

fire station & community center

How can element identity and alignment create prepositional relationships and influence experience?

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experience?

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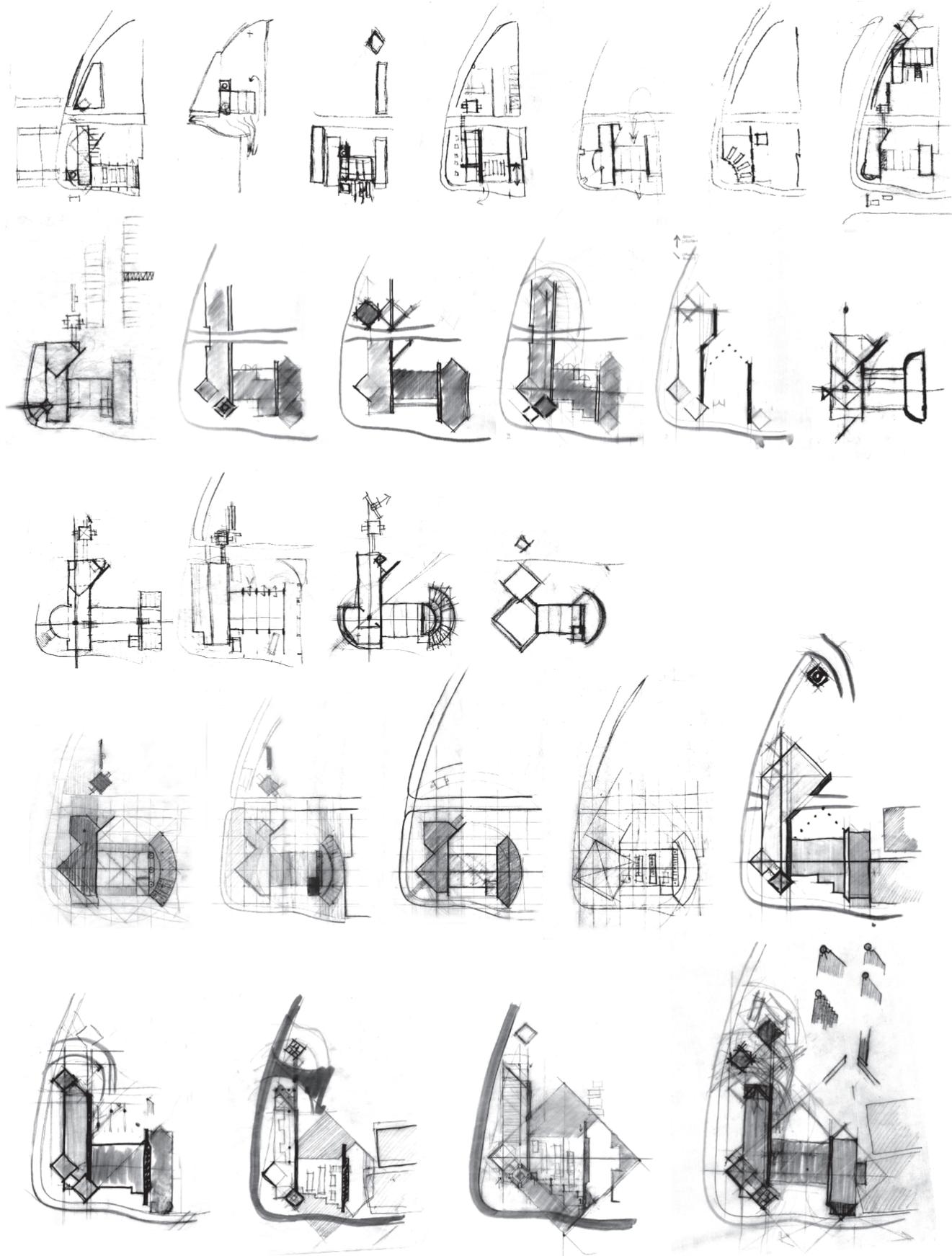
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Abstract

We are able to define architectural members specifically, and create identity of members within a hierarchy. Through appropriate placement with respect to their character and hierarchy, relationships are created that strengthen the individual's traits. This reinforcement creates an effect beyond what the individual elements are able to project toward one another, and influences our participation in their relationships. If we question how element identity, placement and alignment work together to create prepositional relationships, and consciously define members within a physical hierarchy, then we are able to strengthen identity of individual members, and ultimately create a more meaningful and considerate environment.



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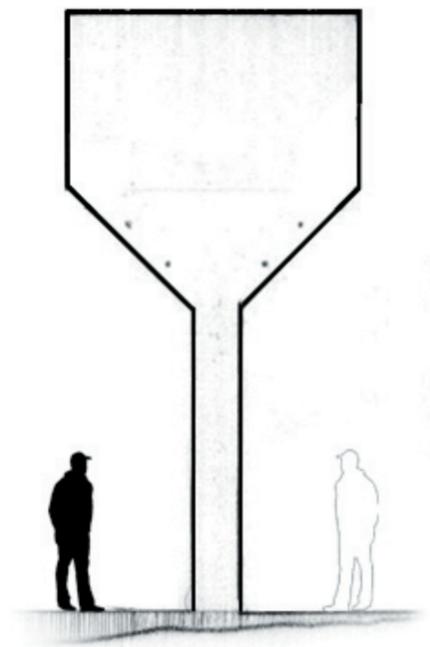
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A wall or column has certain dimensions which are tangible and quantifiable; size for instance, or material, weight and stiffness. These tangible dimensions contribute to an object's presence. Objects can be considered elements if they also possess some intangible qualities. It is these intangible qualities which create a certain character and dignity in an element, and which enhance the quality of affect which they exert on everything around them. The greater presence an element has, the larger is its range of influence, on both people, as well as adjacent elements.

When I was young, I remember an English lesson we were given in school. The teacher was instructing us in grammar and the use of prepositions. She used an example to illustrate to us how this piece of grammar dealt with the relationship or positioning that one noun can have in relation to another. Her example was a tree. She spoke of all the relationships one could have to this tree. She told us how we could be beside the tree, or near it. Dig under it, or fly over it. Circle around it, or stand before it. Travel along, or cut through a tree. Maybe I will head towards it, and if there are two of them I can walk between them.

This piece of grammar is relevant to the field of Architecture because of the physical, and spatial questions it offers. How elements of architecture are described and built directly affect our experience.

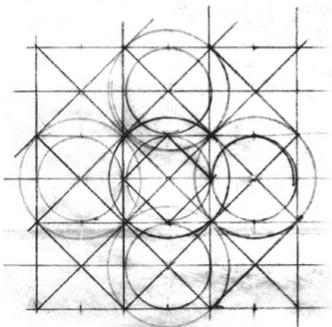
Imagine we were to replace the example of the tree, with that of a wall. What effect does that have? It is still the object, or noun which one is in relation to. We can still imagine circling around this wall, or traveling along it. It is probably irrelevant to the example of the preposition, which object is employed, but I think it is worth mentioning what type of wall one imagines during the exercise. Without the certain inherent dignity inspired by a tree, we are left to our own familiar associations. The wall may be made of stone, or maybe brick, perhaps it's painted. Maybe it's tall and slight, or perhaps curved. It could be a knee height wall. Thickness, length, shape, height, and material all vary in each of our minds. Another consideration is where and in what relation to other objects this wall is placed. Maybe the low, stone wall vision is located in front of a city church, or maybe it's in a field in Virginia. Are there people around or maybe there are cows in the distance? Is your wall an interior one with a baseboard and crown molding separating the vertical plane of its surface from the floor and ceiling planes? Is there a rug close by, or maybe a chair. Are there people in your vision other than yourself? My image of the tree was always set on a background of white. A large mature oak tree with no ground or sky, no floor or ceiling, only an up and a down, the tree and myself. But my image of the wall is much less defined because for some reason I feel there are many more options to consider. A definite consideration is required with this wall, because it will not grow by itself into such a terrific presence as does a tree.

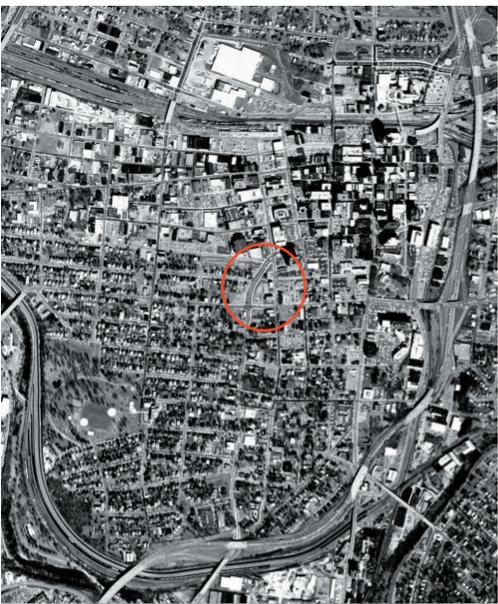


Now all this may seem very elementary, but it is very easy to lose sight of some of the more basic decisions involved in making. It is necessary to question the habits of construction. It is these "Maybe" questions, or a "What if" type of process which allows the options to increase. What is the difference? There is no default wall, just as there is no default tree. And so the possibilities expand at every scale and in every direction.

Making architecture is a process of simplification, or distillation in order to clarify a position as to how things are to be made. There are too many options for every decision to be made independent of all other decisions, and so tools are employed in order to limit those options to the most appropriate. Then those options are tested in a variety of ways, and a decision is eventually made. A decision which a number of other decisions will inevitably be based upon. These tools might be the subjection of rules, or maybe just a specific belief about certain hierarchy, or any number of other systems. Whatever the basis of a tool is, it is solely the construct of the architect in the goal of producing more meaningful elements.

Mapping a course, made of starts and stops, motions and silences, THROUGH thresholds, ALONG passages and TOWARDS destinations is our job, and to do it in a meaningful way is our professional responsibility. But in order to create these prepositions, we must first begin with a noun, or maybe two. How architectural elements are described and placed relates directly to the character and amount of presence which they will contain. As nouns in a sentence, or characters in a story, not every element can contain the same amount of presence, but each is necessary to contribute to the composed presence of the whole.



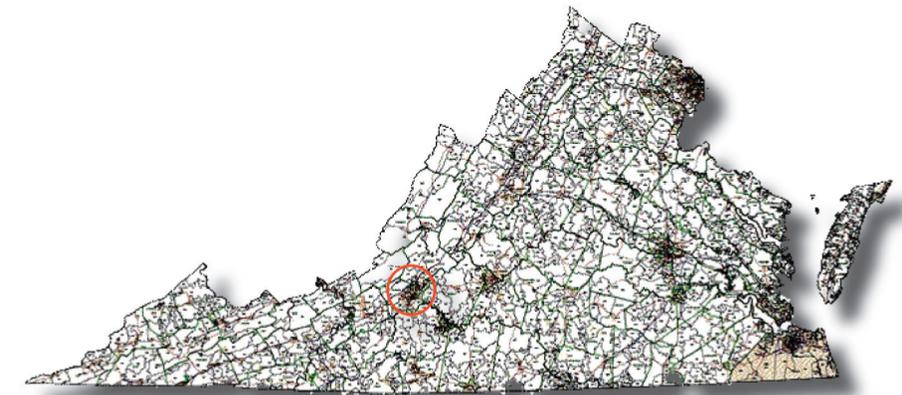


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* image source = <http://gis.roanokeva.gov>, 2004



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the site

The program chosen to use in exploration of this thesis is a fire station and community center, and the site is on the NE corner of the intersection at Elm Ave, and Franklin Rd. SW, in Roanoke Va.

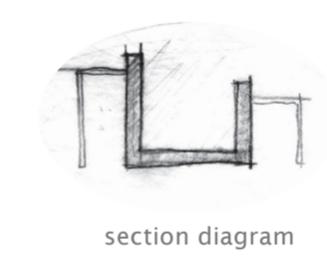
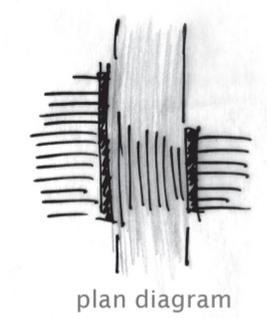
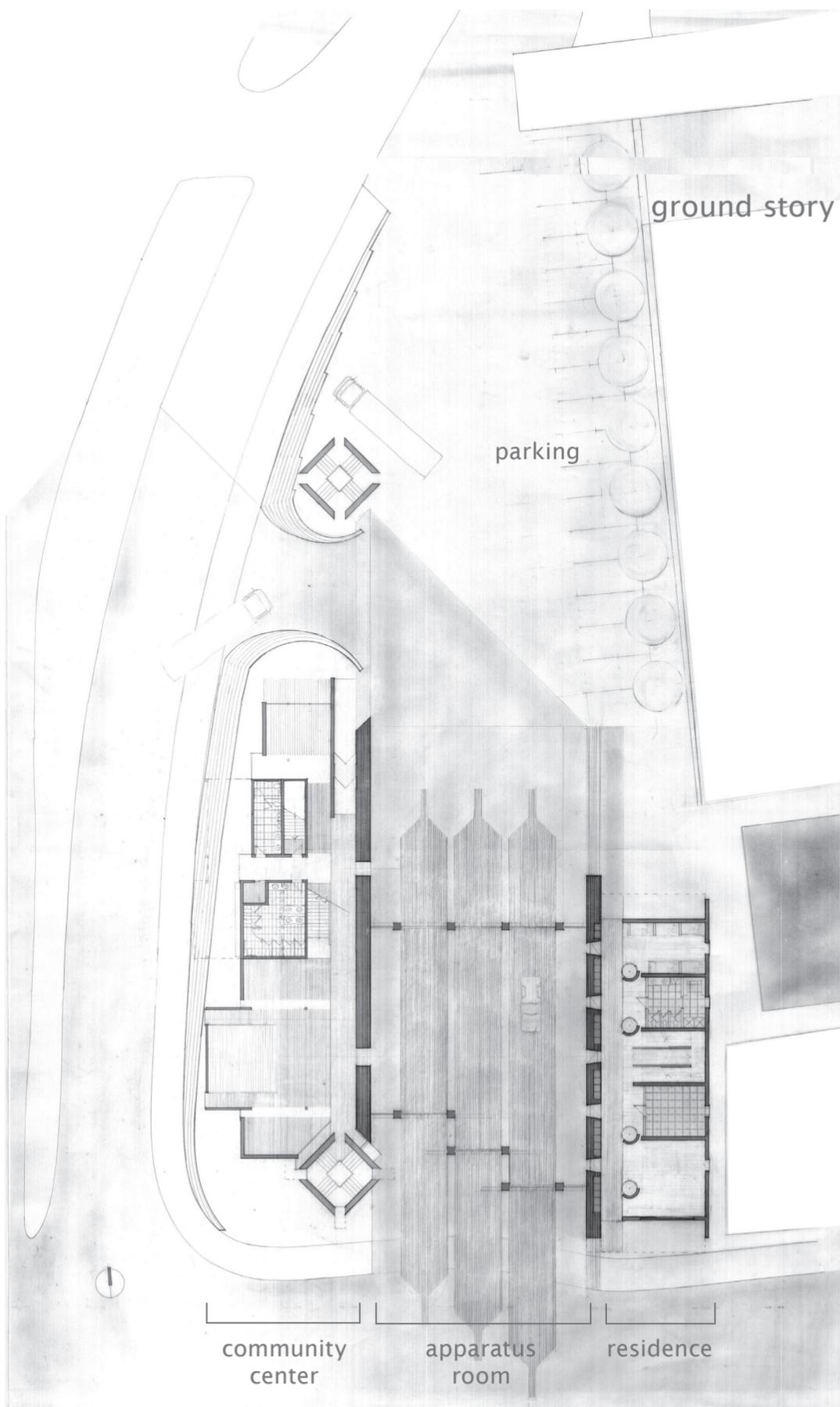
Succeeding an investigation of the topography at the chosen site, the primary walls of the project are placed, as retaining walls in order to mediate between the slope of the terrain, and the necessity for level floor planes (the slope can be said to generally follow an East to West downhill slope).

The site seems to be an important intersection of the city that is undeveloped. This corner is at a juncture set between the central business district to the NE, and a large residential district to the SW. The NE corner of the intersection presents itself in different views to the 4 vehicular approaches.

I am attracted to this building type by the images instilled in my mind of dramatic brass fire poles, several large garage doors aligned in a dutiful row and a great tower who's signalling presence is also used for drying the wet hoses after fighting fires. I am also interested in this programs necessity to include varying sizes and scales of rooms, which require a direct adjacency to one another. The apparatus room (where the heavy machinery is kept) is historically the largest room in many small American towns. This room can also be used, as a secular alternative, to host community events such as dances, voting, and fund raisers. Adjacent to this "multipurpose room" must be located, at a more intimate scale, the residence of the career firemen, while they are on duty.

Social content is an important aspect of the program. How close a community is to its fire and rescue, as well as how a group of neighbors can congregate in a secular context that the city has subsidized.

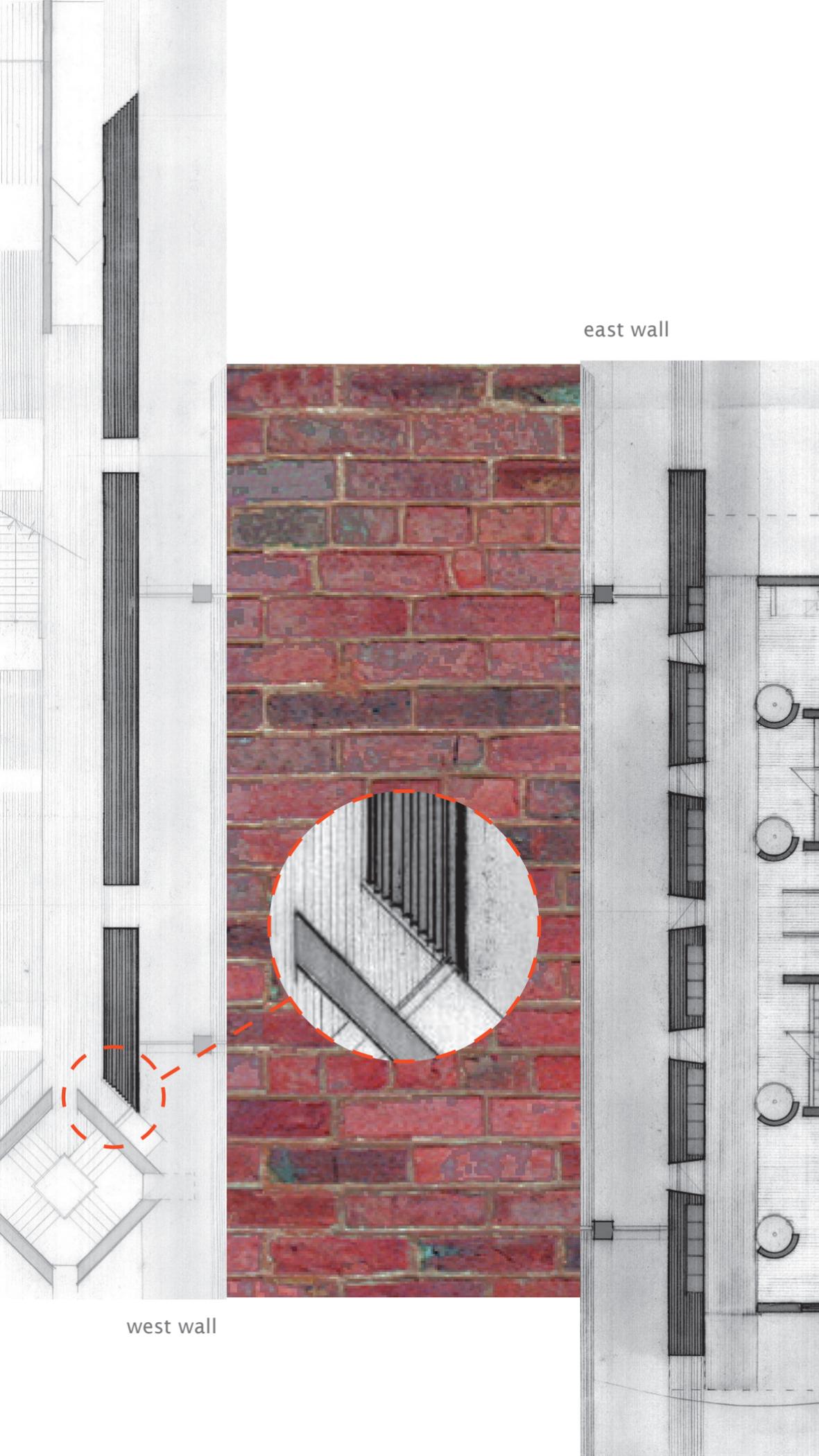
* image source = www.virginia.gov, 2004



the Walls

A study of the topography of the site lends the project to develop as a terraced construction, relying on two retaining walls. When the two parallel walls are placed, immediately decisions need to be made with regards to material, scale and ultimately the hierarchy of the spaces created and separated by the walls. The program of the fire station/community center, with its three distinct zones, aided the definition of the divided spaces. People to the outside of the walls and machines in between them. The order produced by this decision and the accepted hierarchy creates a diagram which can be referenced throughout the design process.

