

The Living/Learning Cabin

A Prototype Design for Children with Disabilities

Variety the Children's Charity of the Delaware Valley



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I. INTRODUCTION

PROJECT DESCRIPTION

A Living-Learning Cabin Prototype Enabling Space for Children with Disabilities

As Variety re-envision its campus in Worcester Township, it has a unique opportunity to create innovative enabling spaces for the children and young people that it serves. The 77-acre site was originally developed in 1949 as a summer camp for children afflicted with polio. The campus remains a bucolic and joyful place, but over decades its structures have become worn and are ill-suited to current programmatic needs, and as the clients' diagnoses now tend toward intellectual and developmental disabilities, new facilities must be designed with a focus on creating supportive space for their diverse sensitivities.

We understand that Living-Learning Cabins will be the touchstone for a child's experience at Variety. From here they may enjoy a week at summer overnight camp or day camp and enhance their learning in extended school year programs. During the school year they may come for after school programs and Saturday arts or social club meetings. The cabin prototype we propose is designed to adapt to these different activities and to provide a variety of enabling spatial conditions that can accommodate the differing needs of the children with diagnoses that range from autism to cerebral palsy to Down syndrome.



*Image: Existing Aerial
Photo*



VARIETY AND TEMPLE'S URBAN WORKSHOP

The collaboration between Variety and the Temple's Urban Workshop began in 2020. A graduate architecture design studio engaged with Variety and developed conceptual designs for various buildings proposed in the 2019 master plan.

In 2022 with a grant from the National Endowment for the Arts and support from Temple University, the project was carried forward as a professional research-based design for the Living-Learning Cabin Prototype. Faculty members, a graduate research fellow, and graduate seminar students participated in advancing the project with input and support from Variety's staff and board.

The collaboration with Variety has been inspiring. In all contexts and scales, the Urban Workshop values the human-centered design approach, yet the work with Variety presents an exceptional opportunity to more deeply explore that ethic. The Living-Learning Cabin project has permitted us to focus on the crucial role the physical environment plays in the well-being and development of Variety's unique client population. It illuminates the fundamental human-environment relations.

Image: The Entrance sign for the campsite.

II. RESEARCH

Everything you
Always wanted
to know about 6...
But were afraid
to ask!

Directed by:

UNCLES:

MARTY

1976

+ Chad

CAST:

LOUIS
LEE NATE

MARTY
BILLY

Bob Mike
LARRY

RESEARCH OVERVIEW

The design of the Living-Learning Cabin is grounded in a research agenda that has been used to guide and inform the work. We drew on different sources and employed diverse methods: We conducted on-site visits and interviews, performed a review of literature and case study projects, and familiarized ourselves with existing studies and plans. In addition, we found the feedback from members of Variety around preliminary assumptions and propositions to be helpful in clarifying goals and specific needs. From this combined research we were able to develop a human-centered architectural program for the Living-Learning in Cabin that could be function in a multivalent way and bring joy and support to the users.

Issues of sustainability are considered broadly, keeping in the forefront the impact the natural environment has on the users. The campus is a respite from the structures of everyday experience and cabin design can celebrate the sensory qualities offered in the natural environment. Research suggests that multiple connections with nature can be a powerful therapeutic influence and the opportunities to exploit this inside, outside, and in between are worthy of thoughtful consideration.



ON SITE RESEARCH

In several on-site visits we observed the facilities and programmed activities, and we conducted interviews with staff and board. We saw the site in rain and sun, during the summer and in the wintertime, and we spent an afternoon with the children and teachers at the satellite site at the Widener School near Temple. The student design studio investigations helped to set the context by understanding the scope of the organization's programming, its facilities, and its range of users.

In subsequent visits members of the Urban Workshop team were able to have in-depth conversations with the staff and to observe how the children and their teachers use the existing spaces. During our visits many of the Variety children were engaged in passive and active play; others were receiving hands-on teaching and coaching from the staff; others required retreat from over stimulation. It became clear how the environment factored significantly into the children's ability to focus and to interact with others

*Image: Variety staff
interacting with students
during arts class*



Image: Exterior Arbor
between Cabins



Image: Interior Learning
Zone of one cabin

Left Image: The cabins

Diagnoses of 12,000+ Campers at Variety :



USER NEEDS RESEARCH

Variety serves children with a range of diagnoses, mostly autism spectrum disorder, but also cerebral palsy, Down syndrome, and many others. Together with our client-centered research our literature review helped to identify special challenges for these primary user groups*.

For children with autism the hypersensitivity to sensory stimuli affects their ability to concentrate and contributes to impulsivity and their tendency to “escape” from the place where the anxiety originated. They struggle with social interactions but are soothed by predictability in routines.

The Down syndrome child also struggles with concentration and hypersensitivity issues but is more socially amenable. They are developmentally delayed and need support for mobility.

Similarly, the child with cerebral palsy has developmental delays and mobility challenges, but these latter impairments are more extreme. Balance and motor dysfunction and hearing and vision impairments make them dependent on supportive equipment

*See bibliographic references at the end of this report.

Image (Top): Background
Research provided by
the Urban Workshop
and students of the
Architecture Program.

