

ACHIEVING NORMALCY:
POSSIBILITY AND PERMANENCE IN A WORKSHOP FOR ARTISTS

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I. THESIS STATEMENT

This project entails the design of a multimedia workshop for artists. In the making of art there is a continuum of creation that begins with a concept and ends with the art object. The intermediaries between the concept and the creation of the object are the tools artists wield in the pursuit of their craft. Many artists, while flush with vision, lack the tools they need to engage in the process of creation and arrive at a material expression of their artistic drive. This prevents artists from living the life that is normal to their innate creativity.

The workshop will serve as a place for the cooperative ownership of tools and workspace. By sharing costs artists gain access to a range of equipment that would otherwise be unavailable to them. This workshop represents the provision of otherwise denied possibilities as well as a place that simply enables artists to sate their need to make art.

The workshop also serves a function in the community. Due to the processes involved in making art, artists frequently seek out spacious derelict or underutilized spaces where they can live and work inexpensively. As they conduct their work the artists begin to build a cultural profile in the area they inhabit. This profile eventually attracts development. Ultimately, the artists draw a level of development that drives them out of the neighborhood they rediscovered. This cycle of gentrification repeats itself as the artists move on to the next abandoned site. The workshop seeks to arrest this nomadic cycle by establishing a permanent, accessible place to work in a neighborhood that is already home to a large art community. The permanence of the workshop secures the habitability of the neighborhood for artists.

ARTISTS AND THEIR TOOLS



Fig. 1 WOODWORKER



Fig. 2 PRINTMAKER



Fig. 3 METALWORKER

II. PROGRAM

The workshop will be run as a cooperative enterprise, operated and supported by its members. The cooperative structure is based upon three different levels of memberships. The first level is those people who need a permanent full-time place to work. The long-term commitment of these people lends stability to the workshop community and forms a core constituency. Second are those who need a place to work, but who do not devote a full-time effort to their craft. These people also have a long-term presence in the shop but have lesser needs for space and place fewer demands on equipment. Third are those who need space and tools for a single piece of work or short-term project. These people will have an intermittent relationship with the shop, dropping in to use the shop for a few hours, a day, or a week at a time.

The character of this workshop is influenced by the nature of the media it includes. The workshop will facilitate the media of sculpture and printmaking with shops for woodworking, metalworking, and printing. Each of these media require tools that are large and costly, and spacious studios that can accommodate dust, noise, and fire hazards. With these physical realities taken into consideration, these media are prime candidates for the cooperative ownership of tools and workspace.

SHOPS FOR WOODWORKING, METALWORKING, AND PRINTING



Fig. 4



Fig. 5



Fig. 6

The practice of these art forms also require the knowledge of myriad and complex tools and processes. With a diverse group of practitioners gathered under one roof, the workshop also becomes a repository of shared experience and wisdom.



Fig. 7

The primary elements of the program, in both size and importance, are the working spaces: the print shop, metal shop, and wood shop. The metal and wood shops also connect to multipurpose large project space and outdoor working spaces. A small number of private studios adjoin the shops. The shop spaces will contain a mixture of shared spaces and dedicated personal spaces. While the cooperative spirit is essential to the workshop, having a number of spaces that can be dedicated to individuals on a long-term basis helps form a stable core constituency for the workshop.



Fig. 8

STAFF

The workshop will have a staff of six people. Each of the three shops will have an attendant responsible for maintaining the spaces and offering technical assistance to those working in the shops. There is a main office staff of two people who will be responsible for administering memberships and caring for the general operations of the workshop. There will be one staff member responsible for custodial tasks and building maintenance.



Fig. 9

SUMMARY OF SPACES

Woodworking Shop: shared machine area, bench area, personal storage, receiving and storage area, tool crib, attendant's station, finishing room	6000SF
Metalworking Shop: shared machine area, bench area, personal storage, receiving and storage area, tool crib, attendant's station	4500SF
Printmaking Shop: shared press area, acid room, darkroom (2-person, B/W photo only), personal storage, attendant's station.	3000SF
Large Project Space: An open space with access to outdoors and the wood and metal shops. Includes a gantry for moving heavy objects.	2000SF
Outdoor Work Areas: These areas will include a variety of open and canopy-covered spaces. The spaces will accommodate work that is unsuitable for indoors as well as simple personal preference for working outdoors.	3000SF
Private Studios (10 @150SF): Individual studios equipped with a sink.	1500SF
Gallery: The gallery accommodates the display and sale of 2D and 3D artwork.	2000SF
Seminar Room: The seminar room provides a venue for administrative or cooperative meetings. It also provides a space for group instruction that cannot be conducted in the shops.	350SF
Lounge: An area for relaxation, gathering, and communication. Separated from the noise, dust, and vapors of the shops.	600SF
Administrative offices: Includes a control desk proximate to the gallery and the entry to the shops. The control desk is the point where shop membership and entry is administered. Supervision of the gallery is also made from the control desk. Office space also included for full-time staff.	500SF

Custodial Spaces: Rooms for recycling and trash removal. Storage for cleaning tools and supplies	750SF
Bathrooms:	800SF
SUBTOTAL SQUARE FOOTAGE:	25,000SF
Circulation allowance: Includes corridors, circulation paths within the work spaces, and elevators and their mechanical rooms.	2500SF
Mechanical Spaces:	2500SF
TOTAL SQUARE FOOTAGE:	30,000SF

III. SITE

The site is located in the Lyn-Lake area of Uptown Minneapolis at the intersection of Lyndale Avenue and the defunct railbed at approximately 29th St. This site is currently occupied by a construction company. The site is bounded by Lyndale Ave. to the west, Garfield Ave. to the east, and the railbed to the south. The northern boundary is 14' south of the main building of the construction company.



Fig. 10 AERIAL PHOTO OF SITE
YELLOW RECTANGLE INDICATES OUTLINE OF SITE

SITE SELECTION

The Lyn-Lake neighborhood has a number of features, both physical and intangible, that make it a desirable site for an artists' workshop. Foremost among these are the people who live there. Simply put, in colloquial terms, Lyn-Lake is the 'hipster' neighborhood. It is home to a large number of artists and creative people, particularly young ones. The Minneapolis College of Art and Design is in the nearby Whittier neighborhood, and many MCAD students and graduates live in the Uptown area. In general, Uptown is a favored neighborhood for urban-oriented people arriving in Minneapolis from other towns or leaving the local colleges and their campuses. The neighborhood also has a relatively large number of apartment units. A young artist living in a small apartment is precisely the type of person who needs access to tools and a place to work. Uptown is a very livable urban neighborhood with many amenities, siting a workshop in this area fills the gap in livability that a lack of workspace represents to artists.

SNAPSHOTS OF LYN-LAKE & UPTOWN



Fig. 11



Fig. 12



Fig. 13



Fig. 14

While not a strongly defined art precinct like the Minneapolis Warehouse District, Lyn-Lake has a solid base of established art institutions. In the immediate vicinity of the workshop site are Intermedia Arts and the Calhoun Arts Building. Intermedia Arts is a nonprofit arts organization with a gallery and a number of community arts outreach programs. They may be best known as the sponsor of the annual Art Car Rally, a part of the Lyn-Lake street fair. The Calhoun Arts building is an Artspace Projects, Inc. development that includes pARTS Photographic Gallery and a number of other arts and nonprofit organizations. The Jungle Theater, while not involved in the visual arts, is another art institution less than a block from the workshop site. By siting in the vicinity of these institutions the workshop becomes part of the artistic aggregate of Lyn-Lake and enhances the vibrancy of the local scene.

LOCAL TEXTURE

The Lyn-Lake neighborhood also has a number of businesses that can directly support the activities of the workshop. Art Materials, Inc., Bennett Lumber, Rockler Hardware, and Lyndale Hardware are nearby businesses that can provide materials and supplies for the artists in the workshop. These businesses provide a convenient material infrastructure for the activity of the workshop. The neighborhood also contains a number of businesses that reflect creation and construction. These are such places as a stained glass



Fig. 15 ANNUAL ART CAR RALLY



Fig. 16 INTERMEDIA ARTS



Fig. 17 THE JUNGLE THEATER



Fig. 18 CALHOUN ARTS BUILDING



Fig. 19 ART MATERIALS INC.



Fig. 20 CONTRACTOR'S YARD AT BRYANT AVE.

studio and a building contractor's yard strewn with rusted machinery and piles of lumber. Other shops: a classic car rebuilder, a vacuum cleaner repairman, a picture framer; add to the mix and create an atmosphere where everyone seems to be at work with their hands.

SITE HISTORY

The land that contains the workshop site was originally platted as an area of two dozen parcels, each approximately 40' x 130', named Chamberlain's Addition. The current occupants of the site, Cook Construction, are the first to build a structure on the site of the workshop.

Of greater historic interest are the areas immediately surrounding the site. Most prominent is the railbed, formerly owned by the Chicago, Milwaukee, and St. Paul Railroad. The railway fell into disuse in the early 1990's but the signs of rail traffic, loading docks and derelict rails, still line the corridor. The rail corridor is currently being redeveloped as a transitway.

Of additional interest is the site immediately to the east of the workshop, across Garfield Ave., now a community garden. This vacant lot was formerly home to a large grain elevator and two other attendant buildings. The area immediately surrounding the site currently has a mostly residential scale. Discovering the massive presence of what formerly occupied the site belies this contemporary perception and speaks to the former character and purpose of the rail corridor.

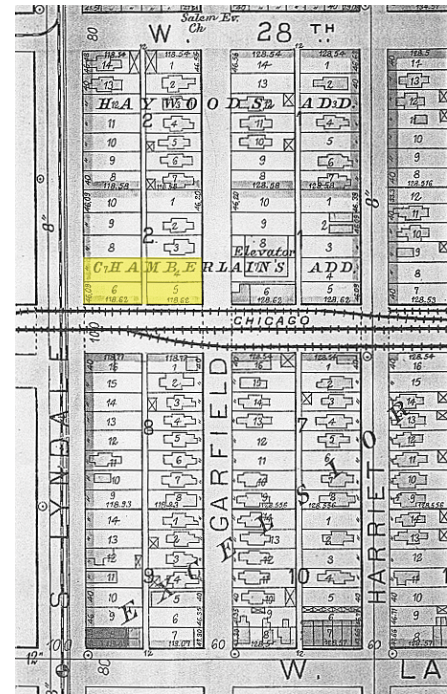


Fig. 21 1892 PLAT MAP
THE YELLOW RECTANGLE INDICATES
THE OUTLINE OF THE WORKSHOP SITE.



Fig. 22 DERELICT RAILS



Fig. 23 FORMER GRAIN ELEVATOR SITE.
NOW A COMMUNITY GARDEN.

DEVELOPMENT AND THE FUTURE

By siting at the edge of the 29th St. rail corridor the workshop also has the opportunity to address the potentials of the renewal schemes being considered for this area. Though these plans are not precisely defined at this point, they revolve around the reconception of the railbed as the 'Midtown Greenway.' These proposals include various combinations of bike/recreational paths, a dedicated busway, and possibly, in the more distant future, a light rail line. The workshop has the chance to exhibit a significant public art presence and potentially come to be a Lyn-Lake landmark if a high-traffic transit corridor comes to be. No matter what the exact nature of the redevelopment, the workshop can be a pioneer on the Greenway by thoughtfully addressing its emerging presence.

In the face of neighborhood growth and redevelopment the workshop can also serve as a repository of local memory. As the neighborhood density increases, many of the local shops could be driven out by the same gentrifying forces that typically work on artists and their spaces. Through its embodiment of creation and handwork the workshop can distill and preserve the character of the builders, craftspeople, and repairmen who now share the neighborhood.

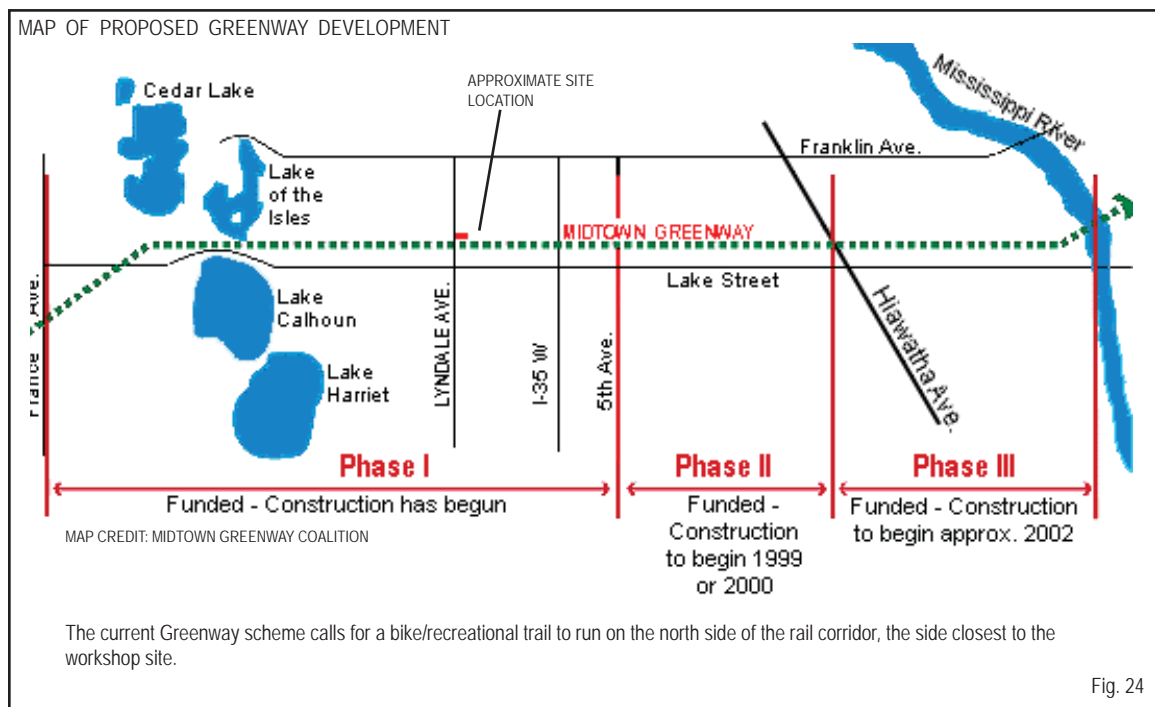


Fig. 24

MAPS & SITE STUDIES

This map diagrams the presence of art, craft, and construction related businesses and institutions proximate to the workshop site. The map shows a concentration of such places along Lyndale Avenue and the former rail corridor.

