## THE WHOLE AS THE PART: AN ANALYSIS ON THE ARRANGEMENT OF PERMANENT SUPPORTIVE HOUSING NEIGHBORHOODS

An Undergraduate Research Scholars Thesis

by

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This project did not require approval from the Texas A&M University Research Compliance & Biosafety office.

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#### ABSTRACT

# The Whole as the Part: An Analysis on the Arrangement of Permanent Supportive Housing Neighborhoods

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There is evidence of a lack of architectural design in the arrangement of permanent supportive housing (PSH) neighborhoods. Many promote or even require community engagement and interaction, which makes the configuration of the community vital. Though there is no question that PSH neighborhoods have been beneficial, the primary question lies in what steps can be taken to improve the overall arrangement of the communities. Research began with an in-depth analysis on the arrangement of four diverse PSH communities. Commonalities were identified through each aspect of the projects, both good and bad. Qualities were then displayed in a series of analytical drawings at each scale of the projects from city to individual unit. Additionally, four analogical drawings were created to playfully draw a line from site plans to the mundane arrangement of objects within the home. While researching, it became clear that though motivations in the designs are pure, they can fundamentally miss the mark and result in inefficient designs for the city and the residents of the communities. This led to an effort to develop accessible and understandable information pertaining to crucial aspects in designing a successful housing community, a toolkit was developed to fulfill this purpose. The lack of architectural quality in PSH neighborhoods is largely due to the lack of design in arrangement, but with the consideration of the elements and strategies proposed, these communities can be designed as both programmatic and aesthetic. The goal of this research is not to prove one model better than another, but rather to uncover general elements of design which should be considered when arranging any supportive housing model.

## **DEDICATION**

To my loving parents, Dow and Gayle Martin. Without their constant selflessness, support, prayer, and encouragement I would not be where I am today.

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#### Contributors

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The materials used to produce drawings for the analysis on Field's Edge in Midland Texas were provided by Laura Chandler from The Field's Edge. The materials used to produce drawings for the analysis on Quail Trail in Fort Worth Texas were provided by Mark Dabney from Boka Powell.

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Finally, I would like to acknowledge Luke Redus from Compassion United for inspiring the creation of a toolkit to be used for the planning of permanent supportive housing neighborhoods.

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### NOMENCLATURE

PSH Permanent Supportive Housing Μ Mile Ν North Fast Food 9 Grocery ۲ Medical • Airport 9 Gas Station • Housing • Religeous ٢ Education ٢ Forest ٢ Fire Station ۲ Library  $\odot$ Pharmact ٢ Retail V Golf Course

$\odot$	Water
	Train Tracks
0	Sports Facility
Ç	Community Center
⊗	Law Enforcement
<b>©</b>	Lodging
	Bus Routes
Q	Bus Stops
	Walking Routes
•	Project Site

#### 1. AESTHETIC MOTIVATION AND RESEARCH QUESTION

Permanent supportive housing (PSH) neighborhoods are a somewhat recent strategy for assisting the unhoused by providing long-term housing for individuals and families with extremely low incomes. According to the National Alliance to End Homelessness, investments in permanent supportive housing have helped decrease the number of chronically homeless individuals by twenty percent since 2007. However, there is evidence of a lack of architectural design in the arrangement of PSH neighborhoods. Many promote or even require community engagement and interaction, which makes the configuration of the community vital. There is no question that PSH neighborhoods have been beneficial, however the primary question lies in what steps can be taken to improve the overall arrangement of the communities.

Research began with an in-depth analysis on the arrangement of four diverse permanent supportive housing communities. Commonalities were identified through each aspect of the projects, both good and bad. Qualities were then displayed in a series of analytical drawings at each scale of the projects from city to individual unit, beginning with a land sustainability analysis to evaluate the lot and later analyzing the arrangement of spaces on that lot. Additionally, four analogical drawings were created to playfully draw a line from site plans to the mundane arrangement of objects within the home. These illustrations attempt to relate the complexities of architecture to something even a child could understand, bringing the arrangement down to the most basic concepts of composition. While researching, it became clear that though motivations in the designs are pure, they can be severely misleading and result in inefficient designs for the city and the residents of the communities. This led to a motivation to develop accessible and understandable information on the crucial aspects to consider in order to design a successful housing community. Which begs the question, what elements of design can be established to assist in the successful planning of the arrangement of permanent supportive housing neighborhoods?

Design issues found in existing and proposed PSH neighborhoods are not inherently the fault of the designers. Though architects are always involved, generally they are simply fulfilling what the developer of the community has requested. There is a lack of information and resources, which leads to designers basing their communities primarily off what others have already done. The flaw in this design approach is the assumption that modeling off existing projects is the best strategy. One of the most popular models for PSH neighborhoods is the tiny home village. Though tiny homes fulfill the desire for ownership, are easy to build and simple to design, they present affordability and accessibility inefficiencies. Tiny homes require more land, materials, and energy to provide the same amount of housing as something at a higher density. Large affordable plots of land are rarely found in areas with resources accessible by foot, which requires communities to provide those resources themselves adding even more cost. Even when a lot is found in an accessible area, plans for tiny home villages are often faced with surrounding residents having a "not in my backyard" (NIMBY) attitude, ultimately preventing the use of that site. In order to improve PSH neighborhoods in the future, the first step is to identify what causes the inefficiencies that result in poor accessibility and affordability. The purpose of this research is to suggest a new approach and provide a resource to enable its application.