Image: Variety Teachers
working with student

III. DESIGN



DESIGN OVERVIEW

The architectural proposal presented here aspires to achieve what Program Director, Nick Larcenese expressed when he said he would “like the building design to do half the work.” Spatial qualities do impact a child’s learning, socialization, mobility, and comfort in special ways. They can either support or impede progress. This is propounded in the literature and the experience of the Variety teachers and staff that have been shared with us.

We have approached the design problem with a user-first approach with attention to the special sensitivities and impairments that characterize the primary diagnoses of Variety’s youth population. In addition, the well-being of the staff who are engaged in hands-on work with the children has been considered. They need functional space for working with their clients and the ability to adapt that space to programming needs as they change over a day, a week, or a season.

Because the the needs of the different users are diverse, so is the range of space types within the Living/Learning Cabin. This multivalent approach notwithstanding, there are architectural commonalities that runs through all the user groups -- the needs for physical support, accessibility, and perceptually, a strong sense of place..

Image: A rainy summer day




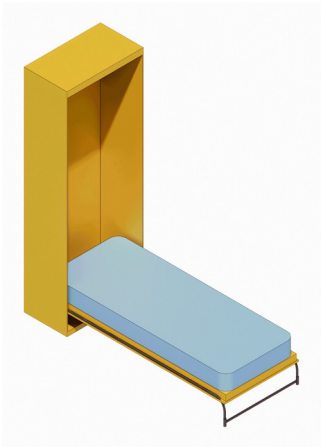
DESIGN PRINCIPLES

To respond to special needs of the users, we developed a set of principles to guide the design.

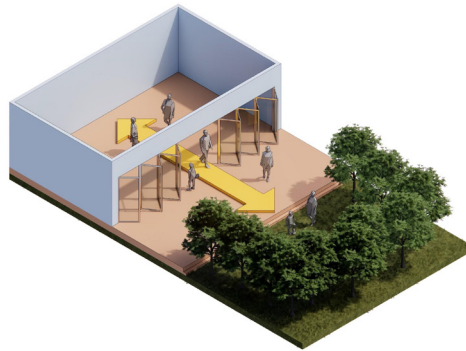
- Visually identify different activities spaces
- Develop gradual spatial transitions
- Provide access and support for impaired mobility, vision, and hearing
- Assist navigation with memorable landmarks and tactile clues
- Carefully place doors; avoid offering escape
- Cue spatial boundaries
- Group together high- vs low-stimulus activity spaces
- Avoid overstimulation through jarring contrasts of light, sound, color, texture, pattern
- Keep colors muted to calming hues: light blue, salmon, and butter yellow
- Control acoustics within and noise coming from outside
- Allow soothing views of the sky and greenery
- Introduce natural systems into the cabin and its related outdoor space (e.g., tree canopy, multi-sensory garden, green walls, vegetated roof, water feature, etc.)
- Make clear indoor-outdoor transitions to adjust senses
- Balance bright and filtered lighting
- Provide cross ventilation
- Create seasonal comfort zones