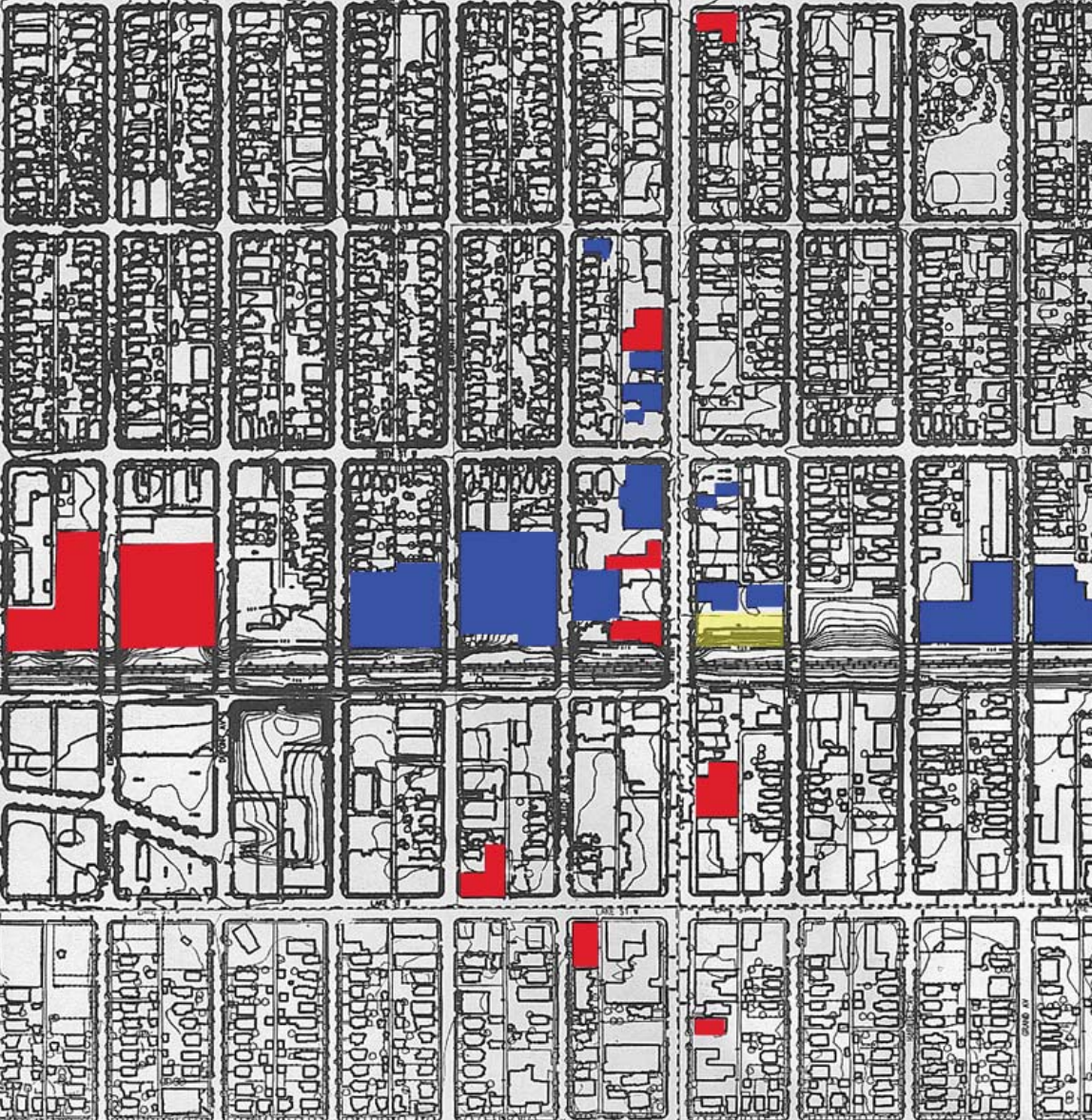


Fig. 25

ART-RELATED BUSINESSES AND INSTITUTIONS
SHOPS OF CRAFT, CONSTRUCTION, AND REPAIR
SITE OUTLINE

FIGURE - GROUND

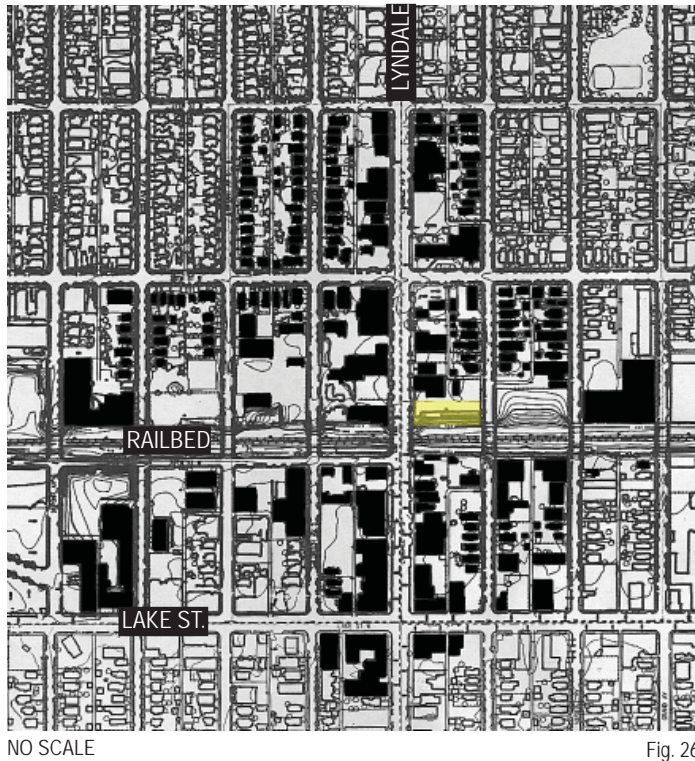


Fig. 26

These maps show a figural study of the area immediately around the workshop site. The figure-only diagram reveals the spatial characteristics of the neighborhood. Lyndale Avenue has a relatively well-defined street wall, especially as it intersects Lake Street. However, this density quickly reverts to the small fragments that represent the residential blocks as one moves away from Lyndale proper.

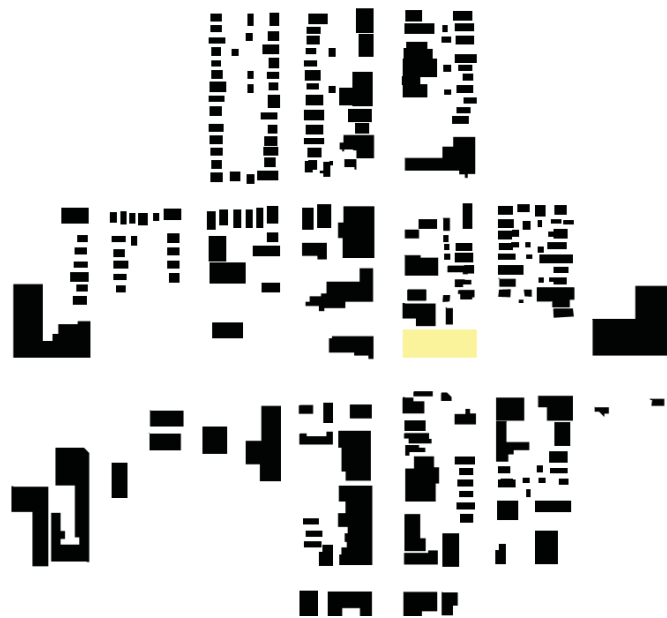


Fig. 27

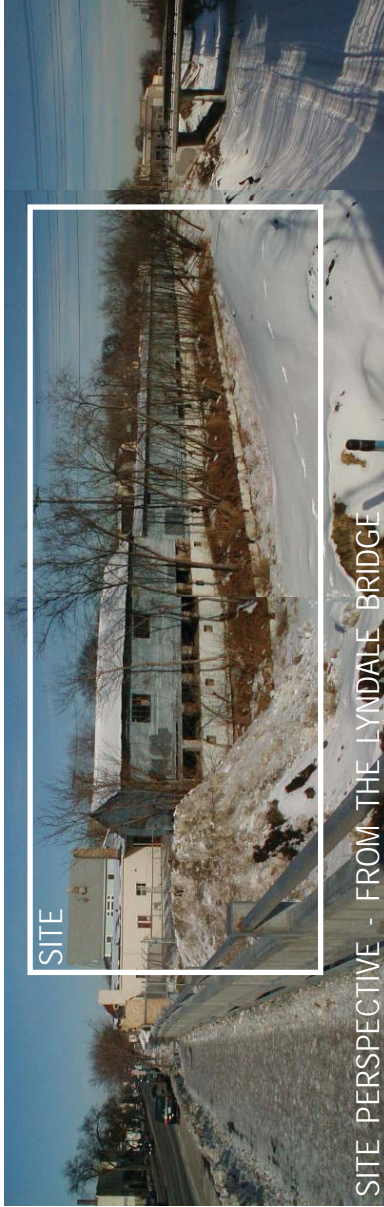
The figure of the rail corridor is distinctive in that it simultaneously gathers large structures and large voids. The large structures speak to the industrial memory of the railroad. Some of the voids do as well, as they are the sites of working buildings that have been demolished. Other voids represent spaces that have remained undeveloped due to their proximity to the railroad.

SITE PANORAMAS

These photos illustrate the site and its immediate surroundings. The blue shed, which is prominent in these images, will be demolished. The views from the bridge and the Greenway show evidence of the construction currently underway. What currently appear as mounds of earth will be graded and shaped by retaining walls along the Greenway path.



LYNDALE ELEVATION - AT THE SITE



SITE PERSPECTIVE - FROM THE LYNDALE BRIDGE

Fig. 28: Top
 Fig. 29: Middle
 Fig. 30: Bottom



GREENWAY ELEVATION - LOOKING NORTH

IV. PRECEDENTS

Craft Center at Balerna

Ticino, Switzerland

Mario Botta, architect

In this complex Botta divides the various activities of the program into four separate buildings. The buildings are arranged around a covered outdoor space. Botta's design simply illustrates a number of the qualities that seem common to architecture that involves artisanal workshops. The ground floor of each building is where the work takes place. The upper floors contain smaller spaces such as offices and apartments.

This layering of spaces streamlines the operations of the workshops because they can be entered on grade and they have easy access to outdoor work areas. Additionally, since the activity of the workshop is conducted on the ground plane the movement of materials, equipment, and other heavy objects is simplified. The spatial layering and the separation of the program into four buildings also addresses several issues related to environmental controls. These separations serve to mitigate structural vibrations, isolate sources of noise, and contain dust and vapors circulating in the air. Daylighting of the workshops has also been dealt with cleverly. The windows open onto the covered courtyard, using the canopy and other buildings to mitigate strong directional light.

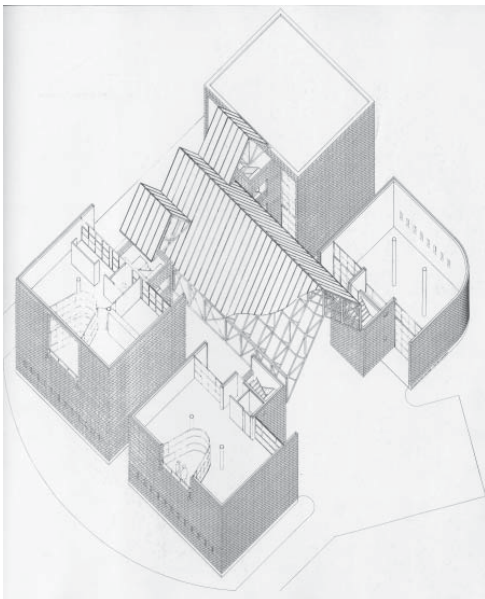


Fig. 31 THIS PLAN-AXONOMETRIC ILLUSTRATES THE SEPARATION AND LAYERING OF SPACES THAT DEFINE THE FUNCTIONALITY OF THE CRAFT CENTER.



Fig. 32 SOUTHEAST CORNER
THE WINDOWS TO THE WORKSHOPS ARE VISIBLE IN THE INTERIOR OF THE COURTYARD



Fig. 33 WEST ELEVATION

Studio for Remy Zaugg Herzog & de Meuron, architects, in collaboration with Remy Zaugg

"If an artist were not capable of inventing his daily work, who on earth would be?"

-Remy Zaugg

This studio is Zaugg's place of work, which includes making silkscreen prints and writing. As such, it is a place to both create and reflect upon art. Alejandro Zaera describes Herzog and de Meuron's works as "...surfaces onto which different meanings can be projected." In creating architecture for an artist Herzog and de Meuron have taken an intentionally ambiguous stance between abstract and figurative language (Steiner, 14).

The section of Zaugg's studio illustrates the direct relationship between indoor and outdoor spaces seen in Botta's Craft Center. The studio employs an elegant and simple toplighting scheme to illuminate the interior. This, combined with the easy flow between the indoor and outdoor work spaces, shows a holistic approach to the connection of the outside environment to the interior.

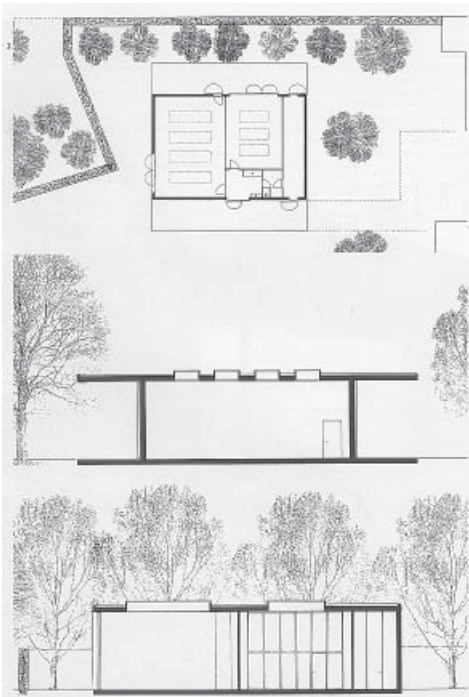


Fig. 34 PLAN AND SECTIONS OF THE ZAUGG STUDIO



Fig. 35 EXTERIOR VIEW OF THE STUDIO.



Fig. 36 THIS INTERIOR VIEW OF THE STUDIO CAPTURES THE RELATIONSHIP OF THE INTERIOR TO THE OUTSIDE THROUGH BOTH THE CANOPY SPACE AND THE SKYLIGHT.

"The spaces immediately surrounding the artists as they work are the simplest, the most abstracted, with the least number of choices already made – leaving the artists free to get on with their own work."

The Nordic Artists' Center is a residential artists' colony that includes individual studios and a shared workshop. The workspaces here have been described as "blank pages waiting to receive the marks of the inhabitants - hammer blows, nail holes, footsteps and shouts, the din of machinery, scorch marks, paint spills (Almaas, 63)." These quotations describe an architecture that defers to the presence of artists and their work.

This raises the question of how an artist relates to their workshop. In one sense, the building must come to the artist in the form of building services such as light and fresh air, especially in technically intensive crafts such as metalwork. Yet, the architecture should simultaneously stand off, and be wary of the presence it projects into the artist's creative space.

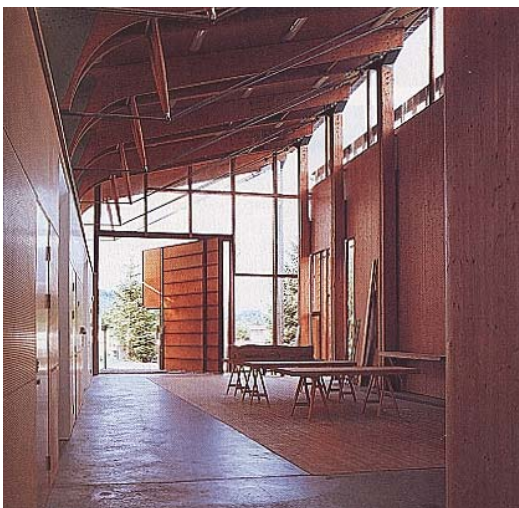


Fig. 37 INTERIOR PHOTO OF THE SHARED WORKSHOP AT NORDIC ARTISTS' CENTER

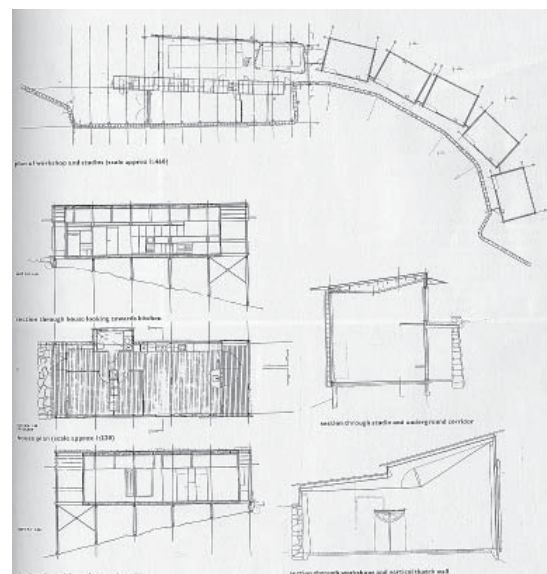


Fig. 38 PLANS AND SECTIONS OF THE INDIVIDUAL AND COMMON WORKSHOPS

This studio employs a toplighting scheme similar to that of the Zaugg studio. In this case, a photography studio, the skylights can be shuttered with horizontal shades to control illumination levels. This precedent differs from the others in that, since the program includes only the media of photography, the link to outdoor spaces is not emphasized.

