ON BUILDING TYPOLOGY

HANNO WEBER

ON BUILDING TYPOLOGY

HANNO WEBER

CONTENTS

1. PROLOGUE

What follows are arguments that have been brewing for a while, resulting from my involvement and commitment to both the practice and teaching of Architecture. These arguments first surfaced in written form when I was invited to contribute them as a series of articles to be published in the company periodical of Il Shin Architects & Associates in Pusan, South Korea for whom my practice has served as a design consultant over the past twenty years.

However, it all began in the Spring of 1979 when Edward Baum and I were on the faculty of the School of Architecture at Washington University in St. Louis and were assigned to teach an undergraduate Design Studio Course. Although we came from rather different academic backgrounds and previous teaching experiences - he from the Graduate School of Design at Harvard University and me from the School of Architecture at Princeton University - we both sensed a pedagogical structure was missing in the beginning years of Architectural Design training. In most undergraduate programs, this usually starts during the Junior year after having an exposure to two and three dimensional basic design.

Ed Baum and I shared a belief that just simply assigning students in a Design Studio Course, a program and a site for a building and subsequently providing individual desk criticism two times per week, like pollinating bees, did not provide a reasonable transfer of knowledge, literacy and understanding, even if the instructor happened to possess that knowledge, literacy and understanding. So we joined forces and combined our studios into a 40 strong class with the intention of creating a rigorous sequence of architectural design exercises and building design problems, supported by lectures and reading assignment, all intended to assist students in developing a design vocabulary, a design grammar and confidence in designing, based on a conscious control of the elements and systems in building.

We divided the responsibility for the lectures and the syllabus work and implemented the program during two Spring semesters. To our delight, the student work confirmed the value of the pedagogic objectives which underlie the Design Studio Course we taught, but more importantly which underlie the arguments and content that are presented herein.

I left Washington University in 1980 and returned to full time practice with the opportunity to design projects in the Middle East as an Associate at Skidmore, Owings & Merrill, Chicago. As I will note when making the case for "typology" and "precedent" in the text of this publication, my confrontation with the inevitable microclimate of desert contexts, only added further validation to what became "Building Morphology" when I returned to teaching design studios during 1984 in the School of Architecture at the University of Wisconsin / Milwaukee. "Building Morphology" - the logic of form – also underlies the design ethos in my practice as an architect, wherein we search for both the reason and the form, with which to root architecture into contexts as integral parts of an ongoing continuum.

The intention of this publication is to make a case for the practice and teaching of Architecture as an endeavor requiring great clarity of purpose, a strong system of thought to provide logic to form giving, and accordingly, the means to convey that human endeavor that we call "design" to others. Throughout the text I will rely on arguments and illustrations developed in the course of teaching and practice, in effect "practicing what I preach" and "preaching what I practice" and I will use as case studies a series of projects wherein my practice has served as the Architect of Record or has been associated as the Design Architect on design competitions.

Hanno Weber , January 2012

2. ARCHITECTURE AND LEARNING

We live in an age that thrives on celebrity - that prefers consumer motivated idiosyncratic overtures over the anonymous and unaffected and the startling over the subtle - that favors novelty rather than integration and continuity - and that appears to enjoy the "visual noise" proliferating all around us, not only in the graphic media, but also in Architecture. Novelty for its own sake in Architecture, is as fleeting as and insubstantial as "hair styles" or other consumer motivated stimuli; and the ongoing search for whimsical irregularity in the form of buildings, too often reflects an insecure conceptual adolescence, that presumes "freedom of expression" requires demonizing anything that is ordered and the defying of convention.

The resulting formal and cultural design amnesia of anything and everything that precedes us may have temporary marketing appeal under the referential pretext to conflicts in contemporary society. But all it engenders are intrusive and disruptive impositions on existing contexts, often confused with liberation from the bindings of a culture. More importantly, the corresponding cost to Architecture has been the erosion of what are perhaps its most basic underpinnings: the principles that have given its primary activity - design - the internal intellectual *raison d'etre* , it's reason for being - form giving order.

All the current surface imagery of fragmentation, immateriality, dislocation and disintegration, even when supported by the borrowed rational rhetoric from philosophy or literary criticism, and the fact that technology enables architects to build just about anything, anywhere, cannot overcome the simple fact that designing Architecture never " starts from scratch". Unlike tree swallows, to whom building is an instinctive act, an architect confronting a site, a program, a building budget and blank sheet of paper, better have the literacy of precedent in order support and engender intuition. The ongoing stylistic climate will argue literacy thwarts invention and arrogantly dismisses design as a continuous process of transformation and reinterpretation of cumulative knowledge. It does not distinguish between nostalgic parodies of the past, and design as a process of mutations within the fabric of the built landscape.

Architecture is learned. The required knowledge of facts, procedures and standards, and their assembly into coherent building wholes is not nascent in us, simply awaiting inspiration from the muses. The "noble savage" that fictive model for much of modern thought, inspired by Romanticism, did not build from instinct. So called "primitive humans" learned to build , if not Architecture, in ways remarkably similar to ours, by acquiring knowledge of the purposes and processes of building from their surroundings and cultural milieu - by observation, by instruction and by practice.

If Architecture is learned, then it merits to examine how learning in fact influences Architecture. Several major principles attributed to learning theory are in fact equally applicable to design.

The first principle is **Cognitive Learning** which engenders the acquisition of that basic mode of thinking, using systematic reasoning, inferences and projection. This form of learning exists in a continuum from knowledge of specific facts to knowledge of larger inclusive concepts; from the concrete to the abstract; from the particular to the general. Dealing with abstractions without the facts which the abstractions seek to generalize, only yields dilettantism. We are reminded of

the conflict between Plato and Aristotle: the latter brought to our attention the insight that we were able to think, because we had hands. Architecture does not exist without a basic reservoir of specific facts and examples.

In order to give operational meaning and to organize the infinite number of perceptions and facts that the human mind acquires we must learn to generalize. The capacity of **Generalization** is essential for designing and other forms of deductive reasoning. It is asking "how things are the same?" not just "how things differ?" Informed generalization is central to Architecture, for it provides the concept of "type": sets of things showing important similarities at a working or structural level, which enable us to filter material evidence, identify affinities and recurring attributes that can be grouped into replicable formal models. This conceptual armature of a compositional order - the logic of "type" - enables architects to approach new situations with relevant prior knowledge. "Type" and its essential role in designing, shall serve as a basic conceptual foundation throughout the argument.

Most knowledge is cumulative in Architecture as well as other human endeavors. Through **Cumulative Learning**, what is already learned can be used again and again, de-mystifying what was previously mysterious and raising the level of doubt and speculation, as knowledge and experience grows. Contrary to the current demands to "invent the wheel every Monday" and approach each design task as if you had taken an intellectual laxative, Architects would be well served if they developed the habit of asking how their own previous work and the work of others can inform and benefit an ongoing design task.

Architects should also practice **Learning by Comparing**. Comparing things is a fundamental way of learning - how things are different and how they are similar. Characteristics and qualities emerge in this process which often are difficult or impossible to perceive in a single example. Comparison heightens our awareness, causes us to question the validity of alternate approaches and increases our overall architectural literacy.