Image: Interior of Lunchroom

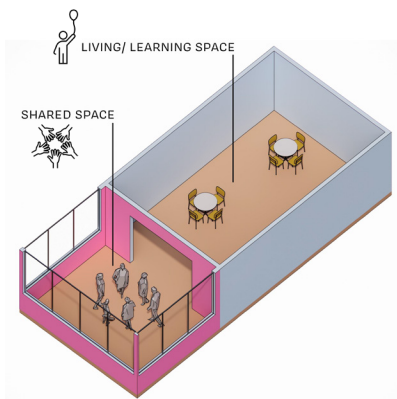
 USING MURPHY BED



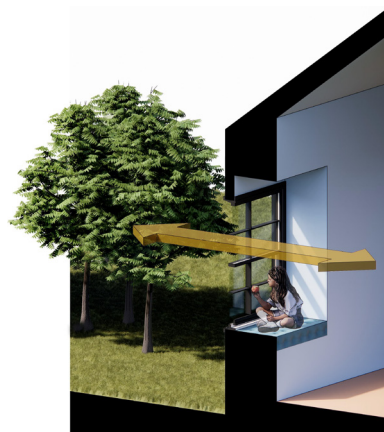
 INDOOR/ OUTDOOR CONNECTION



 SHARED SPACE



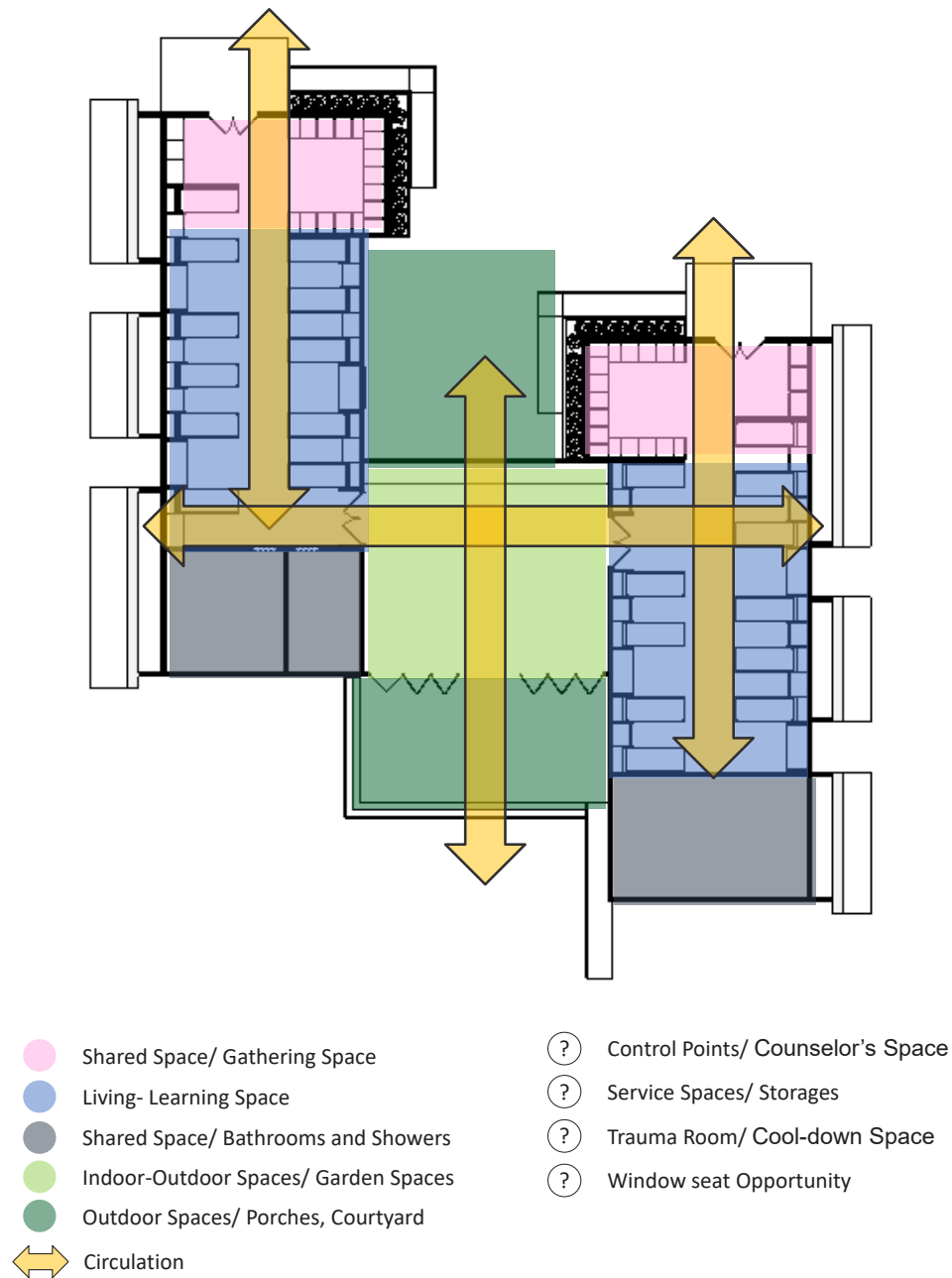
 WINDOW SEAT (INDOOR/ OUTDOOR CONNECTION)



ARCHITECTURAL SPACE PROGRAM

Though cabin groups are organized by age, the needs and sensitivities of the users within each cabin will vary and require a diversity of spatial conditions in the design. Importantly the Living-Learning Cabin will need to accommodate multiple functions within its footprint. Our approach then is to be inclusive, adaptable, and heterogenous in design so that spatial choices are available depending on the users' needs and the programs of activities. These spaces are included in the cabin prototype design:

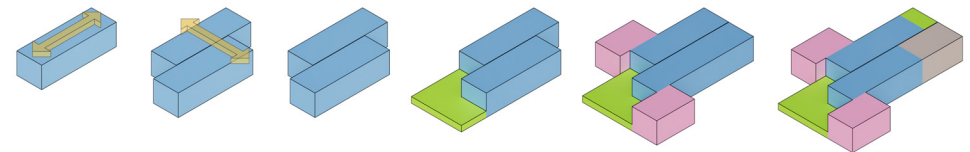
- Entry court space/s for transition from campus to cabins
- Indoor nature learning/play zone
- Fold down Murphy bed sleep space that accommodates 12 beds plus 3 counselors in double bunks
- Fold-up beds to create open floor small group learning space
- Fold-down work desks for older children
- Enclosed storage cabinets for chairs, clothing, and learning and play materials
- Window seats and sunny nooks for personal quiet space
- Informal gathering space as learning/play zone
- 2 toilet and shower spaces per 12 children
- Trauma room for deceleration
- Deck and garden space



DESIGN STRATEGIES

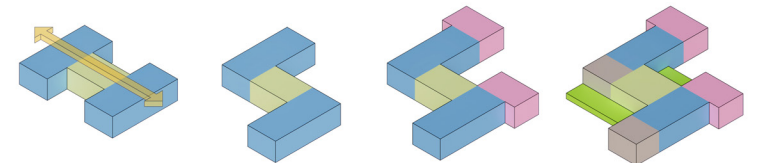
Considering the spatial principles derived from analysis of the users' needs and Variety's programmatic aspirations, the design team developed alternative organizational strategies for the cabin. These are variations on a theme using the architectural elements in different configurations. We settled on the Centralized scheme for several reasons: It offers the greatest clarity of circulation, approach, entry and movement through the primary spaces. It captures outdoor space within the massing of the building. It allows flexibility in configuration in various locations on the site.