An interesting feature of the photographic studio is the slope of the roof plane seen in the longitudinal section. In designing a multipurpose workshop the question arises; How can work of varying scales of work be well accommodated in a single large space? In this studio the slope of the roof, combined with the interval of the skylights, helps to create a sequence of differently scaled spaces even though the space is uninterrupted.

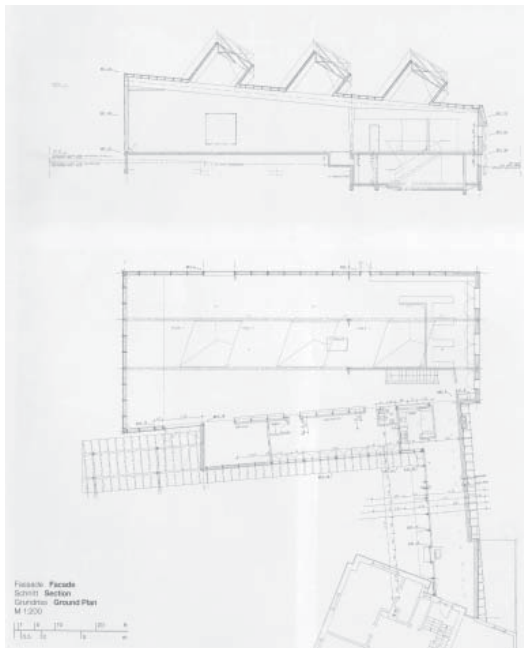


Fig. 39 PLAN AND SECTION OF THE PHOTOGRAPHIC STUDIO



Fig. 40 PHOTO OF STUDIO INTERIOR



Fig. 41 EXTERIOR VIEW OF THE STUDIO. HERE THE SKYLIGHTS APPEAR AS PROMINENT FIGURAL ELEMENTS.

This precedent elaborates upon the layering example provided by Botta's Craft Center. Similarly, it arranges smaller spaces above a large ground floor workspace. However, in this case an open staircase and a mezzanine connect the upper spaces to the lower level. This creates a much more open vertical space from the perspective of the workshop as well as spaces for observation from above. A drawback of this design is that it opens the upper levels to some of the noise and dust issues that a strict separation obviates.

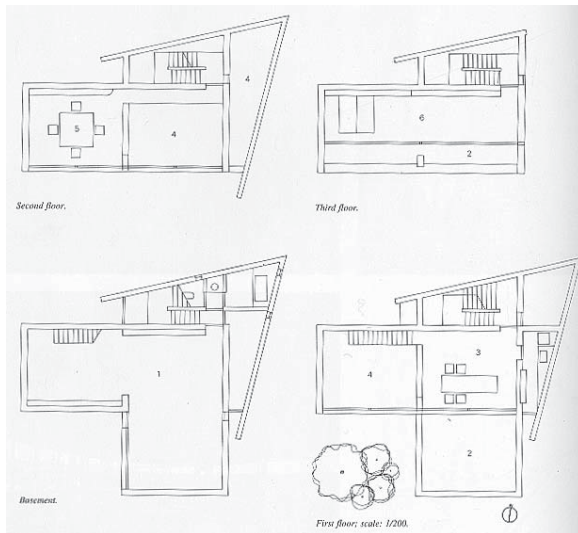


Fig. 42 PLANS OF THE ATELIER

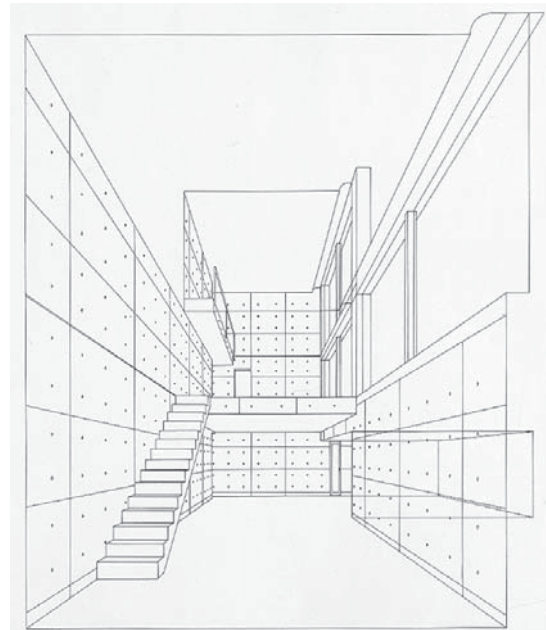


Fig. 43 PERSPECTIVE OF THE INTERIOR OF THE ATELIER. THIS VIEW ILLUSTRATES THE VARIETY OF SPATIAL LAYERS IN THE MAIN SPACE.

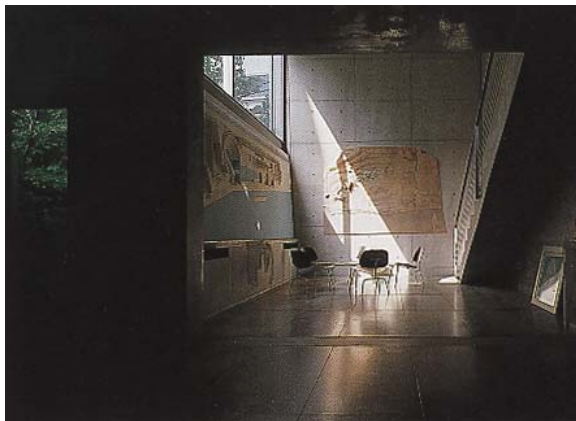


Fig. 44 THIS INTERIOR PHOTO DESCRIBES HOW THE OVERHEAD LEVELS AND THE SIDELIGHTING WORK TO DEFINE THE LOWER LEVEL OF THE ATELIER.

V. BUILDING TECHNOLOGY

The workshop includes tools and materials that create a number of technical issues in the areas of environmental control and fire resistance. The shops produce varying amounts of dust, fumes, vapors, noise, and vibration from machinery. Fire hazards are created by things ranging from welding torches to printing solvents to piles of lumber.

Since there will be a variety of activities occurring simultaneously in the workshop, close control of potential nuisances is necessary to create a harmonious working environment. The importance of technological issues in the workshop requires that they be addressed in the earliest stages of design. An integrated approach to building utilities will ensure that the spaces are adequately served in a manner that is architecturally intentional.

TECHNICAL ISSUES AND FACTORS:

FIRE PROTECTION: This issue includes planning for the everyday hazards posed by such things as welding torches as well as accidental fires. Safe storage of possible sources of ignition and fuel for fires is an additional consideration. Design implications include choosing fire resistant assemblies and compartmentalizing potential dangers. The provision of an automatic fire sprinkler system will mitigate a wide variety of risks.



Fig. 45



Fig. 46



Fig. 47



Fig. 48

STRUCTURAL VIBRATIONS: Much of the machinery used in the wood and metal shops produces vibrations that affect the comfort of everyone in the building. Addressing this issue includes placing and installing machinery so as to reduce vibrations. Structural systems can be designed to dampen and isolate vibration.

DURABLE WEAR SURFACES: This issue extends to both building materials and fixtures. Wear resistance and ease of cleaning both factor into the choice of materials in the workshop. A building with a lower cost of ownership will help financially sustain the workshop.

ACOUSTICS / NOISE CONTROL: Portable and stationary machine tools as well as simple tools such as hammers are all potential sources of noise. Stationary tools can be placed in contained areas in order to isolate noise. Reflective surfaces that amplify noise should be minimized, though this factor will have to be reconciled with the need for hard and durable surfaces.

ENVIRONMENTAL CONTROLS: FRESH AIR AND TEMPERATURE: The control of dust, fumes, and vapors is the greatest challenge in designing the environmental systems for the workshop. Air quality issues include both safety and comfort. Maintaining thermal comfort is also a complicated issue. The artists in the building will be engaged in a wide range of physical activity, ranging from drawing to heavy labor such as grinding or swinging a mallet. These activities, combined with sources of heat such as running machinery and welding torches, create the need for an environmental control system that can be closely attuned to the operation of the workshop.

HAZARDOUS MATERIALS: Solvents, paints, and many of the chemicals necessary for printmaking processes are both flammable and environmental hazards. The proper storage, use, and disposal of these materials need to be considered in the design of the workshop.

LIGHTING: The east-west orientation of the workshop site offers ample opportunity for daylighting the interior. The openness of the rail corridor guarantees access to light, though steps must be taken to mitigate direct sunlight and glare. The uses in the workshop require both ambient and task-specific lighting. Light should be plentiful and easily adjustable.

VI. THEORY

In approaching the role of theory in the design of a workshop for artists, the first question I posed is, "How can theory explain the relationship between art and architecture?" To explore this question it was first necessary to define the stance of the workshop regarding the work of art. Central to the mission of the workshop is enabling artists to pursue their creativity by providing tools and a place to work. By understanding the role of work as central to the nature of the workshop the focus of inquiry came to rest on the process of creation rather than the art object.

The process of creation is a central issue to both making art and the construction of architecture. In The Production of Space Henri Lefebvre emphasizes the importance of lived experience over the image or symbolic explanation as a means of understanding architecture. As part of this experiential approach, Lefebvre thought it important to be able to trace the path from the object, or building, to the production activity. He raised the issue of whether the process of creation is subsumed or revealed in the finished object (Lefebvre, 113).

Related to the theories of Lefebvre, Reyner Banham describes the implications of the arrangement of architectural systems in The Architecture of the Well-Tempered Environment. Banham explains the implications of exposed and concealed systems and establishes a continuum within which the disposition of systems can be understood. This continuum was based upon the categories of emphasized, allowed to be seen, and concealed. Banham believed that there was an intellectual and moral need to be able to distinguish the structure of architecture from the systems that power it (Banham, 242). Banham's description of open systems establishes a framework for understanding the assembly and operation of a building. This understanding of assembly and operation brings the revelation of process advocated by Lefebvre to the milieu of contemporary buildings.

Earlier theorists such as Viollet-le-Duc believed that meaning in architecture lay in the manner in which the order of relationships in construction was made manifest (Angelil, 31). If meaning were to be understood as the search for truth, Viollet-le-Duc found truth in the utility rather than the formalist beauty of architecture. Viollet-le-Duc asserted that the logic which governed architectural form was to be based upon the realities of construction. The theories of Gottfried Semper were also informed by the connection of truth to utility. He asserted that the meaning of the work of art was determined by its function, material, and the technique of its creation (Angelil, 33). Semper envisioned architecture as simultaneously a system of production and as artistic expression.

Taken together as a guide for the design of the workshop, these theories suggest an architecture that contains a narrative of its construction and operation. It is an architecture of articulation that explains the whole in terms of its elements and component parts. In design, this articulation could potentially be explained through the use of architectural systems and materials that embody work done by human hands.

VII. CODES AND REGULATIONS

OCCUPANCY GROUPS

Woodshop: 6000SF:	F-1
Metal Shop: 4500SF:	F-1
Print Studio: 3000SF:	F-1
Large Project Space: 2000SF:	F-1
Private Studios: 10 @ 150SF:	B
Gallery: 2000SF:	M
Seminar Room: 350SF:	B
Lounge: 600SF:	B
Administrative Offices: 500SF:	B

Due to the relatively small square footages, building height and area limitations are not a factor in the building's design. With sprinklers, any construction type is permissible for these spaces. Without sprinklers, unprotected wood light frame construction is prohibited.

The building's occupancies will include the use of materials posing a physical hazard (flammable/combustible). In planning the building, it is assumed that quantities of hazardous materials will be managed such that code compliance can be achieved with one or more control areas. The intent of this strategy is to avoid creation of an H (hazardous) occupancy.

EGRESS

Minimum number of exits: 2.

Maximum travel distance to nearest exit: 150'.

Rooms that may have only one door: private studios, administrative offices, seminar room.

Minimum corridor clear width: 44"

VIII. DESIGN PROCESS

At the outset of this project I identified several themes that the design would explore. One of these is responsiveness to the site. The project location in the Lyn-Lake neighborhood was chosen in large part due to the character of the neighborhood: a character where the Artist's Center and the neighborhood offer reciprocal benefits. This reciprocity suggests a building that embraces and respects its context. Another important aspect of designing for this site is engaging its particular geography. The site is at the intersection of a unique bi-level streetscape which asks the building to address the public realm in a multifaceted way.

In terms of simple functionality, the design must create spaces that are conducive to the type of work undertaken in each of them. Art media have varying physical requirements in terms of the volume of space they require, light conditions, surface finishes, fixtures, and environmental controls. At the same time, these fragments of the program are collected and arranged together as parts of a single shared enterprise. The design must integrate these fragments so that, beyond simply coexisting, they can create a whole greater than the sum of its parts. There is the opportunity to shape a community in tandem with spaces for the creation of art.

The building's form is explored as an architectural expression of the creative work taking place at the site. This provides a means to describe parallels between art and architecture. These analogs include the raw materials of the work and the tools and methods of assembly, as well as the creativity of the individual.

The design was developed through an iterative process of hand sketching, overlay, and study models. At intervals in the process hard line drawings were made in order to validate concepts in terms of functionality and feasibility. Plans, sections, elevations, isometrics and details were drawn in a non-linear sequence that allowed both small and large-scale ideas to influence the overall course of design.

SITE INVESTIGATION & SCHEMATIC DESIGNS

Due to the site's location in a residential-scale urban street grid it has a traditionally defined public, street-facing front and private, rear-facing secondary access. The rear of the site actually fronts on Garfield Avenue. However, the lots on the opposite side of the street are all unbuilt, giving the street more of a rear yard or alley character. The immediate context has a consistent street facade of buildings with little to no setback from the street and sidewalk. Schematic designs for the building aligned with this context, with a strong street-facing front on Lyndale Ave. and service functions positioned at the rear. This arrangement held throughout the design. While the site has a typical interior side yard shared with the adjacent property, what distinguishes it is the second public side that faces the Greenway. It is not unlike a corner lot configuration with intersecting public streets, but in this case the second public street passes the site at a level approximately twenty feet below the predominant pedestrian and traffic grade of the site on Lyndale Avenue.

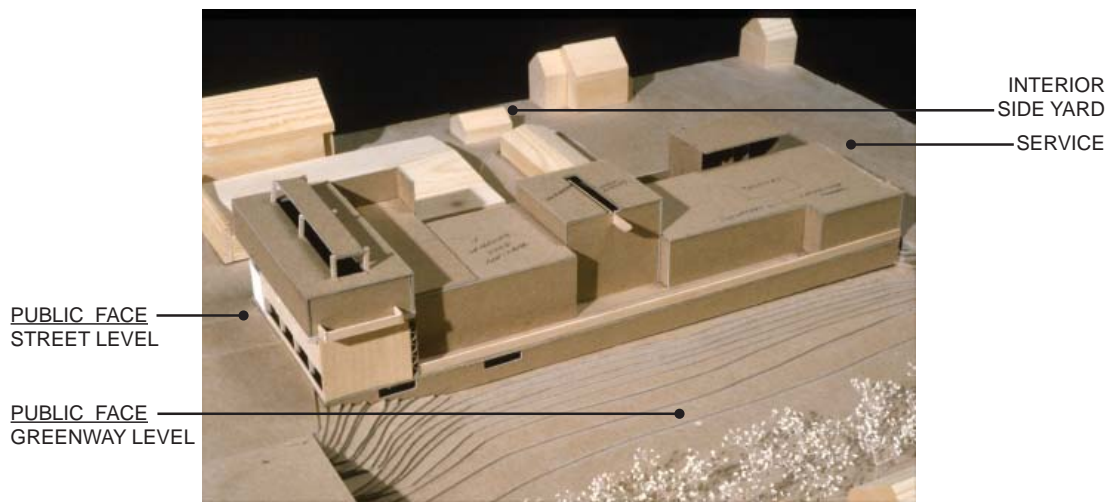


Fig. 49

EARLY SITE AND BUILDING FORM STUDY MODEL

Initial plans had the entire program arrayed on a single level aligned with the street grade. This was driven by a pragmatic concept that arranging all of the spaces on single level at street grade would ease the movement of materials and objects through the building. The deficit of this pragmatic approach was that it resulted in a building that seemed perched above the Greenway. The plan acknowledged this amenity but did little to truly integrate it into the design.