Lastly, much of the knowledge we possess is acquired by **Affective Learning** - adopting standards, skills and patterns from the world around us - by emulating models. It is a basic mode of learning and is critical to Architecture and design, in which the cognitive mode of thought has limits. This form of learning is perhaps the most threatening to the proponents of novelty, who not unlike our precursors at the Bauhaus practiced a form of censorship and suppression that "threw away the baby with the bathwater". The question is not whether we at best emulate models that have been proven or at worst mimic images, as proposed by early 19th century discourses. Unlike J.N.L. Durand's 1802 Ecole Polytechnique pattern book, wherein "type" was reduced to programmatic stylistic visions to be taken literally - the models we emulate must be both appropriate to the situation at hand and worthy of our attentive translation and transformation. [1]

ARCHITECTURE AS BUILDING MORPHOLOGY

The search for a logic to form in Architecture, as the conscious attempt to understand the arrangement of parts, their structure, size, shape and relationship, all comprising a coherent whole can be traced to the rise of the academies during the second half of the 17th. century when Architecture became a profession in France. Under the guidance

of Jean Baptiste Colbert, advisor on all matters to Louis XIV, thinking about building and the drawing of those thoughts was wrested from the medieval guilds, and assigned to The Royal Academy of Architecture. In effect architects were granted the freedoms and privileges of artists and liberated from manual work, while the builders were conferred production without the burdens of "having to think". 2

It took a century to transform Architecture from a conceptual framework guided by design decisions warranted by divine law, into a rational and empirical specialization directed by the need to maximize utility and minimize expense as subsequently practiced by the Ecole Polytechnique.

At the Royal Academy, however, there was an interlude, seeking to understand morphological relationships and pursuing ideas not dissimilar to other branches of knowledge. Under the guidance of Antoine Chrysôthome Quatremére de Quincy, Architecture like botany and other biological sciences, began to look for recurring attributes, coarse features and idealized schemas that would filter out material evidence and affinities. Dominant formal ideas could characterize Architecture as a class of repeated configurations and replicable geometrical orders. Implicit in the new perception, buildings could be typified as "court houses" or having a "palazzo plan". Their topological organizations, in turn, could be described as "nodal", "linear" or "cellular".

Qautremére De Quincy warned that "type" was not intended to convey images to be imitated but to represent the central idea, serving as a grammar to a model. He also urged academics to link form, reason and use, insisting that everything had an antecedent. By finding the origins and causes of form and recognizing that "types" were not frozen , he introduced the idea of mutable constructs which undergo reinterpretation and transform-ation, and thus offered Architecture the opportunity to become an intellectual discipline. 3 Regrettably the 19th. century did not heed his invitation and Architecture had to await the explorations of Modernism to engage "typology" again.

NOTES

1. J.L.N. Durand, *Précis de Leçons doneés a l'École Royal Polytechnique,* Paris 1823, Vol 1

2. Blunt, Anthony. *Art and Architecture in France 1500-1700.* Penguin Books, Baltimore, MD , 1953.

3. Tzonis, Alexander and Liane Lefaivre. "The Mechanical Body vs. the Divine Body: The Rise of Modern Design Theory in *Journal of Architectural Education,* Vol 29, No. 1, Spring 1974.
Lavin, Sylvia. *Quatremére de Quincy and the Invention of a Modern Language of Architecture.* M.I.T. Press, Cambridge, MA 1992

3. MODERNITY AND TYPOLOGY

In the first segment of this argument, I made the case for Architecture as an endeavor that is learned. I urged that Architecture become an intellectual activity wherein there is a conscious and ongoing search to understand the origins, arrangements and relationships of forms. And I promoted Architecture as a creative process which recognizes the need for precedents and antecedents, as mutable constructs which undergo reinterpretation and transformation.

I also noted that these academic underpinnings, which surfaced during the late 18th. century, lay dormant, until Architecture and its related ideas on "typology" had to confront developments in building technics and new building programs that became inherent with the Industrial Revolution.

The liberation from masonry, and from having to cope with the forces of gravity only with walls in compression, forced Architecture to explore alternate origins and causes to form. It is not surprising that steel, reinforced concrete and major advancements in sanitation, plus the overwhelming expansion of new building programs, such as railroad stations, public museums and libraries, department stores, hospitals, hotels, banks, market halls, prisons and factories, caused a reexamination of the 19th. century stylistic excesses.

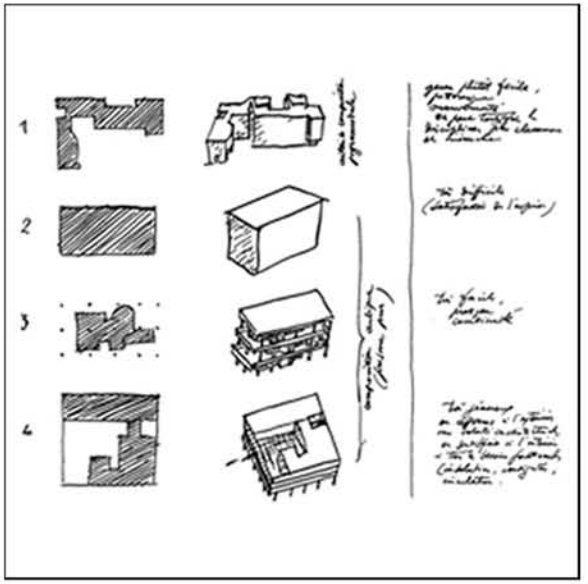
Modern Architecture appropriately attributed the stylistic excesses to the "pattern books" which were inappropriately equated with "typology". In the new rhetoric, the form of building was attributed to merely the result of functional and operational needs and building technics, brought together and fused into an almost biological extension of life. The rhetoric, however, excluded if not avoided, the aesthetic agenda – that newly evolved "unfettered freedom" of the artist/architect, concurrent in all the arts, to exercise personal expression, and the genius – which if we but knew it – presumably resided in us all.

Since architects did not see the need to examine precedents, in fact they attacked the traditional city and history, architectural education with very few exceptions, discarded any normative ideas of formal and compositional literacy, The education of architects focused entirely on the nature of materials, on standardization and industrial production, on functional and operational concerns and on building technics. This new formal determinism – an almost religious "techno-aesthetic doctrine" was promoted as equally valid for Boston, Buenos Aires, Barcelona or Bombay.

One critical exception from the typology censorship by the early moderns was LeCorbusier. Despite his relentless attacks on the traditional city in such proposals as *Ville Contemporaine* 1922 and subsequently *Plan Voisin* 1925 [1] and *Ville Radieuse* 1935, he may not have been able to erase from his memory bank, the classical training he received as a watch engraver, prior to becoming an architect. (See Drawing No. 1)

LeCorbusier left us with that amazing set of sketches for the cover of Volume II of the *Ouvre Complète published in 1935.* The sketches typified the composition of four of his houses: *Villa LaRoche,* 1923; *Villa Garches,* 1927; the house at *Weissenhof* in Stuttgart, 1927; and *Villa Savoye* at Poissy, 1929. In the sketches and insightful comments written beside each house, he conveys a morphological analysis/synthesis of the building volumes as "types" – an inner conceptual structure that juxtaposes memory and reason. [2] (See Drawing No. 2)

True, the sketches depict only free-standing detached objects - suburban



1. Segment of Plan Voisin, Paris - Le Corbusier 1925
2. House Types , Ouvre Complete - Le Corbusier 1935

houses; their significance, however, is in the fact that they admit and recognize the presence of an a priori underlying order. The sketches also acknowledge Architecture as neither the single unrelated and unexplained artistic event, nor the reversion to an activity that unthinkingly accepts and replicates a precedent without regard to context or specific tasks.

The sketches also remind us that LeCorbusier and his Modern Architecture contemporaries all had the benefit of a late 19th. century design education, which enabled them as architects to exercise their intuition using the knowledge and literacy of past responses to design problems. Whether they would admit, as LeCorbusier did in his sketches, that the creation of form was a process of adapting formal preconceptions - "types"- to specific contexts and programmatic tasks, is doubtful. The regrettable consequence of the modernist messianic zeal to purge the past resulted in at least two generations of architects without the literacy, the grammar and the intellectual frame of reference to search and find both the reason and the form of buildings and urban fabrics, as an integral part of an ongoing historical continuum.