LINEAR

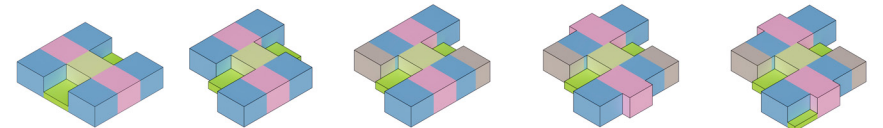


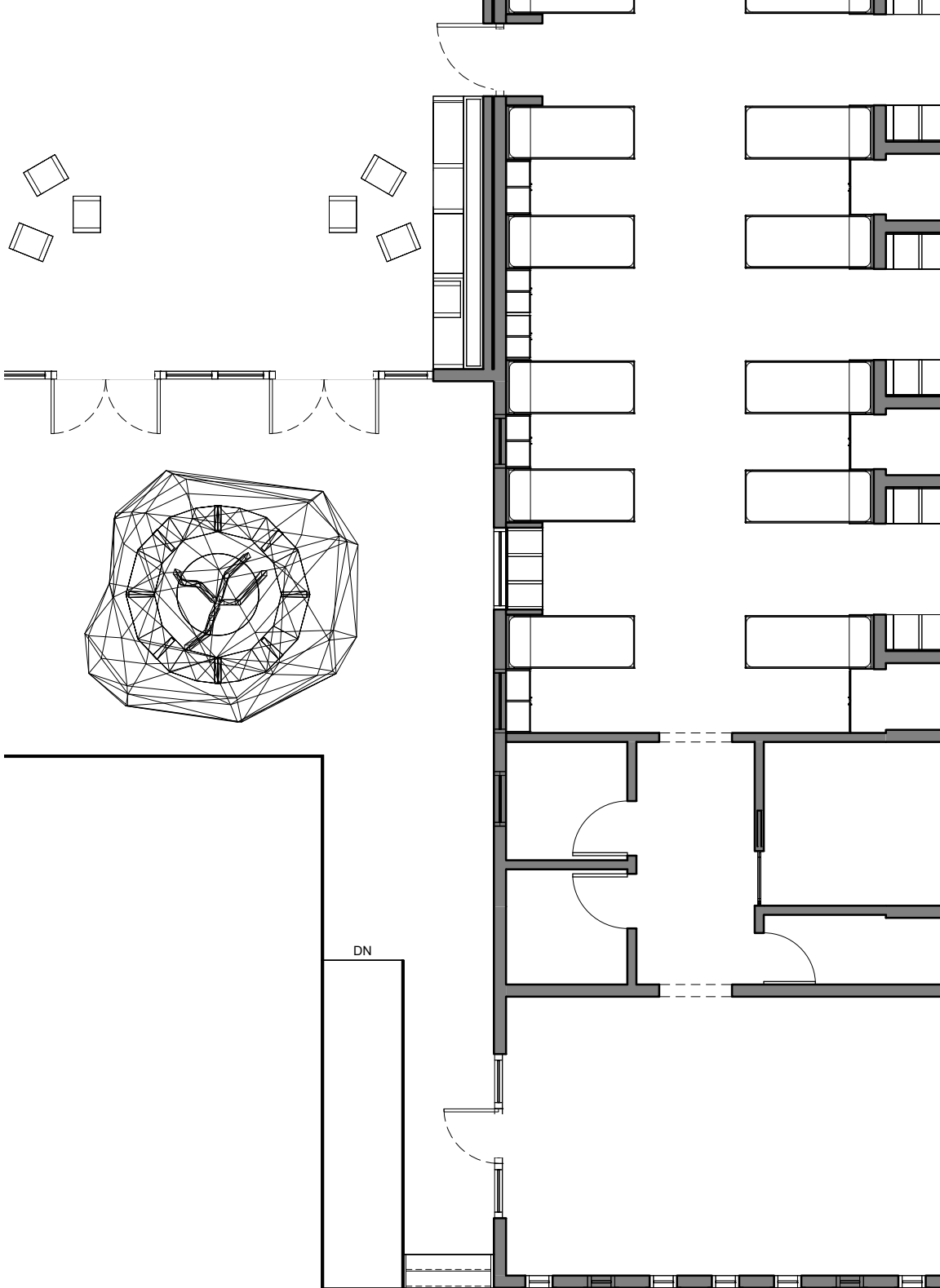
CENTRALIZED

- Living- Learning Space
- Outdoor Spaces/ Porches, Courtyard
- Shared Space/ Gathering Space
- Shared Space/ Bathrooms and Showers



GRID





PLANS

We propose paired cabin units connected with a shared entry space. The configuration creates partially enclosed outdoor decks on both the campus facing side and the rear. A small flowering tree is the centerpiece of the decks, bringing nature into the purview of the cabins. The glassed entry/green space offers an indoor-outdoor transition dedicated to nature play; it can function as a breezeway in the summer and a winter garden in the cooler months, and along its sides are interactive living walls.