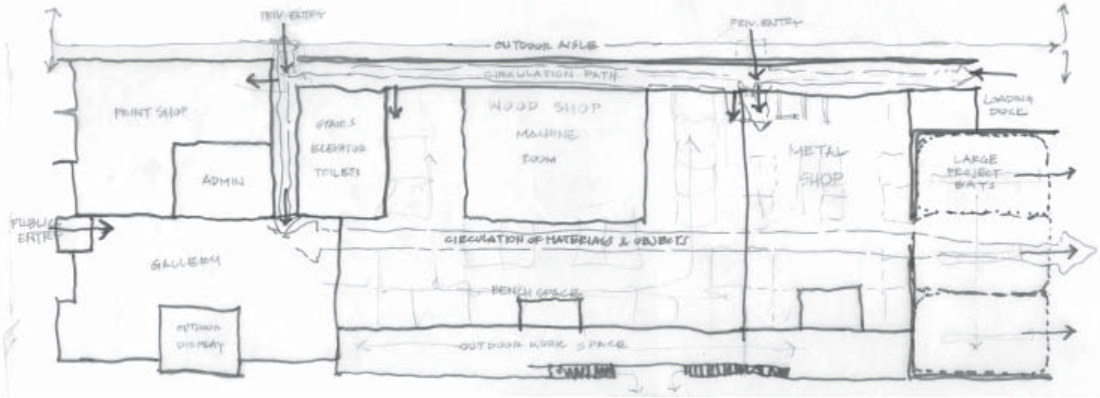


Fig. 50 CONCEPT FLOOR PLAN

Further iterations of the design investigated breaking away from the street level plane and re-layering the spaces in a way that better engaged the site while still serving the building's program. Closer scrutiny of the needs of each spaces determined which could most easily move above or below street grade. The gallery remained in front at street level to provide a space that would engage the public and fit within the local context of street level retail storefronts.

Among the work spaces, the large project space and metal shop had the clearest need to remain at street level, in order to facilitate material handling and moving objects in and out of the building. The physical constraints on the woodworking shop and print shop were not as strong. In the section sketch at right, the woodworking shop has been located in the center of the building and depressed so that its floor level more closely aligns with the grade of the Greenway. The print shop as well as offices and studios have been moved to a street side second level, resulting in a more generous gallery space on the main floor.

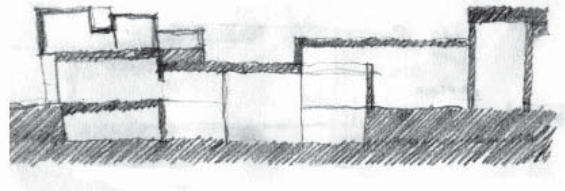


Fig. 51 SCHEMATIC SECTION

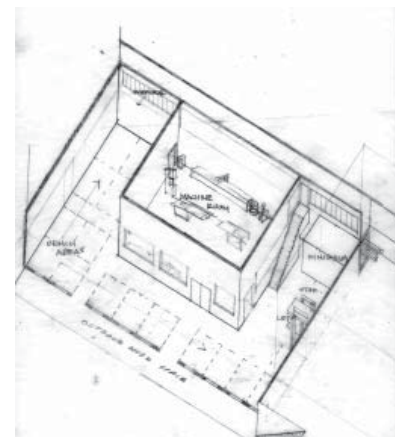


Fig. 52 WOODWORKING SHOP AXONOMETRIC

The axonometric drawing at right illustrates how the woodworking shop has been lowered. Floor level of the metal shop is at right and the back wall of the gallery and second floor spaces is at left. A street level corridor skirts behind the shop.

Two avenues in the exploration of the building's form were daylighting and openings in the building envelope, and studying how materials and structure express or evoke the purpose of the building and the activities that take place there.

The project site offers unobstructed solar access on all sides. This provides strong opportunities for daylighting but also raises the question of how to mitigate solar gain and glare. The two isometric drawings at right illustrate the study of using overhangs, shading devices, and vertical fins to manage sunlight from the south and west. The top right sketch also shows north-facing light monitors as a means of bringing diffuse light into the building.

The lower right isometric is a reiteration of the sketch above where the grid of overhangs and fins has evolved into a roofed veranda. This is a move towards a better design where the form of the building itself solves issues of shading rather than the shading being provided by elements that appear tacked on to the primary mass. This drawing also looks at omitting the roof monitors from this portion of the building. Reconsideration of the monitors was based on aesthetic and functional criteria. Aesthetically they would become a prominent feature of the west elevation. Functionally, the space being lit is shallow enough that it can receive ample daylight from wall openings on three sides, including the long west-facing elevation. The conclusion from weighing these factors was that the monitors added an unwanted complexity to the street facade and their purpose was redundant to lighting provided by other openings.

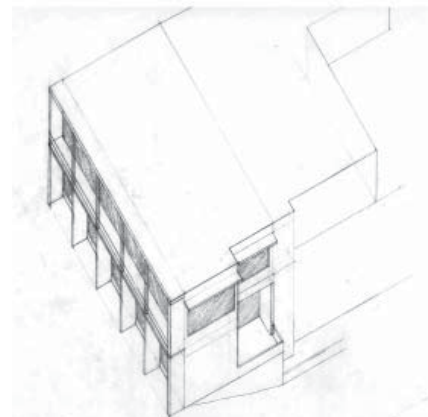
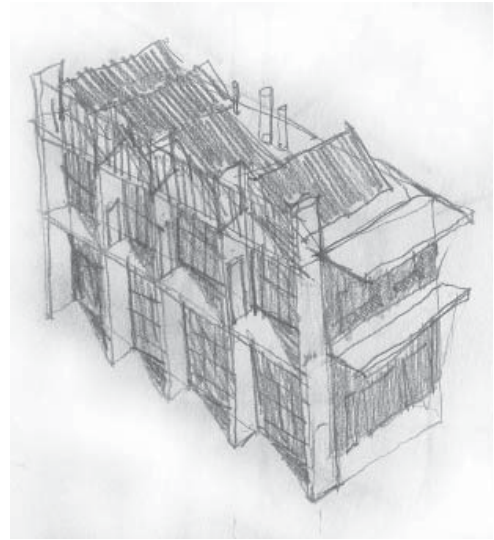


Fig. 53 ISOMETRIC STUDIES OF SOUTH & WEST FACING FACADES

Additional design of lighting and wall openings was done with study models. In the model view at left the creation of south-facing openings is extremely tentative at the large studios. There are large openings high on the wall at the metalworking studio as well as in the notch at the center of the woodworking studio. Otherwise, the small punched windows in the south walls point to the unresolved nature of the design at this point.

The light monitor strategy is being tested at the large project space and the metalworking studio, where the monitor has become the main architectural expression of the roof of this component. At the large project space the sawtooth array of monitors fully lights this room, where wall openings have been minimized to emphasize the massive nature of this block.

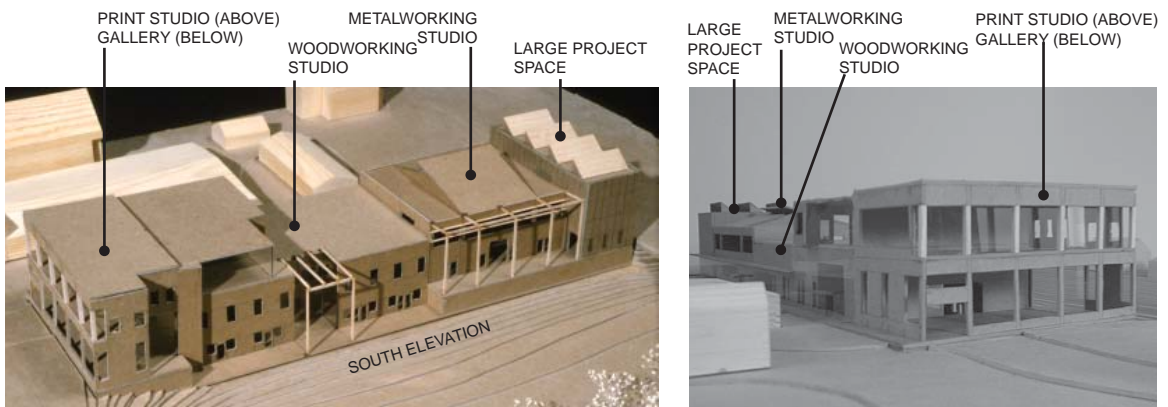


Fig. 54 STUDY MODEL PERSPECTIVES

The model view at right shows the roof monitor openings and large areas of glazing to take advantage of diffuse north light. At grade level there is a fully glazed corridor running the length of the building. In addition to its role in building circulation this space was studied as a means of bringing borrowed light into the interior of the woodworking studio via a second wall of interior glazing.



Fig. 55 WOODWORKING STUDIO / CORRIDOR ISOMETRIC

At the west/front elevation the covered veranda scheme for the upper level has been retained, while large openings are shown at the first floor gallery level. These first floor openings are problematic and unresolved at this point in the process. There is a desire to have large openings in order to display the gallery and engage the public. However, the directly west-facing windows would be difficult to shade and failing to mitigate the light from this direction would severely detract from the quality of the space.

Part of the development of the design was looking at ways materials and structure could be used to express the building's presence and communicate its purpose.

The thumbnail sketch at top right associates wood, steel, concrete and masonry with distinct program blocks of the building and examines how these parts mass together.

The sketch makes a direct association between wood and the woodworking studio and steel with the metalworking studio. At this phase, the association of the materials with surface, structure or both is not determined.

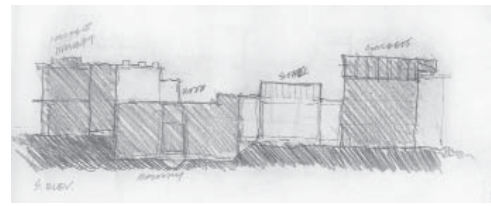


Fig. 56 MASSING / MATERIAL DIAGRAM

The large project space is intended as an area that facilitates work on grand scale projects. The isometric at right shows a block built with panel-cast concrete walls and precast concrete roof beams. This concept predates the roof monitors that were later added to the roof. The intent of the drawing is see how the concrete can describe the particular nature of what is going on inside this space. The work being done here is envisioned as carving large blocks of stone or creating tall assemblages. The concrete embodies density

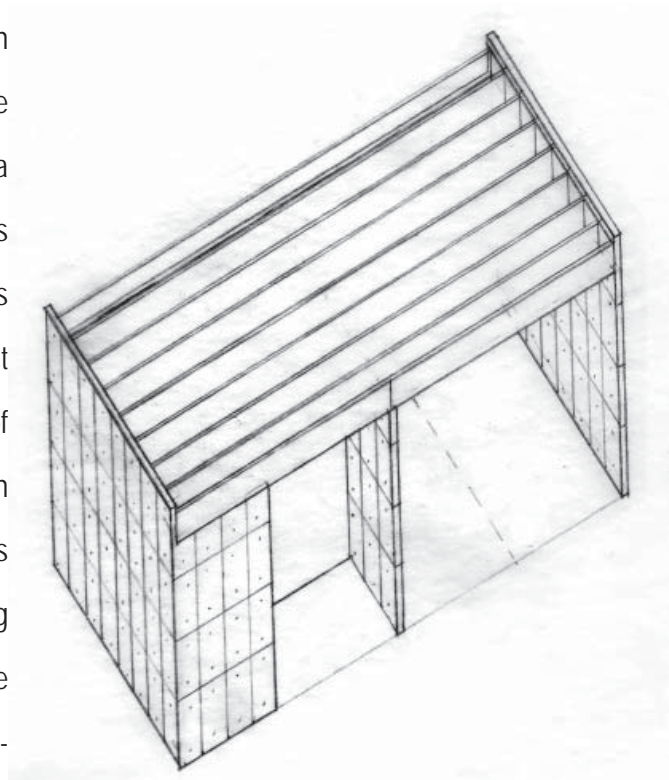


Fig. 57 LARGE PROJECT SPACE ISOMETRIC

and weight. At the same time, the harshness of the material evokes the arduousness of the type of work this space is tailored to. This block of concrete is also being thought of in it's role in the overall architectural composition of the building. It could serve as a strong ending point for the building. It could also provide a backdrop or contrast for other parts of the building that have a greater degree of articulation and detail.

The materiality and structure of the wood-working and metalworking studios were studied in a manner similar to that of the large project space. In the study model at right (Fig. 58) a post and beam timber or glulam paired with exterior bearing walls is considered for the woodworking studio. The shortcoming of the design found here is that the wood doesn't find an expression on the exterior of the building, aside from perhaps what the exterior wall would be clad with. The metalworking studio is studied as a series of rigid frames with roof and wall purlins. This would have an interesting expression on the interior, but this concept suffers the same shortcomings as with the woodworking studio.

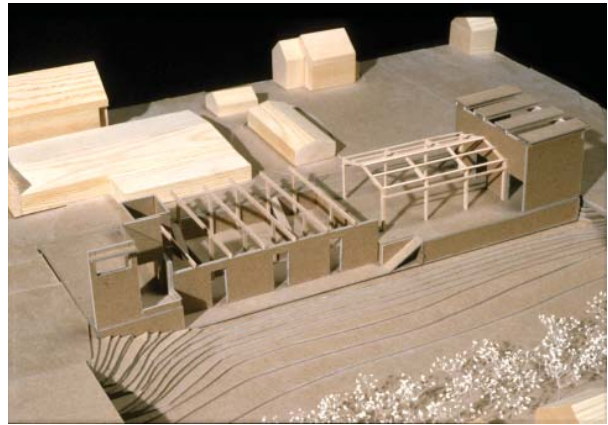


Fig. 58 STUDY MODEL PERSPECTIVE

The adjacency of these two systems also revealed issues with the form and composition of the overall design. Combined with the shift in floor elevation, the change in form and structural systems creates a strong break in the continuity of the building at the transition between the studios. Concurrent with developing each programmatic piece is a design concept that the building have articulated parts but nonetheless read as a cohesive aggregate. In light of this goal, this study model revealed ideas that didn't work and pointed to a different design direction.

In this subsequent study model below (Fig. 59) elements of the structure have found some exterior expression. Working in concert with the project's daylighting goals, the roof of the metalworking studio has changed to a clerestory truss configuration. The truss contributes to the exterior form while the members of the chords and webs provide visual detail at the interior. At the south elevation the structures of the studios have been extended towards the Greenway to create wood and steel pergolas over the outdoor work spaces arrayed along that side of the building.