REDISCOVERING TYPOLOGY

Filtering out the evidence that idealizes and thus appears to make inevitable a formal building response to social, economic, cultural and climatic conditions, resurfaced after World War II, when European architects confronted the reconstruction of cities. In most of the early work, architects followed the principles espoused by the Bauhaus and C.I.A.M., the International Congress of Modern Architects, placing buildings as object in the landscape, surrounded by unassigned "left-over-open space" intended to contribute sunlight and promote health – the new biotechnical determinism.

But the inadequacies, sterility and oversimplification in these initial post-war efforts soon exposed the need to reconsider, fitting and merging new buildings without disruption into existing historic settings. In some contexts, pre-war buildings were carefully preserved or even reconstructed exactly, when completely destroyed. Elsewhere, when the war damage was relatively limited, the rediscovery of an essential historical continuity, opened the door to seeking an understanding of urbanity and existing antecedents. Architects began examining the city fabric and

encountered "types" – recurring formal constructs that could be reinterpreted and transformed in order to reconcile the existing traditional cities and modernity. They recognized that architectural form was neither a single artistic event, nor an anonymous replication of nostalgic images from the past. 3

The ideas of formal type and building morphology, as the primary tools for designing by architects, unfortunately are not as pervasive in practice, in teaching nor in architectural criticism as they ought to be. With few exceptions, design curricula in schools of Architecture continue to reduce the exposure to history courses, which have been one of the few vehicles to expand a literacy of precedents. And very few "academics" are engaged in an inquiry of conceptual frameworks to guide the design activity and consequently learning to design Much of what passes for design education is not dissimilar to giving swimming lessons, by throwing students into the deep end of a pool, without any instructions other than "try to stay afloat".

MORPHOLOGY vs. MIMESIS

There is no better incentive for an architect trying to understand how the logic of form responds to a context, than confronting a totally different culture, a completely unfamiliar and extreme climate, and uniquely restrictive resources. The inherent danger, however, is falling prey to imagery. I am reminded of a much admired project in the South Pacific that sought to emulate the indigenous building forms with structural components prefabricated in Europe from timber harvested in Central Africa.

Responding to visual predilections runs the risk of becoming mimickry. Countless building projects designed by western architects throughout the Middle East, have been clad in pointed arches and screened enclosures under the design pretext of addressing Islamic values. Closer inspection suggests in most cases only surface decoration. Perhaps the best way to illustrate the difference between morphology and mimickry is to examine that arid region of the world extending from Southern Spain and North Africa, through the Middle East and to Northern India.

What at first glance appear to be extreme and insurmountable constraints, have given rise to a coherent and even poetic building order. Climate, culture and resources are addressed by a logic of building form that transcends the extreme limitations and roots itself in its context. Of course one can argue that the building order has been dictated by Islamic cultural ideals that seek to recreate paradise on earth. The resulting shaded courtyard structures, each with a trickle of water, can be attributed to the cultural predilections for privacy and protection. But they are also products of a coherent building grammar that constantly undergoes reinterpretation and transformation. 4

MICROCLIMATE ORDER

Wherever the sun dictates life as it does in desert contexts, one usually finds building forms and urban fabrics that limit exposure and engender shading. One also encounters building volumetric assemblies that induce natural ventilation and recurring building enclosure systems that diffuse glare. (See Drawings Nos. 3,4 & 5)

The most evident building and urban fabric response is a compact cellular tissue, consisting primarily of courtyard

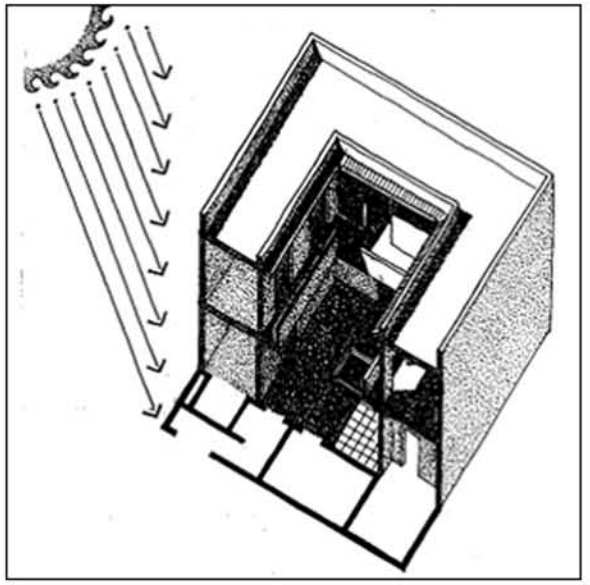
plan buildings. Whether they are dwellings, schools, markets or places of worship, they abut and shade each other forming a continuous ground within which are carved figural open spaces. (See Drawings 6,7 & 8).

Ventilation and light control are supported by the courtyard plan, an elemental massing of volumes enclosed by screened and punctured walls, each volume containing distinct living functions as well as ventilating shafts. The latter introduce cool night air that scours the heavy masonry building thermal mass and is exhausted through the courtyards. (See Drawings 9,10 & 11)

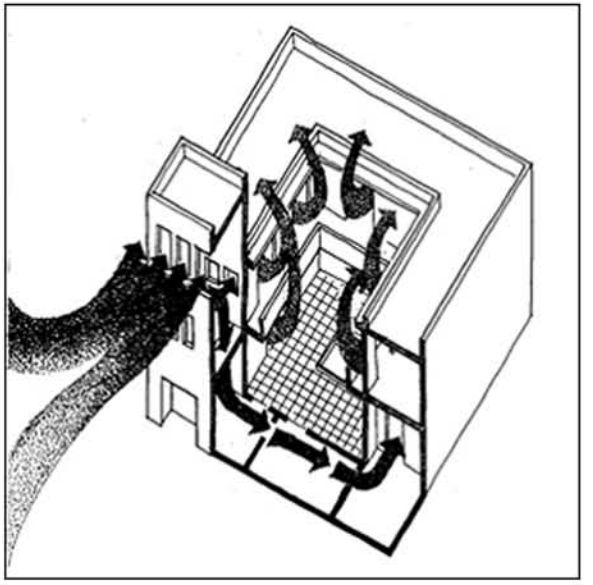
The resulting, replicable building order and urban tissue are further characterized by that ever present private space – the refuge from the intemperate desert; by segmented networks which insure the ability to always walk in the shade, and which accommodate the embedment of the symbolic set pieces: the mosques, the religious schools and the secular institutions. (See Drawings 12,13,& 14).

Evident in the above description is a morphological framework that typifies the order of an urban fabric armature, the order of building assemblies as well as the order in the configuration of rooms. The framework offers a simple typology, which is not intended to fully represent the complexity in an architectural composition. What it contributes is a point of departure in the design of buildings, based on precedents which extend continuity with the past. It is a *parti*, as it was described at the *Ecole de Beaux Arts,* informed by an architectural literacy