The cabin is multifunctional and adaptive, allowing sleeping bunks for campers and counsellors, open floor space, or a desk layout. A thickened wall with fold-up Murphy beds and fold-out tables underneath permits this flexibility. Between the bed-desk unit are storage spaces and window seats. Along the entry side these elements are shallow; along the outer side the sitting areas are deep, intimate nooks alternated with large storage closets.

At the campus facing ends of each cabin unit is a space for informal gathering and or group learning. This room is accessed through a short passage, off of which is a cushioned de-escalation room, and utility closets and snack storage. At the opposite end of the cabin are hygiene spaces, all accessible: one room with two toilets, showers, and sinks, and a separate with toilet, shower, and sink. A washer and dryer station is opposite.

Image: Detailed view of the proposed cabin plan.

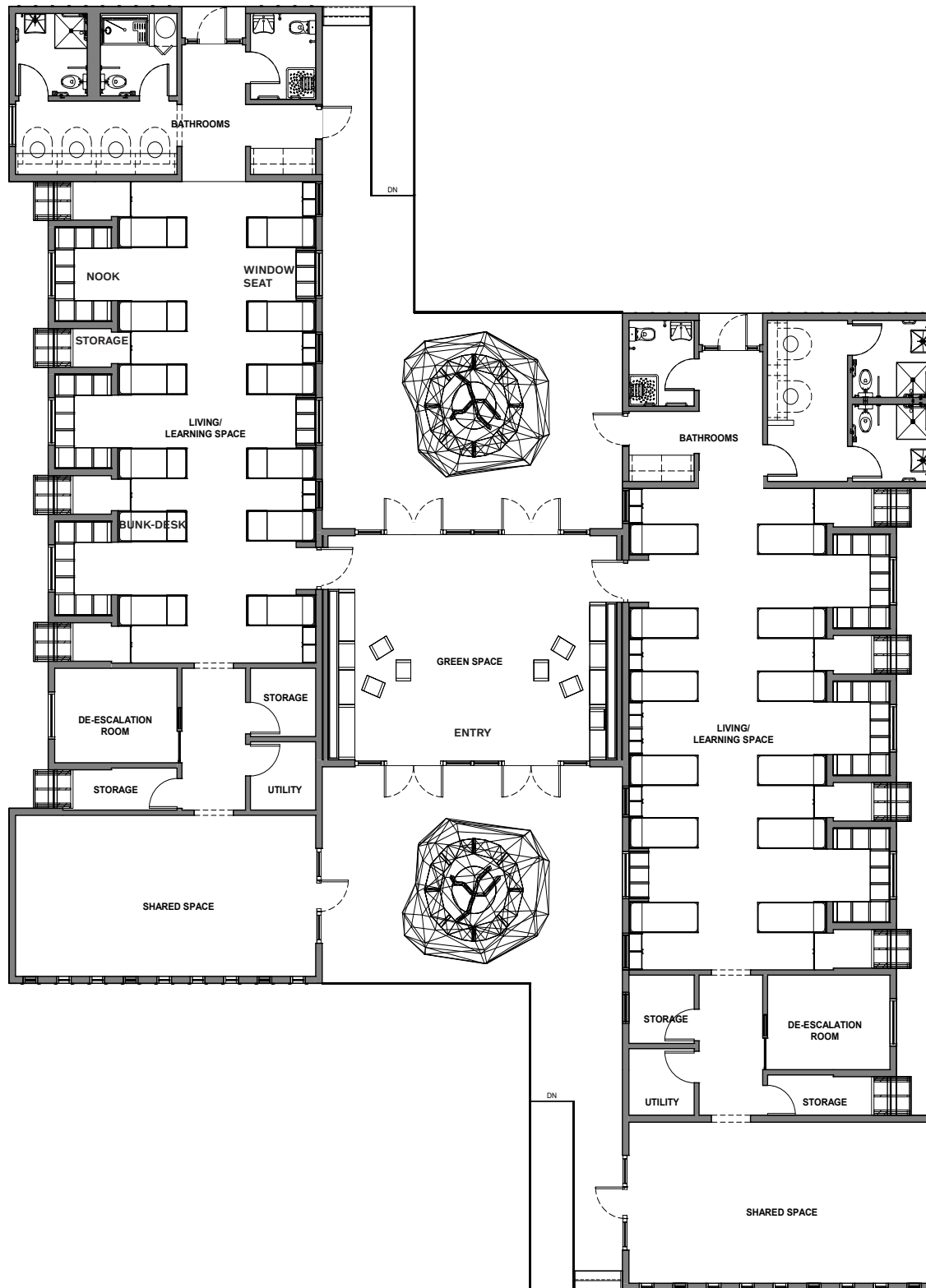
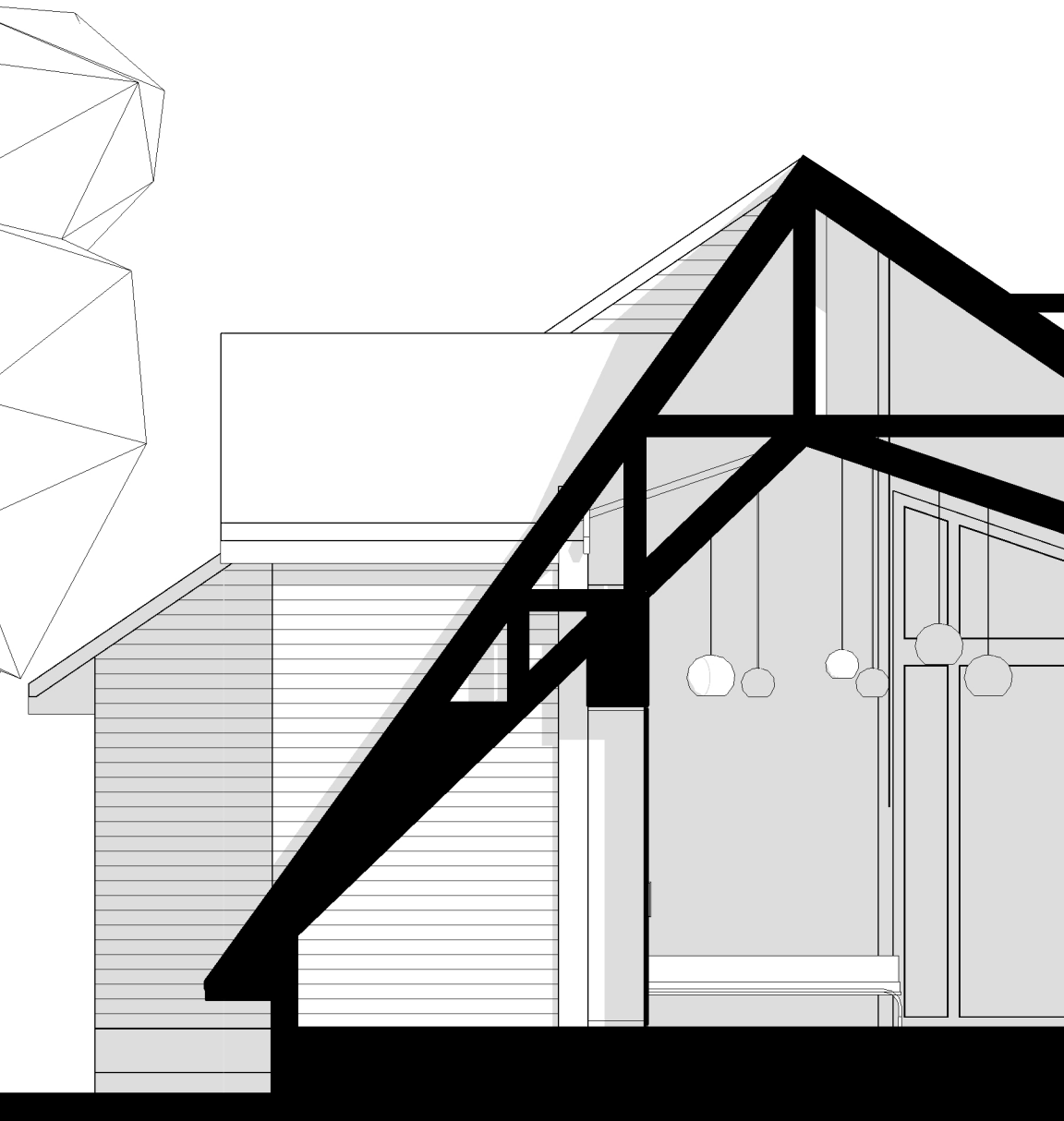