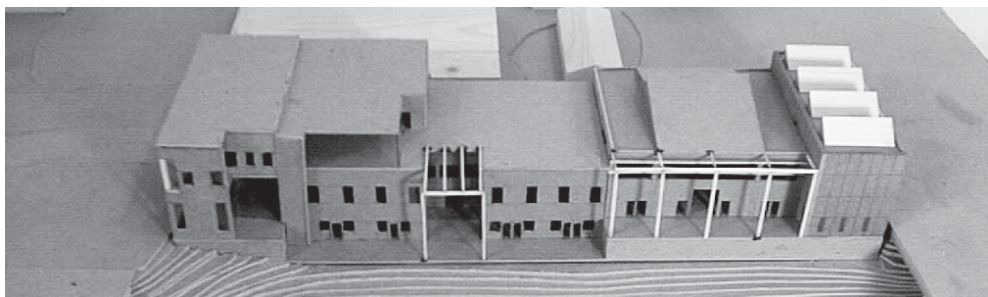


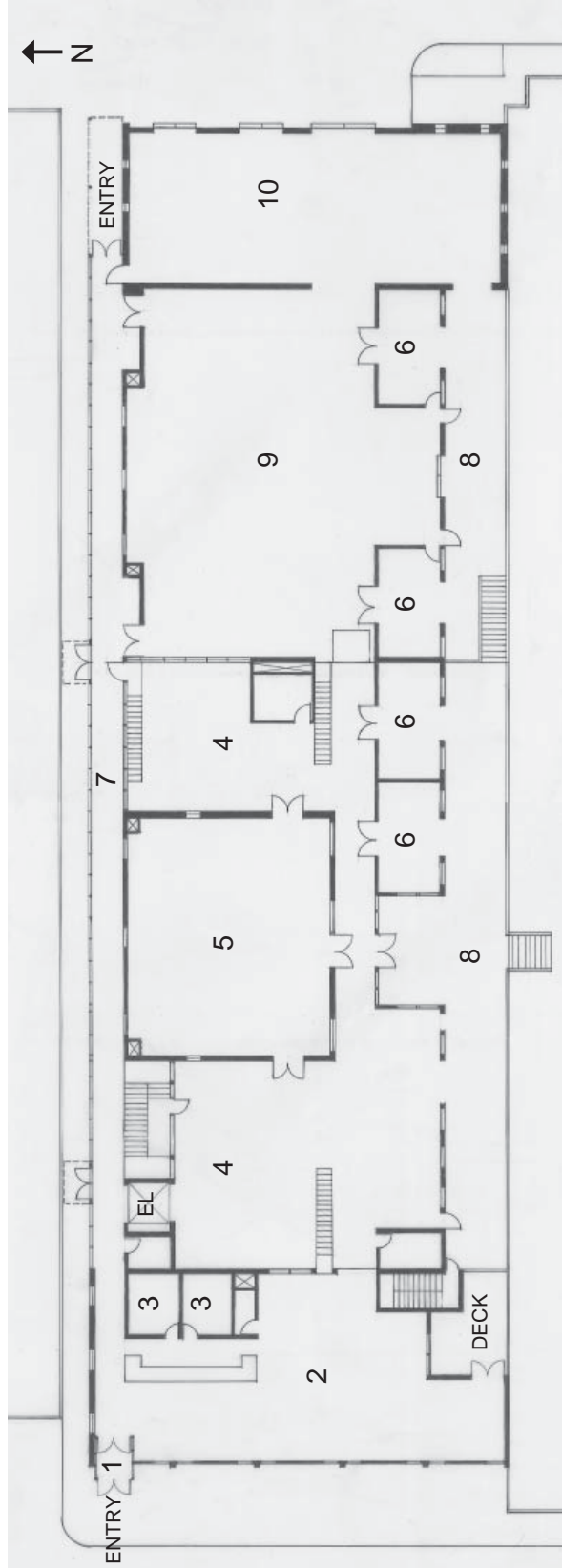
Fig. 59 STUDY MODEL PERSPECTIVE

IX. THE PROJECT : A NARRATIVE WALKTHROUGH

The Lyn-Lake Artists' Center has a public entrance on the Lyndale Avenue side of the building. The entrance opens to the gallery, where there is a reception desk / sales counter directly inside the vestibule. The reception desk is paired with the Center's small administrative area. The design and layout of the gallery has a two-fold purpose: the display and sale of artwork as well as introducing visitors to the Center and the artists who work there. Gallery visitors can browse the space to view artwork made at the Center. At the east wall of the gallery is glazing that provides an overlook into the woodworking studio. Adjacent to the windows are service entrances into the working spaces which allow for moving work in and out of the gallery. At the south side of the gallery doors open onto a terrace that overlooks the Greenway and the outdoor project spaces.

The reception desk also serves as a point where artists seeking to work at the Center can register and be admitted to the center. Running the full length of the north side of the building is a corridor that serves as the main pedestrian path through the building. Once past the reception desk, the corridor provides access to all of the work spaces on both floors. At the east end of the corridor as well as at two intermediate points are private entrances that can be used by those with established access to the building. Also at the east side of the building are the service doors at the large project space that open onto the alley. The service doors are the entry point for the material handling path that traverses all three of the large studios and ends at the gallery. Material handling through these spaces is augmented with a lift between the levels of the woodworking and metalworking studios, as well as a beam crane running the full length of the spaces.

The intent of the building's circulation scheme is to provide two parallel paths: one for people and one for things. Via the corridor, people can enter, exit and travel through the building without necessarily being exposed to the workshop environments. Likewise, the material path provides a means of segregating industrial-type work from foot traffic so that everything and everyone can easily move about.



- FIRST FLOOR PLAN KEY
- 1 VESTIBULE
 - 2 GALLERY
 - 3 OFFICE
 - 4 WOODWORKING STUDIO
 - 5 WOODWORKING MACHINE ROOM
 - 6 PRIVATE STUDIO
 - 7 CORRIDOR
 - 8 OUTDOOR PROJECT SPACE
 - 9 METALWORKING STUDIO
 - 10 LARGE PROJECT SPACE

Fig. 60 FIRST FLOOR PLAN

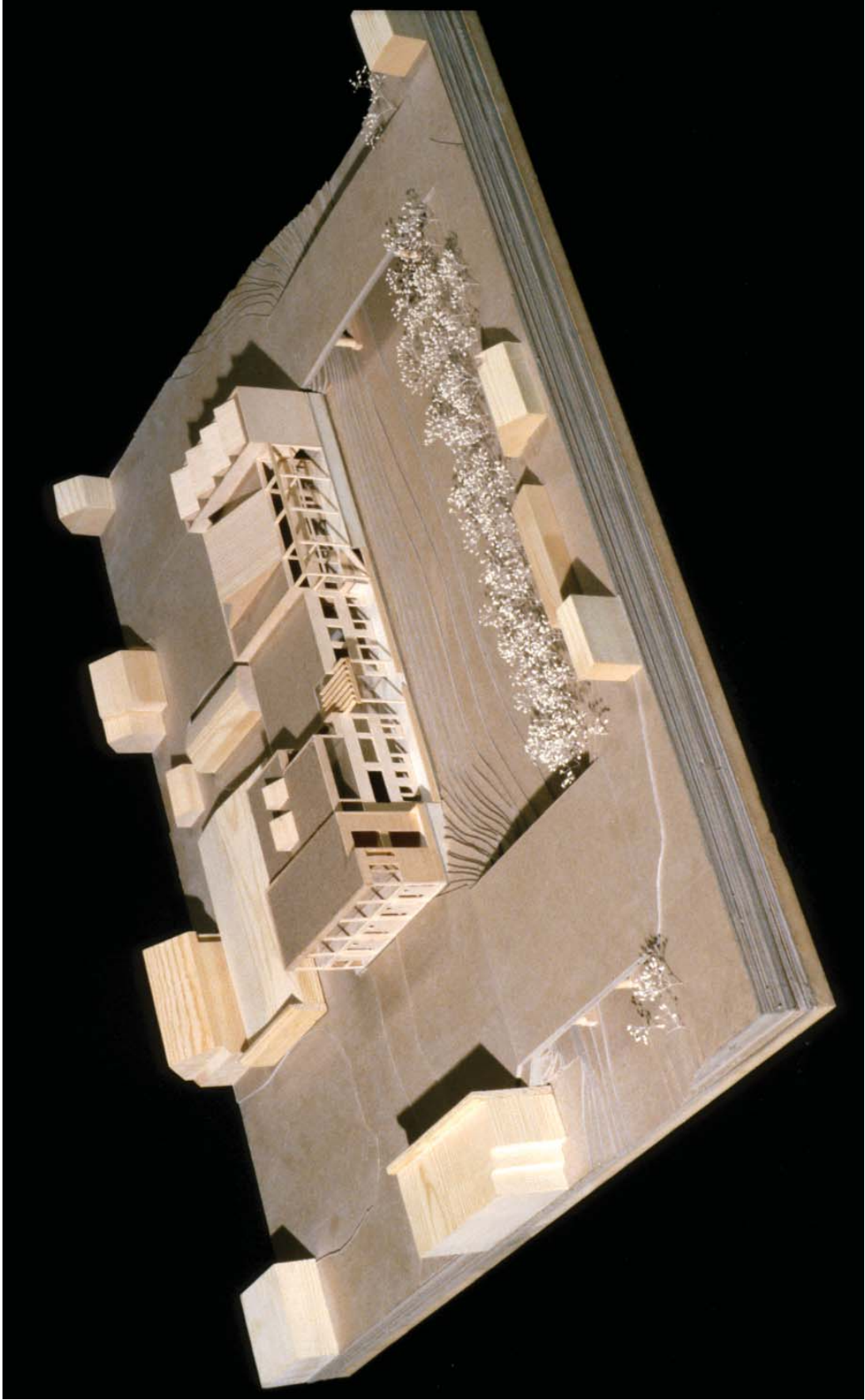


Fig. 61 PRESENTATION MODEL: BIRDSEYE VIEW FROM SOUTHWEST

As one progresses into the pedestrian corridor from the entry there is a vertical circulation node with a three-stop elevator and stairwell. The node connects the lower level of the woodworking studio, the main floor and the second floor printmaking studio and seminar room. The corridor is fully glazed on the north side. The glazing provides light and views in what would otherwise be a very long and narrow hall. Interior windows on the south wall of the corridor allow people to see into the spaces as well as allow the spaces to borrow light from the exterior glazing. The borrowed light helps to balance the daylighting in the spaces that are too deep to be entirely daylit from the south side.



Fig. 62 PRESENTATION MODEL - VIEW FROM NORTHWEST

Moving further into the building, the first workspace is the woodworking studio. From the corridor, two sets of stairs lead down into the space. The woodworking studio is divided into three primary space types. The main room is open bench space, where there is an array of workbenches for projects. The main room contains two small ancillary spaces: a dust-free finishing room and a tool crib.

Positioned in the center of the studio is a large woodworking machine room. The intent of this room is to separate equipment that produces relatively more noise and dust from the bench space. On a purely functional level, the machine room helps control environmental nuisances and makes the

overall space quieter and cleaner. In addition, by locating the machine room in the center of the studio it creates separate east and west bench spaces. The division of the open space also prevents activity in one part from dominating the atmosphere of the whole room.

Those working at benches may be assembling pieces or working with hand tools. Creating separate rooms as well as defining rooms within the room provides a means of tailoring spaces to the mode of work. Working with machinery and working with hand tools are distinct processes. Most woodworkers use both, while some are very intentional about using traditional methods. Having different types of spaces to work in, while keeping them all in the same realm, allows people to find a space that fits their work style or even just the particular phase their piece of work is in.

At the south side of the woodworking studio is access to the outdoor project space. A variety of hinged and overhead doors allow materials and projects to be brought outside. Two staircases connect the woodworking studio's outdoor project space to the adjacent metalworking space as well as to the Greenway below. A tall timber pergola overhangs the center of the space. Two private studios also open onto the outdoor space, each with its own sets of doors.

The metalworking studio shares some commonalities with woodworking: there is an array of benches and a pair of private studios at the perimeter of the main space. There is an analogous connection to the outdoor work area. In terms of scale, this studio is a mid-way point between the woodworking studio and the large project space. This relates in part to a concept of the building form stepping down into the Greenway and stepping back out again. The studio is also scaled to the things made here; conceived of as mainly castings and welded assemblages. Having more of a contiguous ballroom-type space in addition to the benches provides room for staging castings as well as laydown area for organizing assemblies. Since even moderately sized metal objects require equipment to pick them up and move them around a greater floor area is needed to accommodate the maneuvering required by the work.

The Large Project Space is conceived of as a versatile high-bay work area where oversized works can be made. It is a space for unique standalone projects and can also serve as the final assembly area for work built from components made in the other studios. Three large service doors open onto Garfield Avenue. One door is aligned with the main material path that travels through all of the work spaces. This defines an open aisle that is maintained for moving materials in and out of the building. Above this aisle is a beam crane that extends the length of the building from the outside of the Large Project Space to the Gallery on the west end of the building.

Two additional doors plus an area to the south of the main aisle each delineate distinct project bays. The south bay also opens on to the outdoor work area shared with the metalworking studio. By providing several points of access directly to the outdoors the Large Project Space can house up to three large projects and each of these can move into or out of the building without affecting other works in progress. In another scenario, the two bays north of the main aisle could be combined for one project. The south bay could then serve as a staging area or it could house an entirely separate second project. Conversely, if no large pieces of work had a claim on the space it could be temporarily divided into any number of small work areas.



Fig. 63 PRESENTATION MODEL - VIEW FROM NORTHEAST INTO LARGE PROJECT SPACE

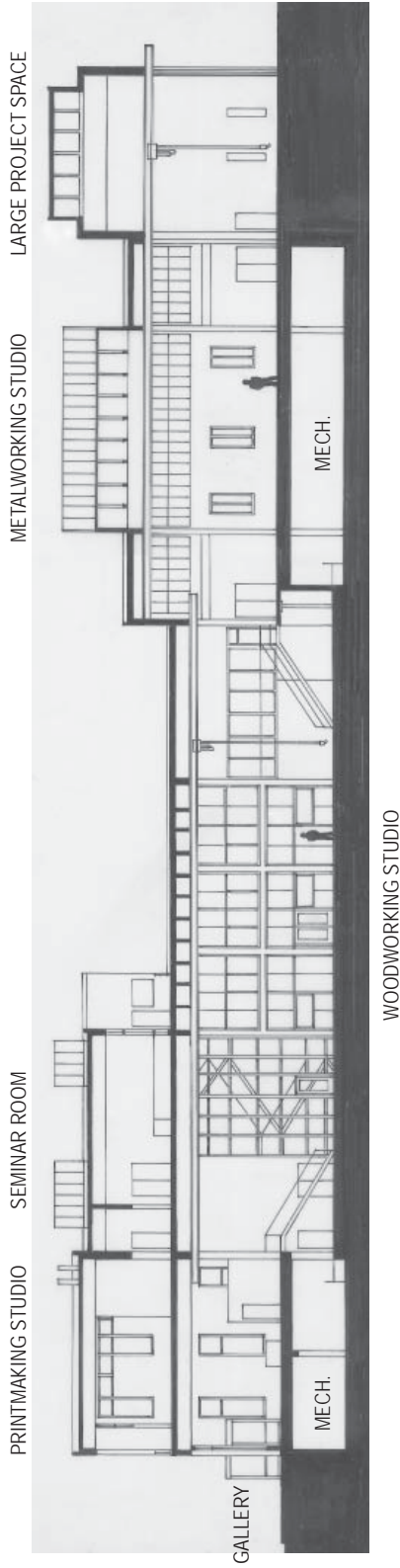


Fig. 64 LONGITUDINAL SECTION

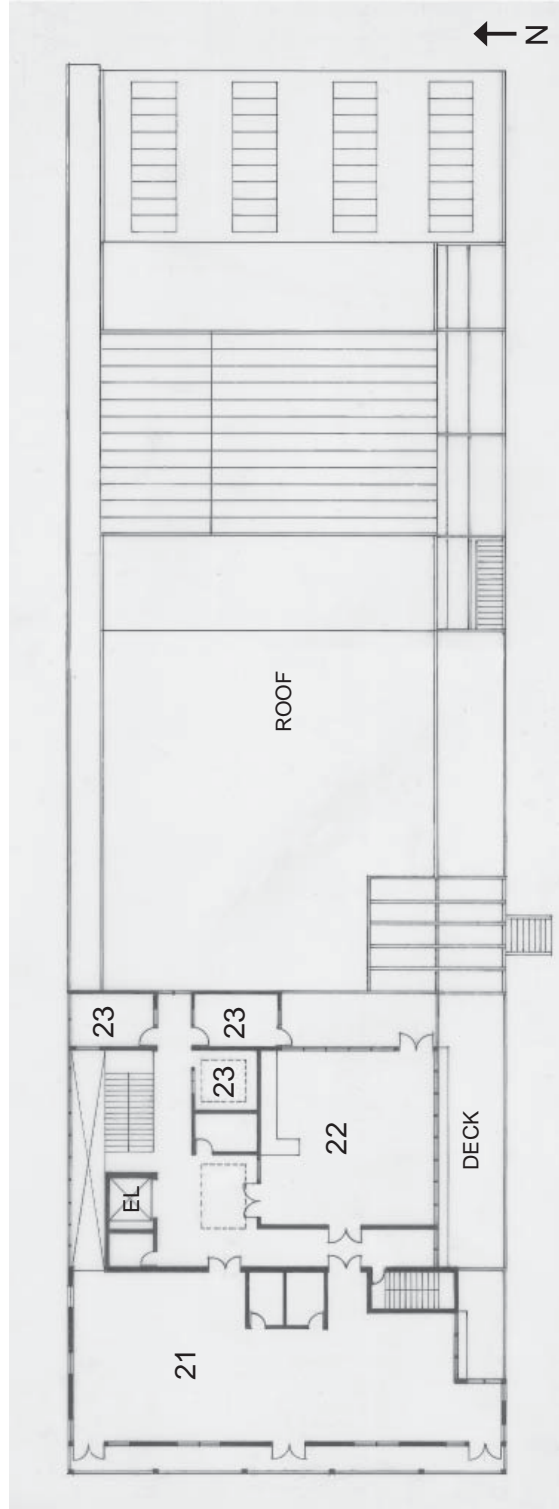


Fig. 65 SECOND FLOOR PLAN

- SECOND FLOOR PLAN KEY
- 21 PRINTMAKING STUDIO
 - 22 SEMINAR ROOM / LOUNGE
 - 23 PRIVATE STUDIO

The primary spaces on the second floor are the Printmaking Studio, private studios, and the Seminar Room. The second floor is envisioned as the quiet part of the building. In most respects, printmaking is a standalone craft that doesn't need the physical connection that the first floor studios have to each other. The materials central to printing: paper and ink, are of a lighter nature and call for a space that is less industrial in feel. The equipment involved is of a similar character. Hand presses can be impressive machines but they are operated by hand. As opposed to the first floor studios, printmaking is much more of a non-motorized, manual process.