The two north/south walls divide the project into three distinct areas which relate specifically to the three divisions of the program. The apparatus room for the trucks falls between the two walls and is an extension of the through hall design employed at most contemporary stations. This strategy permits the trucks, when they come off the street, to drive into the rear of the room and never need turn around, or reverse. The firemen's residence is positioned to the side of the east wall. This area requires a set of rooms which range in character from private sleeping quarters, to common area and kitchen, to areas of public interaction. The community center is exposed, most appropriately, to the intersection at Elm and Franklin.



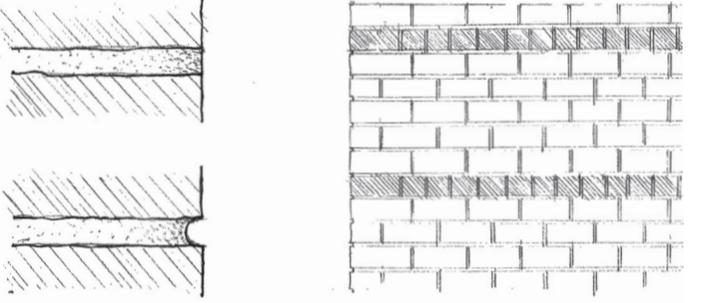
east wall

west wall



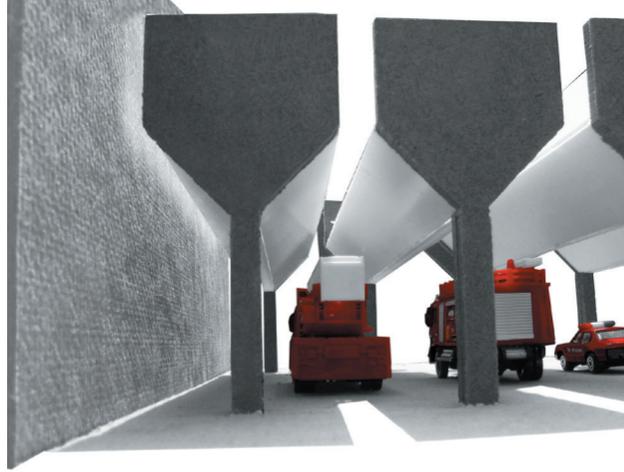
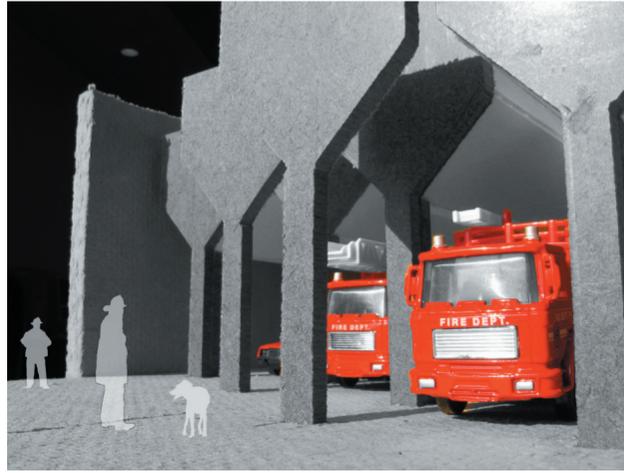
the Walls

The two red clay brick walls define the limits of the spaces. The walls are set in an American, or common bond, with a concave pointing in a red mortar on the horizontal joints and a flush joint on the verticals. This, coupled with the course of headers every 6th course, accentuates the horizontal dimension of the walls while contrasting the large vertical breaks let into them at specific locations.



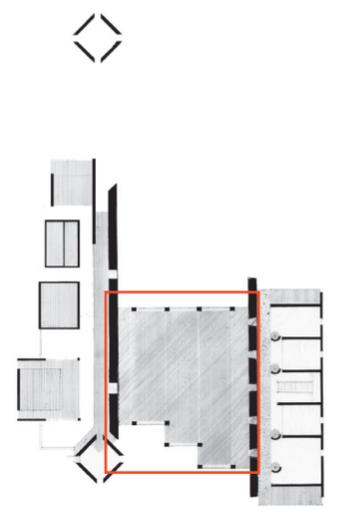
jointing

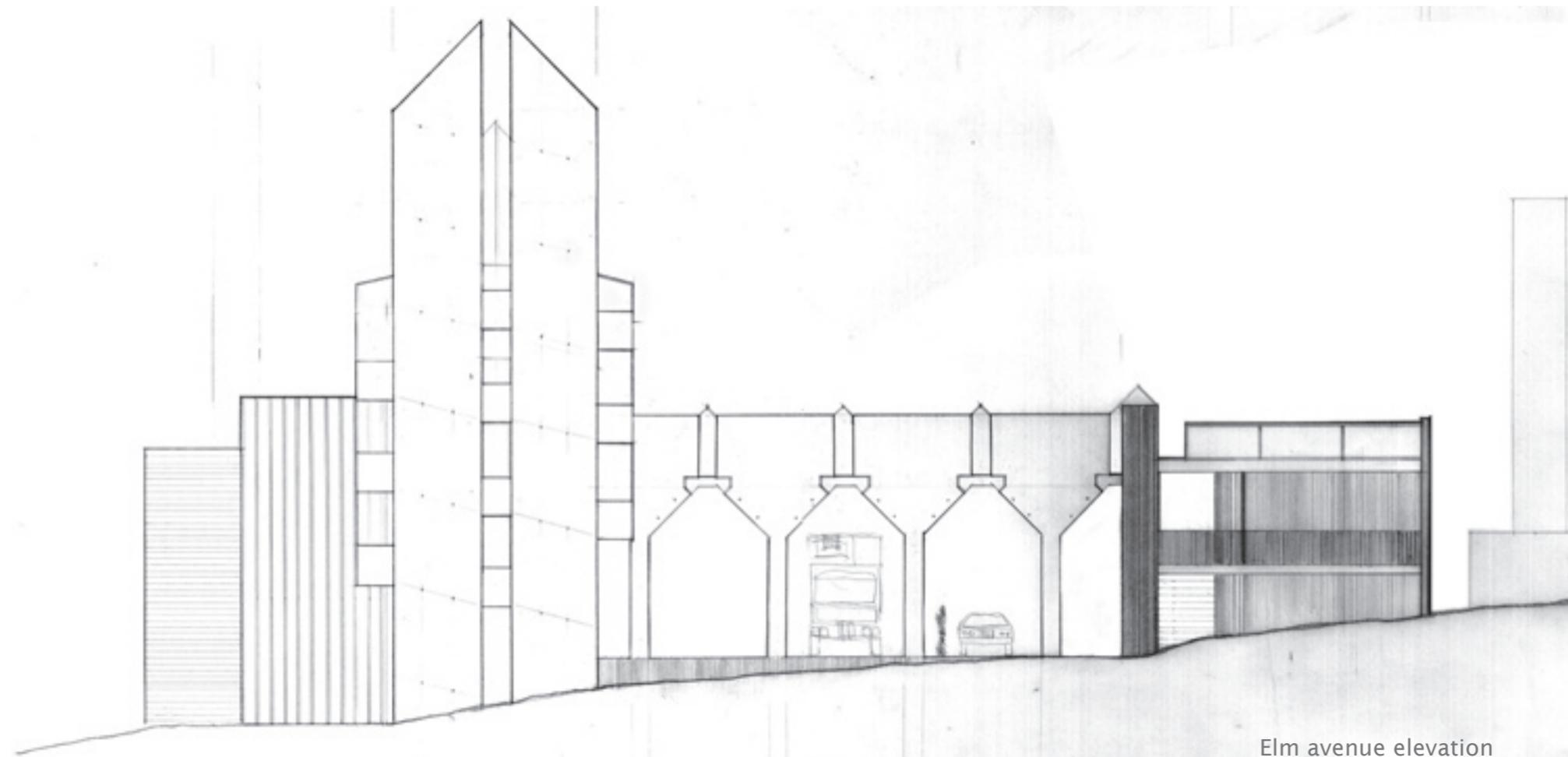
common bond



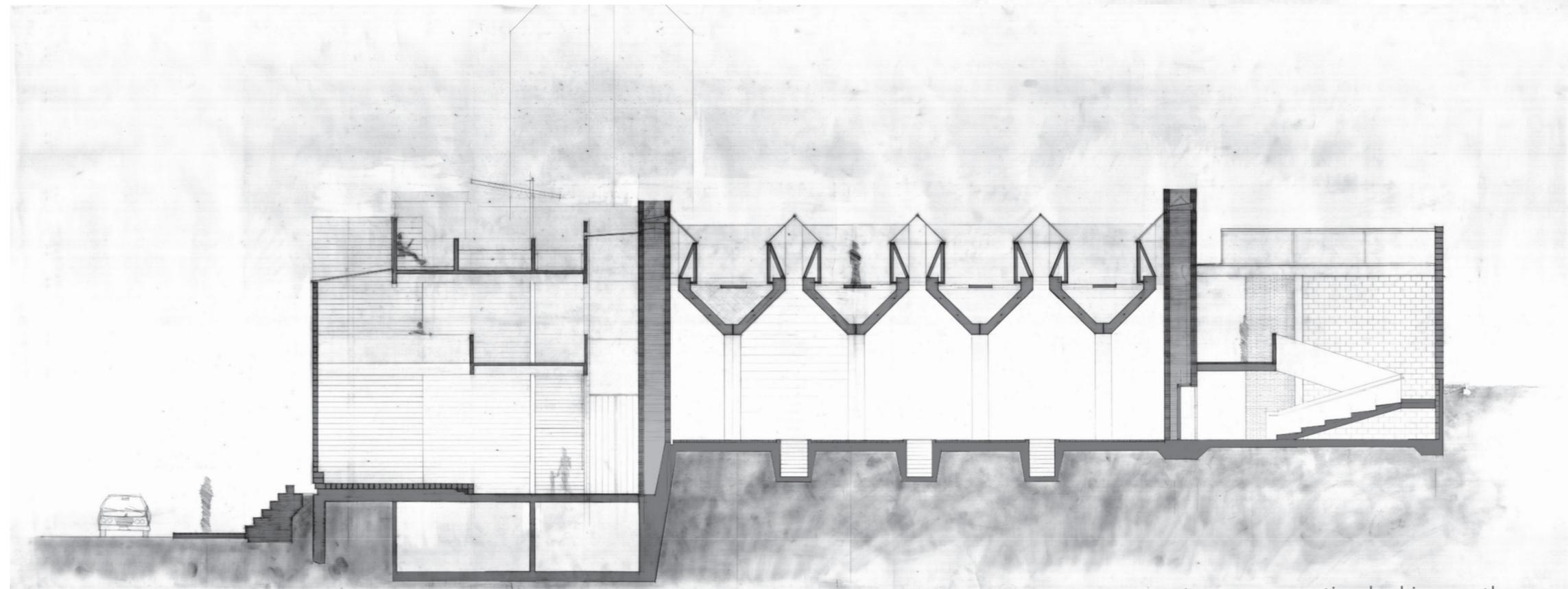
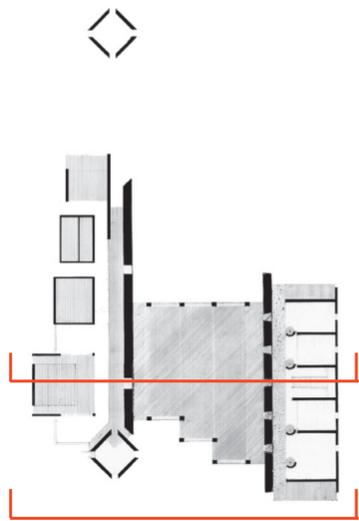
apparatus room

The space between the two walls is the area designated for the apparatus. For machines and not for people. This area can be described by four primary surfaces, including the two brick walls, a floor and a ceiling surface. An overhead canopy of pre-cast concrete and light is designed to create a dynamic day-lighting situation which reflects and diffuses a majority of the light in an effort to effectively present the beautiful equipment to the public. These are some photographs of a working model, and the expected lighting conditions.

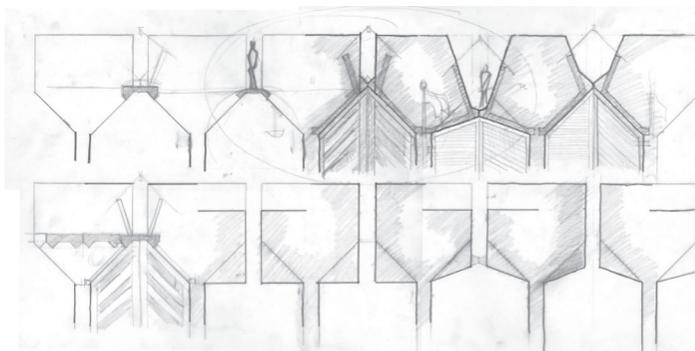
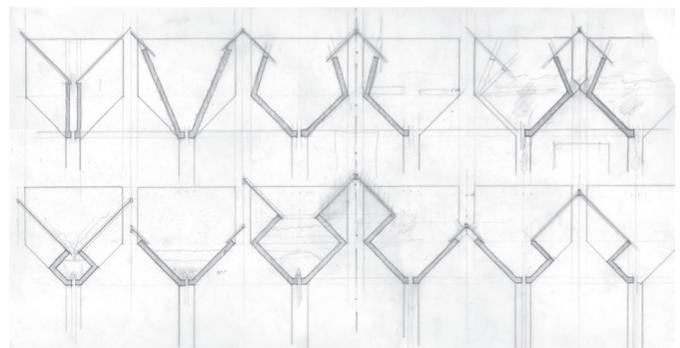
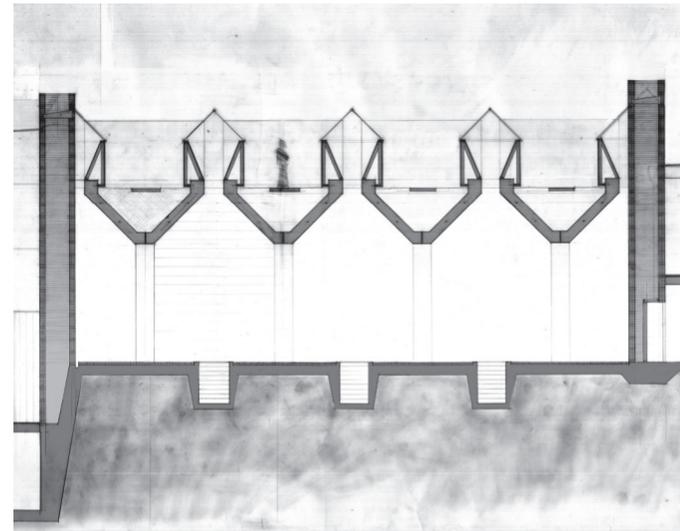
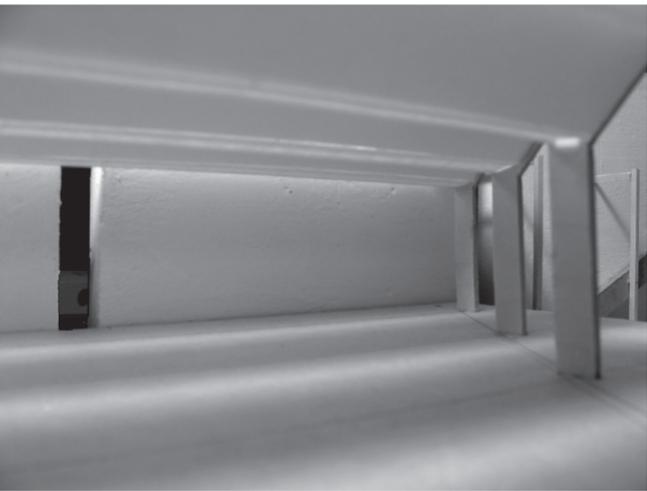




