

Reimagining Housing Options for the Sisters Elementary School Site

Winter 2023 Sisters

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COLLEGE OF DESIGN









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This report represents original student work and recommendations prepared by students in the University of Oregon's Sustainable City Year Program for the City of Sisters. Text and images contained in this report may not be used without permission from the University of Oregon.

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About SCI

The Sustainable Cities Institute (SCI) is an applied think tank focusing on sustainability and cities through applied research, teaching, and community partnerships. We work across disciplines that match the complexity of cities to address sustainability challenges, from regional planning to building design and from enhancing engagement of diverse communities to understanding the impacts on municipal budgets from disruptive technologies and many issues in between.

SCI focuses on sustainability-based research and teaching opportunities through two primary efforts:

1. Our Sustainable City Year Program

(SCYP), a massively scaled universitycommunity partnership program that matches the resources of the University with one Oregon community each year to help advance that community's sustainability goals; and 2. Our Urbanism Next Center, which focuses on how autonomous vehicles, e-commerce, and the sharing economy will impact the form and function of cities.

In all cases, we share our expertise and experiences with scholars, policymakers, community leaders, and project partners. We further extend our impact via an annual Expert-in-Residence Program, SCI China visiting scholars program, study abroad course on redesigning cities for people on bicycle, and through our coleadership of the Educational Partnerships for Innovation in Communities Network (EPIC-N), which is transferring SCYP to universities and communities across the globe. Our work connects student passion, faculty experience, and community needs to produce innovative, tangible solutions for the creation of a sustainable society.

About SCYP

The Sustainable City Year Program (SCYP) is a yearlong partnership between SCI and a partner in Oregon, in which students and faculty in courses from across the university collaborate with a public entity on sustainability and livability projects. SCYP faculty and students work in collaboration with staff from the partner agency through a variety of studio projects and service- learning courses to provide students with real-world projects to investigate. Students bring energy, enthusiasm, and innovative approaches to difficult, persistent problems. SCYP's primary value derives from collaborations that result in on-the-ground impact and expanded conversations for a community ready to transition to a more sustainable and livable future.

About City of Sisters

Located at the foot of the Cascade Mountains in Central Oregon, the City of Sisters offers beautiful natural surroundings, a variety of year-round recreational opportunities, and a vibrant local economy.



Sisters was a place where Paiute, Warm Springs, and Wasco peoples stopped during movement across central Oregon. The name of Whychus Creek, a tributary that runs through town and joins the Deschutes River just beyond the city limits, comes from a Sahaptin phrase, "The Place We Cross the Water." Sisters became a way station and became accessible once roads were constructed through McKenzie Pass and Santiam Pass in the Cascade Mountain Range. In the early twentieth century, Sisters was a center for sheep and cattle ranching and later became a focus for the timber industry, with numerous mills surrounding Sisters and even a mill in town.

The townsite of Sisters was platted in 1901, although the town was not incorporated until 1946. The original townsite for the City was six blocks in size, circumscribed by Adams Street on the north, Larch Street on the east, Cascade Street on the south, and Elm Street on the west, which represents the downtown core of the City of Sisters north of Cascade Avenue today.

With Sisters' strategic location as the "Gateway to the Cascades," major industries have included sheepherding, cattle ranching, timber production, and provision of goods and services for travelers. Sisters has capitalized on accommodating visitors, initially serving the transient tradesmen that traveled through central Oregon.

Many people know Sisters for its Western frontier design theme that derives architectural inspiration from the town's beginnings in the 1880s. However, Sisters did not always look this way. When Brooks Resources developed Black Butte Ranch, a resort community eight miles west of Sisters, it envisioned a plan to help the Sisters downtown core reinvent itself. In coordination with the City Council, Brooks Resources offered loans, forgiveable after 10 years, to businesses who built with a Western theme. From this idea, the City developed a strong identity that helped attract people to Sisters as a tourism destination. The economy strengthened, the population returned, and in 1992, the Sisters School District reopened its high school after 25 years of sending students to Redmond High School.