Based on the successes and shortcomings of the discussed projects a series of steps and strategies were established and organized into a toolkit. This strategy is often used when spaces are actively being designed or built by untrained people. One such example is the Self-Build Manual by Comunal. The group found that families in rural Mexico were building their homes

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with little to no structural knowledge. On their Who We Are page they state, "we do not conceive architecture as an individual author's work or as a static, artistic and unmodifiable object; but as a collaborative, live, open and constantly evolving social process". By recognizing architecture as a social process, Comunal empowers users with decision making and acknowledges them as the most central part of projects. Their toolkit provides an accessible resource to ensure that not only do the users have decision making power, but also that they are making informed and safe decisions in terms of structure.

In a similar way, the toolkit produced from this research seeks to provide a resource so that organizations along with the users are making informed design decisions to ensure optimal living spaces, a real sense of ownership, and community. The organization of chapters was done intentionally and is meant to be followed in order so that each aspect is given correct priority and focus. This resource is intended to be printed out and used through a series of steps involving cutting out pieces, taping things together, drawing, and taking notes. Following each step of the process a user will explore the arrangement possibilities as they see instructions on how to plan a community without a computer program or prior architectural knowledge. After the toolkit was complete, a design was created using the tool for a site in Baytown, Texas. By using the toolkit to design a potential community, the images created serve both as examples of the application to assist users as well as a source of reflection on the effectiveness of the product. Through each step of the toolkit users can see an example of the application through the community designed using the toolkit. This toolkit gives the proposed elements of designing a permanent supportive housing community in a practical and tangible way. Lack of architectural quality in PSH neighborhoods is largely due to the lack of design in arrangement, but with the consideration of

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the elements and strategies proposed, these communities can be designed as both programmatic and aesthetic.

Though there are organizations that offer workshops to educate on the planning of supportive housing neighborhoods, they are all for tiny home villages. The creative artifact produced from this research proposes breaking from this approach. One aspect of design the toolkit focuses on is a solution to the desire to build single family homes in order to fulfill the supposed "American dream". This usually leads to the tiny home model; however, the toolkit proposes another solution. By suggesting the development of mid-density housing, the designs can satisfy the American dream through an illusion of single-family homes. Supportive housing units are small enough that when arranged into dwellings of 2-4 units, they can still appear to be a single-family home. This creative artifact seeks to answer the primary question of this research in a format that is accessible not only to architects, but anyone with the hope of housing the unhoused. Though it may not solve the problem at hand, by establishing a set of guidelines it opens a line of discourse for others to agree or disagree on.

# 2. HISTORICAL CONTEXT, DISCIPLINARY PARADIGMS, AND AESTHETIC STANDARDS

#### 2.1 Context

Aldo Rossi in The Architecture of the City said, "the comfort of any building consists of three principal items: its site, its form, and the organization of its parts" (Rossi, 2007). By considering the whole as a part, it can also be said that the comfort of a site is dependent on the city as the larger site, its form, and the organization of its parts. In Design and Affordable American Housing, Gwendolyn Wright said "site plans are more significant than architectural styles. They orchestrate the natural environment, of course, but they also affect safety and social life, both planned and serendipitous, for residents of all ages" (Wright, 2014). The success of any community relies heavily on the arrangement of its parts. Historically, social housing has primarily been designed as high density, presenting numerous challenges which ultimately lead to the failure of many projects. Unfortunately, low density supportive housing comes with many of its own challenges. The primary issue is the tendency to create a scaled down model of the traditional American suburban home and neighborhood. In the post-war American suburban neighborhood, a resident interacts primarily with only their home or lot, whereas in a supportive housing neighborhood the home is scaled down significantly often removing elements that require the resident to leave for simple tasks, yet these neighborhoods are arranged in a similar manner. This attempt to fulfill the supposed American dream ultimately leads to a juxtaposition of the traditional neighborhood and the PSH neighborhood.

After locating numerous projects across the nation and identifying the core elements composed in the design arrangement, the analysis places each part of the project within the

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following categories. Unit relationships are either linear, curved, angled, radial, or a combination. Communities are arranged in a central, perimeter, grid, or random order. The four precedents discussed were chosen because they diversely speak to important successes and failures seen in PSH neighborhoods. The analyses of these projects were created for the purpose of encouraging conversation on future decisions, not to criticize decisions that have already been made. Regardless of the potential architectural faults discussed in the designs of these projects, it should be remembered that they are serving many people and fulfilling the purpose well.