Elm avenue elevation



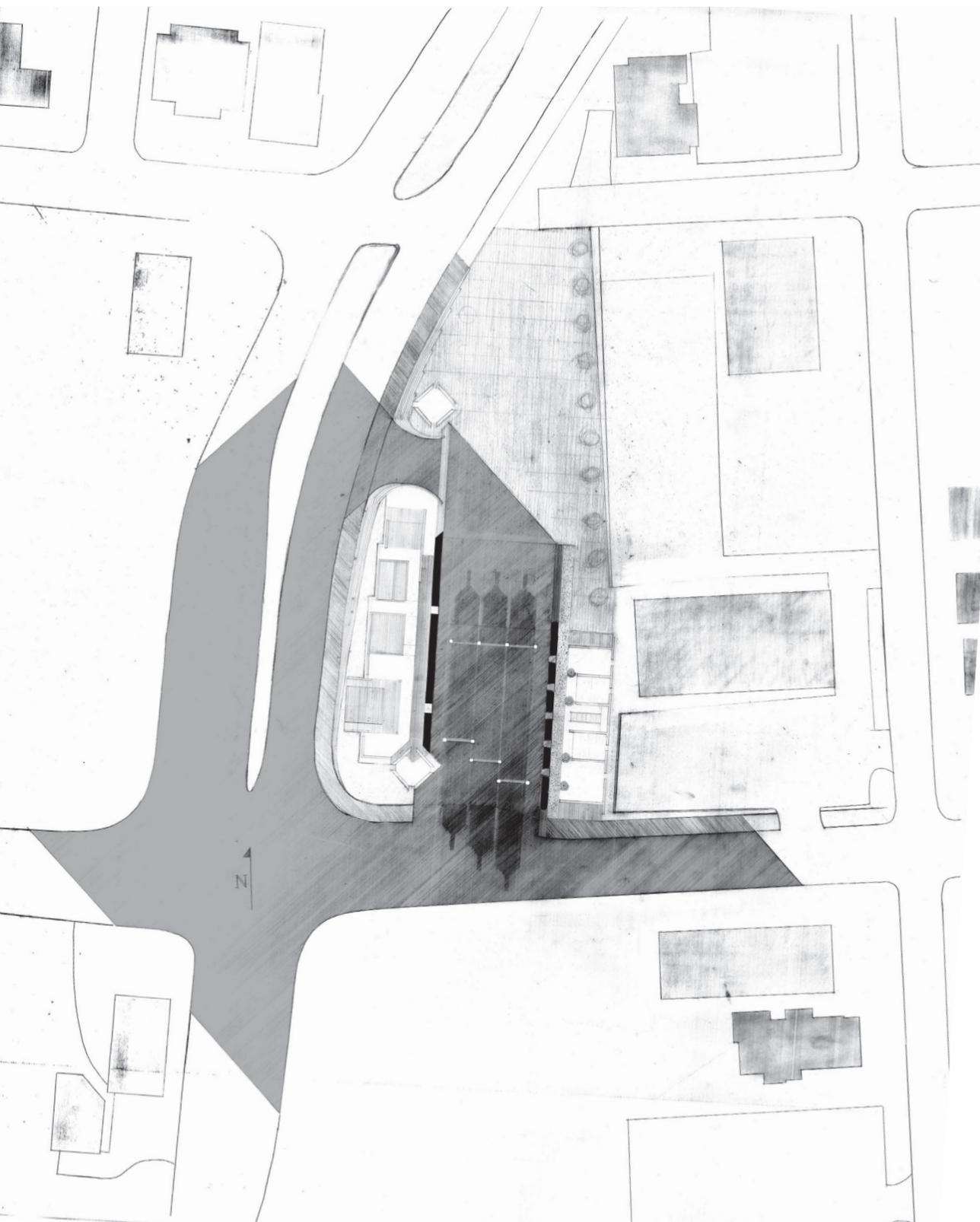
transverse section looking north



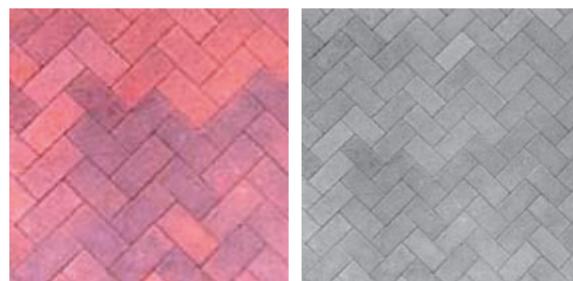
One of the first studies investigates the mediation between ambient light and the controlled light of the apparatus room. This study concentrates on how the geometry allows light into the space and how the physical pieces of the mediator can be made to come together elegantly.

The desired effect is achieved after a few simple geometric exercises. By producing and testing, through drawing and modeling, the possibilities narrowed, and a successful product is realized.

apparatus room light



site plan



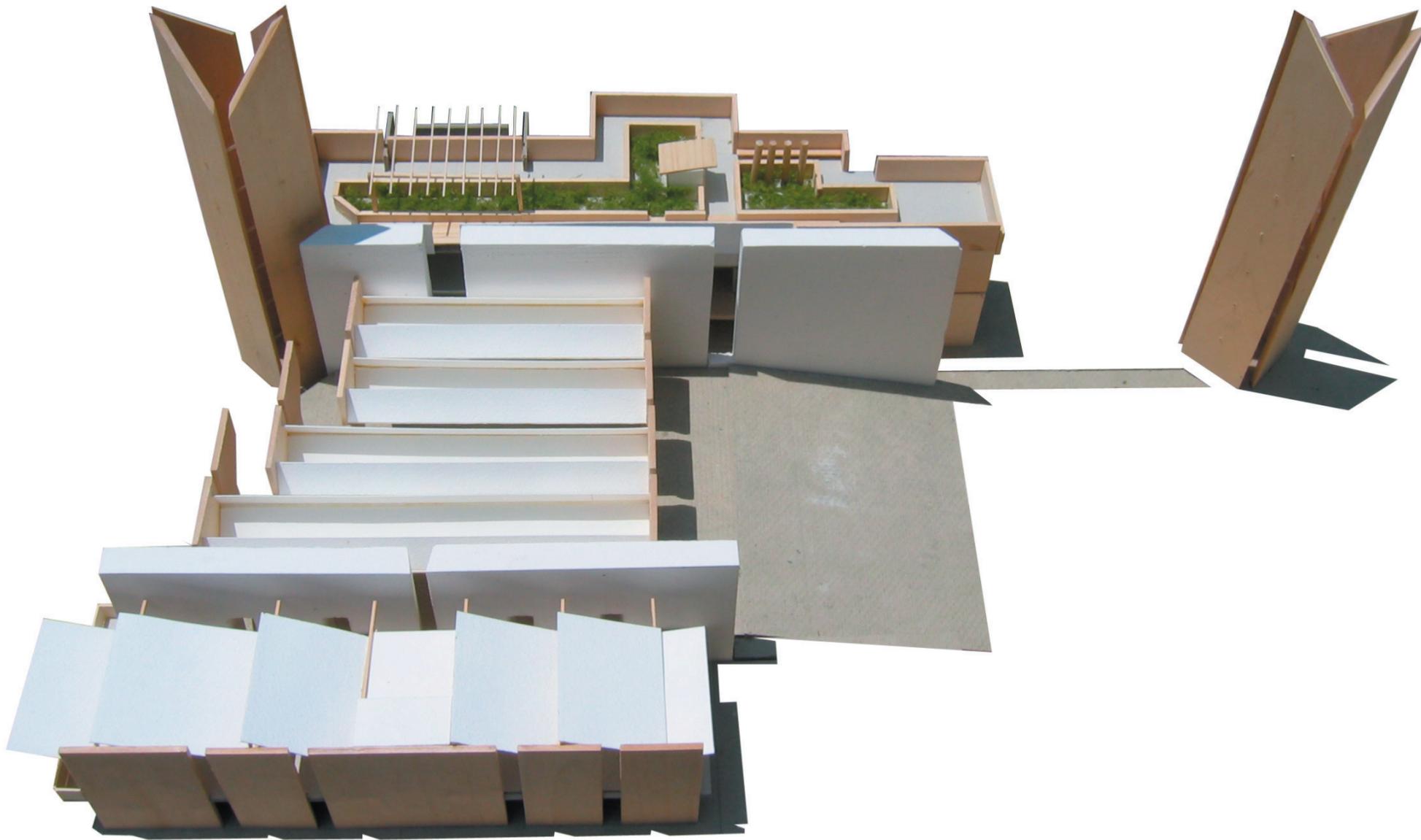
brick pavers

concrete pavers



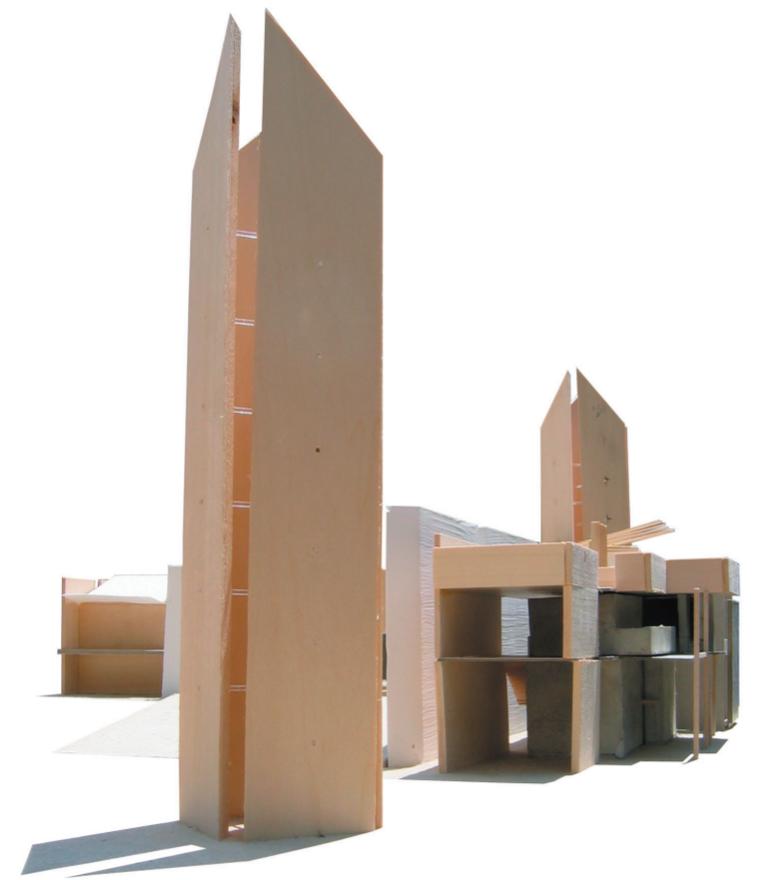
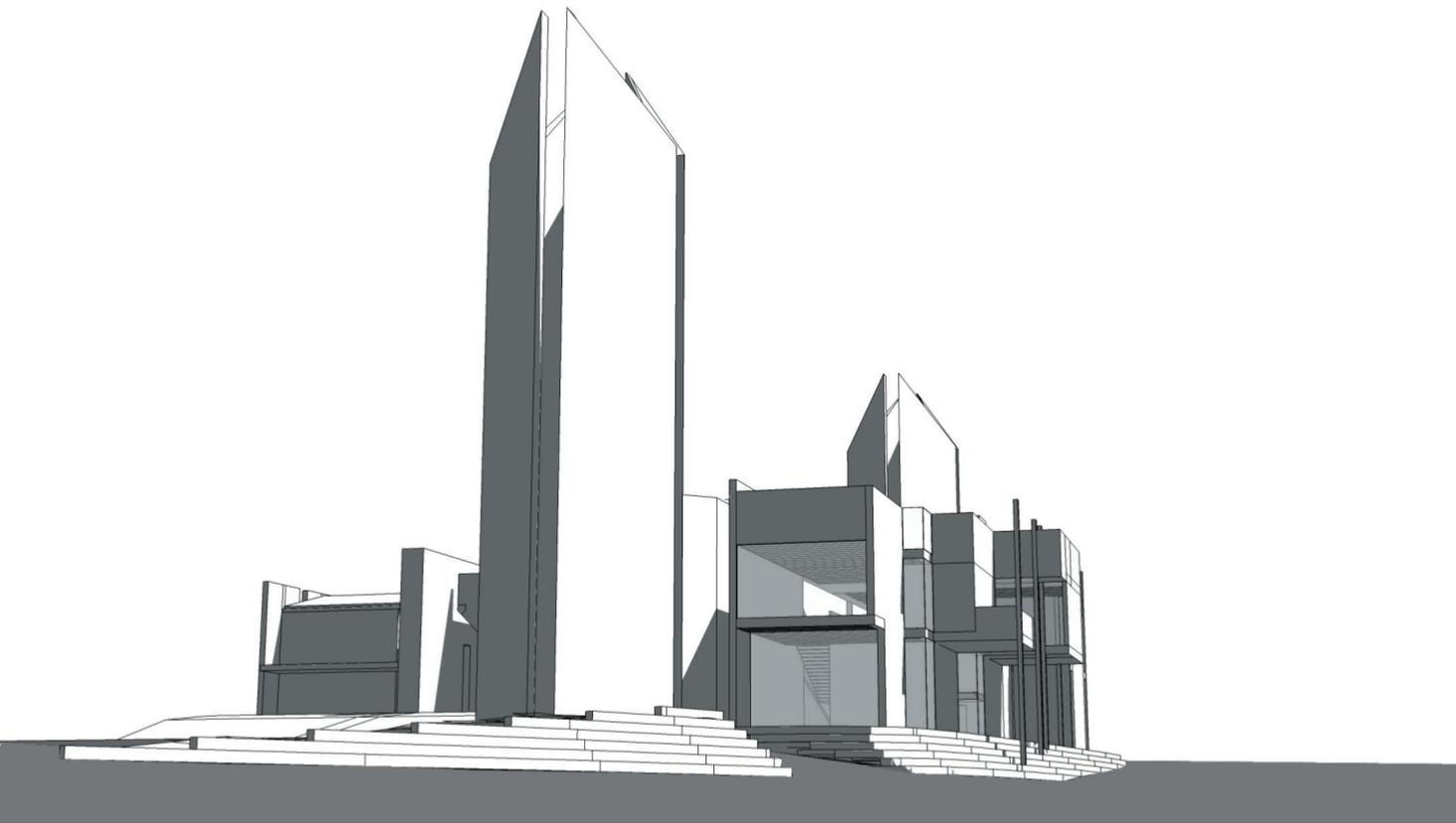
territory

The fourth surface in the apparatus room is the floor. Brick sized, concrete masonry units are employed to designate the floor surface on which the trucks rest, known as the truck lanes. Also on the floor surface in the apparatus room, are the same red clay brick used in the walls. They in fill between the truck lanes and extending out to also become the street surface for the limits of the fire station's territory. In other words, as you can see in the site plan image, the lighter toned area refers to the red brick pavers, and the darker color represents the truck lanes. The brick paved surface extends past the legal limits of the site and incorporates the area adjacent to the site which is affected when a call is being heeded. These surfaces are manipulated in a directional recognition of the station. The diagonal thresholds which initiate the surface change are an immediate signal to drivers that a heightened level of attention is required of them in this area. The truck lanes extend out into Elm avenue at the most convenient access the site provides to the street system of Roanoke. The apparatus room is defined by the walls and the roof while the floor surface acts as an extension of the street by wrapping itself around the community center and through the apparatus room. Between the brick walls is the domain of the apparatus. Made of simple colors and employing a regular rhythm, this space acts as a backdrop to present to the community in a calculated and dramatic way, the brightly colored and mechanically complex machinery.



The two strong walls (and by strong walls, I mean to label the two walls which separate apparatus from people) having been placed and described, create space between them which acts as a frame for the apparatus. It's now time to introduce two additional elements which when placed actually surpass in presence the range of the two strong walls. These are the towers. In contrast to the horizontal, unit production of the brick walls, the towers are vertically board formed concrete, and reach to a height of 75' above grade. These elements signal to the community, from a distance, that this is a civic institution. Some conventions used as designators for civic buildings in America include flag poles, columns, and the use of brick as material. These conventions are adopted by architects to convey a certain feeling of austerity and authority, and have acquired an associative merit over time. And so, this small civic structure also incorporates the forms of these traditions, if not in such a habitual manner. The columns are represented in the apparatus room façade, bricks are used in the previously discussed manner for the strong walls and the territorial ground surface, and the towers replace the flagpoles as a formal vertical element. Each of the four vehicular approaches promote one of the two towers as a signal to its civic program.

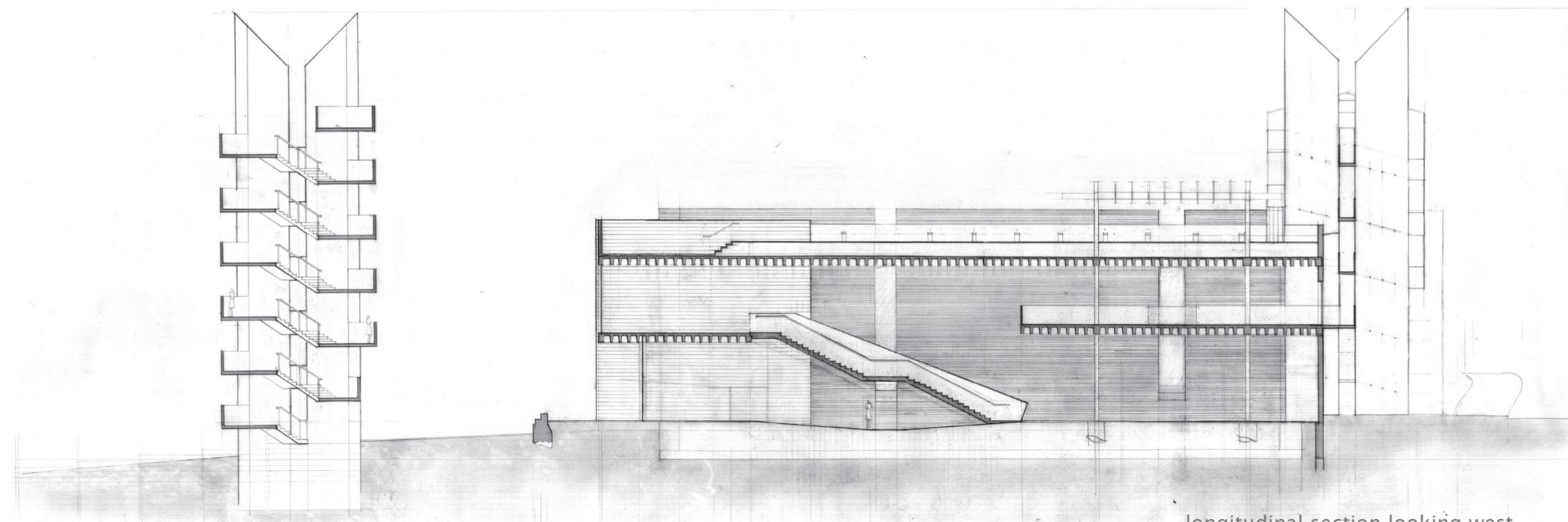
the Towers



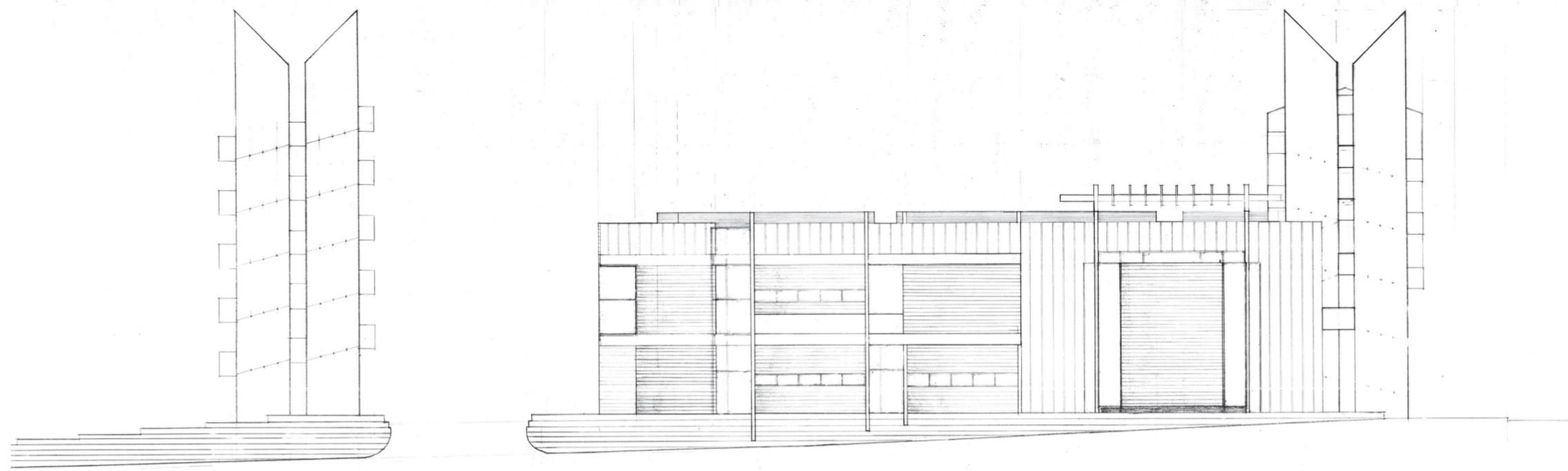
the Towers

The towers share few characteristics with the strong walls. What they do share is full height, vertical penetrations which present a passage as a *between* preposition. By de-materializing the corners of the rotated square towers, you are able to pass between the walls of the tower, but still feel as if you are entering inside a mass.