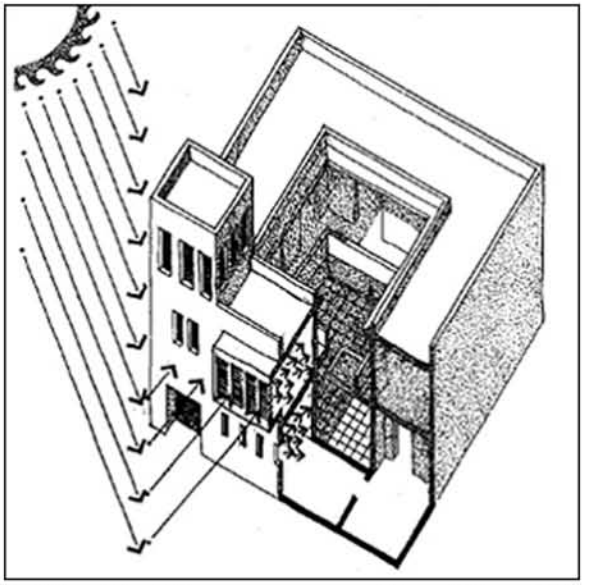
Building assemblies are given form by



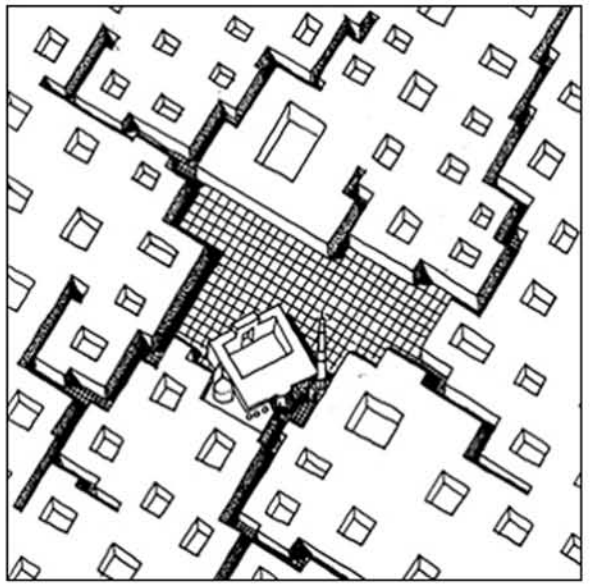
3. Limited Exposure & Extreme Shading

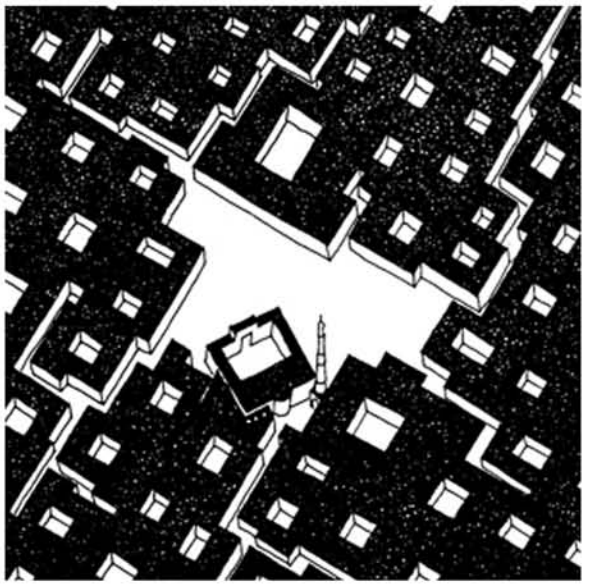


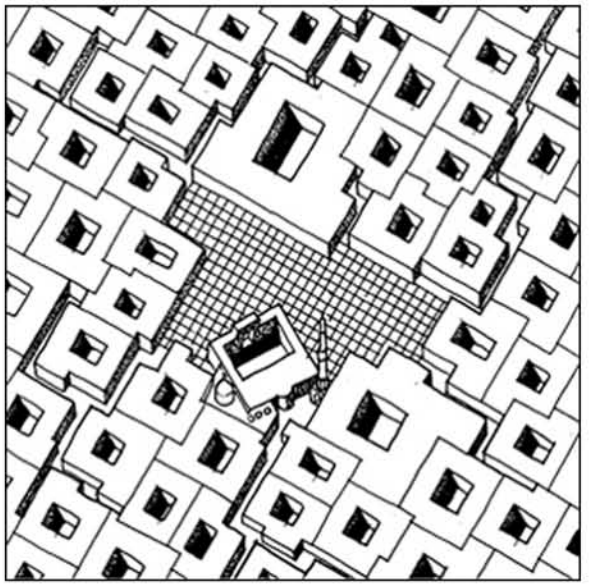
4. Induced Ventilation & Convection

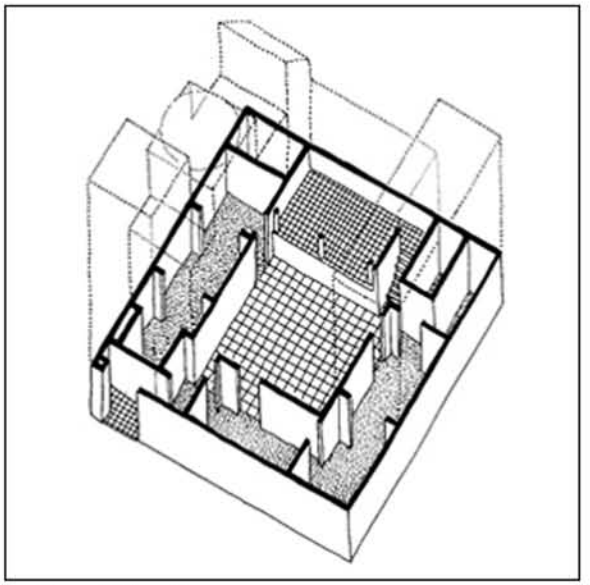


5. Diffused Daylight Hanno Weber , 1981

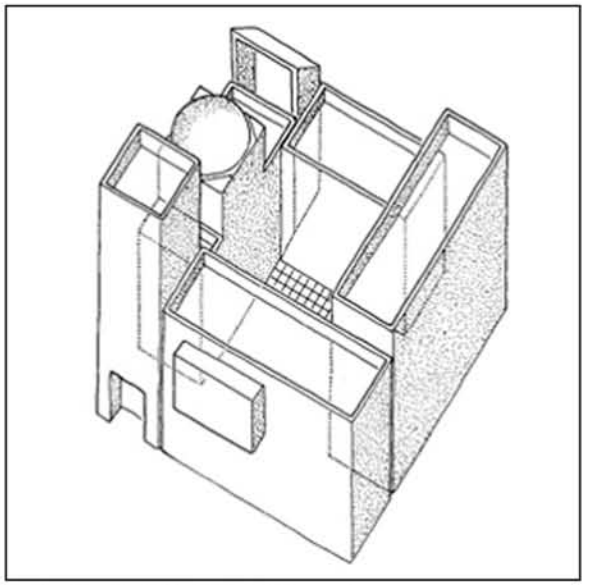




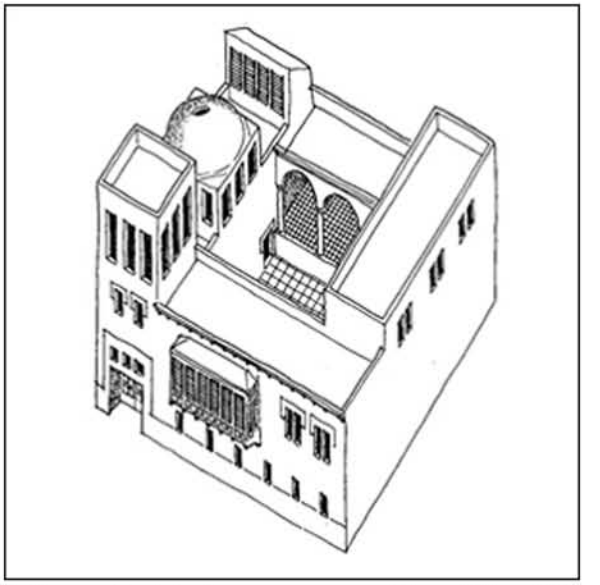




6. Carved Urban Tissue
9. Ubiquitous Cortyard Plan



7. Continuous Urban Ground
10. Elemental Volume Massing



8. Compact Cellular Tissue
11. Punctured Masonry Enclosure

Hanno Weber 1981

the order of a plan type and a related structural system. Furthermore, building form is the result of conscious choices in the volumetric order that is juxtaposed to and integrated with a plan and structural order, and by enclosure systems that temper a building's environment and contribute to a reading of its public presence. Plan, structure, volume and enclosure in turn take clues from and contribute to the order of a building context.

The subsequent segments will elaborate the conception of typology as it is encountered in the plan, structure, volume and enclosure of buildings as well as the interface between typology in buildings and the contextual strategies wherein buildings are rooted.