#### 2.2 Quixote Village

Quixote Village in Tumwater, Washington, was built in 2017, and contains 30 detached units all inhabited by previously homeless individuals. The name of the designer is not given; however, the process of design consistently involved the future residents. The analogical drawing displays the community as a house of cards spread across a large table (Figure 2.1). In consideration of the site, the arrangement of units seems wasteful with the amount of leftover unused land. Quixote Village is located amongst commercial buildings with the back of the neighborhood closely situated to railroad tracks (Figure 2.2). There is a gas station located just over half a mile away and two grocery stores a little over a mile away (Figure 2.3 and 2.4). This site position is not ideal, especially considering the residents do not typically own vehicles. The site contains a non-centrally placed commons building and gardens, as well as a small water feature situated at the back of the site (Figure 2.5). Each unit contains only a bedroom, half bath, and small front porch, arranged along a curve in a low-density format. The community building placement is an issue considering residents must shower and prepare food there. This project lacks in site placement, location of resources on site, and definition between semi-private and semi-public space.

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Figure 2.1: Quixote Village analogical illustration, "House of Cards".



Figure 2.2: Quixote Village site plan superimposed on satellite image.



Figure 2.3: Quixote Village accessibility and resource analysis.



Figure 2.4: Tumwater, WA city analysis for Quixote Village.



Figure 2.5: Quixote Village unit and community arrangement analysis.

#### 2.3 Field's Edge

Field's Edge in Midland, Texas was designed by PSC. The status of the project is still proposed, but they have almost completed their funding and plan to begin construction within the year 2021. For this analogical illustration, each cluster of housing is shown as crackers and cheese on plates placed on a tablecloth draped as the site boundary (Figure 2.6). The master plan includes 100 total units for homeless individuals in ten clusters of ten units, a market, health building, pavilion, gardens, playground, worship center, four chapels, a gym, and amphitheater (Figure 2.7). A little over a mile away, the closest resource is a gas station with no sidewalks along the road that leads to it, so walking could be dangerous (Figure 2.8). This site is in a rural

area amongst commercial and industrial sites and open land (Figure 2.9). This project's organizers obtained most of their planning from a course they took through the Community First Village, a notoriously massive, tiny home community located outside of Austin, Texas. Each tiny home will only contain a bedroom, and each cluster will have a mission home and community building with bathrooms, kitchen, and laundry with all buildings organized radially. The project has centrally placed community buildings and unit clusters around the perimeter (Figure 2.10). Site placement and access to resources are the two main issues with this project.



Figure 2.6: Fields Edge analogical illustration, "Wheat Crackers".



Figure 2.7: Field's Edge site plan superimposed on satellite image.



Figure 2.8: Field's Edge accessibility and resource analysis.



Figure 2.9: Midland, TX, city analysis for Field's Edge.



Figure 2.10: Field's Edge unit and community arrangement analysis.

#### 2.4 Quail Trail

Quail Trail in Fort Worth, Texas was designed by BOKA Powell and its current status is proposed, but they have plans to break ground soon. The residents will be former chronically homeless individuals, living in twelve dwellings with 48 total units, all identical. For this analogical drawing, the site is portrayed as the rug on a floor and the housing as a child's building blocks (Figure 2.11). As far as accessibility, this site is well placed however, the lot is backed by retail buildings and surrounded by low incoming housing. They plan to keep the chain link fence surrounding the site with three access points along Quail trail. The site will contain centrally placed laundry and commons buildings, and a non-centrally placed dumpster (Figure 2.12). There is a bus stop adjacent to the site, and a second stop less than a mile away. Additionally, there is a Walmart 0.6 miles walking distance (Figure 2.13). At the city scale, this site is in a dense suburban area within walking or biking distance of numerous resources and necessities (Figure 2.14). Each dwelling is made up of four units in a radial pattern and placed linearly in rows of three. Units contain a bedroom, full bathroom, kitchen, and living space (Figure 2.15). The location of this project is optimal with ready access to necessary resources. However, the hinged arrangement on the site lacks site response, and there are no definitive levels of ownership outside of the units.



Figure 2.11: Quail Trail analogical illustration, "Wood Blocks".



*Figure 2.12: Quail Trail site plan superimposed on satellite image.* 



Figure 2.13: Quail Trail accessibility and resource analysis.



Figure 2.14: Fort Worth, TX, city analysis for Quail Trail.



Figure 2.15: Quail Trail unit and community arrangement analysis.

#### 2.5 Bastion

Bastion is in New Orleans, Louisiana designed by OJT. The project is mostly realized apart from three community buildings, with its most recent phase completed in 2018. This analogical drawing is placed in elevation rather than plan portraying the housing as frames on a wall (Figure 2.16). The site contains 29 dwellings with a total of 58 units occupied by post 9/11 combat veterans (Figure 2.17). Residents without a mode of transportation have access to three bus routes and two small grocery stores within walking distance (Figure 2.18). Site placement is in a dense suburban area within a reasonable distance of most necessary resources (Figure 2.19). The site is situated on a residential block surrounded by single family homes. One thing OJT

understood was the difficulty in getting a PSH community accepted in an existing neighborhood. To address this, they worked in elevation to reflect the surrounding typology. Each unit contains 1-2 bedrooms, full bath, kitchen, living, and laundry. The units are paired to provide semi-private space and arranged linearly on the site hugging the perimeter forming community spaces centrally (Figure 2.20). Bastion could be considered the most successful of the projects shown.