The main room of the Printmaking Studio contains a variety of presses for different printing processes: copperplate etching, stone lithography, monoprint, et cetera. Work tables and benches are interspersed among the presses, as well as other printing equipment such as drying racks and shelving and drawers for paper and prints. Two ancillary spaces include an acid room and a small darkroom. The acid room contains the acid baths used in copperplate etching. The vapors are a health hazard and have an acrid odor, therefore this space is enclosed and vented directly to the outdoors. The darkroom contains equipment and chemical baths for black and white printing. It is not intended as another full studio, but rather as a process space ancillary to the other printing processes.

Across the hall from the Printmaking Studio are three private studios; similar to the woodworking and metalworking studios where there are private rooms adjacent to the main space. These second floor studios, while belonging to Printmaking in a sense, could also be rented by artists working in other media who just need a room to work in, for example: painters.

The seminar room may be more accurately termed a multipurpose room. A main function of the space would be to hold classes, which would be a source of revenue for the Center and a means of introducing artists and patrons to the building. The room would also serve as a lounge for anyone working at the Center. The room would have table and chairs, soft seating, a kitchenette, and would

open onto a roof deck. Whatever else artists may be working on in the studios, almost everyone will occasionally need a place where they can sit down to think and draw for awhile, and this space serves that purpose.

The specialized art studios create the issue that people may come to the site, work in their own discipline, and not have meaningful interactions with people pursuing other crafts. While there is a degree of visual interconnection between the various studios, tailoring each space to the work means that there is some degree of natural segregation between them. Creating a common gathering space is a means of drawing people out of their silos and encouraging collaboration.



Fig. 66 PRESENTATION MODEL: BIRDSEYE VIEW FROM SOUTHWEST

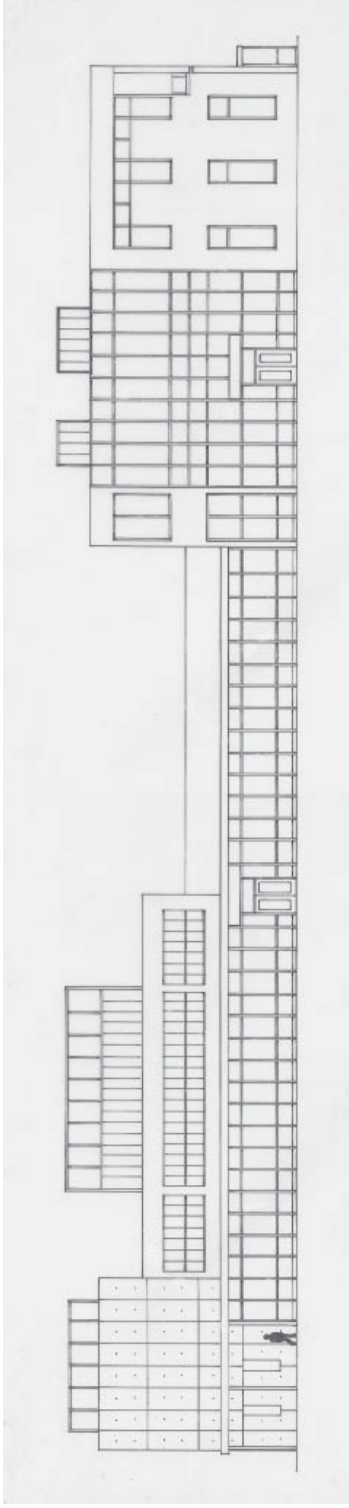


Fig. 67 NORTH ELEVATION

The north elevation provides an illustration of the north-facing glazing, a key part of the building's daylighting strategy. The roof monitors on the Large Project Space and over the second floor studios are visible. Openings at the metalworking studio consist of the clerestory portion of the roof trusses and additional clerestory glazing in the wall below. Curtain wall defines the main corridor and central stair. At the west end of the building, punched window openings provide light to the gallery and printmaking studio. The curtain wall was not continued at these spaces because of the need to preserve wall space for hanging artwork and placing equipment. There was also a desire to use the gallery block at the front and the Large Project Space at the back to compositionally bracket the expanse of glass on this side.



Fig. 68 PRESENTATION MODEL: VIEW FROM NORTHEAST



Fig. 69 SOUTH ELEVATION

In many respects the south elevation is the public face of the Artists' Center. When approaching the site on Lyndale from the south the open space of the Greenway presents a broad view of the building, creating a natural point of architectural focus. A timber pergola extending from the woodworking studio is an exterior signifier of the space. A similar element framed with structural steel is at the outside of the metalworking studio. The standing seam metal roof on the metalworking studio also communicates the materiality of the space. Both of these spaces have clerestory glazing at their upper half and a combination of windows and fully glazed overhead doors at floor level. In addition, a notch in the woodworking studio is has curtainwall glazing on three sides, allowing views in and out of the space.

Small slit windows in the concrete walls of the Large Project space accent the mass of the space by revealing the thickness of the walls. The mass is otherwise simply patterned with the joints of the panel forms and holes from the form ties.



Fig. 70 PRESENTATION MODEL: VIEW FROM SOUTHEAST

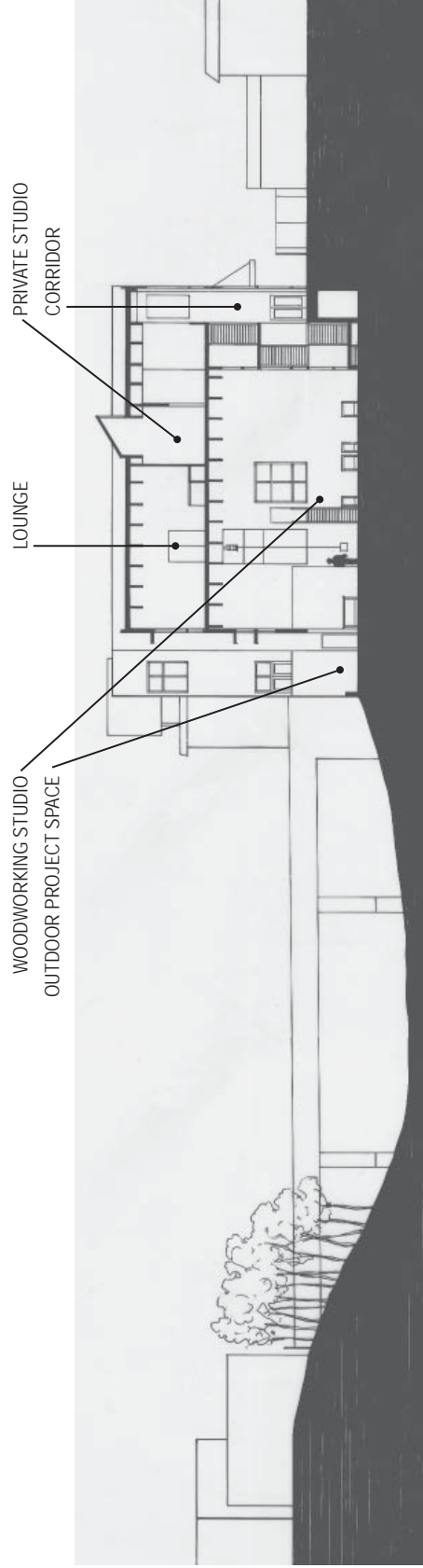


Fig. 71 CROSS SECTION - VIEW TO WEST

This section is cut through the west half of the woodworking studio, describing how the building sits relative to the street and Greenway grades. The bridge in the background is Lyndale Avenue. In addition to linking the different planes of the site, sinking the woodworking shop allows creation of a greater volume of space while reducing the mass of the building perceived at street level.

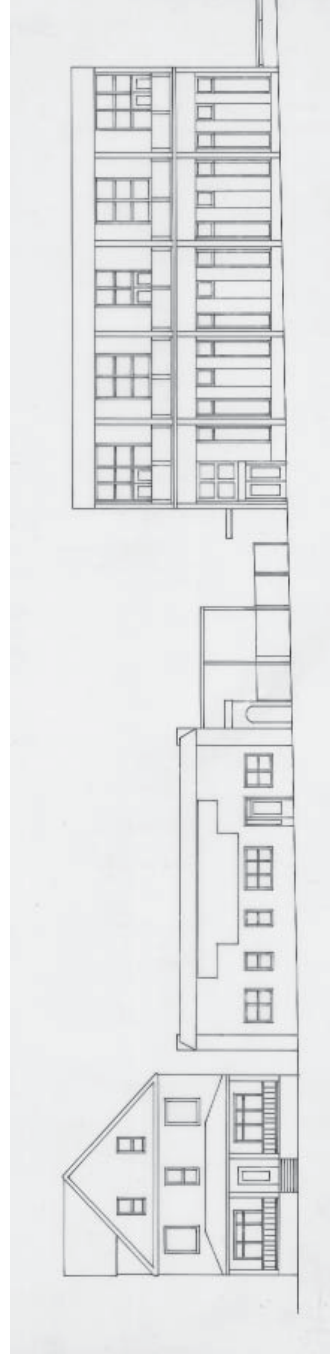


Fig. 72 WEST ELEVATION

This elevation is the side of the building facing Lyndale Avenue. Adjacent buildings: a construction company office and a 2-1/2 story single-family house converted to shopfront, illustrate the scale and context of the Artists' Center.

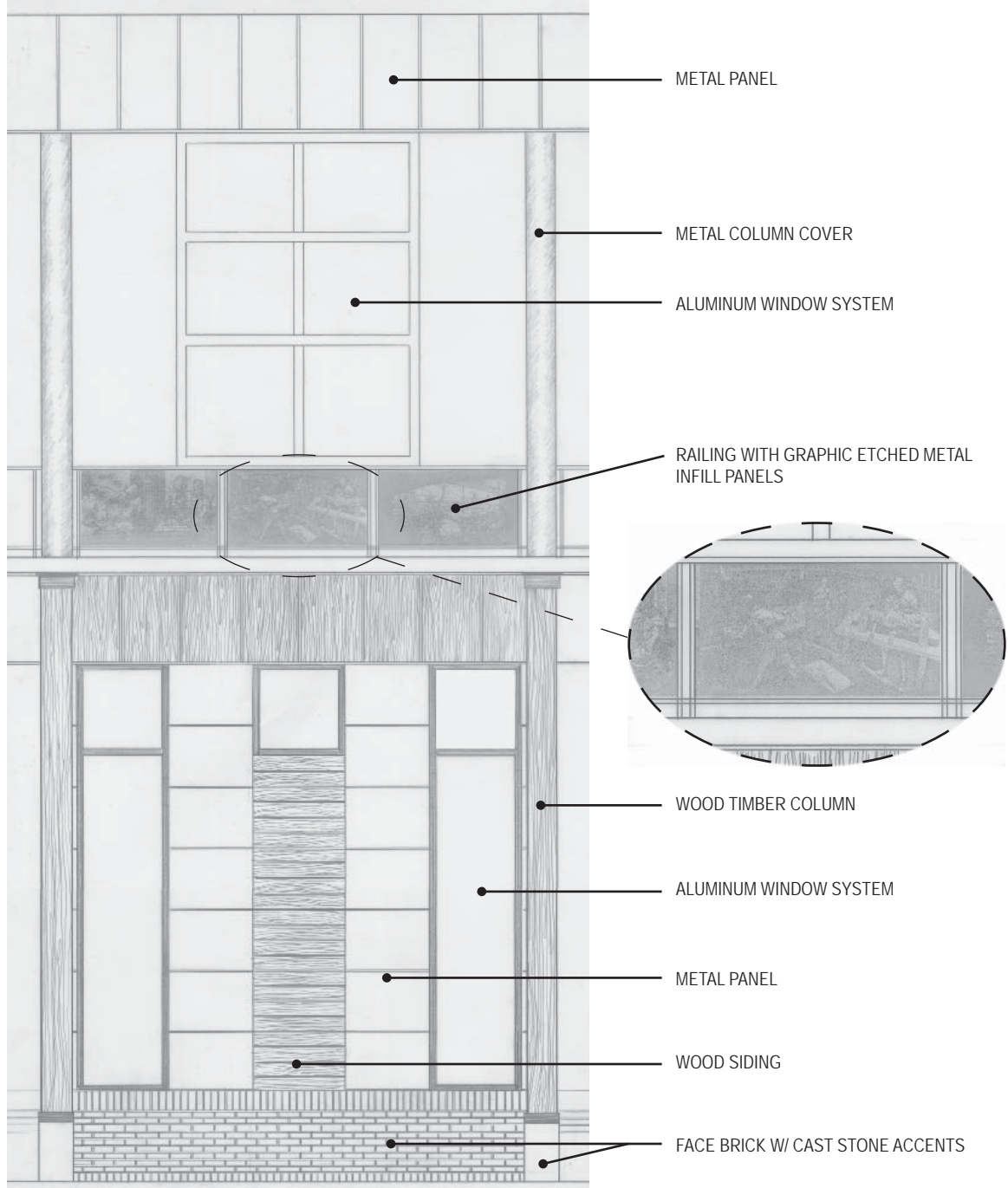


Fig. 73 PARTIAL ENLARGED WEST ELEVATION

The west elevation presents a collage of materials that speak to the work done at the Artists' Center. The railing panels serve as an architectural expression analogous to the timber and steel pergolas outside the other studios. The panels evoke the copper plates used to create etchings and engravings.