NOTES:

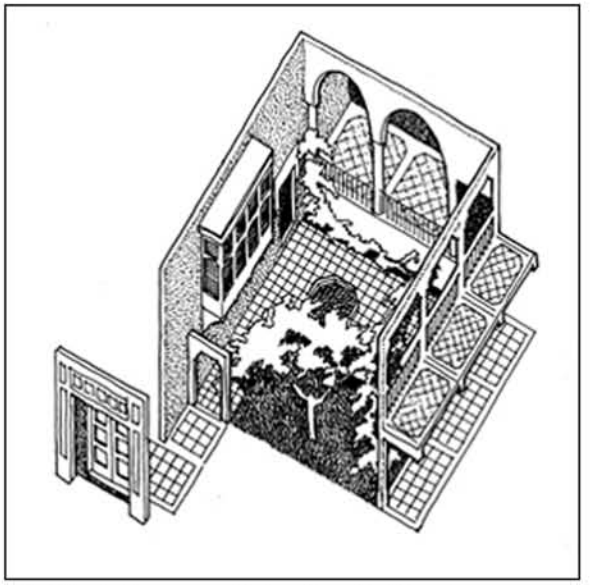
1 Rowe, Colin and Koetter, Fred. *Collage City*. The M.I.T. Press, Cambridge, MA 1978, p.74

2 Benevolo, Leonardo. *History of Modern Architecture, Volume II.* The M.I.T. Press, Cambridge, MA 1971, p.439

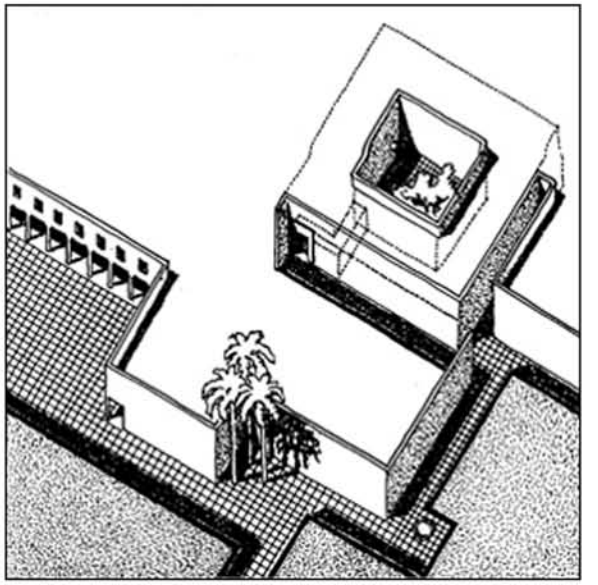
3 Krier,Rob. *UrbanSpace* Rizzoli International Publications, Inc., New York, NY 1979.

Frampton, Kenneth. "Stirling in Context; Buildings and Projects 1950-1975 " in *RIBA Journal,* vol.83, No. 4, March 1076, pp 102-104.

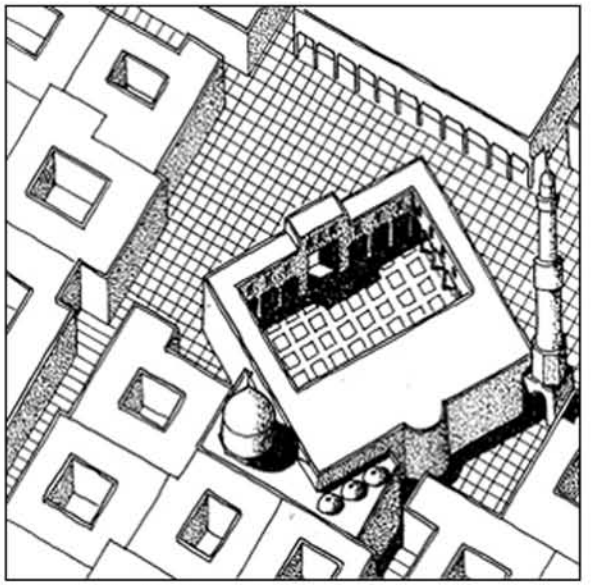
4 Mitchell, George, Ed. *Architecture of the Islamic World.* William Morrow & Co. Inc. New York, NY 1978 ; with texts by Grube, E.J.; Dickie, J.; Grabar, O.; Sims, E.; Lewcock, R. & Petherbridge, G.T.



12. Private Space as a Refuge from the Desert



13. Shaded Segmented Networks



14. Embedded Institution Set Pieces

4. THE MORPHOLOGY OF PLANS

In *Toward a New Architecture,* LeCorbusier reminded us that "The plan is the generator" – "Without a plan, you lack order and willfulness" – "A plan is an austere abstraction, that carries the very essence of sensation". 1

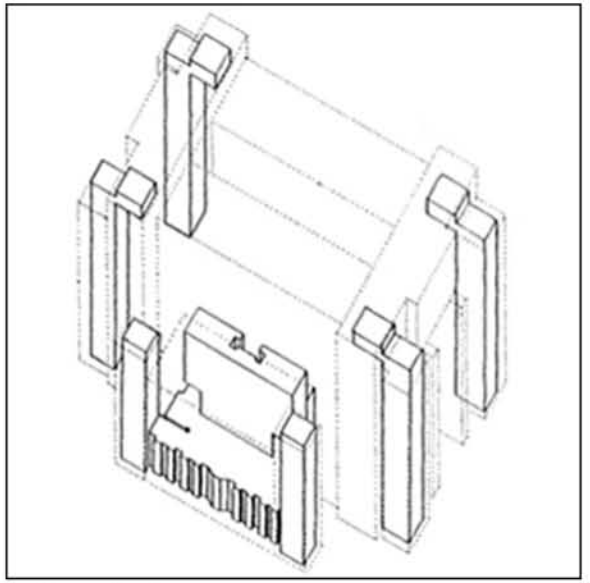
Plans not only arrange the functions, spaces and elements of a built environment into ordered patterns, but also seek to resolve the internal demands of a program, and to shelter the uses within that environment. An even more essential task or responsibility of a plan is conveying a perceivable intention about the organization and the formal ideas that engender the disposition, the zoning and the accommodation of activities in buildings, landscapes or urban constructs.

Plans, like any form of communication, proceed from an informed knowledge of the elements that are being ordered, the possible conventions by which the parts can be arranged and interrelated to each other, and eventually the relationship of the parts within a comprehensible whole

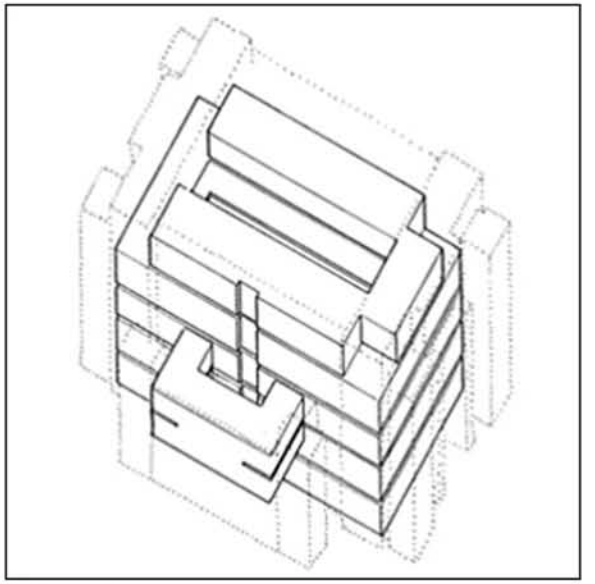
PLAN ELEMENTS.