Figure 2.16: Bastion analogical illustration, "Picture Perfect".



Figure 2.17: Bastion site plan superimposed on satellite image.



Figure 2.18: Bastion accessibility and resource analysis.



Figure 2.19: New Orleans, LA, city analysis for Bastion.



Figure 2.20: Bastion unit and community arrangement analysis.

#### 2.6 Application

Following the analysis of these four precedents, four priorities were established as accessibility, affordability, levels of ownership, and cultivating community. As the toolkit was produced, these priorities were established through each section. First with accessibility, the section on site focusses on evaluating the accessibility to necessary resources as well as the overall quality of the location based on its surroundings. Next, strategies for affordability are proposed through the program and plan sections of the toolkit. Actions such as minimizing plumbing walls, maintaining 4-6 exterior faces, and combining multiple units into one structure all help to reduce costs while improving quality. Levels of ownership are established in the

dwellings section, where users are directed on how to arrange dwelling relationships to provide private, semi-private, and semi-public spaces. Finally, in the community section, the suggestions on arrangement help to continue to implement the prior three priorities while also cultivating healthy interaction within the community as well as between the community and the surrounding neighborhood. The toolkit overall seeks to be specific in strategy but flexible in application, giving it the ability to become specific to a variety of scales of projects and demographics of people.
### **3. EXPLANATION OF EXHIBIT**

This research was presented on April 1, 2021 at the National Conference on the Beginning Design Student (NCBDS), which took place from April 1-3, 2021. The NCBDS is dedicated to the practice of beginning design education. Scholars from across the nation gather to peer review research on the topic of the beginning design student. The conference began as a small gathering called "Gatherings" in 1972 as a forum for design educators. Each year the conference is hosted by a different college or university. The 36<sup>th</sup> NCBDS gathering was initially intended to be held in April of 2020 at Texas A&M University in College Station, Texas, but due to the covid-19 pandemic it was postponed to April of 2021 and held virtually. Papers were assigned to a categorized session along with three other papers, this research was placed in the session titled "Social Engagement". Each session lasted an hour and a half, presenters prerecorded a fifteen-minute video of their research, which left about a half hour for live discussion. At the beginning of each session each presenter was introduced by the session moderator, their videos were played, and a joint live discussion followed.

There were a series of steps that had to be taken before presenting at the NCBDS. In December of 2020, an abstract for this paper was submitted and accepted. This research was one of 88 abstracts accepted out of 172 submitted, an acceptance rate of 51%. The full paper submission was due in February of 2021, with specific length and formatting guidelines, which the paper had to be adjusted to fit. Additionally, a slideshow of the images created from the research was organized to be used in the pre-recorded presentation. This slideshow began with the four precedent studies, then showed the toolkit and design application in Baytown, Texas. Prior to the conference, an informal workshop was organized with a few people who work with organizations involved with planning PSH neighborhoods. During the two-hour session, the toolkit was walked though section by section and those attending gave feedback and suggestions on how the resource could be improved. Based on their comments, changes were made. Most significantly, there was a shift from a horizontal to vertical format, the addition of instructional images displaying the use of the toolkit in each section, and clearer instructions through each section. For the NCBDS, a single page spread of the toolkit was made and shared during the session for a full overview. Though it would have been ideal for each individual to tangibly interact with the toolkit for however much time they would like, the post-pandemic virtual world prevented that. The preview spread of the toolkit allowed for those participating to see the toolkit in its entirety without having to flip through over a hundred pages in a short amount of time.

The presence of this research at the NCBDS was significant considering most presenters were design educators. This research was not treated differently than any other presentation, even though this work was completed by a student and every other piece in the session was done by an educator. Not only did this fact give the presentation significance, but it also made it the ideal platform to gain valuable feedback. The toolkit was ultimately designed for the beginning design student. Though those using it will generally not be "students", they are certainly beginning to learn about the process of design. To have experts about teaching design review this work was invaluable. During the live discussion, a question came up on what it was like to research this subject as a student at Texas A&M University. Architecture research is not widely understood, so the opportunity to contribute at Texas A&M is a privilege. Throughout the entire process of researching the arrangement of PSH neighborhoods, support was received from the department of Architecture and the Undergraduate Research Scholars program. Through thesis advisor James Michael Tate, connections were made with local organizations to gain real world

feedback. Additionally, Tate's personal experience working on supportive housing projects proved to be continually helpful. One notable comment received from those with the URS program was how important it is for students from a land grant university to research these issues. Following the review, a design educator reached out and requested the use of the toolkit for his students. Andrew Wilson, from Fanshawe College, intends to use the toolkit as a resource for his landscape architecture and planning students in a fall course set at the neighborhood scale.