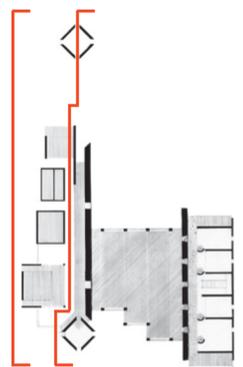
When would *between* be a more appropriate preposition to use than *through*? Well when there are two or more elements. It is easy to determine that there are 2 mountains, or two trees. But do you pass between two limbs or through one tree? Maybe it has something to do with what the ratio of positive to negative space is? Maybe it's just a matter of hierarchy, but maybe differences in process are enough to bring about a different product? Is a room made of four walls, or is it made by a volume, or is it made of a mass? It is these decisions which make the difference to subsequent decisions and ultimately to the end product.

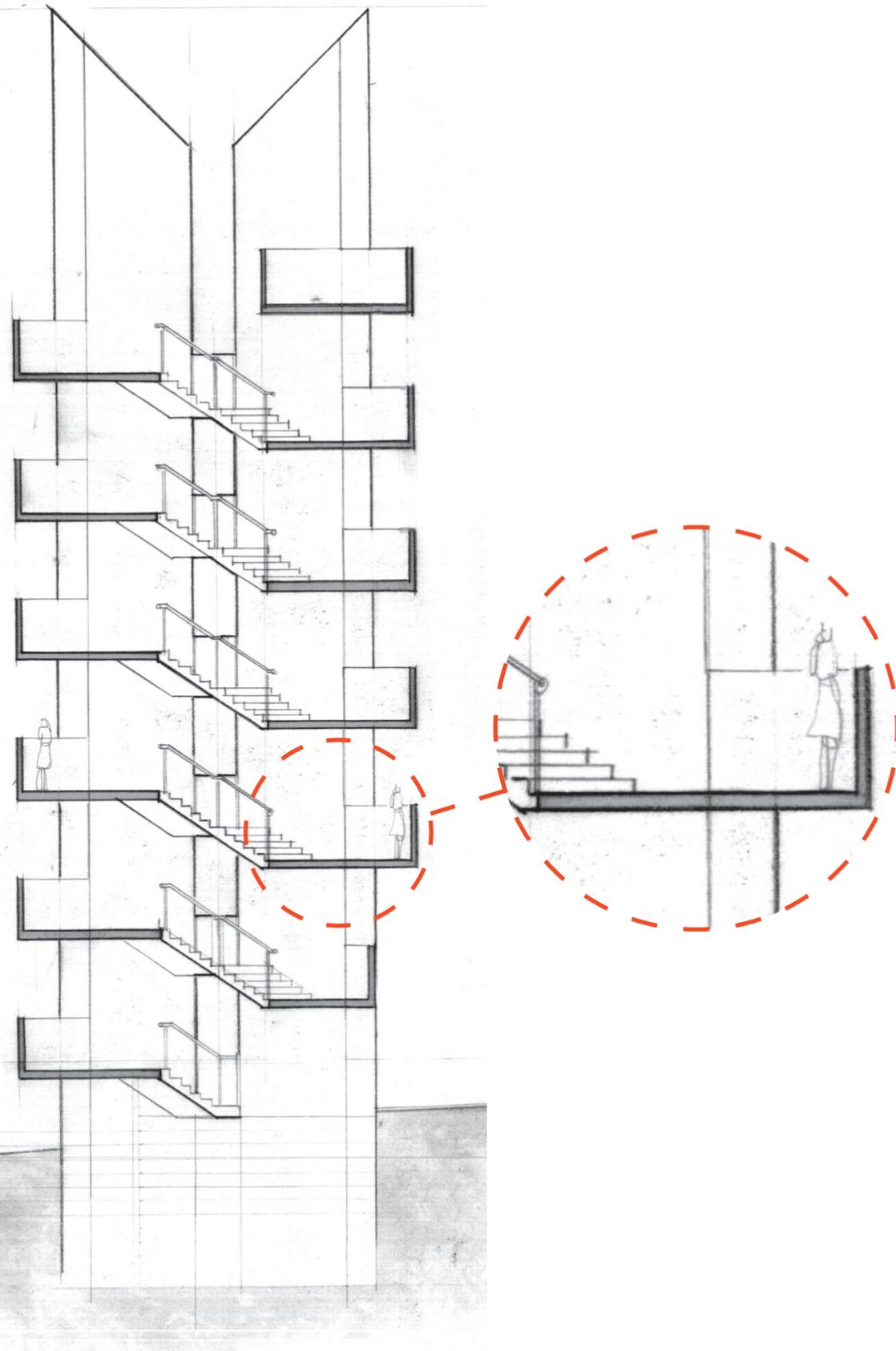


longitudinal section looking west



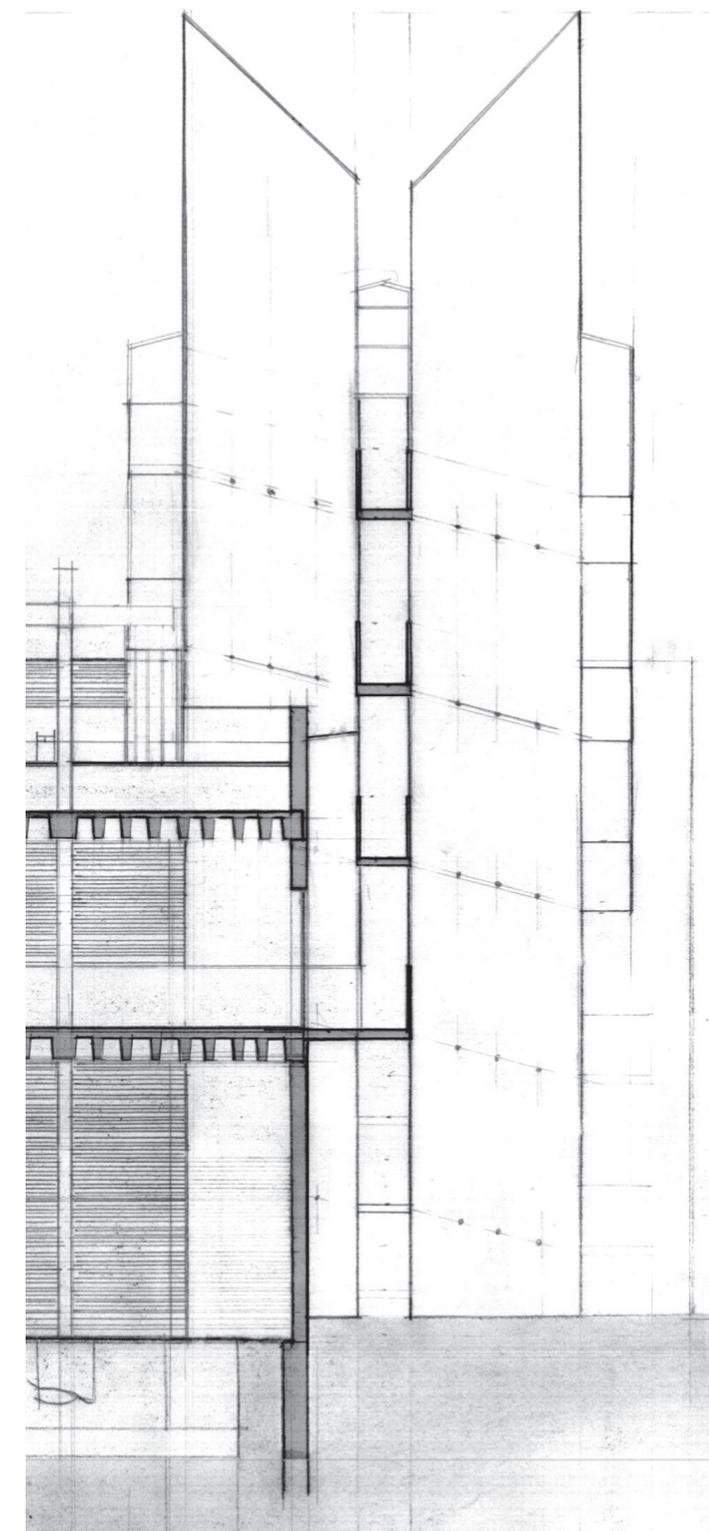
Franklin street elevation





north Tower section

The north tower is separated from the main structure and is used primarily as a training tower for the firemen. The vertical, board formed concrete surface on its exterior accentuates the tower's vertical nature. Evidence of its steel structural stair within is also present on the exterior surface. The south tower contrasts the north in few ways. It is sheltered from the elements with a glass enclosure unlike the north tower, and is finished on the interior with a hardwood floor surface. It's used not only as a circulation stair for the three stories of the community center, but also as a destination. The projecting bays are sized for a single occupant, providing a solitary experience.

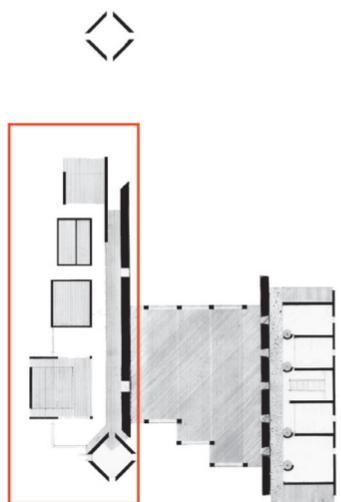


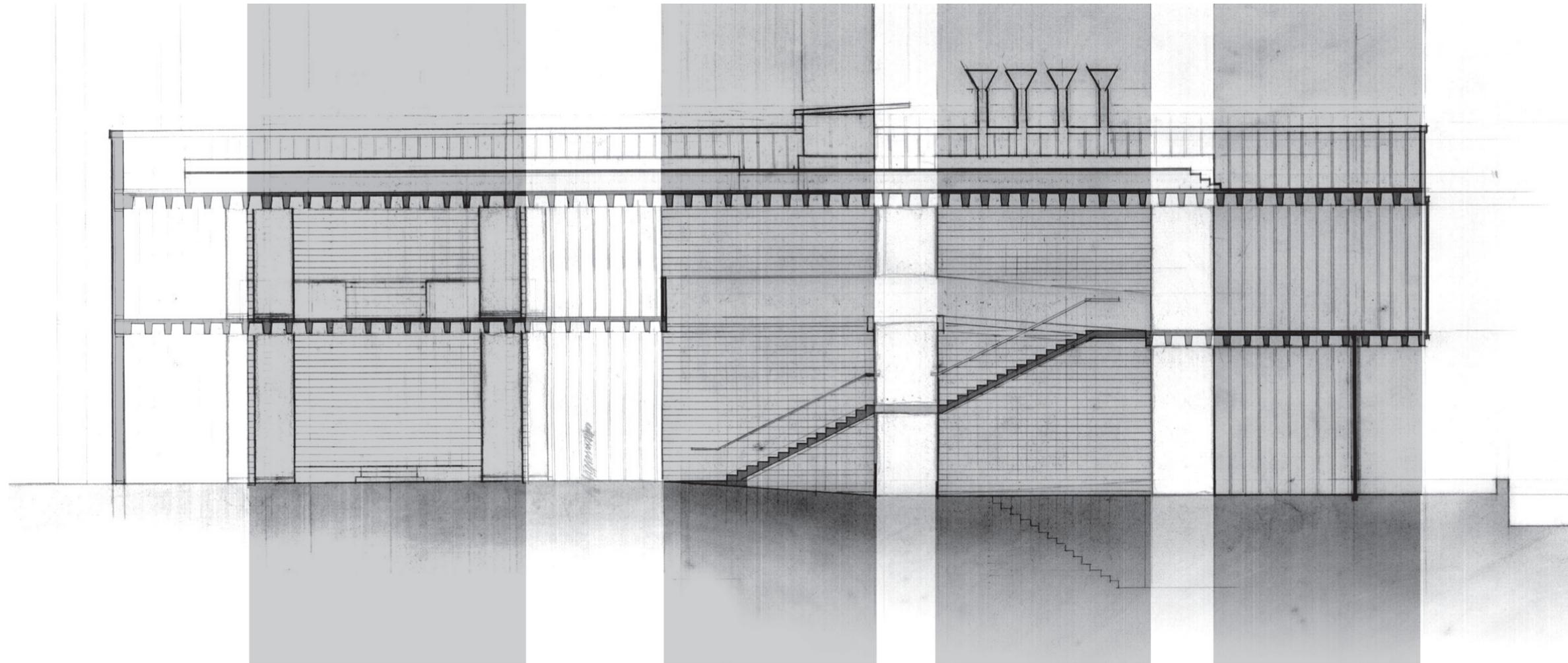
south Tower elevation



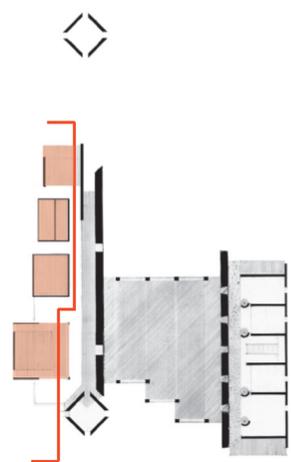
community center

Establishing a gathering center for citizens of the community in direct connection to a functioning fire station, presents logistical difficulties which cannot be ignored. Although there is no direct circulation from one to the other, a physical as well as a psychic union is apparent. The function of the fire station mustn't be interrupted by activities within the center, but the direct connection of the citizenry to their municipal government is essential to the project.

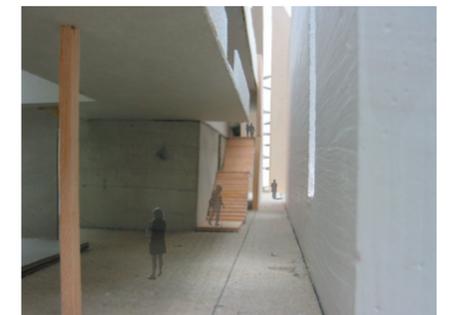




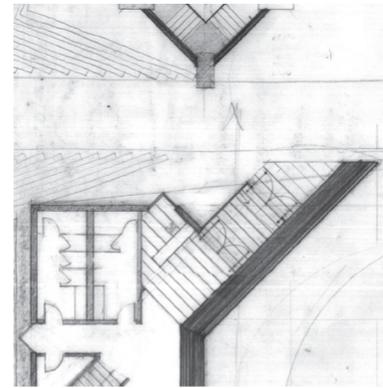
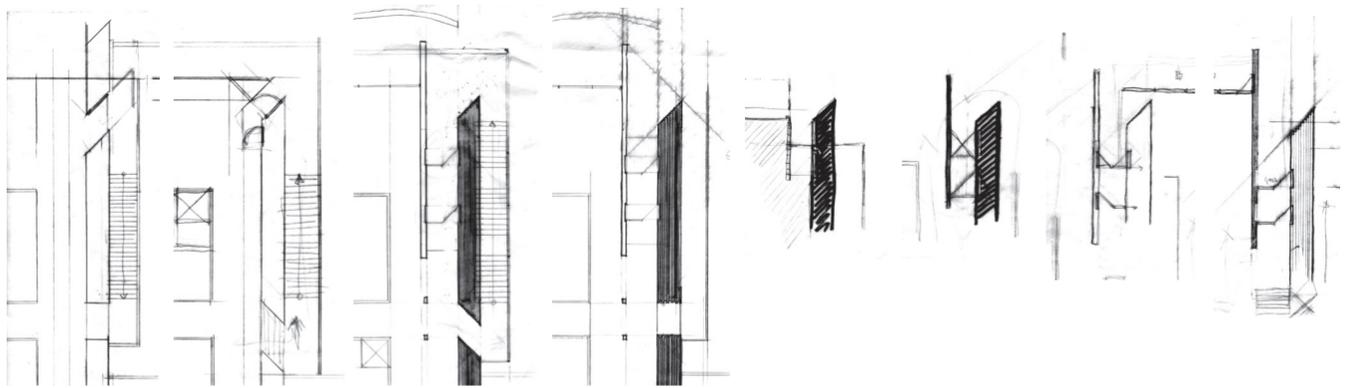
longitudinal section, looking west



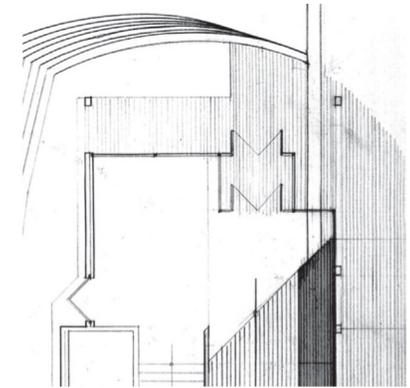
The community center is organized around a graduated series of masses which share a line with the perimeter of the western wall's territory. The masses are the location for the program of the center. The bathrooms, the classrooms, the storage and mechanical rooms, as well as the largest of them, the stage, occupy these masses. The space between each mass can be considered to be that which is necessary for the masses to exist independently. These masses are designated by their material. Concrete masonry block defines each perimeter and creates a threshold into which one would enter. The threshold occurs at the physical limits of the block material which is textured on the exterior and polished on the interior. There is a clearly defined inside and outside. Spaces for activities occur within while a generous circulation area connects them to one another.