At the most basic level, plans are assemblies of three distinct spatial elements:

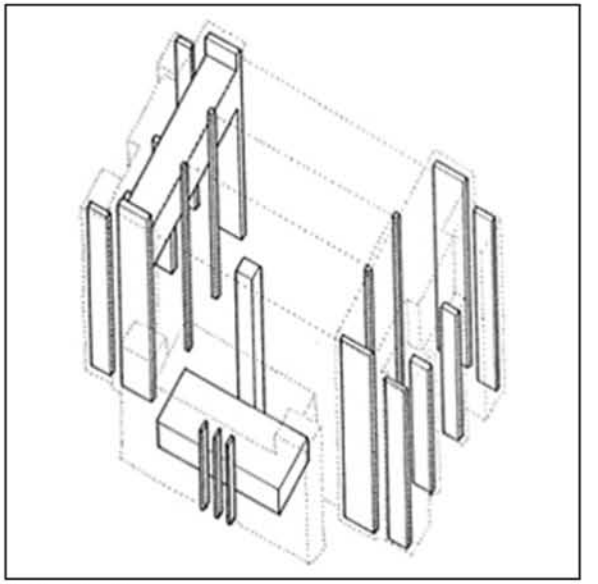
A. The **connective tissue** – the armature of circulation and shared spaces that form the back bone of and organize as a composite sequence the voids and volumes within a prescribed envelope or limit. Such a movement network can be characterized either as an autonomous system unto which are attached equally independent , adjacent served spaces, or as paths that cut



1. Connective Tissue
Larkin Building, Buffalo, NY - Frank Lloyd Wright 1903



2. Served Spaces



3. Service Spaces

through, interpenetrate and juxtapose the served spaces. In either case, circulation always demands points of arrival – entrances – as well as destinations - terminals. (See Drawing No. 1)

B. The **served spaces** - those figural or eroded voids and volumes, corresponding to the major perceived or inferred zones in a built environment that are linked by adjacent or pierced by connective tissue. (See Drawing No. 2)

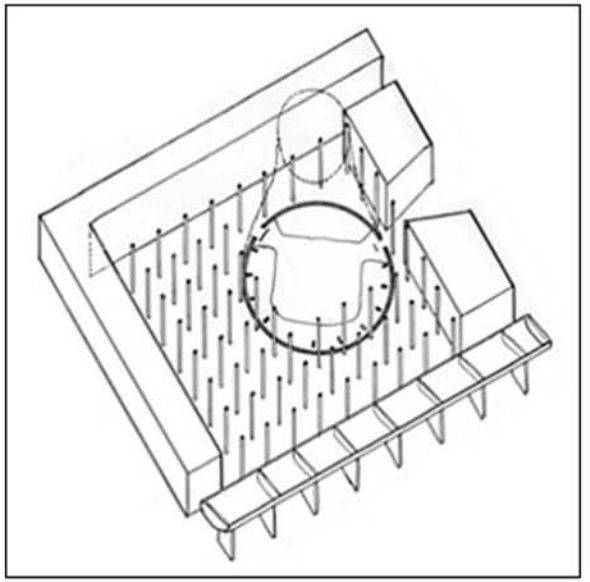
C. The **service spaces** - the cores or zones of supportive services, more than ever a fact in modern conditioned building, that provide both the vertical and horizontal accommodation of equipment and connecting conduits. [2] (See Drawing No. 3)

ELEMENT RELATIONSHIP

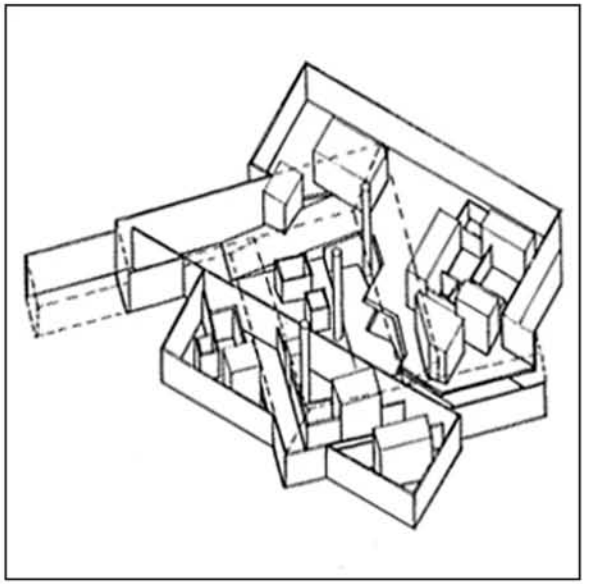
Connective tissue, served spaces and service spaces are arranged and interrelated to each other based on compositional conventions that respond to either function, proximity or visual intention. The extent of contiguity and/or coincidence between the components – that is how distinct or overlapped the elements are within a plan, provide the architect with a second plan order consisting of four topological relationships:

A. **Coincidence**, describes a condition where one space or volume is embedded within another, and occupies the same realm. In this spatial relationship, a larger field becomes the host to an inserted event, which often seeks to juxtapose and contrast the larger containing datum. (See Drawing No. 4)

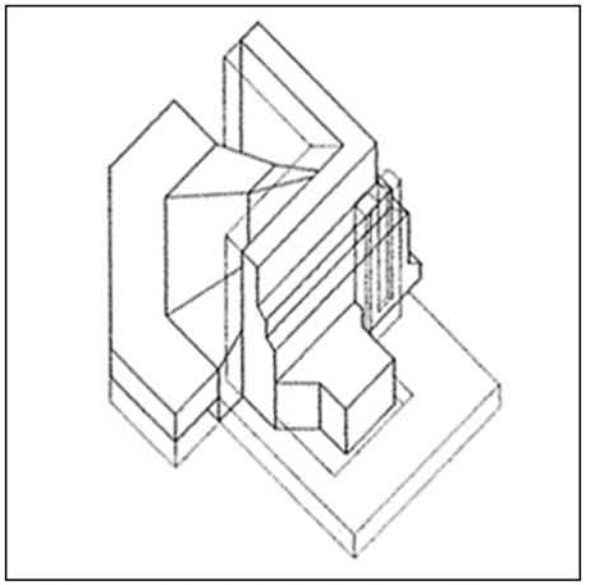
B. When spaces share a common area, by spilling into each other or by interlocking, we encounter



4. Coincidence - Embedded Assembly Hall
Legislative Assembly,Chandigarh, India-LeCorbusier 1956



5. Intersection - Overlapped & Rotated Layers
Occupational Therapy Center, Columbus, IN - HHP 1974



6. Adjacency - Book Stacks, Reading Room, Offices
History Faculty, Cambridge, England - J. Stirling 1968

intersection. The spatial overlap can either be shared equally, become an integral portion of one of the volumes, or develop its own third identity. (See Drawing No. 5)

C. A clear definition of contiguous realms sharing only a common boundary is understood as **adjacency**. This level of separation, however, may vary from limiting physical and visual access to merely implying a distinction between zones. (See Drawing No.6)

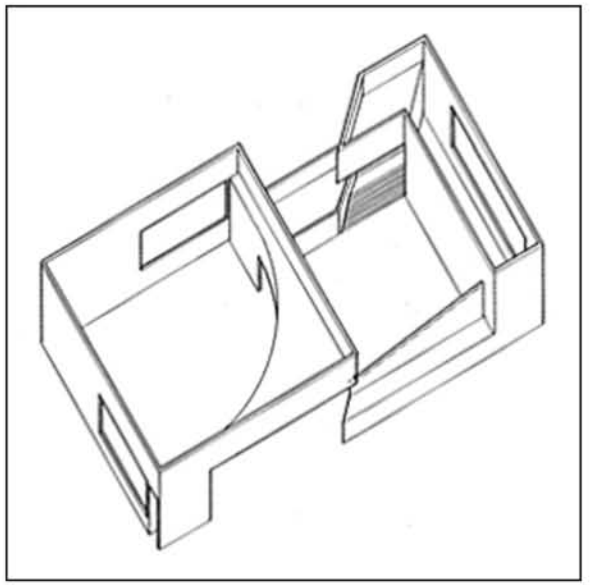
D. Last, linkage between two territories across a mediating third realm is characterized as **connection**. The nature, size and shape of the intermediate space, in turn, conditions the relationship. 3 (See Drawing No. 7)