In addition to the NCBDS, this work was presented at the URS Symposium, which took place from February 24, 2021 to March 3, 2021. This platform was somewhat different but served equally as much in terms of feedback and learning experience. Similarly, with the NCBDS, an abstract was submitted and accepted to present at the conference. In preparation for the symposium, a presentation poster was organized, and a video was recorded to accompany it. The poster began with a feature image of the analogical illustration created for the Quail Trail community analysis, followed by an introduction, discussion, and outcomes. The remaining half of the poster was split between analysis and creative artifact with short text and key images for each. Normally, the URS symposium is held in person with live panel sessions, however, due to the covid-19 pandemic, the 2021 symposium was organized virtually. Each piece of research had its own page on the website, which was accessible during the entirety of the event. On each page, viewers could find the video presentation, poster, or slideshow, and abstract for the research. The platform allowed for comments directly on the page, and the URS program assigned reviewers to each piece of research to fill out a more in-depth review of the work to be shared privately with the researcher(s). This feedback focused more on the quality of the presentation than the work itself. One piece of feedback received more than once centered on how this presentation would have been much easier to follow if it had been presented in person.

#### 4. **REFLECTION**

Often in school, architecture projects begin with a precedent study, which later informs a design. Based on this basic understanding of design process, this research began with precedent studies. This approach worked well for the end goal, which required having an in depth understanding on how PSH neighborhoods are currently being designed. Initially, the desire was to analyze upwards of ten projects, but it was determined that due to time restraints, it would be best to have an in-depth analysis on a handful of projects rather than a shallow analysis on several. Though these projects were not visually analyzed they were still researched and studied to assist in gaining the best understanding of design strategies before creating the toolkit. The design of the toolkit began before the study of the precedents had been completed. By working on the two pieces simultaneously, observations from the existing projects were applied as they were observed. Though this may not have been a conscious decision, it served as an effective process for constant reflection. Early on, the primary audience was established as those working in the organizations to have a PSH neighborhood built, with the future residence and city planners as the secondary users. Additionally, accessibility was made a top priority in the ability to gain access to it, print it, understand, and use it. This was fulfilled through a primarily black and white format for affordable printing, a design process which requires minimal prior design knowledge or additional tools, only basic architectural terminology, and an easy-to-read drawing style with furniture and people to assist with visualizing spaces.

As discussed in the explanation of exhibit, in addition to presenting at the NCBDS, a workshop was held to gain feedback. This session influenced the toolkit more than any other form of feedback received. Prior to that session, the toolkit only contained drawings, but based

on the feedback a series of photographs were taken of the toolkit being used through each step. Additionally, the usability came into question in terms of its page orientation. Previously it was set up on a horizontal 8.5x11 inch format, but with the high number of pages and the expectation that it will be printed on loose sheets of paper, it needed to be capable of being placed in a binder or folder without losing it usability. Another important suggestion was the incorporation of "bubbles" of text, to essentially draw attention to helpful or important reminders periodically throughout the toolkit. More specific pieces of feedback were given for each individual section. In the site section, the resources needed to be qualified as either desirable or undesirable. In the plan section, it was important to create images to explain how the provided floorplans can be organized into dwellings. For the community section, a large amount of modification was suggested, but due to time only a portion was implemented. The photographs begin to show this in the labeling of access points, creating outdoor spaces, and public spaces. It was also suggested that examples of arrangement be shown on various sizes of sites and a stronger relation to what surrounds the site be discussed. Finally, the importance of the form section was questioned, which also required a large amount of modification that could not be implemented. At the conclusion of the session all of those attending insisted that this be looked at as more than an undergraduate thesis, more as a powerful tool. By shifting the focus, the work then became less about satisfying academic expectations and more about producing a toolkit that can make a difference in the planning of PSH neighborhoods. This also forced a change in perspective of who would be viewing it, from professors and thesis reviewers to someone with zero architectural knowledge.

In a pandemic free world with more time, some things would have been done differently. Though the session with those who have worked with organizations to plan PSH communities

was beneficial, the most ideal way to review the toolkit would be to use it with a team actively working to plan a future community. The toolkit is intended for those in the organization, but it is crucial that future residents and city planners also interact with it. Due to the circumstances of the covid-19 pandemic this unfortunately could not be accomplished. However, there are plans to test the toolkit in this way at some point soon. With the toolkit at its current state, there are some aspects that could be improved. Though there is an abundance of content, some of the instructions lack the level of usability that was being aimed for. Looking back at the learning curve that the toolkit went through, it would have been beneficial to closely study existing architectural toolkits prior to designing the one for this research. Additionally, if possible, the analogical drawings would have translated into the toolkit. The addition of this connection was a missed opportunity as it would have added depth and richness. A few of the sections are missing helpful content, for example: the plans sections need handicap accessible options; supplemental information on utilizing google maps in particular the street view feature; and the community and form sections should be longer with more detail such as sidewalks, type of parking, play areas, and the benefits of different roof types.