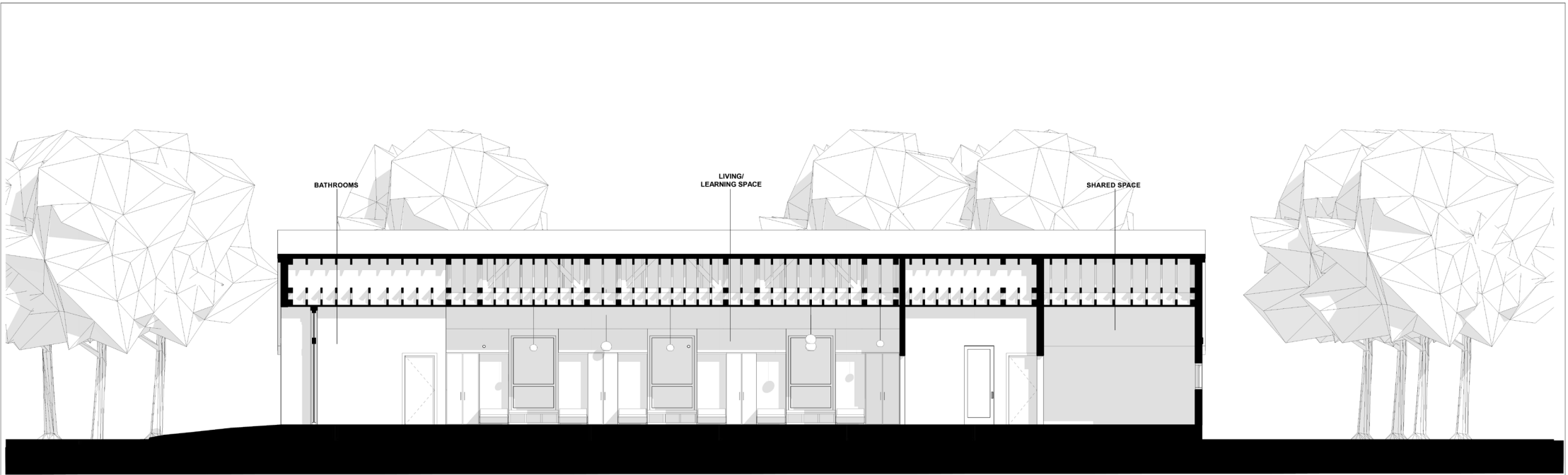
Image: Cabin Floorplan



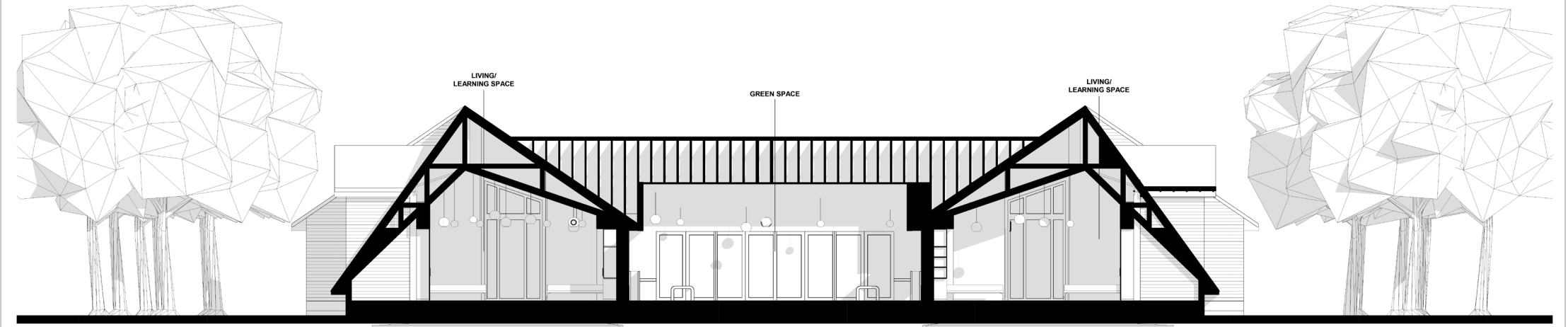
SECTIONS

The cabin is framed in wood throughout. An asymmetrical truss roof runs the length of the Living-Learning space and inside the cabin the ceiling is sloped to create a camp-like feeling. Along the outer side of the cabin the roof is steep and terminates above a few feet above the ground and it is punctuated with gabled nooks that provide an intimate space and open views to the campus space. The opposite side of the Living-Learning space has a shallower pitch with windows below that look into the entry court. The roofs over the entry and the end spaces are simple symmetrical truss rafters. The depth of the roof structure provides space for ductwork, insulation, and an additional air buffer to keep the building cool during the summer. Windows are operable to maximize cross-ventilation. For ease of access its floor sits approximately two feet above grade, and it rests on a concrete foundation.

*Image: Detailed view
of the proposed cabin
sections*



② Section 10
1/4" = 1'-0"



① Section 9
1/4" = 1'-0"



INTERIOR AND EXTERIOR VIEWS

The cabins spaces can accommodate individual and group work, play, intimate socializing, sleep and retreat. They are joyful but gentle spaces that have clear boundaries and distinct zones of use. They are infused with natural light balanced with window openings on two sides. While they provide a comforting sense of enclosure the spaces are always connected to the natural world. The colors are calming, with the bed-desk areas identified with different pastel hues. Wood surfaces create a sense of warmth and are acoustically forgiving. The nature play space with its living walls provides a rich sensory environment.

The exterior continues the theme of bounded space and indoor-outdoor connections. The walls are sheathed with board and battens, and the decks and ramps are resilient, sustainable wood material. The windows and doors have wooden frames and levered hardware.

*Image: Detailed view
of the proposed cabin
sections*



*Image: Interior view
of the living / learning
quarters with the beds*



Image: Interior View of the shared commons between cabins dedicated to accessible indoor natural plantings



Image: Interior view of the living / learning quarters with the bed down and children in the shared window seat.



Image: Interior View of the shared commons at the end of the cabins dedicated to accessible indoor social learning.



Image: Interior view of the living / learning quarters with the learning stations out and children working at their desks



Image: Exterior view of the proposed entrance to the shared commons between cabins and the social space to one end of a cabin.



Image: Exterior view of the bathroom side of the cabin and entry porch to the shared commons between cabins



Image: Exterior view to one side of the cabins showcasing the exterior of the window seating.



Image: Exterior view from the central campus, near the pool.

IV. GOING FORWARD

GOING FORWARD

There are a number of paths Variety can follow to advance the work presented here.

DEVELOPING THE DESIGN. On the most practical level the design proposal as presented is ready to be further developed for construction. After Variety completes an updated site plan that includes topography, utilities, setbacks, and site circulation, an architect of record can be retained to advance the current design. They will proceed with interior and exterior details and provide a structural and mechanical engineer review for the construction of the first unit or cluster of units. Their Contract Document drawings can be submitted for permitting, bidding, and construction.

REPLICATION. As a prototype for several similar structures, the Living-Learning Cabin is designed to adapt to a variety of site conditions. The locations can be determined when Variety confirms its revised site plan. The prototype can be mirrored or realigned according to the site condition. In a large site, the paired units can be clustered in groups of four or six, creating a partially enclosed outdoor environment. In a tight condition the prototype can be halved, built as a singular element with modified entrance and nature play space.