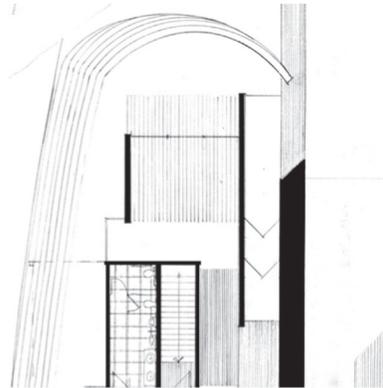
community center



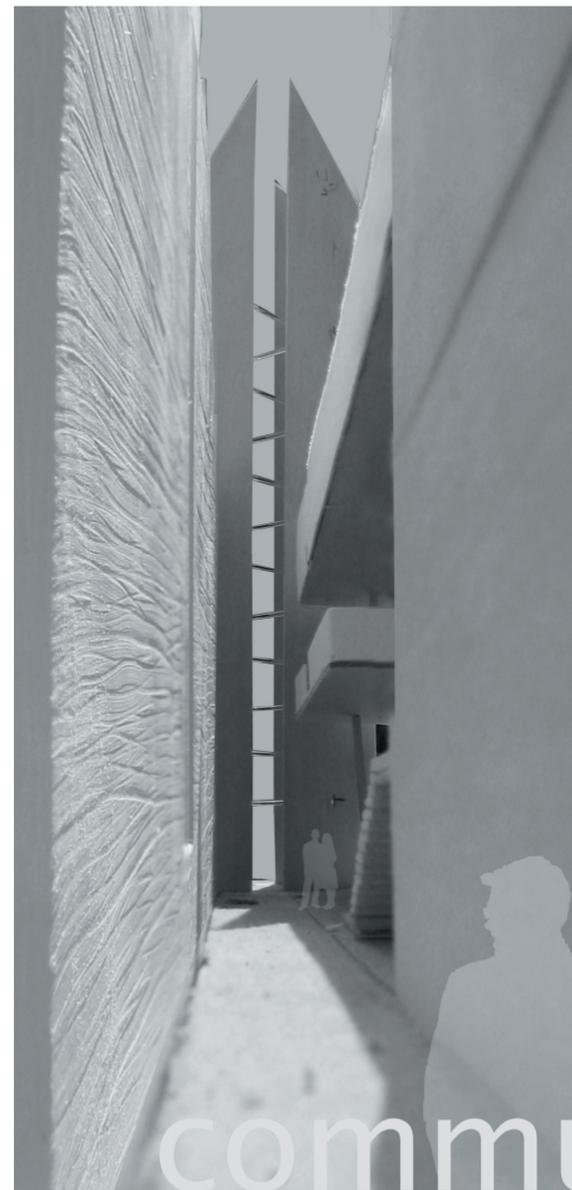
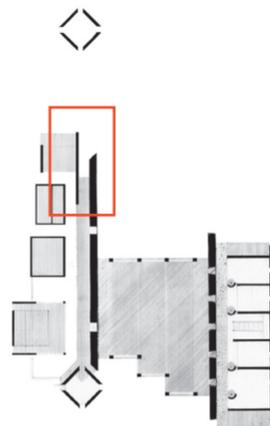
1.



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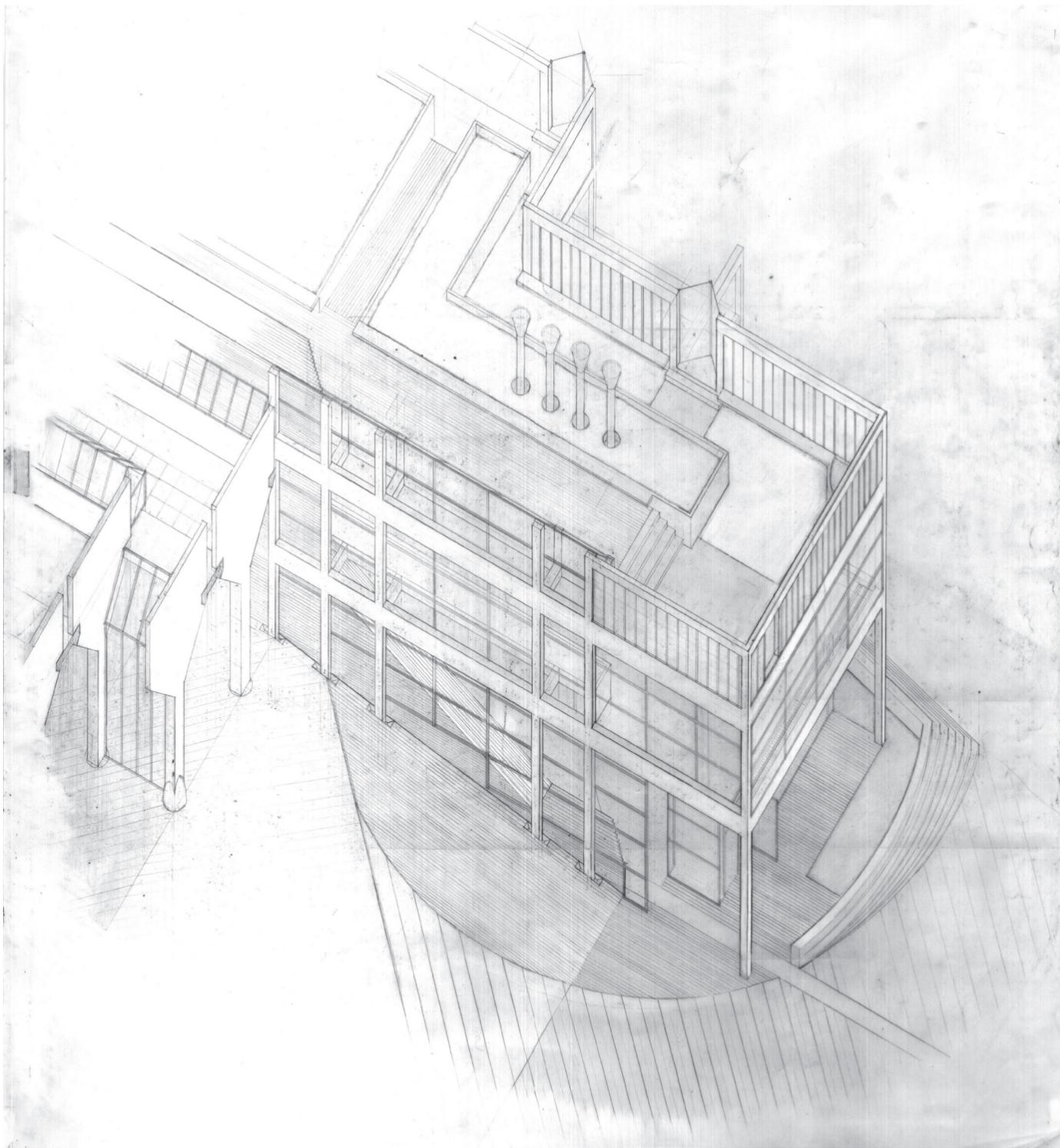
3.



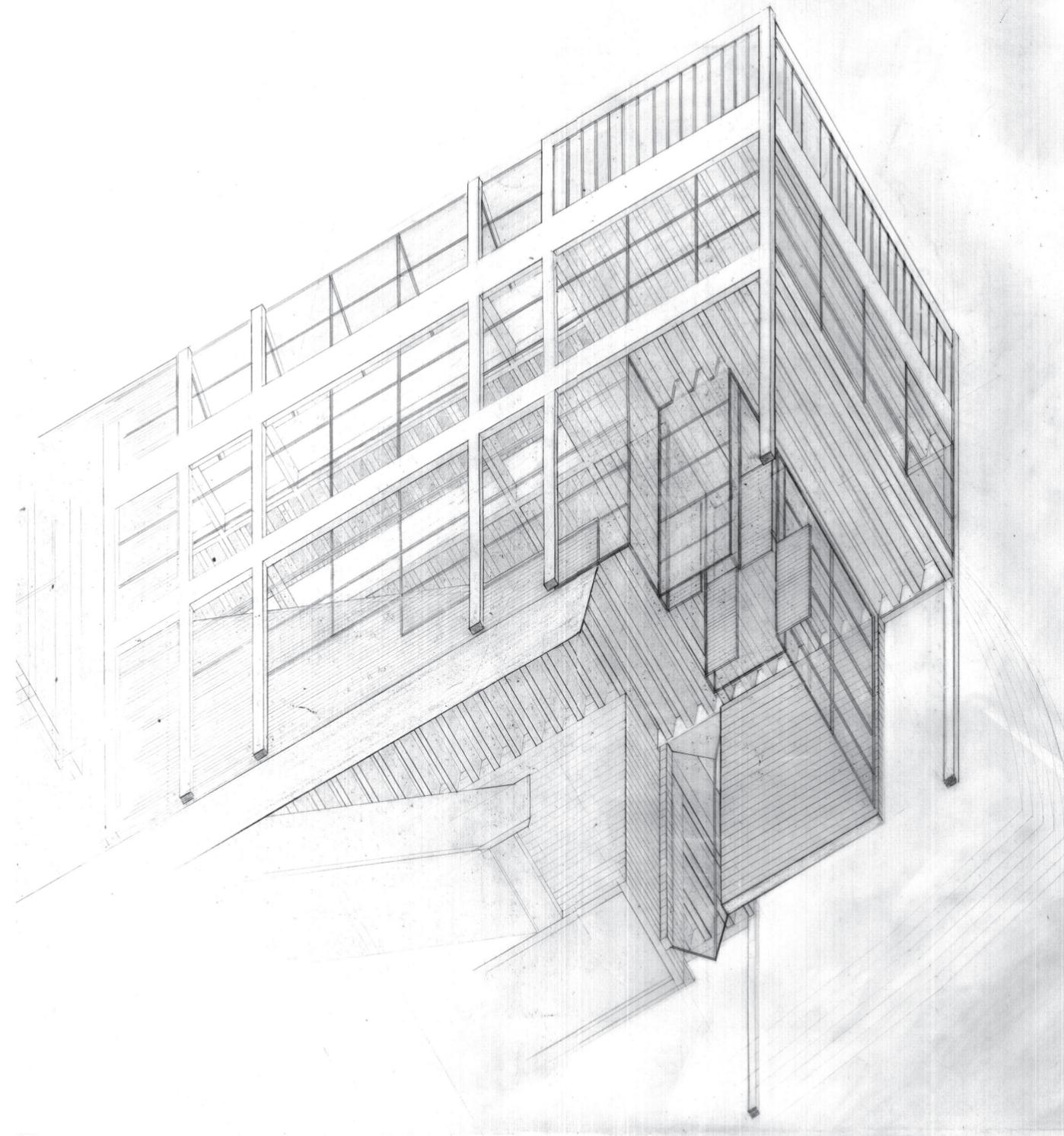
Throughout the development of the project a diagonal path from the parking area was always the main pedestrian approach. As the wall element evolved, so did the community center's entry. (1) As a diagonal, the strong wall bent in recognition of the presence of the tower and also the approach of visitors. This attitude gave too much presence to the tower and forced the will of the wall in a contrived way. (2) The next iteration of interest shows a weather enclosure which wraps around the wall. This made the entrance an element of its own. Although this position is legitimate, this element wasn't ever given enough presence to become anything more than a mere contraption. (3) The most satisfying arrangement is a recognition of the strong wall, and a mediation between inside and out that favors a procession. These are some studies of how that mediation became more meaningful.

community center

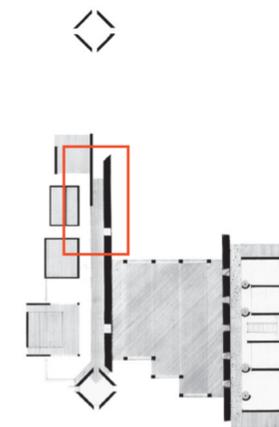
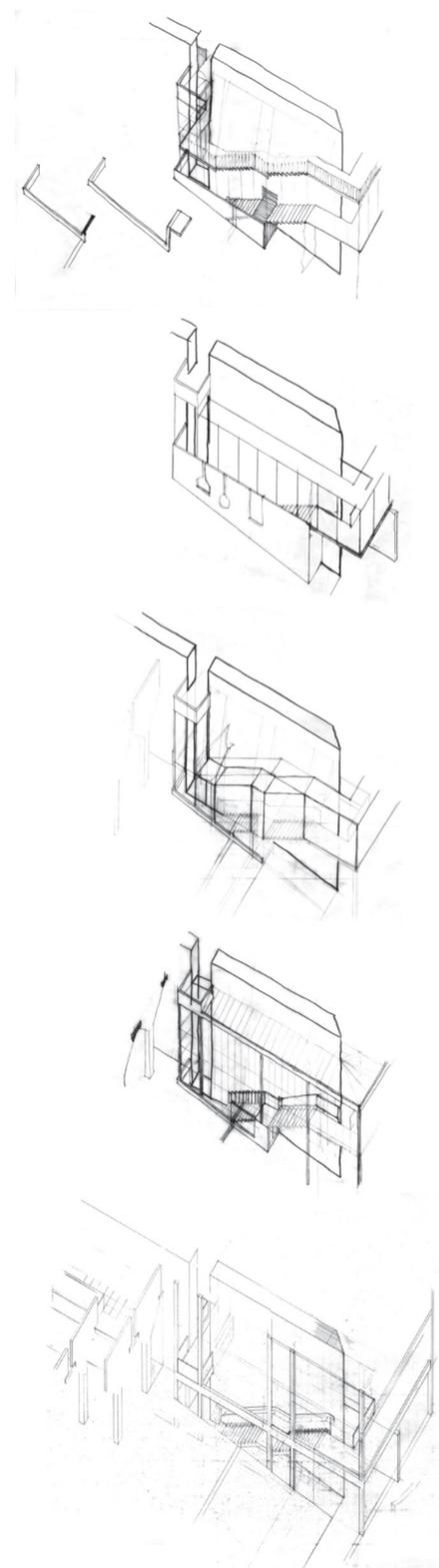
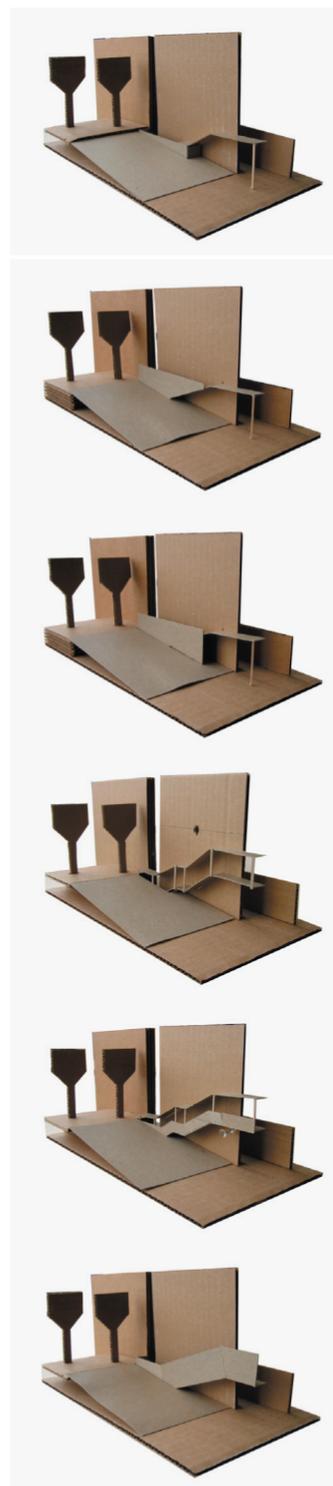
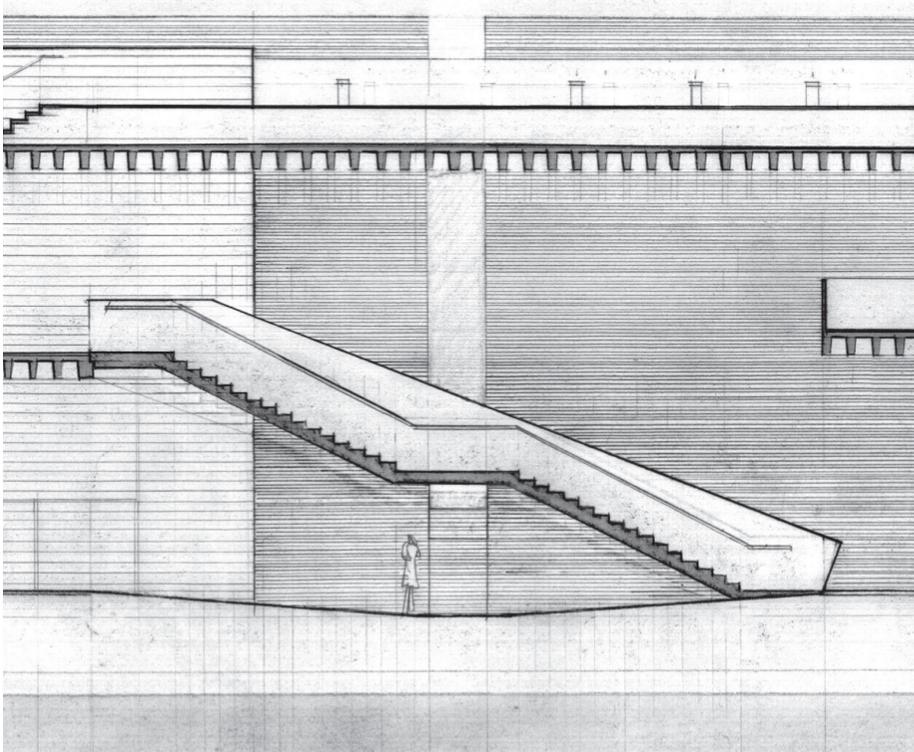
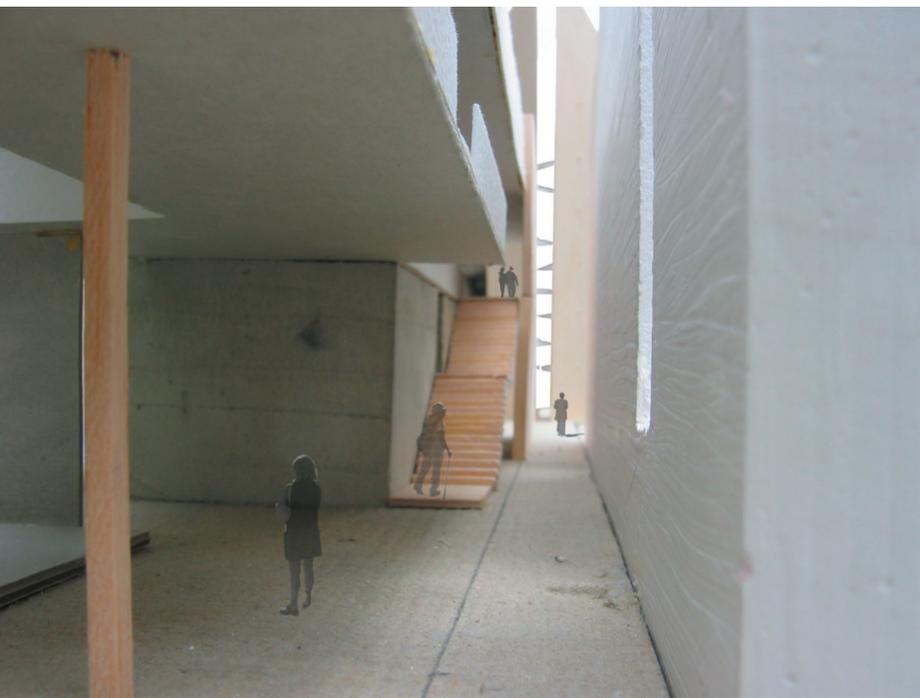
entry development