Following the NCBDS session, the feedback from Andrew Wilson sparked a reconsideration of what the toolkit could serve as. Prior to the conference, the toolkit was only looked at as a tool for those planning PSH neighborhoods. Wilson's request to use the toolkit as a resource for his students suggested something completely different. In a way, this approach serves a similar purpose. If the toolkit is used to educate landscape and planning students, it is preparing those who will potentially be working on PSH projects in the future. City planners are often involved and if they have the education to help, then the process could be improved from another angle. As previously mentioned, this toolkit was essentially designed for the beginning

design student. In any instance where a professor is seeking a tool to assist their students in understanding the importance of the arrangement of communities, this toolkit could serve as a resource. After all the time and hard work put into the toolkit it is exciting to already receive interest in it. In the end, the hope is that the toolkit will serve as a resource for further research, practice, and strategies in the arrangement of permanent supportive housing neighborhoods.

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### **APPENDIX: CREATIVE ARTIFACT**

The toolkit is divided into six sections, intended to be completed in the order they arranged in. Section 1 is "site" because the location of the project is crucial to its success as well as informing the design and arrangement of the community. In this chapter, users follow steps to first find their site, then identify what resources the location already has to offer, keeping in mind the specific needs of proposed residents.

In section 2 "program", elements are organized by bed size, bathroom type, kitchen type, and living/dining objects. Based on the wants and needs of potential residents, program elements should be identified, cut out, and organized into units. Users have the option of manipulating these pieces to design floorplans, or they can move on to section 3 and use the program pieces they chose to find pre-made floorplans already containing what they need. When organizing floorplans using the program pieces, for the purpose of affordability, designers should maintain 4-6 exterior faces, keep plumbing on a single wall when possible, and/or place plumbing on an exterior wall.

In section 3, proposed "plans" were designed and organized using the strategies explained in section 2. In this step of the process, plans should be cut out and organized into middensity dwellings. The designer can select from plans in the toolkit or use their own designed plans and organize them into dwellings of 2-4 units. Keeping in mind the location of plumbing, the 4x4 grid, and 4-6 exterior faces. Once dwellings have been arranged windows can be placed and entrances added or adjusted.

In section 4, users are given instructions on how to arrange their "dwellings" to create semi-private spaces. Dwelling arrangements typologies are categorized by organization types:

radial, angled, curved, and linear. When arranging dwellings, users should consider the placement of doors and windows in relation to private spaces, semi-public spaces, and public spaces. Once users have arranged their dwellings, they are advised to take a picture of each arrangement and revisit each option to evaluate the pros and cons to establish which strategy is best for their site.

Section 5, "community" arrangement, is categorized by central, grid, perimeter, and random. Suggestions are shown on rectilinear, narrow rectilinear, triangular, and curvilinear sites. It is important to maintain the spaces created in the dwelling arrangement while also creating more public in-between spaces in order to provide a sense of ownership and community. Designers should keep in mind parking, circulation, and non-dwelling structures. Additionally, using the site analysis created at the beginning of the process, users will identify lacking resources in the surrounding community and choose what to provide in public or neighborhood structures.

Finally, is section 6, proposed "roof form" designs are categorized first by pitched, gable, hip, and pairs as well as traditional, twisted, shifted, and extended variations. The roof form is an opportunity to add architectural quality while remaining affordable. This step is less crucial to the arrangement and more pertinent to the overall architectural quality, which is why it is placed last. Users should reflect on the possibilities, rather than limiting to the traditional approach.

Thank you again to Luke Redus for inspiring the creation of this creative artifact. The toolkit starts on the following page.

## THE WHOLE AS THE PART



a toolkit for designing permanent supportive housing neighborhoods

by Maggie Martin

this toolkit is intended to be printed double sided on 8.5x11 inch paper it was designed to be printed in either color or greyscale with equal readability for full use of the toolkit you will also need scissors, tape, and pens/pencils

If you use this toolkit, have questions, or contributions, please contact Maggie Martin at maggiebellemartin@gmail.com

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# 01 SITE

Proposed program pieces are organized by bed size [twin, full, queen, and king], bathroom type, kitchen type, and living/dining objects. Based on the wants and needs of potential residents program elements should be identified, cut out, and orginized into unit plans on a 4ft.X4ft. [1/2in.X1/2in. at scale] grid. For the purpose of affordability, maintain 4-6 exterior faces, keep plumbing on a single wall when possible, and/or place plumbing on an exterior wall.

## CITY ANALYSIS

CHOOSING FROM YOUR POTENTIAL SITES

To choose the best site for your project, it is important to analyze the accessibility and other restrictions. The steps on this page should assist in choosing the most optimal site. Be sure to keep in mind the mobility of your residents as well as their specific needs. You can continue to use google maps for these steps, or you can print out satellite images of the site you are considering and physically mark locations and take notes.