The 2021 population in Sisters totaled 3,475 residents, a result of the population doubling every decade since the 1990s. Sisters continues to serve as a gateway to the central Oregon region while also being known for local attractions including Hoodoo Ski Area and prominent community events such as the Sisters Rodeo, the Sisters Outdoor Quilt Show, and the Sisters Folk Festival.

Course Participants

Master of Architecture

Elisia Alampi Ankita Manandhar Andrew Miller Erin Ulcickas

Bachelor of Architecture

Esme Alexander-Jaffe Aracely Barajassilva Vy Bui Kyle Cadavona Bella Creado Jeremy Krementz Madison Merwine Seunghyeon Park Ervin Taylor Melanie Franco Zavala

Executive Summary

University of Oregon Architecture students proposed site designs and adaptive reuse ideas for the existing Sisters Elementary School and outdoor recreational uses and affordable housing.

Student housing proposals fell into four main categories:

- 1) Housing on top of the school
- 2) Housing on the west side of the site
- 3) Housing in groups of clusters
- 4) Housing as larger volumes

Students worked together and independently to improve the quality of life and community in Sisters, Oregon, through design. Students focused on creating spaces for future residents that would serve a range of family sizes and types. Students also proposed outdoor spaces that are designed to serve the community in a variety of ways, mostly through recreational activities such as sports. Proposed designs considered the future Highway 20 roundabout that will be built adjacent to the site, which will slow traffic down as it travels through the central part of Sisters. Students also proposed site layouts that will better accommodate pedestrians and bicyclists as they travel through and around the site. To formulate their designs, students started with case studies, diagrams, and process models. They also completed a detailed site analysis, which included a field trip to the site and the city of Sisters. This helped the students visualize and understand the site, the community, and the community's needs. Students also researched relevant demographics within Sisters, Oregon, including the school district since their project focus included adaptive reuse of the current elementary school and affordable housing for existing and incoming teachers.

Every student designed distinct details within their designs, such as splash pads, a community amphitheater, gardens, and unique connections from the proposed housing to the community spaces. Students strived to reflect the current culture of the community in their designs while adding to the existing beauty of Sisters, Oregon. This report summarizes the three different housing approaches while highlighting details within some of the designs for the affordable housing, adaptive reuse and site design in Sisters, Oregon.

Introduction

As the city of Sisters continues to grow, affordable housing is becoming an increasingly urgent issue.



Figure 1: Sisters Elementary School Photo: Megan Banks

According to <u>niche.com</u>, the public school system in Sisters, Oregon, is ranked #13 out of 159 in Oregon. However, the school district is struggling to hire and retain teachers and staff due to minimal affordable housing in Sisters. With the recent passage of a school bond measure, the school district is building a new elementary school and is seeking adaptive reuse ideas for its existing school. Architecture students developed proposals for the adaptive reuse of the existing elementary school, adding affordable housing and redesigning the site to create a strong center for the community that will include outdoor and indoor recreational facilities. Students considered the future Highway 20 roundabout in their site proposals.

City Findings

To begin the design process for an adaptive and affordable housing project, students started with an understanding of the city of Sisters. To effectively design a site, plans for the city and the city's overall spirit were considered. Students researched the City's zoning, existing land uses, community survey data, neighborhood maps, and recent student planning proposals ("A New Future for the Sisters Elementary School Site," fall 2022) helped students form initial ideas for the site. This process allowed students to shape an image of what the Sisters public wanted to see and experience, and how a new design for the existing elementary school could fit within their community.



Figure 2: City of Sisters zoning map (Source: https://www.ci.sisters. or.us/sites/default/ files/fileattachments/ community_ development/ page/12381/zoning_ map.pdf



Figure 3: City of Sisters land types (Source: City of Sisters Buildable Lands Inventory; https:// www.codepublishing. com/OR/Sisters/#!/ SistersDevCode02/ SistersDevCode0202. html#2.2)



Figure 4: City of Sisters zoning designations (Source: City of Sisters Buildable Lands Inventory; https:// www.ci.sisters.or.us/ sites/default/files/ fileattachments/ community_ development/ page/12381/2020_ sisters_bli_ revised_032221.pdf)

City Findings

Figure 5: City of Sisters residential lands development status (Source: City of Sisters Buildable Lands Inventory; https://www.ci.sisters. or.us/sites/default/ files/fileattachments/ community_ development/ page/12381/2020_ sisters_bli_ revised_032221.pdf)



Students analyzed traffic patterns, including high and low traffic areas, and speed limits on nearby streets. Students also determined whether additional parking for residential or recreational purposes might be needed. Bicycle routes and other non-vehicle routes were also identified.







