recent play yard is still (and forever) under construction on a 1/8-acre plot of urban land next to one of the largest arterial roads in Santa Fe. Forty preschool children (3 to 5 years old) from low-income families come here four days a week to a 'Head Start' program whose goal is preparation for school. The flat site offered very little with the exception of the endless noise from the busy road, lots of dust, a few elm trees and cedars and a ceaseless smell of grease from the fast food restaurant next door. Janice Vascott, local strawbale architect, noted at her first site visit that it would be nice to create a complex circulation route on the yard, where kids meander from destination to destination, rather than being able to run the shortest distance. Anne Nelson, the lead landscape architect, pointed out that children need shade, and lots of it, to protect them from overheating, sun exposure, and also to create comfort for the teachers. (Anne is famous in the area for her play yard design motto "Elms R Us", acknowledging the fact that in hot and dry southwestern climate, the elm is the play yard tree of choice, as it grows fast with no maintenance or watering, both of which are hard to find). Arina Pittman felt that kids need a small strawbale play village with a plaza and orchard. From the combination of their impressions, and suggestions made by parents and teachers, the design for the play yard was born.

The first village we built has only two houses, with entrances from a small placita, where a yard hydrant acts as a traditional water fountain, frequently found in Mexican plazas. Fruit trees, watered by the roof and storm water runoff, surround the village. Local rabbits and squirrels frequently visit a children's garden, planted with sunflowers, grapes, fennel, cilantro, oregano, scallions, rhubarb chard, and lavenders. Birds and butterflies have already discovered our small oasis. The challenge of not having kids during the summer was resolved by selecting plants that either bloom/produce before June 1, or after September 1. Asian pears and apples will wait until first frosts, while pie cherries were already ripening in Mid May. A small (500 gallon) water tank sits under a downspout. Although it will only provide supplemental water, it acts as an important symbol in the children's garden.

By choice our play yards are places of change. We want the children to feel that they can have an impact on their environment, in participating with their families in the building the playground itself but also on a daily basis. Making mud pies, stacking large blocks to make a fort, planting, picking, and eating vegetables, digging in really deep sand are all activities that require little adult intervention. They allow for experimentation, collaboration, the mastery of new skills and constant opportunity for language development. What better preparation for school could there be?

Credits:

Anne Nelson is the mother of three children and an early participant in the Children's Workshop, a community-run outdoor school near Cerrillos, New Mexico that served the local community for over twenty years. Mentored by John Lyle during her years as a student at California State Polytechnic University in Pomona, California she came to landscape architecture with a foundation in 'ecosystematic design'. She has spent over two decades learning about children's needs and learning patterns, focusing on early childhood development and education in the outdoors. She took her professional and parental experience and begun applying it first at the Santa Fe Children's Museum, and later in her multiple contracts with regional institutional childcare providers. The major focus in play yard design is on learning in the outdoors.

Janice Vascott, Santa Fe architect for real homes, also designs decks, tree houses and strawbale play villages. She has ongoing work designing strawbale structures for the Christ in the Desert Monastery in Abiquiu, New Mexico.

Arina Pittman recently completed her Master's degree in landscape architecture. She gardens, raises chickens and turkeys, and works for a water harvesting and landscaping company based in Santa Fe.



A play structure with multiple platforms and varying challenges for climbing stimulates high levels of fantasy play.

Joyce M. Huggins Early Education Center, California State University, Fresno



A naturalistic shaded play zone is open to the imaginative interpretation of children.

Joyce M. Huggins Early Education Center, California State University, Fresno



**A garden invites the aesthetic and scientific exploration of plant life and insects.
Joyce M. Huggins Early Education Center, California State University, Fresno**



**An adjacent aquatic study area provides a myriad of discovery and learning opportunities. It is isolated by fencing for safety but can be viewed from the rest of the outdoor area. Access for children is carefully supervised by staff.
Joyce M. Huggins Early Education Center, California State University, Fresno**



RECOMMENDATIONS FOR FURTHER ACTION

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The *Think Tank* participants suggested the following for future consideration and action:

- Work should continue to create several options of modular facility prototypes enhanced for early care and education. This was the first time modular manufacturers, child care specialists, architects, and other allied professionals have come together to exchange information on the topic of enhancing modular facilities for early care and education. As a result, there was a substantive transfer of knowledge process before the development of prototypical designs could come to fruition.
- At a minimum, dialogue should continue on an on-going basis among the groups represented by the *Think Tank* participants.
- Future efforts on the part of funding foundations or a consortium of foundations should result in the construction and installation of a “model” modular facility to house a child care program and serve as a living laboratory of design.
- Construction and installation of a variety of modular prototypes serving different age groups are recommended to assess issues of cost effectiveness, required production changes, and potential demand for the product.
- It is recommended that an extensive in-depth process be developed to create a handbook of designs that accommodate variables: number and ages of children to be served, size of location, constraints of utility access, parent pickup and drop off areas, children’s outdoor areas, and costs. Additionally, information on facility loans and grants should be included.
- Modular manufacturers should consider adopting an industry standard to request specific programming criteria from the child care professionals who will be the users of the facilities. Manufacturers should offer optional design features that could be added later as additional funds become available.
- Program administrators, facilities managers, and others responsible for ordering modular buildings should attend the Design Institute that affords them the opportunity for dialoguing with child development professionals about planning for facilities for early care and education.
- Modular manufacturers should consider developing marketing materials that emphasize the importance of quality facilities designed specifically for young children and offering many of the enhancements described in this document as “standard.” Create a list of optional design features from which child care providers could select the most applicable for their setting.
- The California Division of the State Architect and the Child Development Division should be given the opportunity to collaborate in developing information on approved or recommended early childhood modular designs for promotion with school districts.
- Facility managers, program administrators, school district personnel and others ordering modular facilities should include policy and procedure statements in written materials that ensure participation of child development professionals in providing programming criteria to the manufacturer.

- ☐ **Policy makers should consider enacting legislation to waive sales tax on modular facilities purchased for child care. The savings for the client can provide resources to achieve some of the desired enhancements.**
- ☐ **School districts should offer longer term lease agreements. Most lease agreements for modular facilities are only five years, which is not enough time to cover loan payback.**



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State of California Child Development Policy Advisory Committee

SELECTED WEBSITES FOR FURTHER INFORMATION

<http://www.packard.org>

The David and Lucile Packard Foundation

<http://www.liifund.org>

Low Income Investment Fund

<http://www.nedlc.org>

National Economic and Development Law Center

<http://www.buildingchildcare.org>

Building Child Care: A California Statewide Collaborative

<http://www.childcarelaw.org>

Child Care Law Center

<http://www.sustainableschools.dgs.ca.gov/sustainableschools>

Division of the State Architect: Sustainable Schools

<http://www.designchildcare.com>

The Design Institute

Website for the Dissemination of the

Final Report: Think Tank on Modular Design for Early Care and Education