1	Identify all potential sites	•••
2	Identify all resources in the general vicinity of the potential sites	© <sup>₽</sup>
3	Locate public transit routes	5
4	Locate public green spaces	
5	Circle areas with the most available resources	
6	Identify sites in these circles and complete any necessary further resource	▼
7	Choose final site	▼

## SITE ANALYSIS

IDENTIFYING WHAT YOUR SITE HAS TO OFFER AND WHAT IS MISSING

Once you have your site, its important to identify what the area has and what is missing. If your residents will not have private transportation, be sure to consider the realistic ability to walk or access a public transit system. If a primary resource is not available, begin to consider how you can provide access to it. Additionally, take note of what the surrounding area is in need of for not only your community, but for the local public. By providing resources for more than your residents you may improve acceptance and support of the neighborhood.





### GOOGLE MAPS

HOW TO CHOOSE YOUR SITE AND IDENTIFY ISSUES IN ACCESSIBILITY TO RESOURCES

When choosing a site for your project, google maps is one of the most helpful and easy to use resources at your disposal. The instructions on this page give the simple steps to set up a folder for organizing sites you are considering. Follow steps 1 through 6 to set up your folder and add your first site. Repeat step 7 for each additional site you add. To go back later and view all of your saved sites at once, follow steps 1 through 4 again and select your existing folder. Once in your folder you will see a list of each of your saved places, by clicking on any of your saved sites you will find three more helpful tools. First, you can search for nearby places by clicking the "nearby" icon and typing in the resource you are looking for. This is important for identifying the accessibility of the site. Second, you can use the directions tool to find exactly how far those resources are and how much time they would take to reach by foot, bike, car, or public transit. Finally, you can add a note directly to the site using the "add note" tool.





# 02 PROGRAM

BATHROOMS BEDROOMS LAUNDRY KITCHENS LIVING DINING Proposed program pieces are organized by bed size [twin, full, queen, and king], bathroom type, kitchen type, and living/dining objects. Based on the wants and needs of potential residents program elements should be identified, cut out, and orginized into unit plans on a 4ft.X4ft. [1/2in.X1/2in. at scale] grid. For the purpose of affordability, maintain 4-6 exterior faces, keep plumbing on a single wall when possible, and/or place plumbing on an exterior wall.



- + work with residents to ensure you are meeting their needs
- + take notes, rank, and discuss
- + modify: remove/add/extend/compress

IF YOU ARE RECEIVING HUD FUNDS, BE SURE TO STUDY THE ACCOMPANIED GUIDELINES

STEP 1



+ cut out selected elements

STEP 2

- + cut out more than one of each element to retain options
- + tip: the backside of each page has dotted lines for easy cutouts
- + if you do not want to lay out your own plans, skip steps 3 and 4, then move to section 02



- + use the provided grid to lay out potential floorplan options
- + rotate/swap/mirror/stretch/shrink
- + consider the primary needs of the user(s)
- + for affordability, keep plumbing on one wall
- + for affordability, arrange with 4-6 exterior faces

DON'T SCRAP ITI TAKE PICTURES OF EACH OPTION AS YOU GO!

STEP 3



- + revisit options, discuss, and choose most optimal plans
- + use grid, tape down pieces, and draw out modifications
- + scan final plans and print copies for section 02

### STEP 4























bathroom // + handicap 🛛



🗆 bathroom // + handicap





□ BEDROOM // TWIN









□ BEDROOM // QUEEN












						FL	O O R P L A N	GRID	

— FL	0 0 R P L A N	GRID						

						FL	O O R P L A N	GRID	

## 

1 BED // COUPLE

1 BED // SHARED

2 BED

3 BED

Proposed plans were designed using the strategies explained in 01. In this step of the process, plans should be cut out and organized into mid-density dwellings. Select or design plans which provide the needs of the proposed residents then organize them into dwellings of 2-4 units. Keep in mind the location of plumbing, the 4x4 grid, and 4-6 exterior faces. Once dwellings have been arranged windows can be placed and entrances added or adjusted.



- + pull together the program pieces you chose
- + find plans with the chosen program elements
- + bookmark potential plans



- + note pros and cons of bookmarked plans
- + note potential modifications
- + the back of each page has labeling to assist if the plans are difficult to understand

CONSIDER LETTING FUTURE RESIDENTS VIEW THE PLANS AND COMMUNICATE WHAT THEY LIKE





STEP 3 🖽

- + select final plans
- + cut out multiple copies of each plan
- + dashed lines are placed on the backside for easy cutting



- + use the plans you have cut out to arrange dwellings composed of approximately 2-6 plans
- + consider placement of plumbing, doors, and potential windows
- + you can also flip plans over to mirror them







- + review arrangements, evaluate and choose final dwellings
- + create or make copies of all the dwellings to be placed in the community





DWELLING #1



DWELLING #2



+ for the design in Baytown, Texas

+ floorplans 2B, 1D, 1A, and 2D were chosen and arranged into dwelling using the steps shown

