Figure 7: City of Sisters existing bicycle facilities (Source: City of Sisters Transportation System Plan) Students reviewed Sisters' demographic data, including age and income, to help them understand the City's general affluence and potential interest areas (pickleball, team sports, walkability, etc.).



Sisters Parks and Recreation District Needs Assessment Focus Group Participants Data

Ethnicity-All Participants were White/Caucasian

* Note—Three participants did not fill out the demographic's questionnaire

Figure 9: Idea Generating Survey Results for the Future of the Sisters Elementary School (Source: Sisters Parks and Recreation District Survey; graphic by Madison Merwine)

Figure 8: Sisters

Parks and Recreation District Needs Assessment focus group participant demographics (Source: Sisters Parks and Recreation District Needs Assessment, July 2022)



Figure 10: Idea Generating Survey Results for the Future of the Sisters Elementary School (Source: Sisters Parks and Recreation District Survey; graphic by Madison Merwine)



Students also reviewed regional incomes and teaching salaries in Sisters, Oregon.



Figure 11: Sisters School staff and teachers' salaries as % of AMI

	Media	n Income	
Overall Household		Teachers	Staff
2010-2014	2015-2019	2022	
\$55,760	\$71,656	\$ 57,100	\$ 43,750

Figure 12: Sisters median income data

		Median House Price	Teachers' Median Income	Housing Cost-to- Income Ratio for Teachers	School Staff Median Income	Housing Cost- to-Income Ratio for Staff
s	Sister	\$858,500	\$57,100	15	\$43,75 0	20

Figure 13: Housing cost-to-income ratio in Sisters



About the Site

With a 2021 population of 3,081 residents inside the City (U.S. Census), and 10,000 in the school district (<u>http://ssd6.org/</u>, n.d.), the city of Sisters is relatively small.

The entire City can be driven through in a matter of minutes, with West Cascade Avenue bisecting the City.

Figure 15: View of the Sisters mountains (Source: City of Sisters)



Named after the Three Sisters, the three mountains visible from the City, Sisters experiences typical mountain weather. The hottest month, July, averages a high of 84 degrees while the coldest month is December, which averages 40 degrees. The City experiences an average of 32 inches of snow per year. (Fast Facts about Sisters, Oregon) With its wide range of outdoor activities, Sisters attracts tourists year-round.



Figure 16: City of Sisters mural (Source: City of Sisters)

16 DB

22 DB

28 DB

34 DB

40 DB

56 DB

62 DB

68 DB

74 DB

80 DB

86 DB

92 DB

98 DB

104 DB

110 DB

Site Difficulties

Students responded to a variety of constraints in their designs, such as:

- Future Oregon Department of Transportation Highway 20 roundabout: reduces the amount of school district property available to design
- Soil inconsistencies: The east side of the site contains soggy soil. To minimize

this constraint, some students placed housing away from this area

- Noise and safety concerns on the west and south sections of the site
- Parking and parking flow: Parking and parking flow for the proposed housing challenged entrance placement and paving arrangement





Figure 17c: Soccer field sound analysis (Source: Melanie Franco Zavala)





In order to move through the complexities on the site, students created a series of "zones" to inform their layout and respond to the site's constraints. Formulating a series of solutions based on their design focus, students planned their project on the movement and experience of the users as a means to inform the functionality of their ideas.

Site solutions

The students split into three groups based on the similarities within their designs: the "west side" group, the "clusters" group, and the "build on top of school" group.

West Side

Students placed and designed housing on the west side of the site, and created a border of housing that enclosed a true "center of the community."