PLAN TYPOLOGY

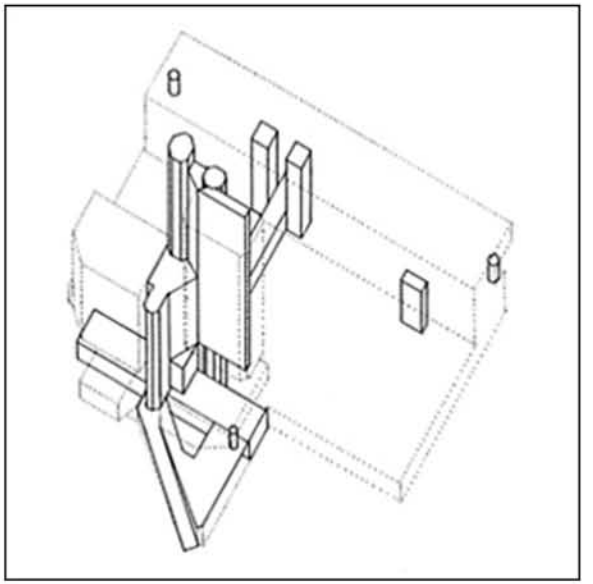
Coincidence, intersection, adjacency and connection, however are insufficient to give plans a form. These spatial attributes, as topological relationships, provide the architect with properties and configurations which are unaltered by shape. Their intent is only to enhance the vocabulary and formal characteristics of plan elements. Without an instrumental logic to engender form, a plan will always remain a shapeless aggregation or cluster of rooms – that pervasive and ubiquitous "bubble diagram" , which too often becomes by literal extension an equally amorphous building.

Plan "types" are given form by three *a priori* origins of spatial order: a point or node, a line or plane and a grid or field.

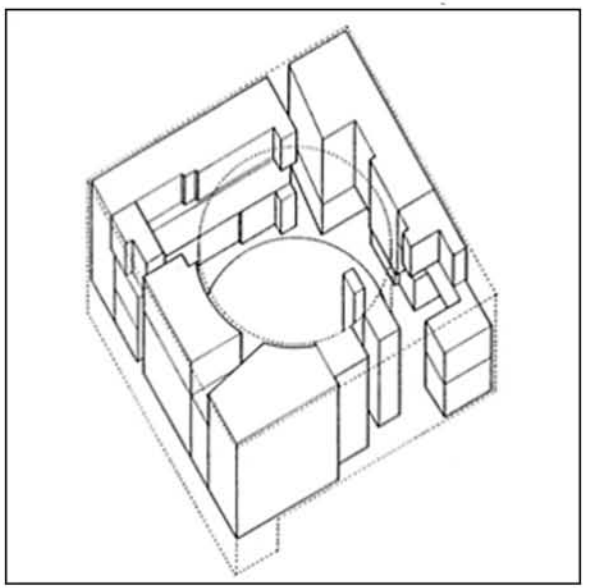
A. **Nodal** plans, are derived from a focus or compositional center of gravity. A node can either be a point or space, around which other components are



7. Connection - Between Auditorium & Gallery
Art Center Choate School, Wallingford CT- IM Pei 1971



8. Nodal Plan - Point Origin
Engineering Bldg, Leicester, England - Stirling & Gowan 1961



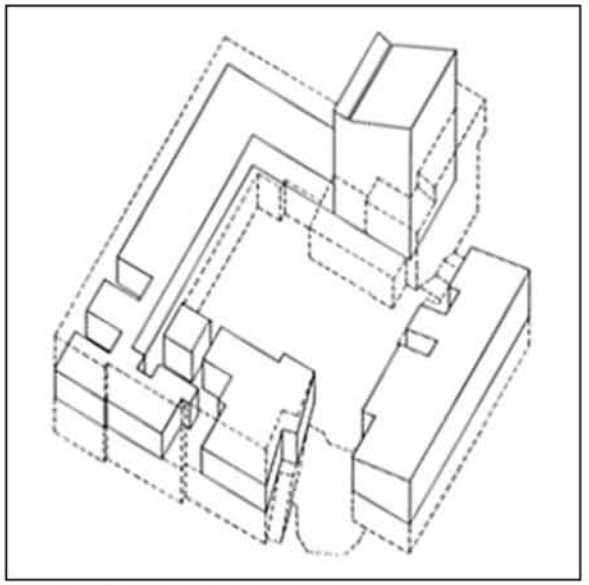
9. Nodal Plan - Central Space
St.Halvard Church, Oslo, Norway - Lund & Sloato 1966

layered , or from which they radiate.

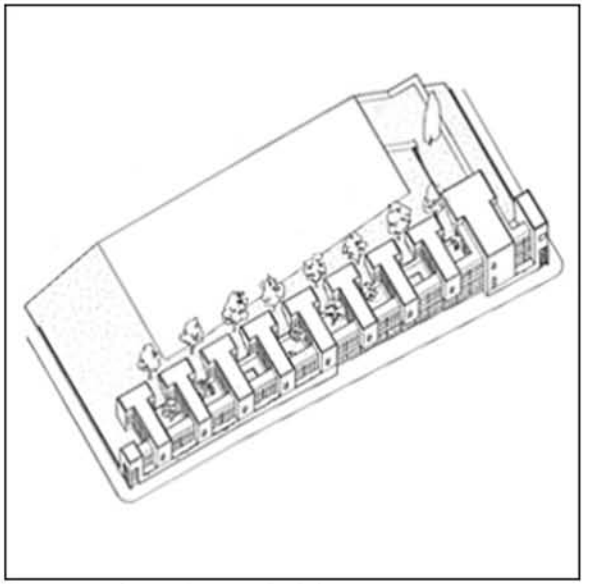
Nodes may engender figural or perfect Platonic regular plan forms, intentionally clustered and articulated aggregations, or radial assemblies of arms, with or without attachments. Nodal plans include the clustering of rooms around a core of services and circulation or embedment of a core within a larger domain, the arrangement of spaces around an open space or courtyard and the encompassing and surrounding of a dominant space such as an atrium or great room by subservient functions. (See Drawings 8, 9 & 10)

B. **Linear** plans, result from linking two points, or by the extension of a point, resulting in assemblies that connect, edge and surround areas. Lines and planes engender directional compositions wherein elements are connected as tributaries of spines or layered in parallel zones of space as bands or planes. Linear and planar organizations can be straight, segmented or curved; axial and symmetrical or single sided and asymmetrical. Linear plans can be simply rooms lined up in a row without circulation, except through the rooms *en filade* , or the linking of rooms along a passage as in the "Single Houses" of Charleston, SC where rooms enfront a "veranda". In layered organizations, parallel zones or bands of space often create a "street" unto which elements are attached along its length. (See Drawings 11, 12, & 13)

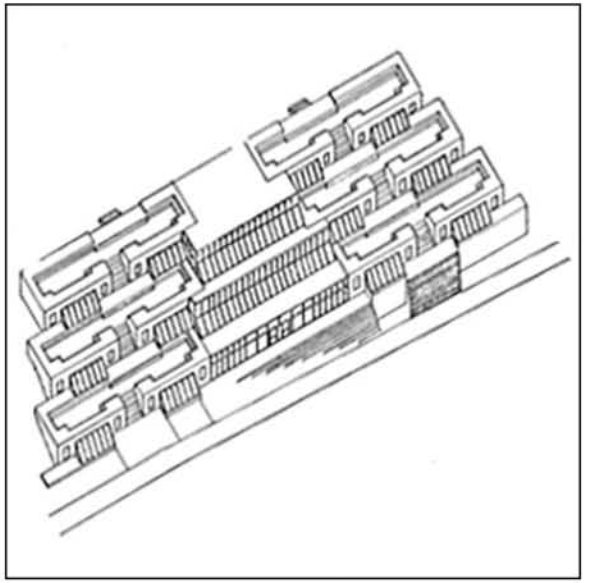
C. **Field** or grid organizations result when a regular pattern of points establish repetitive and modular or evenly spaced units of space. Repetition and a non-hierarchical fabric or cloth, engender a regularity and continuity that invites particularization and transform-ation through addition, subtraction,