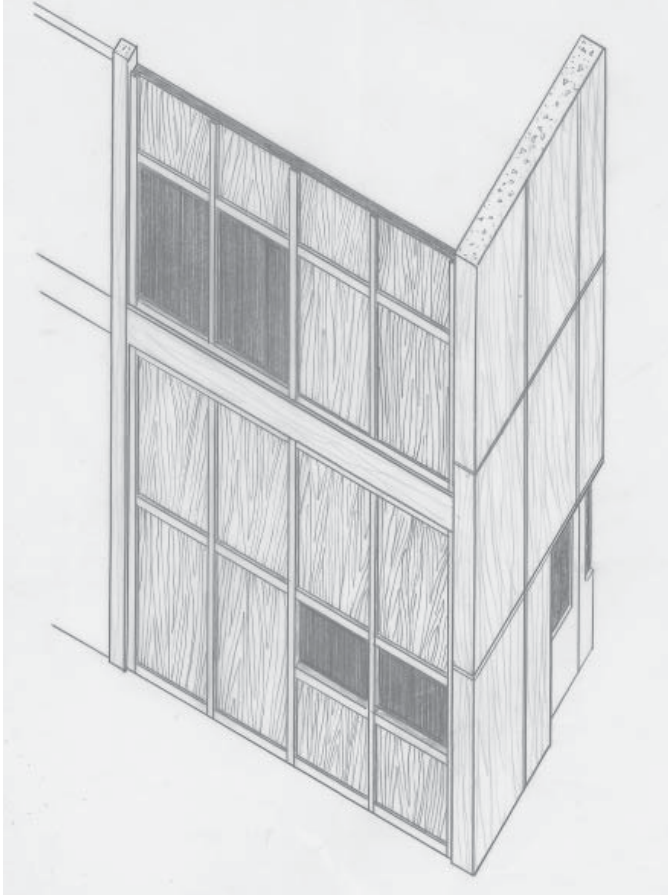


Fig. 74 AXONOMETRIC DETAIL @ WOODWORKING MACHINE ROOM

The detail at left shows an outside corner of the woodworking machine room. The room has a cast-in-place concrete side walls. The walls are formed with plywood panels so that the grain of the wood will be imprinted on the concrete surface.

The front wall of the machine room is framed with concrete columns and beams and has an a sound-insulated wood panel infill. At intervals the woods panels are replaced with vision windows at floor level and clerestory windows above to borrow light from the south-facing glazing at the exterior walls.

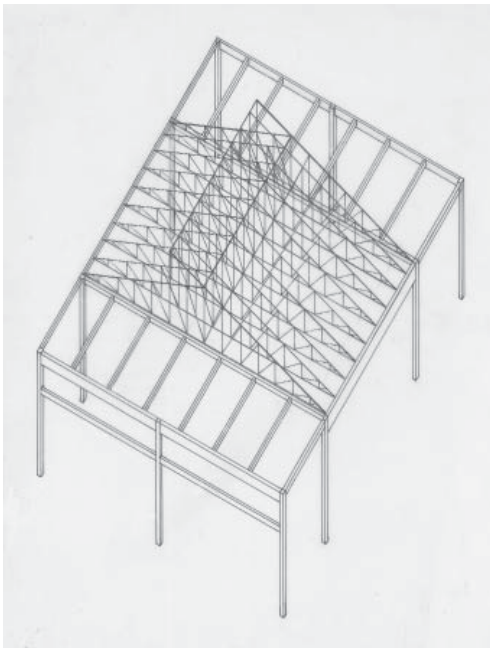


Fig. 75 AXONOMETRIC @ METALWORKING STUDIO

The axonometric drawing at bottom left shows the structure of the metalworking studio. The design intent was to place the structural steel side-by-side with the clerestory trusses so that the bulk of the steel sections could contrast with the latticework effect of the truss chords and webs. Light entering through the glazing in the truss would further emphasize the thinness of the truss members.

X. THESIS ORAL PRESENTATION MATERIALS

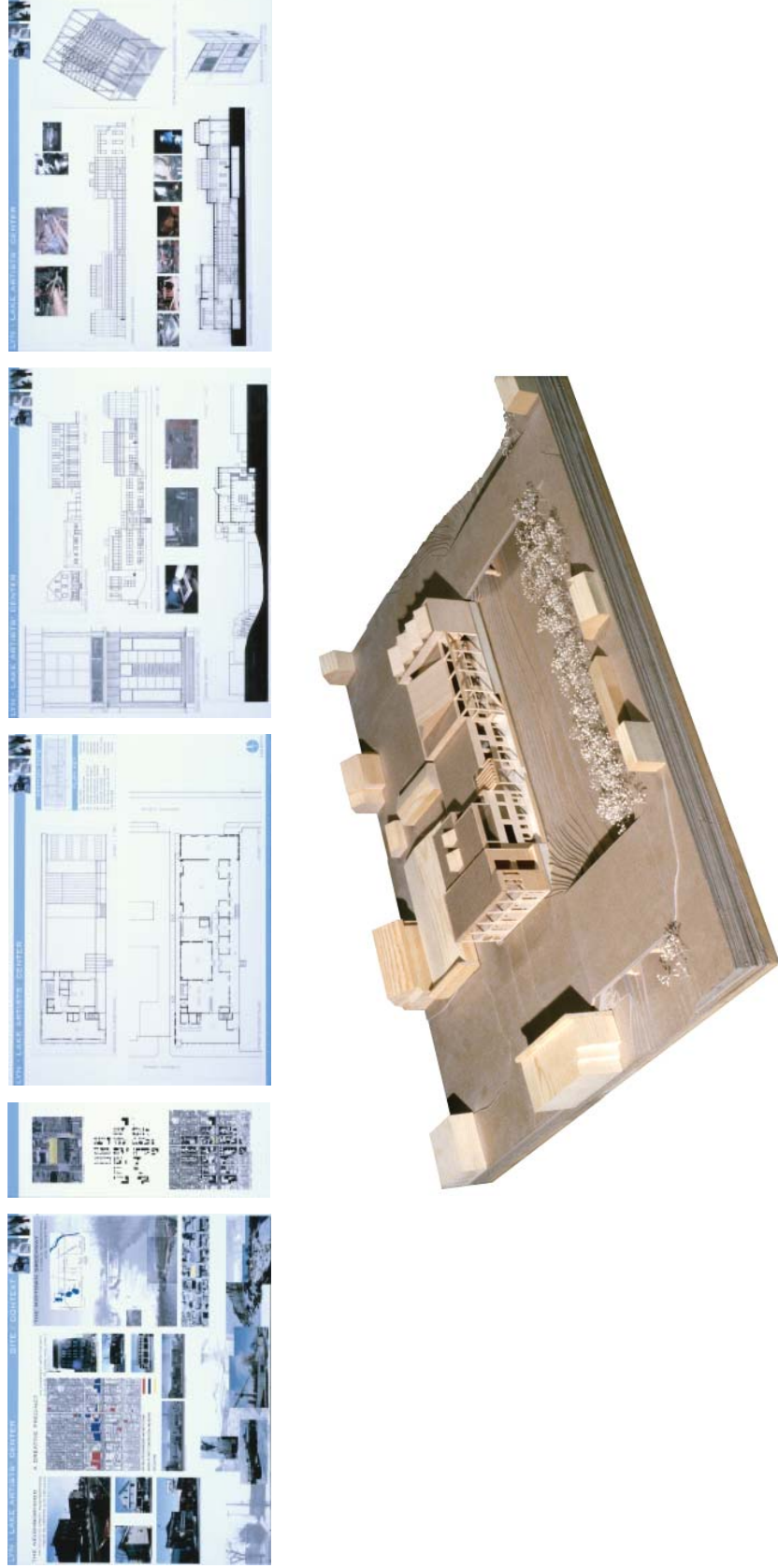


Fig. 76 THESIS ORAL PRESENTATION MATERIALS
The presentation materials consisted of five boards and one model. The five boards included two for site, context and maps; and three for drawings. Drawing list: first floor plan, second floor plan, west elevation, south elevation, cross section, enlarged partial west elevation, north elevation, longitudinal section, metalworking studio axonometric, machine room detail. All drawings were hand drawn pen and ink on mylar.

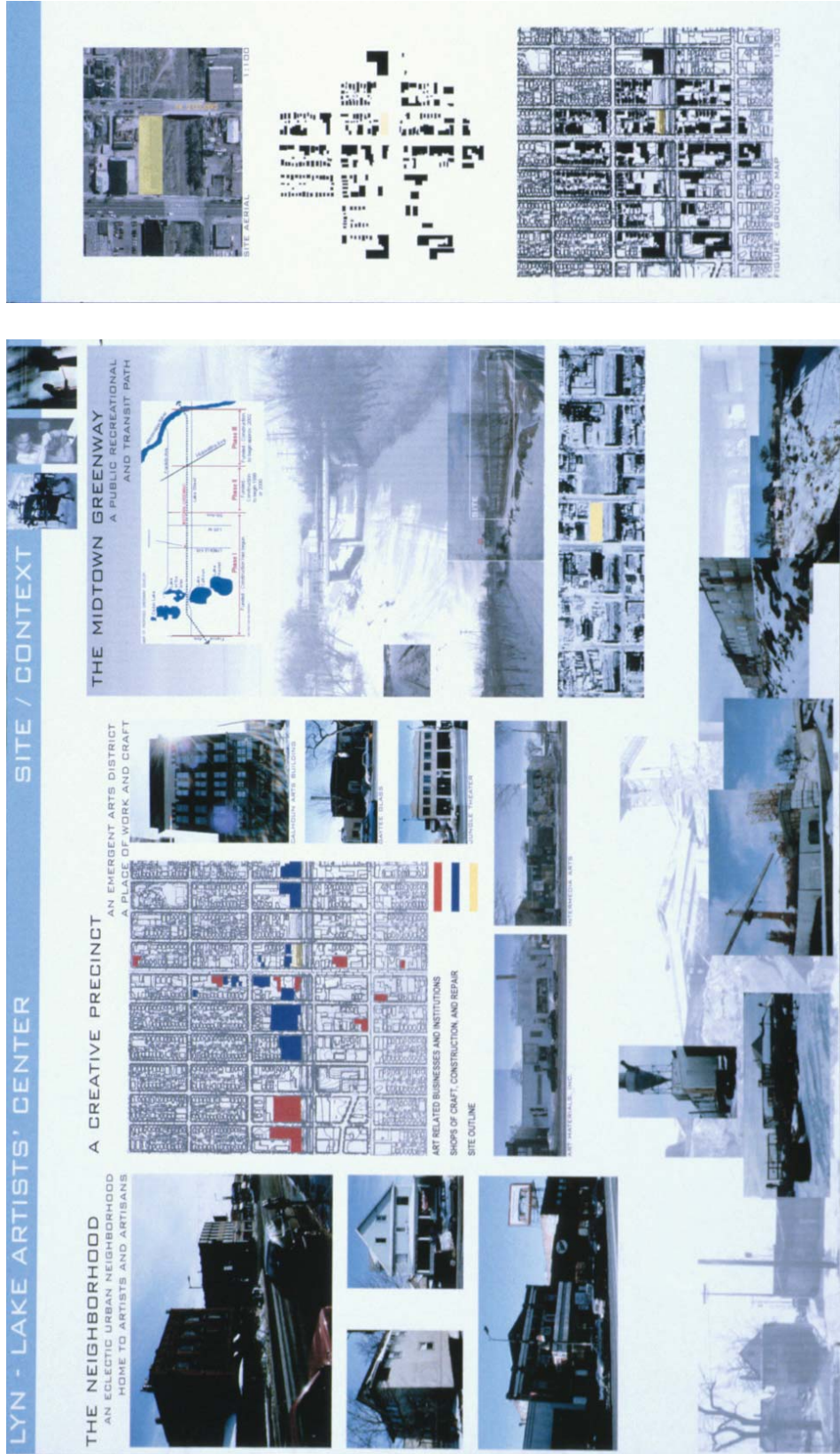


Fig. 77 SITE, CONTEXT & MAP BOARDS

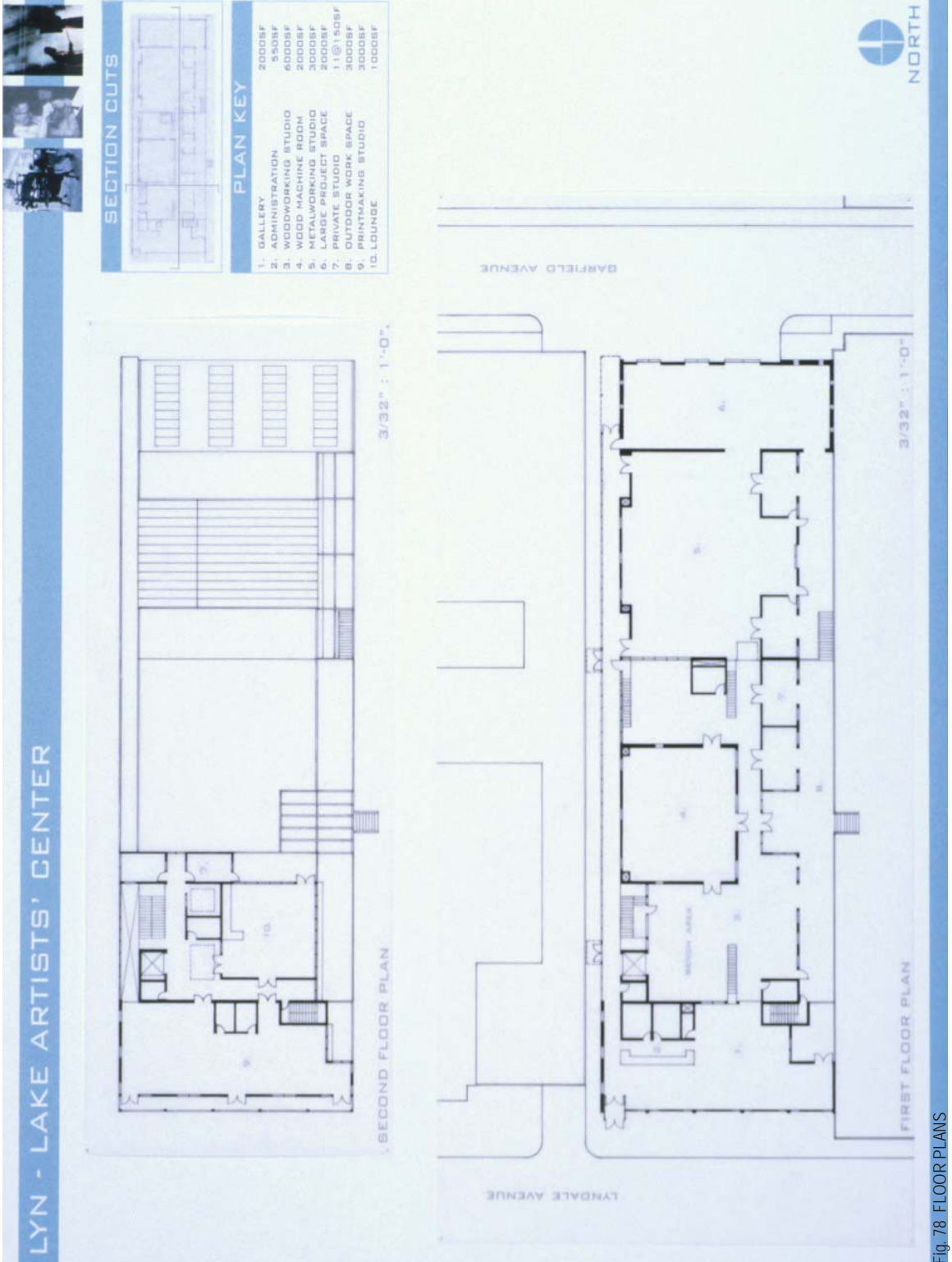
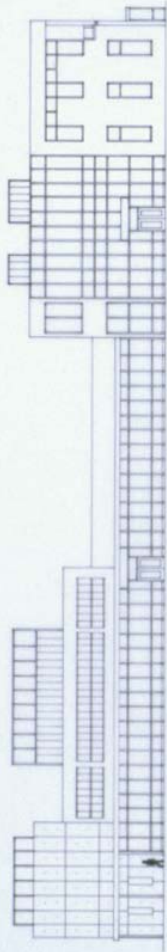