Figure 19: Site plan by Seunghyeon Park

About the Site



Figure 20: Site plan by Melanie Franco Zavala



Figure 21: Site plan by Jeremy Krementz



Clusters

Students from the clusters group designed groupings of freestanding housing mostly on the southeast area of the site. This design location allowed the housing to be placed next to the existing residential structures, leaving the remaining middle and west sides for recreational activities.

Figure 22: Site isometric by Jeremy Krementz



Figure 23: Site plan by Ervin Taylor



Figure 24: Site plan by Esme Alexander-Jaffe



Figure 25: Axonometric View Site Plan by Bella Creado

Build on top of school

This group of students chose to build on top of the existing elementary school to take advantage of the adaptive reuse potential of this project. This group was very efficient with their space as it allows the rest of the site to be available for recreational activities and/or additional housing units.



Figure 26: Site isometric by Madison Merwine



Figure 27: Site plan by Madison Merwine



Figure 28: Site isometric by Erin Ulcickas

Housing as Larger Volumes

A small handful of students looked to three story multi-family housing models that add a level of density to the site. These proposals allow for more units and cost savings, leading to more options and greater affordability. These projects also intentionally integrate open space and indoor-outdoor recreation to create a welcoming mix of uses for residents and visitors.



Figure 29: Site perspectives by Erin Ulcickas

About the Site

Figure 30: Site section by Vy Bui



Approaches to Affordable Housing

The "Missing Middle Housing" ideology, which consists of multi-family or clustered housing types used in scale with transitional neighborhoods, was used to design affordable teacher housing. Students focused on three forms of housing, the apartment, duplex, and quadplex. Students then emphasized their choice of units to reflect which scale of housing would be appropriate to accommodate the residents' needs. Scale and housing options ranged from more condensed apartments to larger townhomes.

The choice of housing was chosen to provide the most workforce, specifically teachers, housing possible. Proposals varied from additional housing for more staff to more open space to allow for future expansion. The number of proposed housing units ranged from 26-130 units.



Figure 31: Site plan by Seunghyeon Park



Figure 32: Housing Site plan by Ervin Taylor



Figure 33 (left): Site section by Erin Ulcickas

Figure 34 (center): Housing site perspective by Erin Ulcickas

Figure 35 (right): Site section by Madison Merwine

School Redesign

Adaptive reuse architecture is defined as the repurposing of an existing structure for a new use. In other words, the structure can be redesigned from the interior, exterior, or even both to fit the building's new use. These proposals focused on introducing a communal center in place of the current elementary school with students redesigning the building's interior.

Some students expanded the school by adding more floors on top of the existing structure, using these floors as either apartments, a coworker center, or a recreational space. Other designs revolved around the school wing design, and how it was redesigned.

A series of recreational centers was proposed for the east wing, with pickleball courts or dance rooms, while other designs extended the locker rooms indoors. Other east wing ideas include office spaces for coworkers or staff.

The south wing was proposed as a multiuse space. Originally classrooms, students redesigned this space as a community area or additional recreational space.

Office space, an expansion or elimination of the kitchen entirely, or even a remodel of the entry point was proposed for the north end of the school.

Students based their elementary school redesign on two approaches, either adapting it for housing to conserve site space, or extending it as a community and recreational center. Both approaches strove to improve the quality of living on the site, whether connecting to the larger Sisters community or creating a central hub on the site.



Figure 36: Site axonometric by Vy Bui



Figure 37: Site plan by Elisia Alampi



Figure 38: Recreation Center plan by Seunghyeon Park



Figure 39: Recreation Center plan by Jeremy Krementz



Figure 40: Recreation Center plan by Aracely Barajassilva



Site Plan and Recreation Design

Students refined the organization of their site plans based on their solutions to housing and recreational spaces. Some projects conserved as much of the current space as possible by placing housing on top of the school. Other projects programmed uses to fill the entire site. Students assigned a location to each project element based on safety, noise, recreational use(s), or public and private spaces.