1 BEDROOM COUPLE // 1 PLUMBING WALL



## 2B

1B

## 1 BEDROOM COUPLE // CENTRAL BATH





















SHARED KITCHEN // CENTRAL BATH



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20














#### SHARED KITCHEN // 2-STORY





 $\blacksquare$ 

5C





### 2D 2 BEDROOM // CENTRAL BATH



2 BEDROOM // 1 PLUMBING WALL

1D



 $\square$ 





2 BEDROOM // CENTRAL LIVING



PUSH UP THE UPPER BEDROOM TO MAKE ROOM FOR A HANDICAP BATHROOM WHEN NECESSARY

 $\square$ 



4D

2 BEDROOM // SQUARE





### 2 BEDROOM // 2-STORY

5D





 $\square$ 





3 BEDROOM // 1 PLUMBING WALL

1E











#### 3 BEDROOM // CENTRAL LIVING

3E





3 BEDROOM // SQUARE

4E







3 BEDROOM // 2-STORY







					FL	O O R P L A N	GRID	

— FL	0 0 R P L A N	GRID						

					FL	O O R P L A N	GRID	

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# 04 DWELLING

RADIAL ANGLED CURVED LINEAR Proposed dwelling arrangements are categorized by orginization types: radial, angled, curved, and linear. When arranging dwellings consider the placement of doors and windows in relation to private spaces, semi-public spaces, public spaces, and parking. Prioritize the creation of private and semi-public outdoor spaces in order to provide a sense of ownership and community.

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- + arrange and rearrange
- + consider semi-private spaces
- + establish a central point and arrange radially

DON'T FORGET TO TAKE PICTURES OF THE RELATIONSHIPS BEFORE YOU REARRANGE THEM!





- + create angled spaces
- + consider usability of the spaces
- + evaluate quality of semi-private spaces





- + design for circulation
- + create central semi-private spaces
- + rotate, flip, and stack to explore every possibility





- + create levels of private to semi private spaces
- + begin to consider to placement of porches
- + keep in mind doors and placement of sidewalks

ITS IMPORTANT TO KEEP DWELLING GROUPS SMALL IN ORDER TO FOSTER MICRO-COMMUNITIES



- + review potential arrangements
- + consider shape/size of site and needs of residents
- + finalize choices

 $\sim$ 

+ make final placement of doors and windows

WINDOWS SHOULD SERVE FOR BEST VIEWS, SUNLIGHT, AND PRIVACY. THEY CAN DIFFER BETWEEN UNITS.



- + ensure each set of dwellings has both private outdoor spaces and semi-private outdoor spaces
- + provide sufficient shaded space
- + consider the residents, children and the elderly have different wants and needs

# 05 COMMUNITY

CENTRAL GRID PERIMETER RANDOM Proposed community arrangments are categorized by central, grid, perimeter, and random. Suggestions are shown on rectilinear, narrow rectilnier, triangular, and curviliniar sites. Maintain the spaces created in the dwelling arrangement while also creating more public in between spaces. Keep in mind parking, circulation, and non-dwelling structures. Using the site analysis created at the begninning of the process, identify lacking resources in the surrounding community and choose what to provide in public or neighborhood structures.


- + calculate dimensions to lay out a scale site
- + draw out your site labeled with real dimensions
- + for every eight feet of your site you will need one inch in length,
- calculate these lengths and label your drawing
- + note access points and what surrounds your site

SCALING CAN BE HARD TO GRASPI USE GOOGLE IF YOU ARE UNSURE

STEP 1

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- + use the dimensions you calculated and lay out your site
- + this will likely take a large amount of space, you may need to use a floor
- + if your site is too large, you can either split it up or scale it down
- + another option is printing a satellite image of your site at 1/8"=1' scale
- + keep in mind, if you scale the site, you will also need to scale your dwellings to match

## 器 STEP 2



- + while maintaining your dwelling arrangements, place them on the site
- + keep in mind the access points, trees, and what flanks your site
- + you may have to adjust your dwelling arrangements to fit the site
- + continue to prioritize semi-private and semi-public spaces

DON'T SCRAP IT! TAKE PICTURES OF EACH OPTION AS YOU GO!

STEP 3

嘂



- + establish circulation
- + lay out parking
- + evaluate your levels of spaces from public to private and adjust to ensure there is enough of each
- + consider how the public space can serve the community outside of the neighborhood

## 器 STEP 4



- + four distinct dwelling groups were placed on the Baytown site
- + a public building was placed between the dwellings and the access road, simultaneously providing public access and community privacy

















## 06 F

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## FORM

PITCHED	Proposed roof form designs are categorized first
GABLE	by pitched, gable, hip, and pairs as well as
HIP	traditional, twisted, shifted, and extended variations. The roof form is an opprotunity to add
TWISTED SHIFTED EXTENDED	architectural quality while remaining affordable. Additionally, a slope of 3-12 is used for affordability.













- + the roof form chosen for Baytown vaguely resembles the surrounding typologies, enough to remain fitting while also adding architectural quality
- + roof form is an opportunity to break the affordability mold without breaking the affordability bank
- + also consider what the roof form can do for the energy of the building
- + explore various materials



+ roof form also provides interior opportunities

YOU DID IT! SHARE YOUR DESIGNS WITH YOUR ARCHITECT AND CITY PLANNER