“bird’s eye” axonometric



“worm’s eye” axonometric
entry sketches

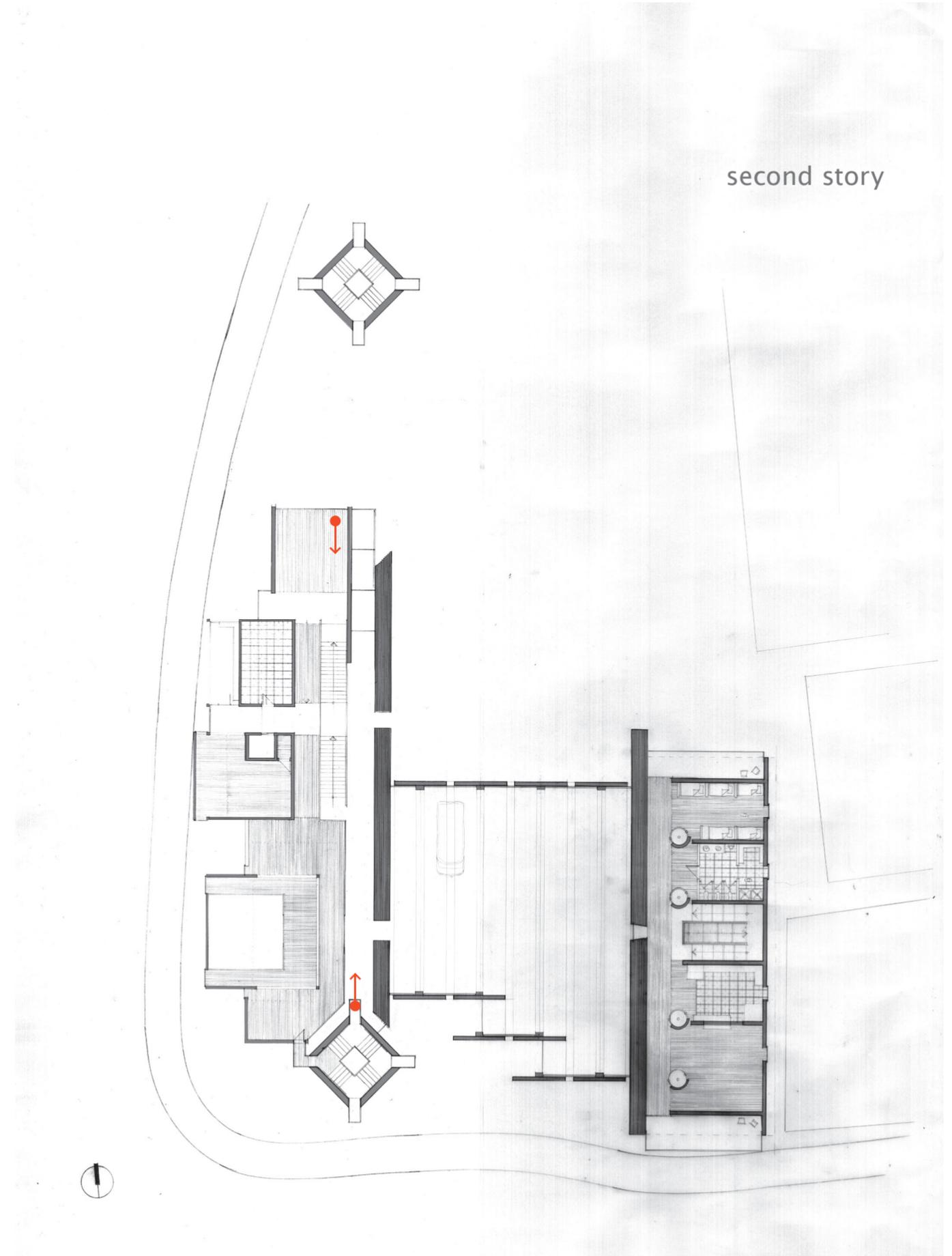
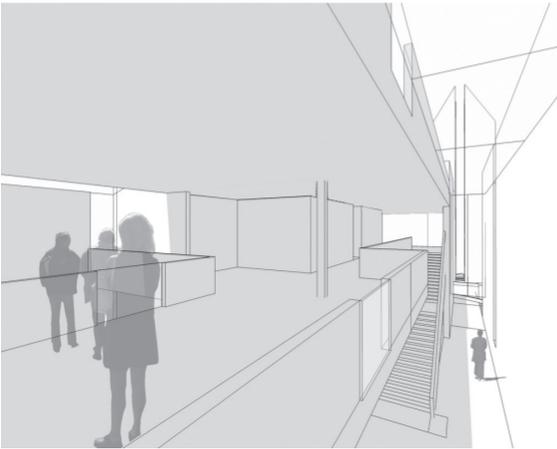


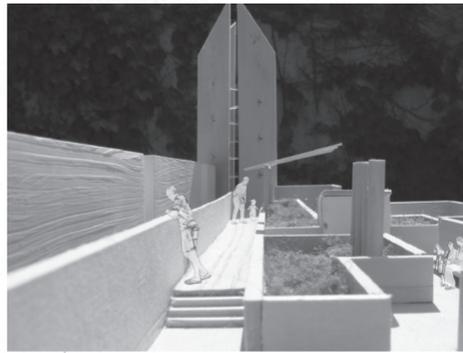
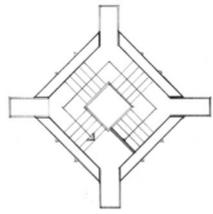
As the wall and entry developed, opportunities for the community center stair became evident. A vertical opening part way along the west wall was allowed which could be used as passage through or around it. I was interested, at this point of the process, in how people experience the thickness of the wall, and hoped to wind the circulation through it at various points. This led to a study of placing the stair, as another element, to the apparatus side of the wall.

Ultimately, the advantages of this positioning were not great enough to outweigh the regularity and simplicity of the apparatus room's territory. The presence of another element within its boundaries, undermined its clarity and importance. Therefore, the decision needed to be made to reposition the stair to the community center side of that wall.

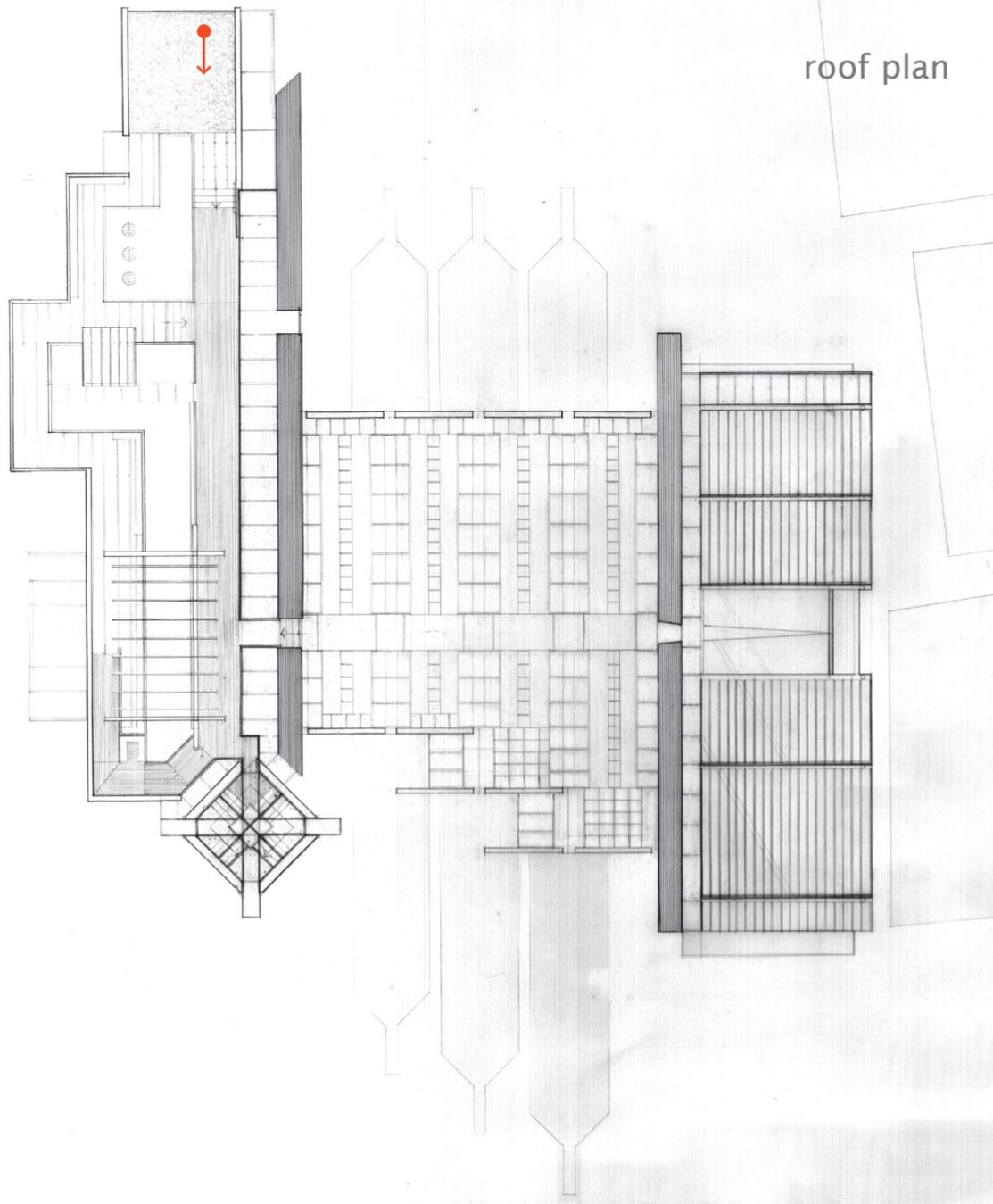
community center

stair development



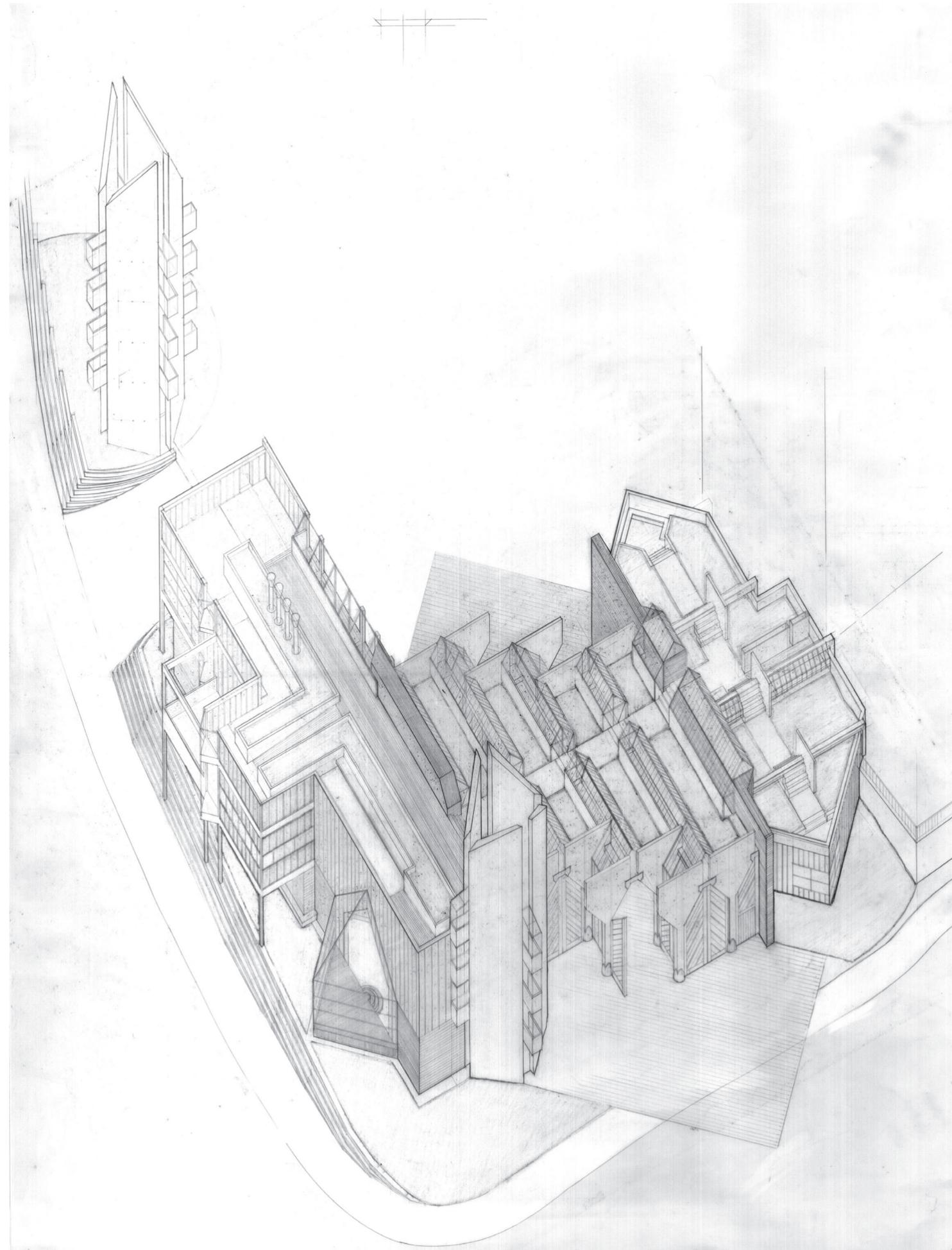


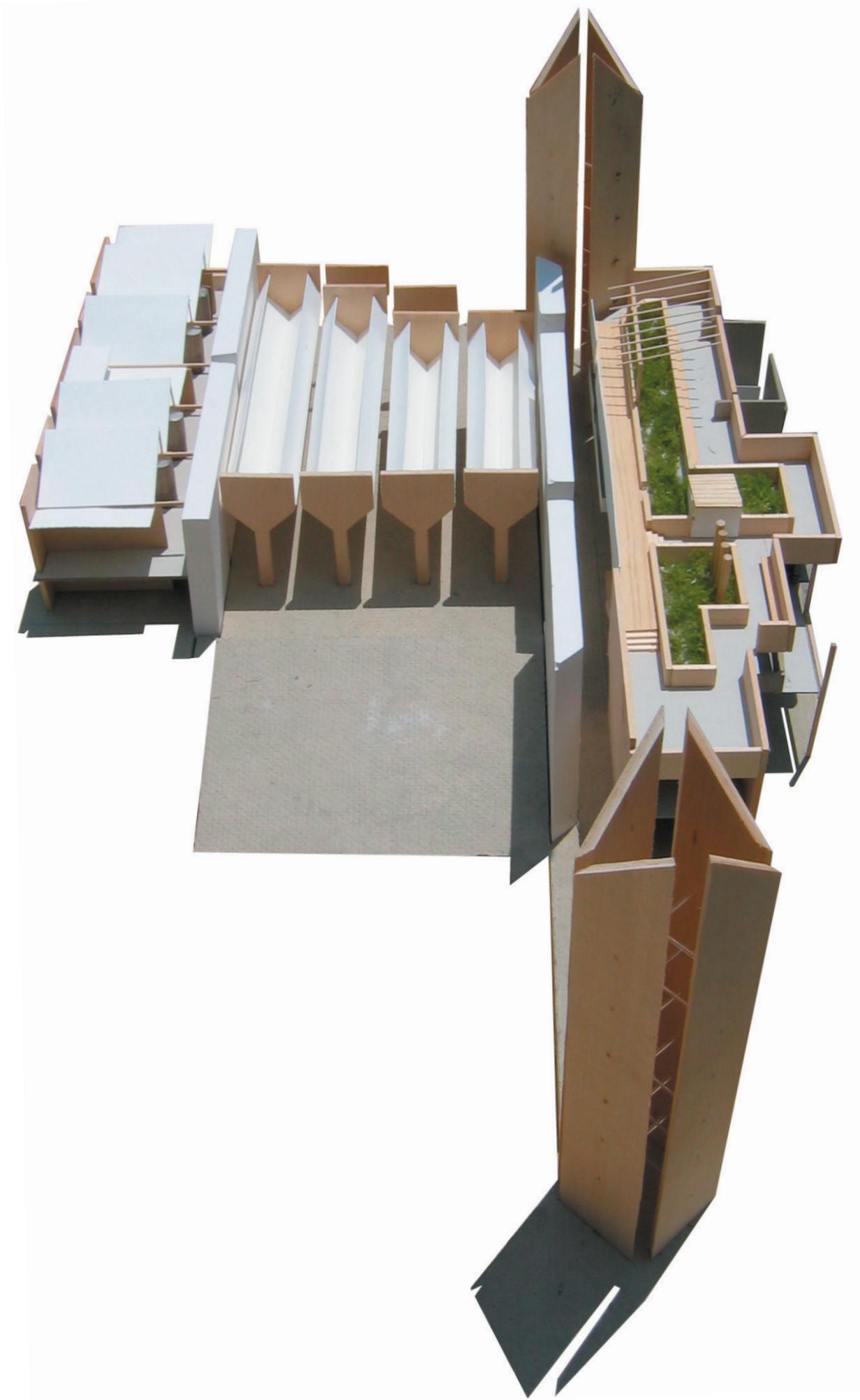
roof plan

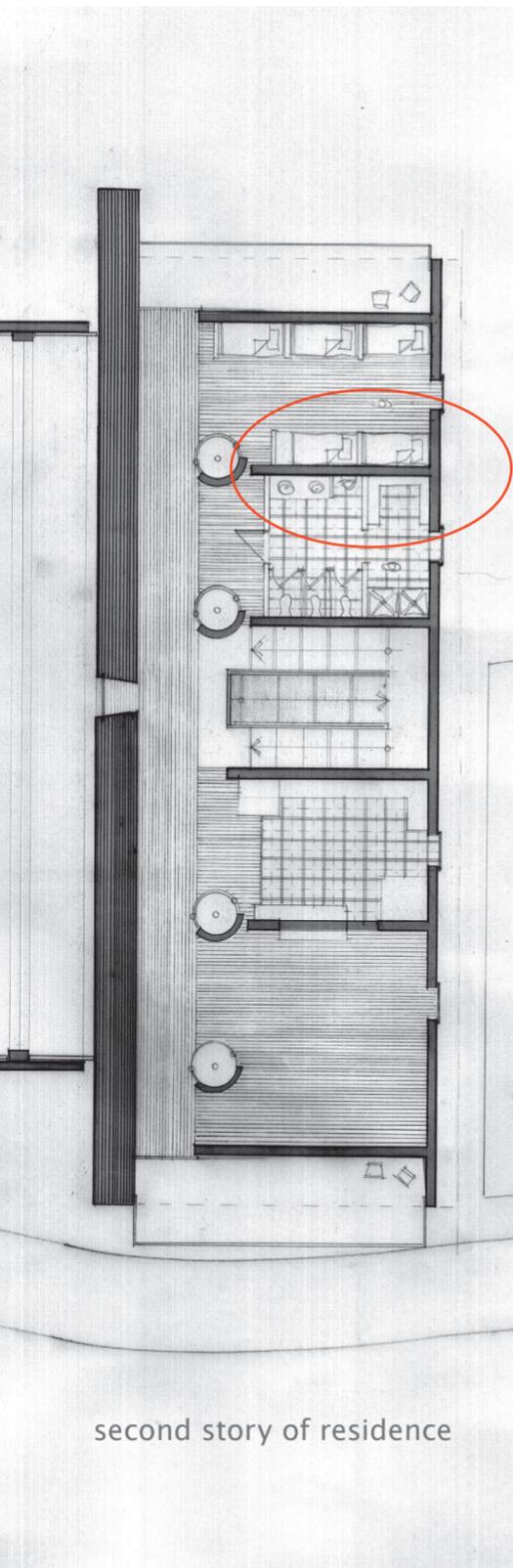


Through investigations of other parts of the building, an opportunity to employ the roof as occupied space became apparent. Developed as a promenade, the roof's circuitous path allows guests to experience the structure of the project from a different perspective. Framed by the two towers and a strong wall, the view is toward the west. The perimeter wall is just high enough to mask the view and some of the noise of the adjacent intersection, while permitting views of the sky and skyline.

the roof







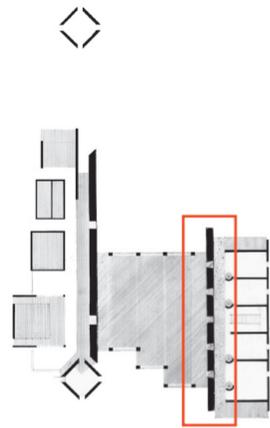
second story of residence

The residence structure is organized around “T” shaped wall elements in plan. These elements must be paired in order to produce a space between, therefore making space the product of a relationship between 2 elements.