Sisters residents identified recreation and sports availability as a high want. The theme of gym and outdoor recreational expansion were common within each design. Students opted to create a multi-use soccer field, which could fit a total of three little league fields, and two middle school soccer fields. Other students also included various sports fields and courts, such

Figure 41: Site organization by Madison Merwine as baseball, tennis, pickleball, and even basketball.

Each proposal focused on the separation and connectivity of each use as they informed public and private spaces. Each project used a variety of design elements to symbolically walk the occupants through the site. For example, the use of landscaping and other separation strategies were used to ensure privacy for residents living on the site.

Walkability of the site was vital to the organization and overall experience of the users. Students applied landscape design to strengthen their path design and guide occupants through the site.

Parking was also crucial to the layout and progression of spaces within the site. Many students designed separate smaller parking zones to accommodate parking needs of residents and visitors.





Figure 42: Site plan by Ervin Taylor



Figure 43: Site plan by Madison Merwine



Figure 44: Site plan by Elisia Alampi



Conclusion

Studio participants endeavored to address the affordable and workforce housing needs of the city of Sisters while maintaining the City's cherished qualities of walkability, access to the outdoors, and community. Students developed proposals that adaptively reuse the existing elementary school while adding affordable housing and redesigning the site to create a vibrant community center with indoor and outdoor recreational facilities. Four main approaches—small housing clusters, housing on top of the school, housing on the west side of the site, and housing as larger volumes showcase a variety of opportunities for the school's future.

Works Cited

The Nugget Newspaper. (n.d.). *Sisters Oregon guide—fast facts*. Fast Facts about Sisters, Oregon. Retrieved May 2, 2023, from <u>http://www.sistersoregonguide.com/</u> <u>sisters-facts.htm</u>

"2022 Sisters School District Rankings." Niche, <u>https://www.niche.com/k12/d/</u> <u>sisters-school-district-or/rankings</u>. "Sisters Average Income, Population and Demographics." *Name Census*, namecensus.com/demographics/ oregon/deschutes-county/ sisters/#:~:text=There%20are%20 total%20of%201%2C558%20housing%20 units%20in,%2883.38%25%29%20 are%20occupied%2C%20and%20259%20 %2816.62%25%29%20are%20vacant. Accessed 12 May 2023.

Appendix: Individual Student Boards



Site Axon







 $I = \frac{4k^2}{12\pi} + \frac{(6.55in)(244in)^2}{12} = 77764a^4$ $S_{\mu} = \frac{4k^2}{12} - \frac{(6.55in)(244in)^2}{12} = 77764a^4$

Mass Timber Strategies

 $I = \frac{bh^2}{12} = \frac{(6.75 \text{ m})(2.4 \text{ m})^4}{12} = 77764 \text{ m}^4}$ $S_{0} = \frac{M_{C}}{I} = \frac{(1466192.9 - \text{ m}) + 12}{77764 \text{ m}^4} = 2247.2 \text{ pri}$ Choose 6.25⁶ Y 2.4⁶ may max bending worth of 2400 pri

Glo-Lam Columns: Maximum column height: 15h Isad on each column:

choose <u>6.75" X 75" column</u>: max load of 26-84# with a load duration CLT Reat:

CLT Read: Live Load = 20pel for non-accupied roo Dead Load = 10pel Snow Load = 29 pel 40 ft span Allowed Deflection = L/180 Choose <u>3-bit SL/MR0 CLT</u> Max spane1 4025 ft Weight = 345pel Viv.strend

Ground Level Perspective of Community Center

Interior Perspective of Community Center



Community Center Level 1 Scale: 3/64"=1'





Community Center Section Scale: 1/8"=1'



Community Center North Elevation Scale: 1/16"=1'

Community Center West Elevation Scale: 1/16"=1'









SOUTH ELENATION 1/02">T

PRECEDENTS

.

House in Envigado Alejandro Arango

Tsuga Townhome Wittman Estes

2.94

PROCESS

1/32" = 1' - 0"

SCI Directors and Staff

Marc Schlossberg	SCI Co-Director, and Professor of Planning, Public Policy and Management, University of Oregon
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