The qualitative aspects of our design proposal that include connections to nature, introduction of natural light, modulated transitions from indoor to outdoor and space to space, and clarity of circulation are strategies and qualities that are replicable. And taken as discrete elements and principles, they can be also applied to other facilities on campus as they come online for new construction.

DISSEMINATION Perhaps most immediately useful is the impact that dissemination of the Living-Learning Cabin Prototype can have on fund-raising. Presentations to potential funders will demonstrate how Variety has taken the rebuilding of its campus as a challenge to meet the unique needs of its client group that has evolved since Variety was first founded as a summer camp for children with polio. The research and design undertaken thus far can be useful to a larger public; it can be disseminated on the Variety website, social media and in local, regional and national conferences, raising the profile of Variety's work among its peer institutions. The construction of the first cabin will establish an innovative model that will reflect well on Variety and its network of supporters.

FUTURE COLLABORATIONS. Future collaborations with Variety can be undertaken as design and academic investigations. The Urban Workshop has intra-University partners that can be engaged in furthering the funded research and design propositions for the campus.

The exceptional sensitivities experienced by youth with disabilities is important in the study of the human-environment relations. Explicitly addressing the spatial needs of disabled children, the project has touched a fundamental chord in the human-to-environment experience, and it demands further research and experimentation through design.

The Landscape Architecture and Horticulture Program located on Temple's Ambler Campus worked with Variety several years ago constructing a rain garden and sensory garden near the current greenhouse site. For the cabin clusters, they could provide professional landscape design for the entry courtyards and walkways, as well as outdoor play space that extend the space of the cabins. They could advance the therapeutic value of creating a sustainable holistic indoor-outdoor environment that is set up by the cabin design.

Another potential collaboration that will advance the research and knowledge base is a test to the design propositions made in the Living -Learning Cabin. We propose a post-occupancy evaluation (POE) of the first cabin constructed. This work can be done in collaboration with the School of Public Health and the Institute for Disabilities Research within the School of Education at Temple. A documented feedback loop can help inform the subsequent cabin design and future construction elsewhere on campus. In addition, findings from this POE can be published in academic journals, advancing the knowledge base in the field of disability design

V. REFERENCES

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Ghazali, Roslinda & Sakip, Siti & Samsuddin, Ismail. (2019). Sensory Design of Learning Environment for Autism : Architects awareness?. Journal of ASIAN Behavioural Studies. 4. 10.21834/jabs.v4i14.338. <https://doi.org/10.21834/jabs.v4i14.338>

Marijke Kinnaer¹•Stijn Baumers¹•Ann Heylighen¹
“Autism-friendly architecture from the outside in and the inside out: an explorative study based on autobiographies of autistic people” In J Hous and the Built Environ (2016) 31:179–195DOI 10.1007/s10901-015-9451-8

Received: 14 April 2014 / Accepted: 30 April 2015 / Published online: 10 May 2015Ó Springer Science+Business Media Dordrecht 2015

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Schelings, Clémentine and Catherine Elsen (2017) Inclusion of Down Syndrome in Architectural Design: Towards a Methodology, SMART ACCESSIBILITY 2017 : The Second International Conference on Universal Accessibility in the Internet of Things and Smart Environments

Tufvesson, Catrin and ÆJoel Tufvesson, (2008) The building process as a tool towards an all-inclusive school. A Swedish example focusing on children with defined concentration difficulties such as ADHD, autism and Down's syndrome, J Hous and the Built Environ (2009) 24:47–66DOI 10.1007/s10901-008-9129-6

CASE STUDIES

Girl Scouts of Utah Summer Cabins, University of Utah School of Architecture, Utah County, UT, United States.

- Year: 2012-2014
- Architect/Design Principals: Jörg Rügemer, Erin Carraher, University of Utah School of Architecture

Camp Graham, Vance County, HENDERSON, North Carolina, United States.

- Year: 2015
- Architects: Weinstein Friedlein Architects

Bikurim School, Tel Aviv, Israeli.

- Year: 2020
- Interior Design & Furniture Design: Sarit Shani Hay
- Architect: Tsionov Vitkon Architects

Hazelwood School, Glasgow, Scotland, UK.

- Year: 2007
- Architects: Alan Dunlop Architect Limited

Sunshine Cottage school for deaf children, San Antonio, Austin, Texas.

- Architects: Lake Flato

Deyang School for Deaf & Intellectually Disabled Children, Deyang, China.

- Year: 2012
- Architects: China Southwest Architectural Design and Research Institute Corp. Ltd

School for Blind and Visually Impaired Children, Gandhinagar, India.

- Year: 2021
- Architects: SEALab

UTS Blackfriars Children's Centre, Chippendale, Australia.

- year: 2018
- Architects: DJRD, Lacoste + Stevenson

Muronokids Satellite Kindergarten, Kanagawa Prefecture, Japan.

- Year: 2017
- Architects: HIBINOSEKKEI + Youji no Shiro

Ouchi (Small House for Kids), Saga, Japan.

- Year: 2017
- Architects: HIBINOSEKKEI + Youji no Shiro