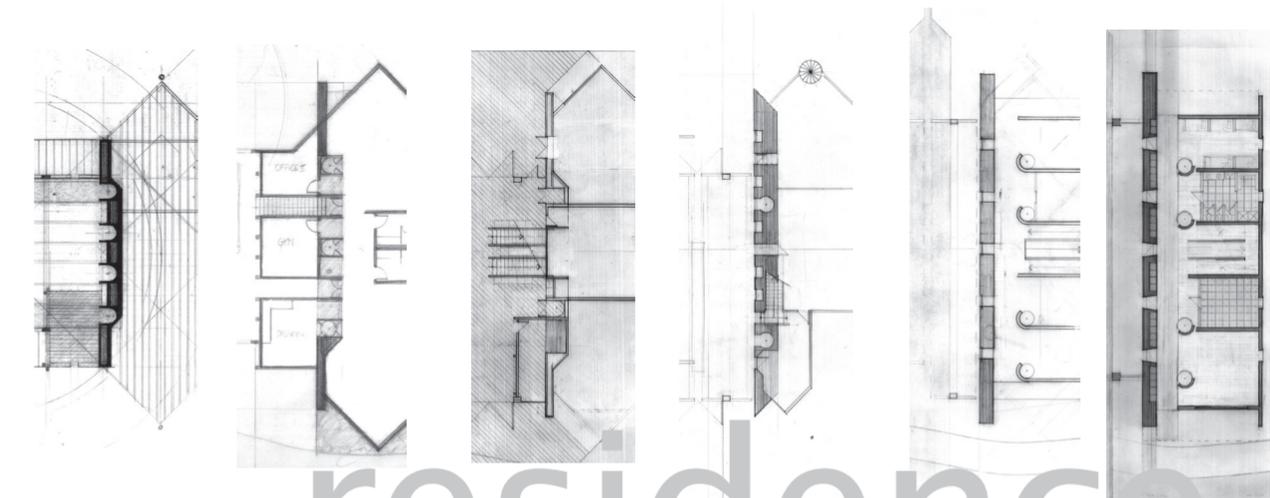
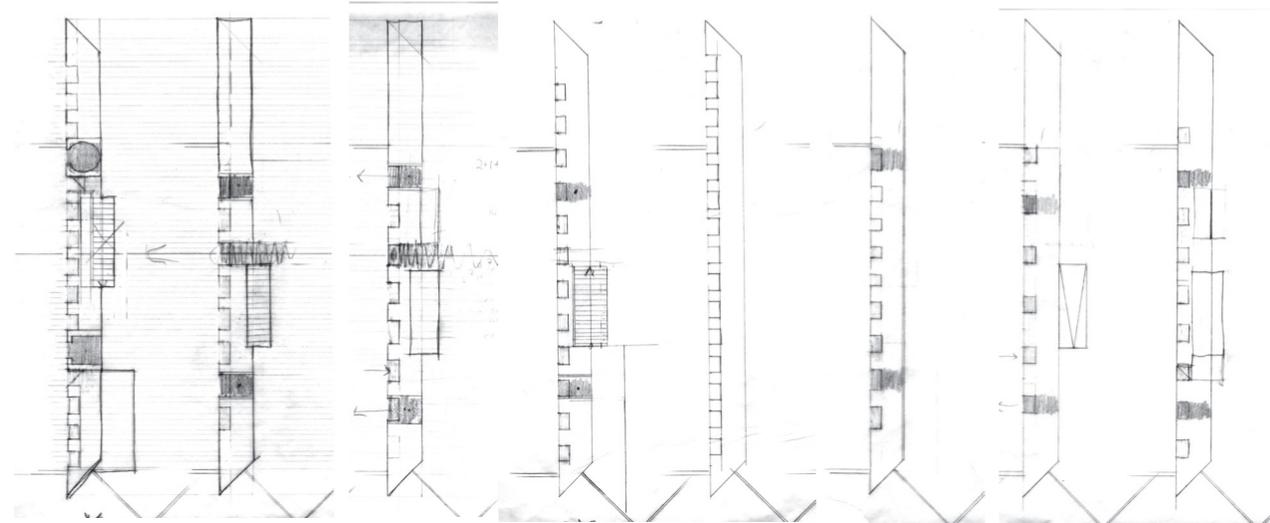
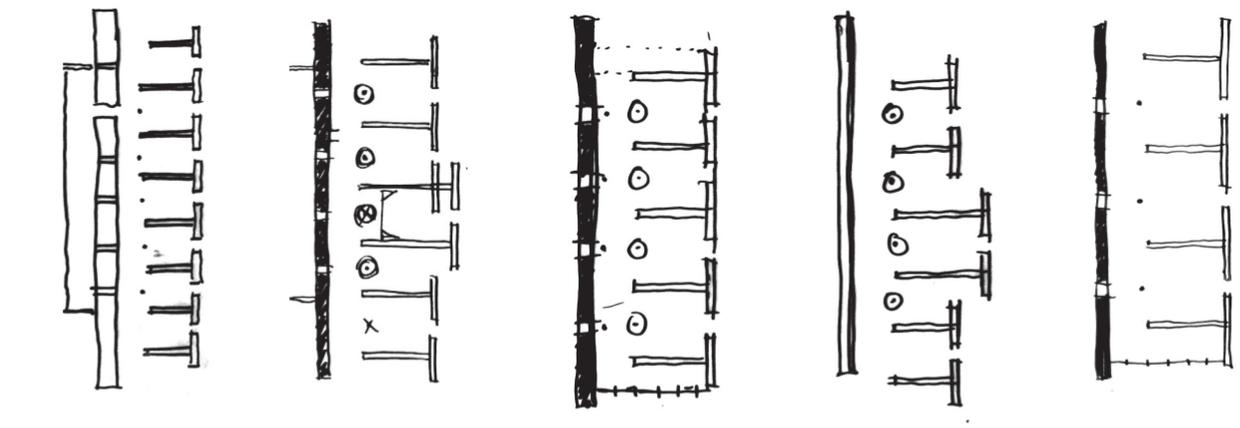
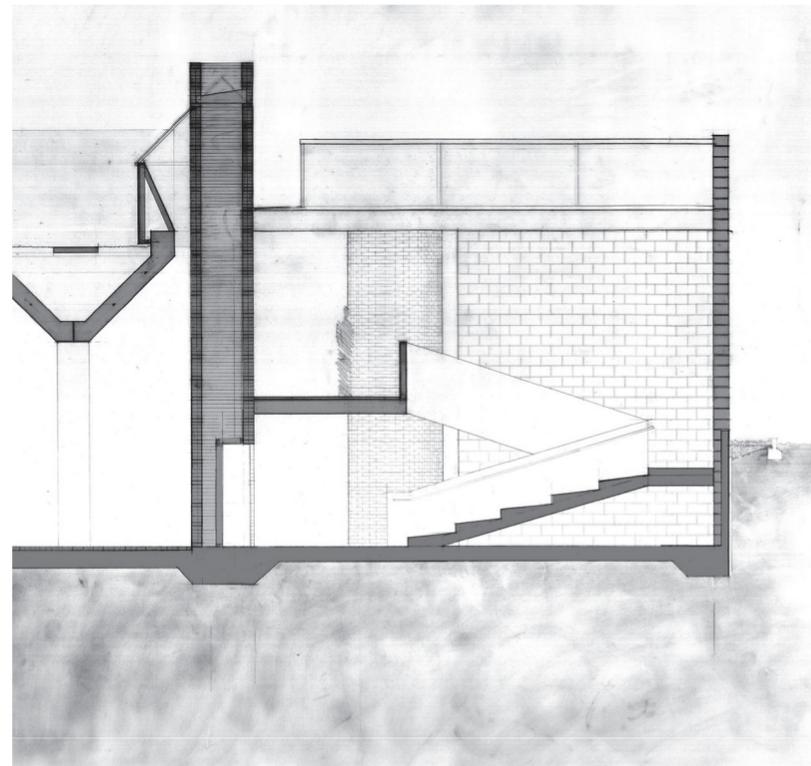
This can be described as a *between* relationship, opposed to the inside/outside relationship experienced in the community center.



residence

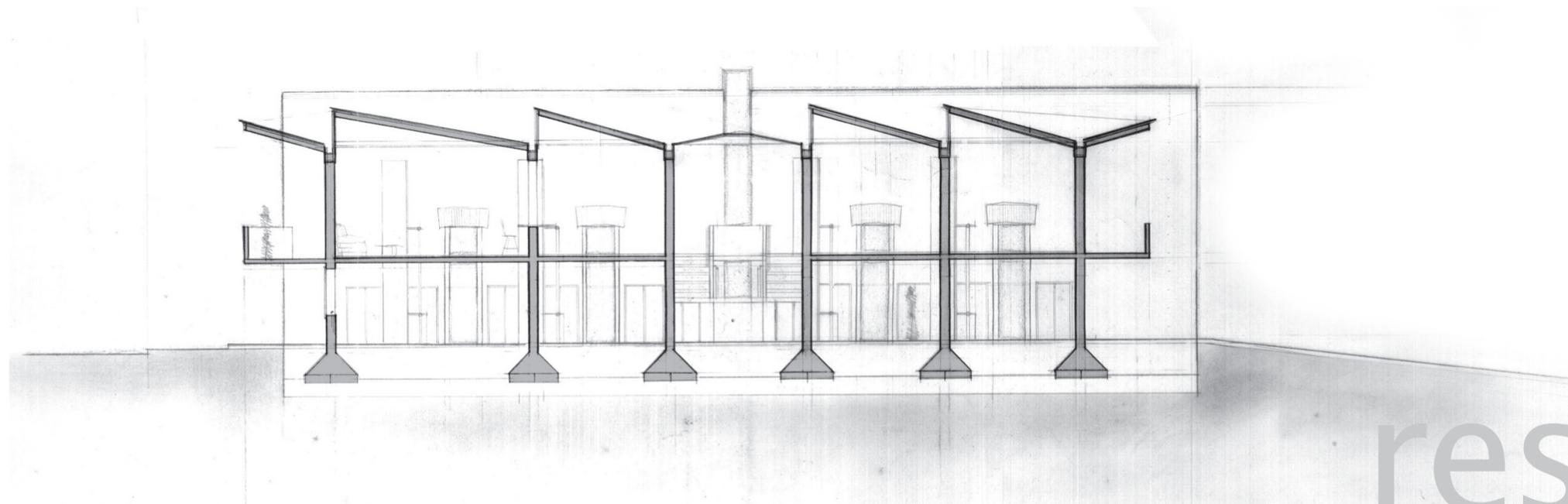


The mediation between residence and apparatus is a big job for the east strong wall. It needs to present a regular and simple rhythm to the apparatus room, while its other face exists in every space within the residence. It must separate these spaces with authority while allowing ease of permeability. These sketches and drawings show by what path this strong wall was developed.

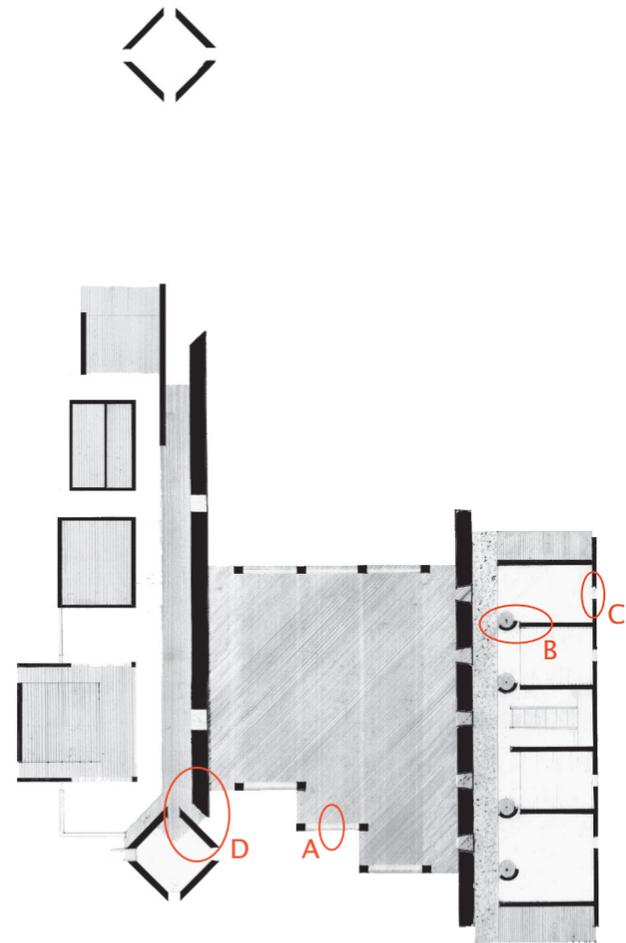


residence

mediation development

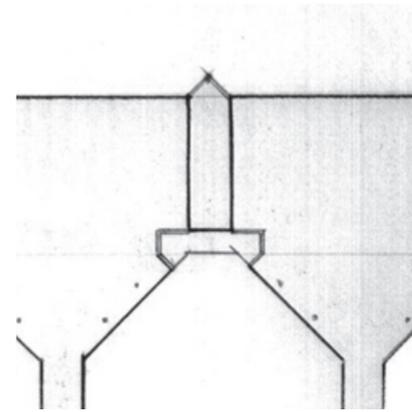


residence

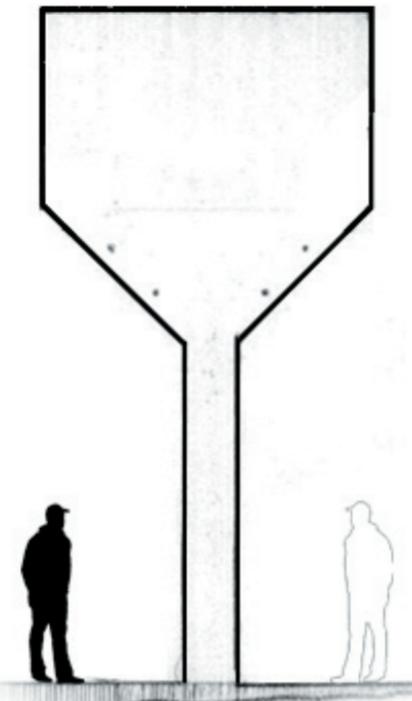


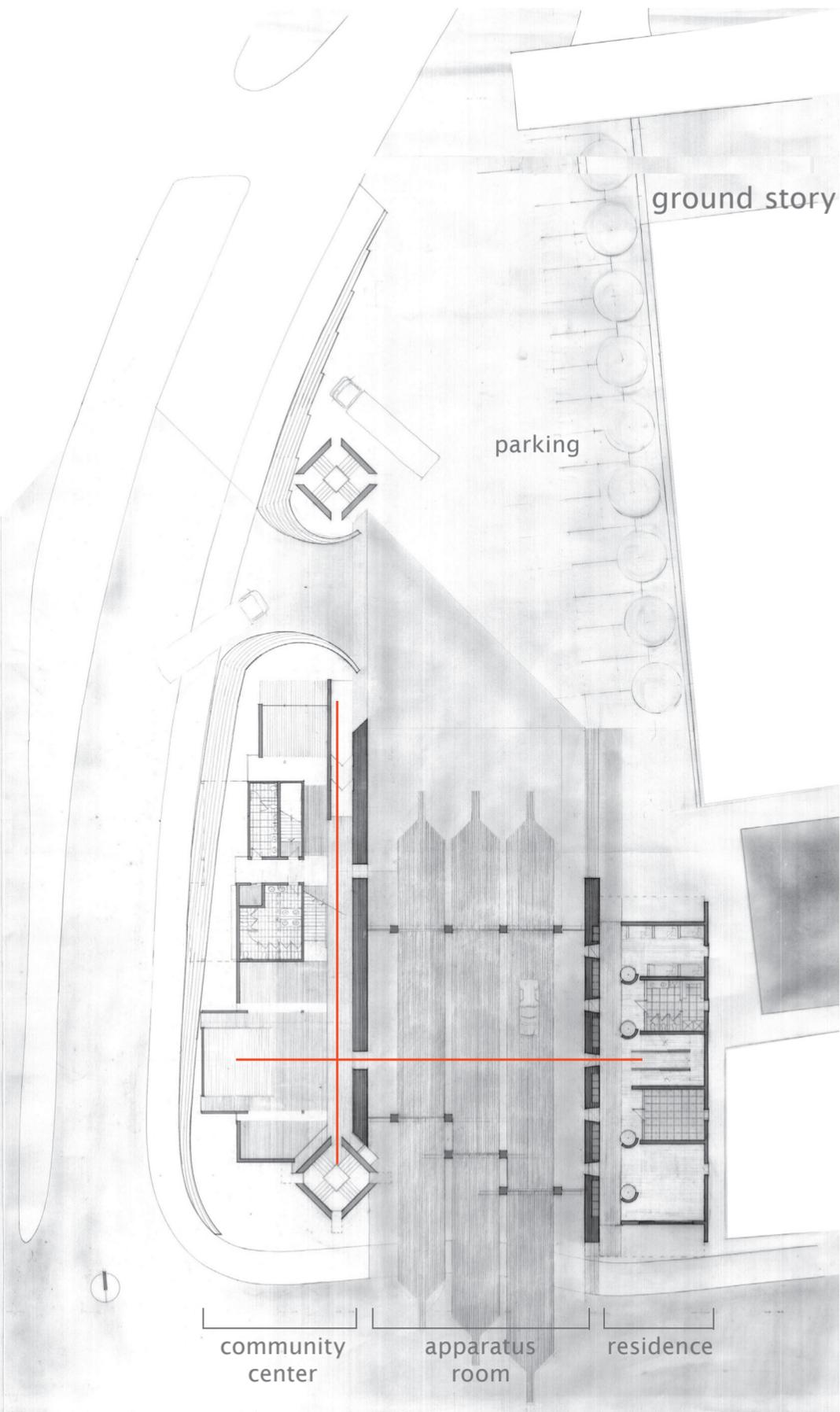
elements

In order for elements to have prepositional relationships, they need to establish a certain level of independence from other elements. It is impossible for members to be fashioned so they meet one another with a tooled accuracy. It is oftentimes more poetic and also more pragmatic to allow an element its own territory in recognition of its presence. Just as the strength of the brick walls make a certain amount of space for themselves beyond their physical boundaries, so in other locations, at a range of scales are places where two elements either desire a mediator, or have enough presence to create their own mediated space. (A) The pre-cast concrete beams of the apparatus room are expressed through the face of the vertical member as a mediator between independent column elements. (B) The fire pole volume is separated from its related wall element. (C) Residence wall elements are not allowed to touch one another. And of course the two strong brick walls are given their due space. (D) The stair towers are also independent elements. Forcing the end of the strong wall into a shape that can accommodate its presence, the south tower creates a clear destination for those entering the main doors of the community center. So not only does the tower act as a signal from the approach, but it is a destination on the interior, and that dual recognition accentuates its authority.