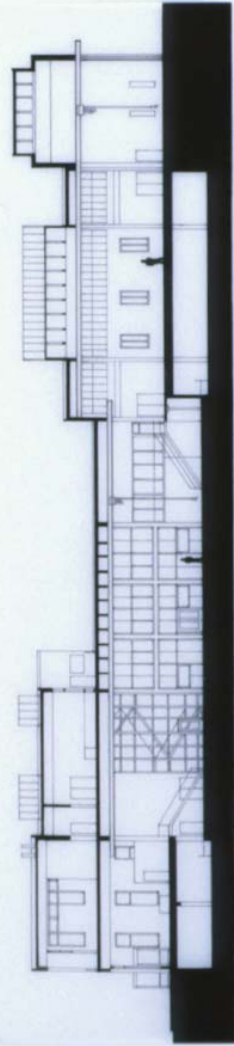
Fig. 78 FLOOR PLANS

LYN - LAKE ARTISTS' CENTER



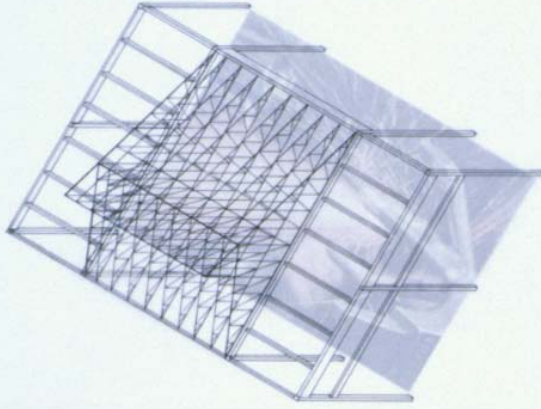
NORTH ELEVATION

3/32" : 1'-0"

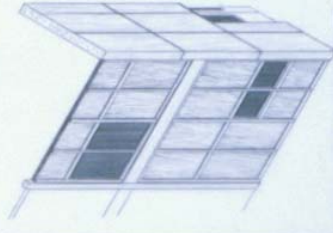


LONGITUDINAL SECTION

3/32" : 1'-0"



STRUCTURAL AXONOMETRIC 1/8" : 1'-0"



MACHINE ROOM DETAIL
1/4" : 1'-0"

Fig. 79 ELEVATION, SECTION, DETAILS

LYN - LAKE ARTISTS' CENTER

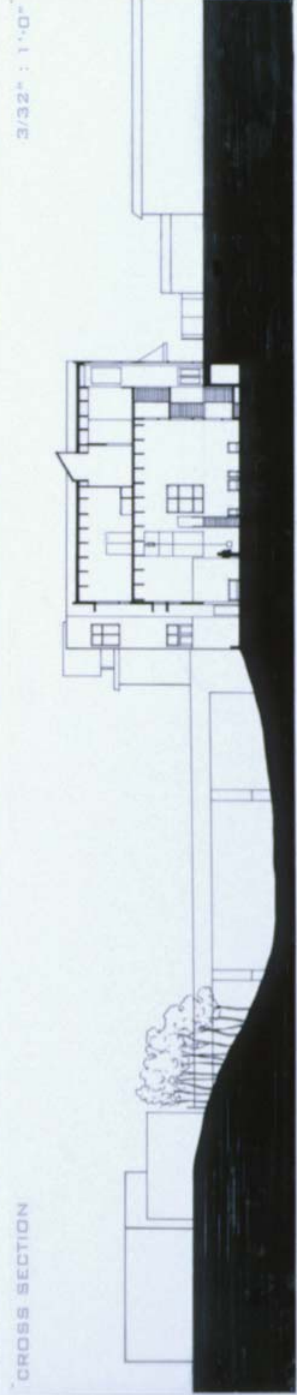
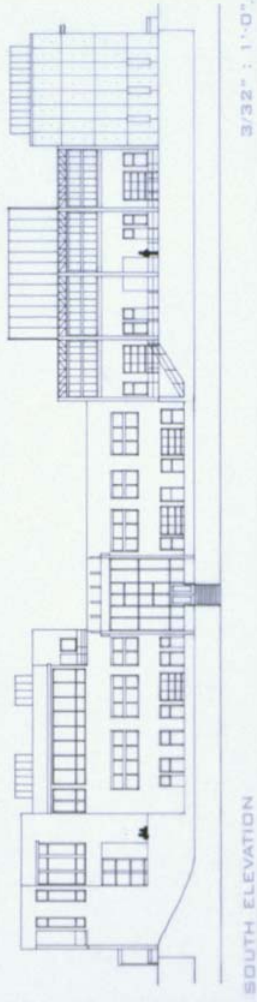
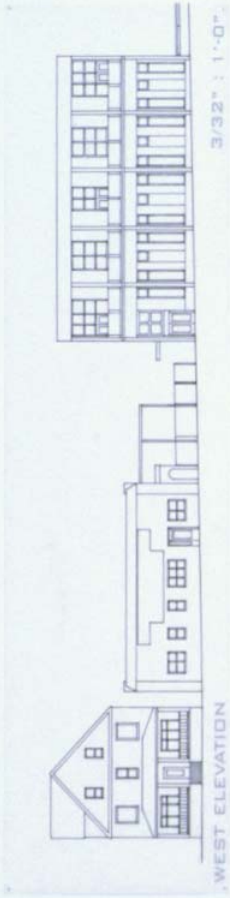
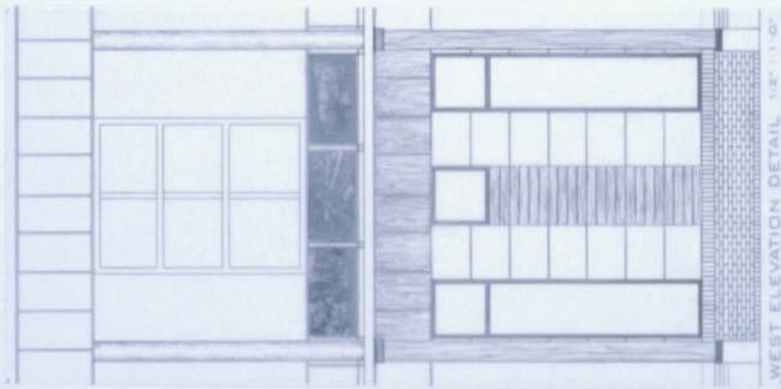


Fig. 80
ELEVATIONS,
SECTION

XI: STRUCTURAL CONCEPTS

A main emphasis of the design of the Artists' Center was using structural systems as a means of expressing the purpose of the building. To pursue this aim timber, steel and cast-in-place concrete were all employed. In some segments of the building the structure is the most prominent architectural concept; in others it is secondary to the surface material or skin of the facade. This section will provide a narrative of the structural systems in the building, identify structural issues that would have to be addressed as part of the design, and propose possible solutions and alternate approaches to structuring the building.

FOOTINGS & FOUNDATIONS:

Prior to addressing questions about the building supports the site itself has to be considered. Due in part to the site history, the soil bearing capacity needs to be tested. There is existing construction to be demolished where the Artists' Center would sit. However, it consists of single-story shed-type outbuildings that do not give any indications of the site's suitability for something larger. The site's location on a former rail bed and industrial corridor also raises the possibility junk fill, e.g.: waste from prior construction, manufacturing byproducts such as sawdust or ash; that would have to be excavated and replaced with clean fill.

The building site creates some complexity in the design of footings and below-grade walls. The floor level of the woodworking shop is 10' below the main part of the first level, which aligns with street grade. Also aligned with the woodworking shop floor level are mechanical spaces underneath the gallery and metalworking studio. Having this substantial below-grade footprint means that earth retention will be required along the full length of the west, north and east sides of the building. Partial retention would be required on the south side, where grade slopes up from the Greenway to Lyndale Avenue. At the east end of the building, the retention occurs at the transition from the Large Project Space to the metalworking studio, rather than at the building perimeter. The building perimeter and its relation to the property boundary poses additional issues that affect the footing design and con-

struction. The exterior walls are close to the lot line on the north, west and east sides. In order to maximize the buildable area of the site, temporary shoring as close to the lot line as possible would be required to provide working clearance for excavation and construction of the footings.

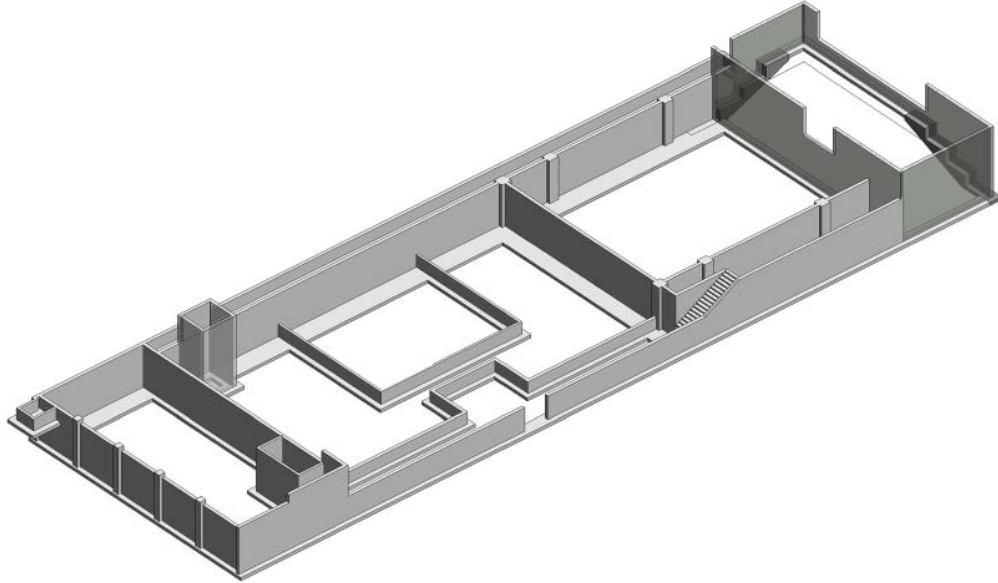


Fig. 81 FOOTING & FOUNDATION ISOMETRIC

STRUCTURAL FRAME & LOAD-BEARING WALLS:

The building consists of five connected but distinct structural systems or zones. These are: 1) the front two-story block consisting of the gallery and printmaking studio, 2) woodworking studio, 3) metalworking studio, 4) Large Project Space and 5) the curtainwall system at the north corridor.

The front two-story block, which is also taken to also include the area of the second floor that overlaps the roof of the woodworking studio, is distinguished more by its surfaces than its structure and thus can take the most utilitarian approach to structure relative to the other spaces. The ground floor at the gallery is over a lower level mechanical space. The walls of the mechanical space; which also serve as retaining/foundation walls at the north, west and south sides, are cast-in-place concrete. The east-west span of the gallery block is approximately 37'. If an intermediate line of concrete piers and beams were provided the gallery floor could be simply built with precast concrete planks, with a topping slab to form the actual gallery floor.

The first and second floors of the gallery block can be built with a steel frame. At the first floor of the west side, timber columns are part of the palette of materials there, and these would need to be integrated with the steel system. The second floor is supported with steel joists and metal deck with a composite concrete slab. The roof could be similarly built with steel joists and metal deck.

The building has a narrow section in the north-south direction. This being the case, either shear walls or lateral bracing need to be accounted for in north-south oriented walls. The northern half of the east wall of the gallery block presents a good opportunity to insert diagonal bracing at both the first and second floors. There are minimal openings through this wall, so the bracing could be located here without an impact on the floor plan or circulation.

The woodworking studio was initially conceived of as a post and beam timber structure with perimeter columns and girders being the primary load-bearing members. The cast-in-place concrete walls of the machine room would also serve as intermediate bearing points for the timber roof structure. In this scheme there would still be spans up to 40'. Achieving this with solid sawn timbers would result in relatively large sections, raising questions of expense and sourcing. In addition, a massive overhead structure doesn't necessarily express the desired architectural intent.

At the pergola over the outdoor project space, having solid timbers is important to the architectural expression. If a more selective approach to how materials are used was taken, this would be the place to retain the timber construction. At the interior, glulam girders and beams would be an effective substitute and still present the sought after character. In addition, glulams would have greater spanning capability; obviating the possibility of having to add additional column grids and breaking up the open floor areas.

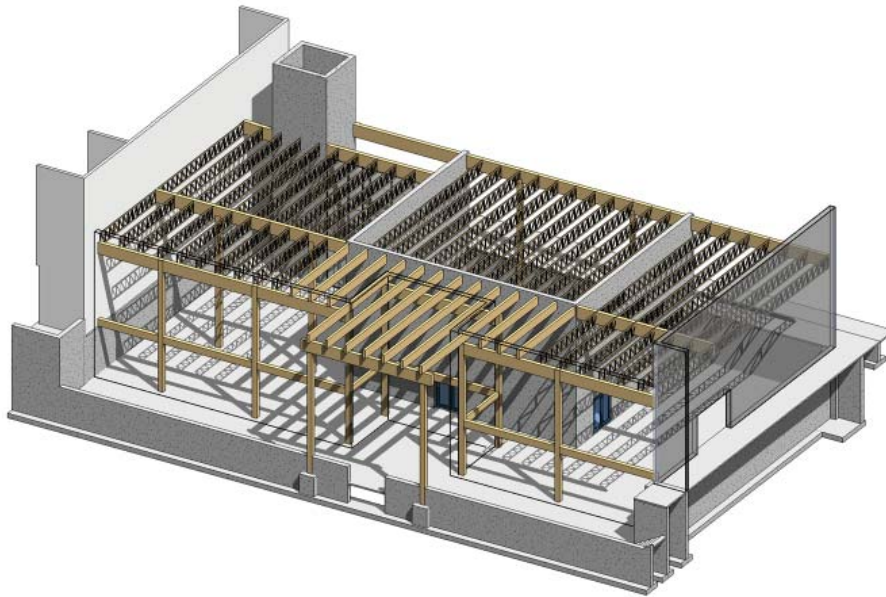


Fig. 82 ISOMETRIC DIAGRAM OF WOODWORKING STUDIO STRUCTURE.

Preliminary calculations of solid sawn timber roof beams yielded sizes on the order of 8"x24". This assumes a roof assembled with 3x solid wood decking, with purlins serving as intermediate members. The prospect of a 24" beam depth raises the possibility of using wood trusses and eliminating solid wood beams altogether. Fig. 82 above is a model study of a hybrid roof structure with a combination of solid sawn timbers, glulam interior girders and wood trusses for the majority of the roof framing.

The structure of the metalworking studio was partially developed in the course of the schematic design and described in some detail in previous parts of this paper. This part of the building has two sets of components: the steel columns and beams composing the superstructure and pergola, and the clerestory trusses. The columns and beams are simple wide flange structural shapes. The clerestory trusses are a typical Pratt truss configuration, with a non-structural extension of the top chord forming the clerestory. The trusses have a span of approximately 62'. At this size, welded back-to-back steel angles could serve as members for the chords and webs. The shared wall between the metalworking and woodworking studios is another location where diagonal bracing could be placed. There is glazing between the studios but in this instance having the braces pass in front of the glass would not be a detriment.

The Large Project Space is built of cast-in-place reinforced concrete using panel forms. The intent is to have the panel seams and holes from the form ties provide a pattern on the elevations. In plan, the space is drawn as a straight concrete rectangle. In practice, adding pilasters at intervals around the interior perimeter would be needed to help address the bending stresses resulting from the height of the walls. There are four light monitors in the roof, running the full width of the space. Each of these would be supported by a pair of girders running east-west. Pilasters on the east and west walls would be located to align with these bearing points. Each roof monitor would be built with an array of monopitch trusses placed on the girders.

The structure for the curtainwall at the north side of the building is a system distinct from the others. An aspect of the architectural intent of this glazed corridor is that it work as a light, transparent connector of all the spaces it passes by. A thin roof assembly and curtainwall supports that are not prominent are part of the concept. The frame for this space is envisioned as a tube steel armature that is close in scale to the curtainwall mullions. Working in tandem with this, the mullions could be sized and reinforced internally to reduce the amount of steel framing that would appear in the corridor.

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