A

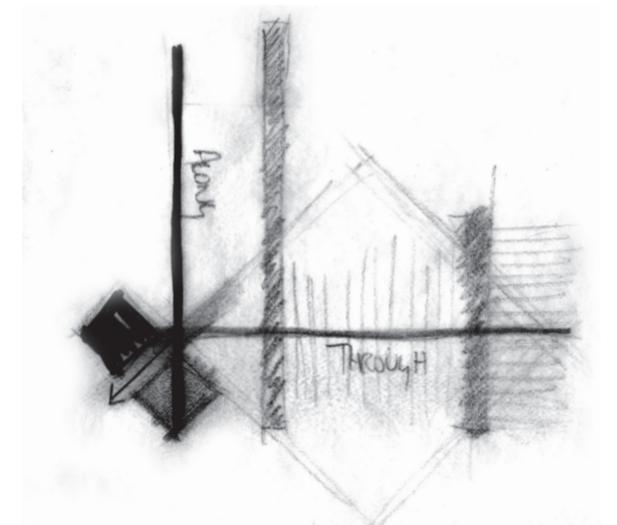


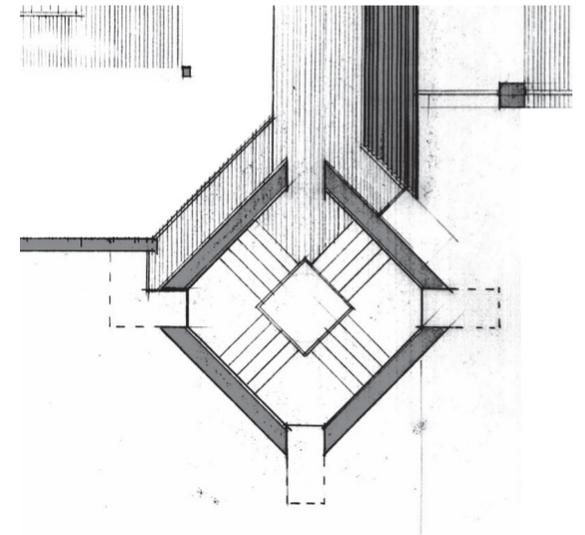
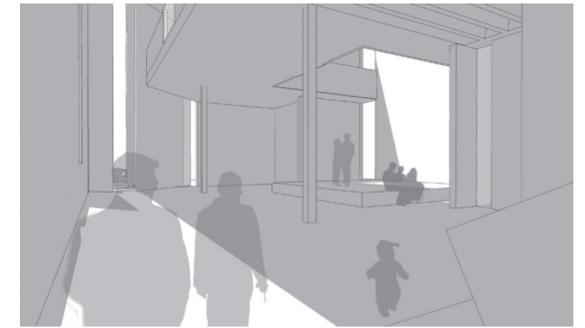
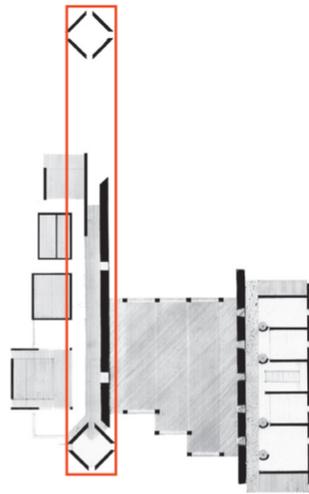


alignment

After individual elements have been created, they are then arranged so that their strengths are recognized by one another. The way they are perceived to react to one another is similar to how people will react to them. This alignment of elements clarifies relationships, and will begin to signify how people are drawn through the space, where they stop to rest, or congregate and how they feel during their experience.

The community center is really only entered and exited at one location. With the diagonal approach from the parking lot to the north, most visitors need to reorient themselves, and that is facilitated by the entrance. Even before encountering the entrance threshold, the relationship between the towers is known. Drivers enter the parking area by passing through the project, and just beside the north tower. They drive over the surface of the entry which is related, in material and direction, to the brick wall in that plane. The towers are obviously related, and the space between them is attractive to visitors.

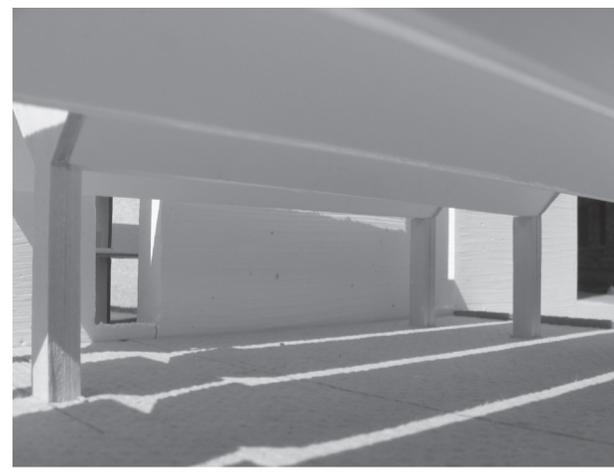




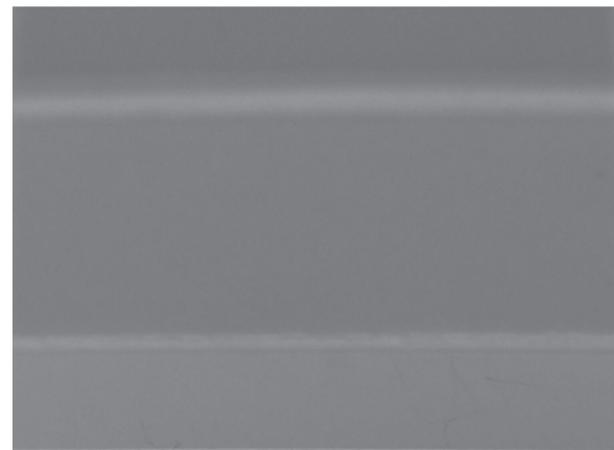
As one enters through the slot that belongs to the strong wall, one realizes that the boundary between the building and the wall is blurred. The 30' tall space is actually a mediator between the wall and the community center, as well as a right of way for the towers. At the other end of the building from the entrance is the 75' tall south tower. The slim opening at its corner runs its entire height, which you can see through the glazed roof, and is directly aligned with a similar condition at the north tower. At this moment it is recognized that the main path of travel on the first floor of the center is also an alignment between towers and along the wall. This alignment is not symmetrical, but is balanced. You are given enough width in your passage to find your own place as you proceed through the entry and along the community center masses. And so you make your way toward the tower, on top of the wood floor surface that is laid in a direction toward it, and next to the wall which ushers you along your path.



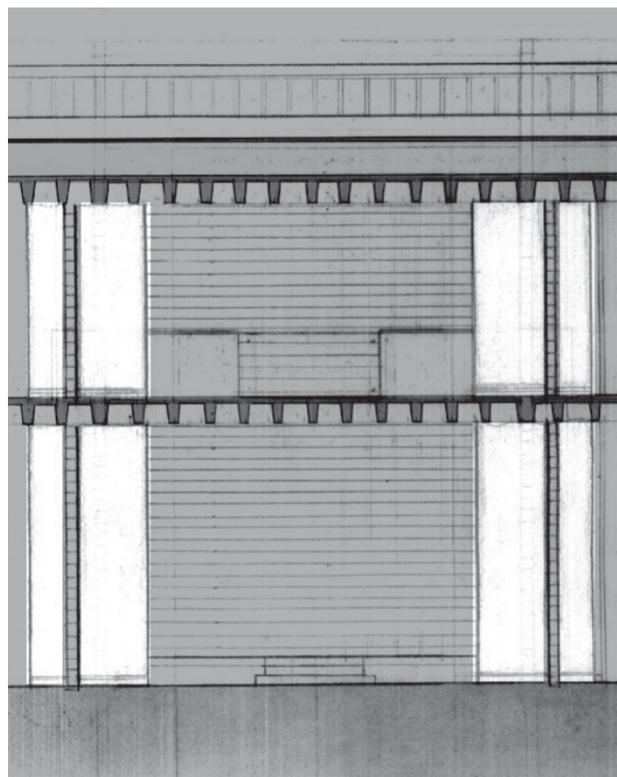
(1)



(2)



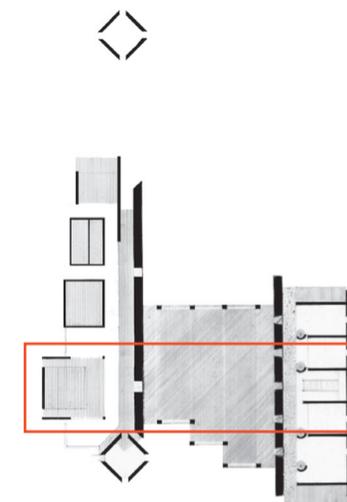
(2)



(3)

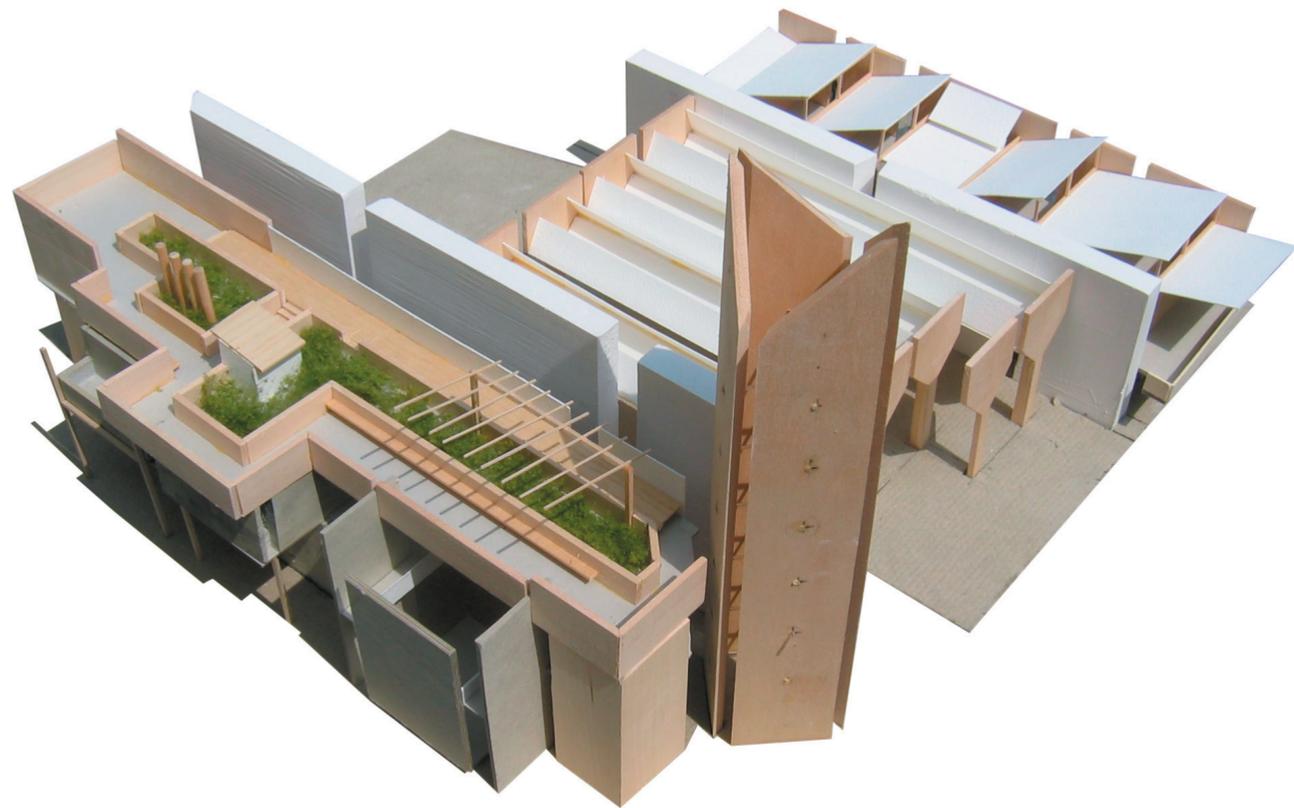


(4)



Another axis in the project is that from the residence, through the apparatus room and into the community center. This alignment exhibits more symmetry. (1) It starts at the vertical circulation room of the firemen's residence. (2) Passing through the stratified play of light in the apparatus room the alignment extends into the community center, where it terminates at a volume labeled the stage. (3) Several manifestations of this termination were considered, but ultimately the idea of a formal volume which could be a stage for light seemed to be the most appropriate. This volume can be seen as the evidence of an axial force which originated in the residence. It is this force that as it punctures the west wall drags with it the service masses of the community center and creates the stage as the largest of the volumes in the center. The origin volume in the residence is smaller than its destination but is described in a similar way, toward the end of displaying the effects of the natural light. (4) By creating openings in both of the strong walls, a specific view is achieved into each of the spaces.

The destinations of these alignments are unique elements. They are recognized as destinations by their presence and by the tolerances they demand from adjacent members. The south tower at the terminus of the north/south alignment, and the stage as the destination of the east/west alignment

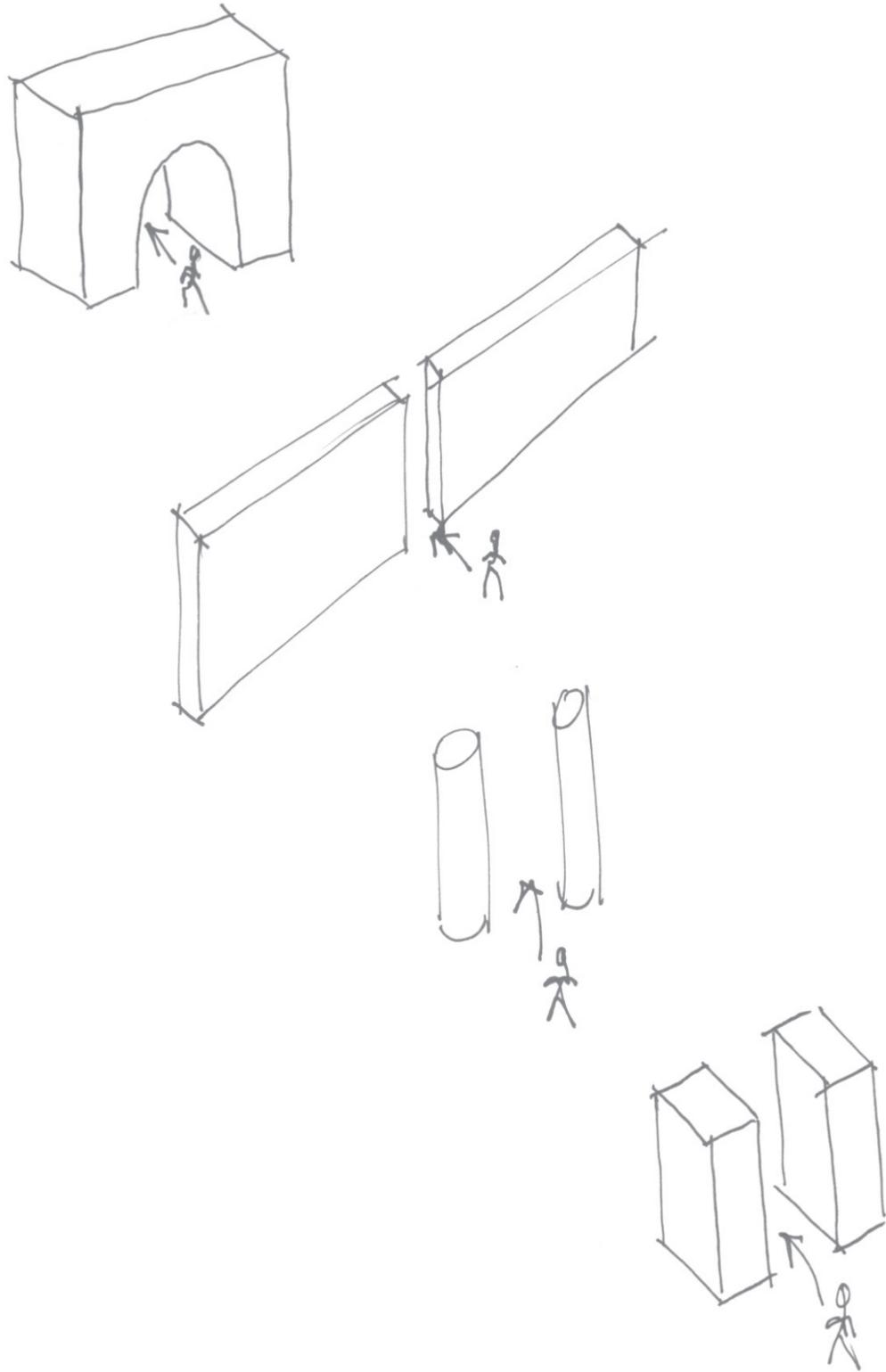


prepositions

If you were riding in the truck exiting the apparatus room you would pass between members and not through a single portal, just as the light would pass between beams in order to enter the truck bays, as opposed to through fenestration.

Upon entering the community center we travel along the wall in order to enter into a mass. This experience is very different from the one in the residence, where occupants and guests find themselves between walls or passing through the strong wall. The independent vertical concrete elements of the apparatus room are similar to the walls of the residence in their dependency on a like member in order to create space.

How these relationships are conceived determines how we perceive and interact with them.



conclusion

We are able to define architectural members specifically, and create identity of members within a hierarchy. Through appropriate placement with respect to their character and hierarchy, relationships are created that strengthen the individual's traits. This reinforcement creates an effect beyond what the individual elements are able to project toward one another, and influences our participation in their relationships. If we question how element identity, placement and alignment work together to create prepositional relationships, and consciously define members within a physical hierarchy, then we are able to strengthen identity of individual members, and ultimately create a more meaningful and considerate environment.