10. Nodal Plan - Central Courtyard
Town Hall, Saynatsalo,Finland - Alvar Aalto 1952



11. Linear Plan - Asymmetric Spine
Day Care Center, St. Louis, MO - Student Project, 1979

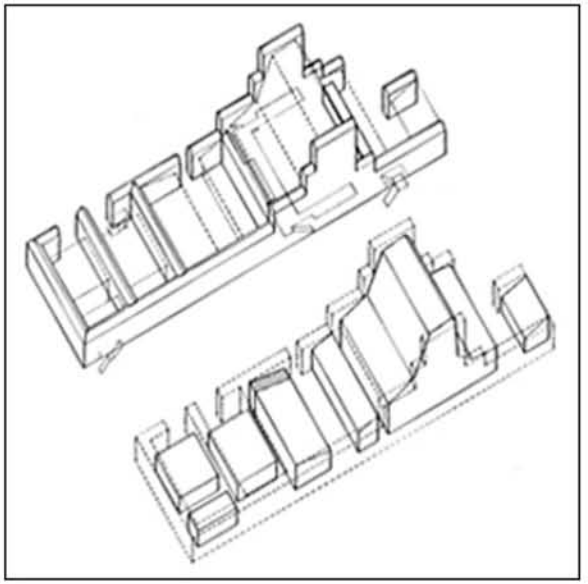


12. Linear Plan - Layered Organization
Day Care Center, St.Louis, MO - Student Project 1979

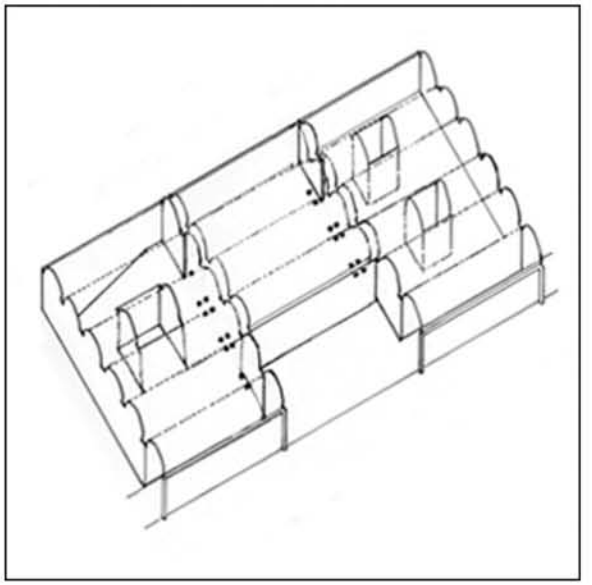
deformation and embedment Field plans, as assemblies of idealized cells, have the capacity to be extended as open-ended tissue, wherein the whole is generally subordinated to the idealized parts. Field plans may be explicit as in the actual construction of a pattern of columns, or implicit as an abstract property of a conceptual armature that establishes a constant set of reference points in space. Frame structures often accommodate spaces as repetitions of a standard module. As conceptual armatures, however, they provide an order to circulation and service networks between segments of space (See Drawings 14, 15 & 16)

When plan elements are subjected to the order of nodal, linear and field organizations, they only begin to take form. They offer only a generalized pattern of similar or identical characteristics.Generalization, however, must accommodate anomalies, differentiation and particularization, attributes which are always present in real life. Buildings are finite and have edges or ends where a generalized conception must stop. Very often, given spatial requirements do not fit the idealized grid or pattern of a plan order and the fabric has to be transformed.

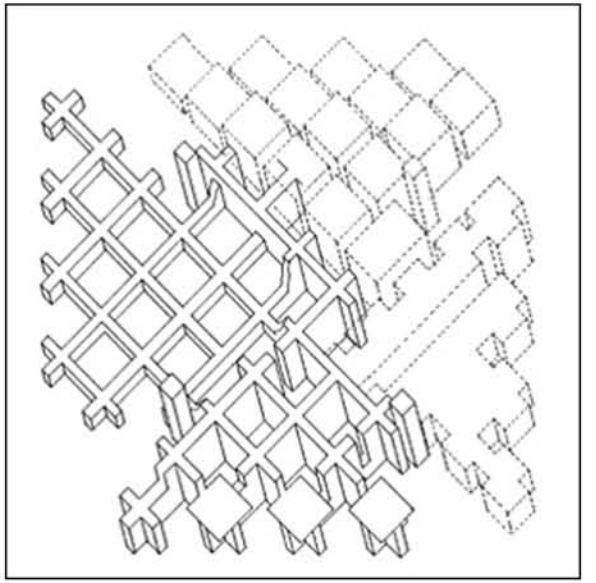
To make a plan order more responsive to particular demands with the least disturbance, differentiation can simply **add** to or **subtract** segments from a general pattern that remains constant. Elements and relationships in plans can be **deformed** to accommodate specific contexts or program requirements while leaving ,the plan order intact. Another strategy, particularly useful in linear plans is to **separate out** particular conditions that do not fit the general order without altering the integrity of the plan fabric. In field organizations,



13. Linear Plan - Ladder Organization
Bagsvaerd Church, Copenhagen,Denmark -J.Utzon 1977



14. Field Plan - Repetitive Cells
Kimball Art Museum, Fort Worth TX - L. Kahn 1972



15. Field Plan - Network Armature
Central Beheer,Appeldorn,Netherlands-H.Hertzberger 1972

anomalous conditions can also be absorbed or **embedded** into the repetitive consistency. One last vehicle to resolve plan anomalies is the **interpenetration** of disparate systems, wherein a dominant generalized order accommodates the intrusion of a particular pattern whose geometry is coordinated and fitted into a coherent whole. [4] (See Drawings Nos. 17, 18, 19, 20 & 21)

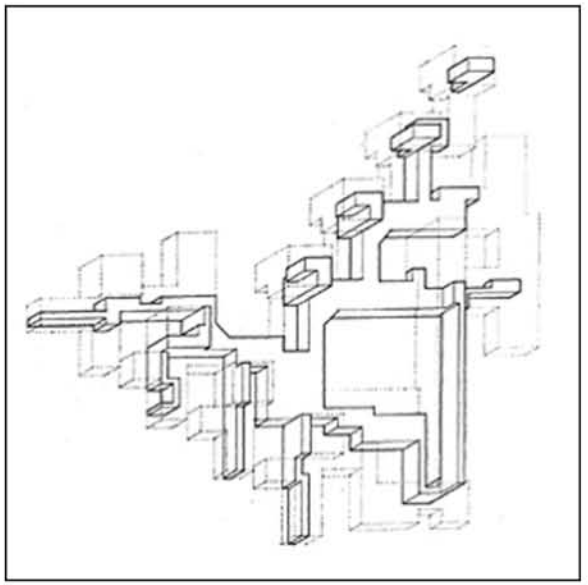
As suggested above a coherent morphology of plan contributes only one essential component to a building design strategy. Designing in Architecture is very much like juggling. Keeping just one ball in the air does not make a juggler. Missing of course are also the physical attributes of geometry and dimension which generally are derived from common or repeated purposes and functions, and more often from the irreducible essence of a building – its stability – its structure. The inevitable confrontation of a building with the forces acting upon it, mainly gravity and wind load, quickly bring an architect to engage shape and size. After all, "Firmness" preceded "Commodity" and "Delight" in Vitruvius' three qualities essential to architecture. [5]

NOTES:

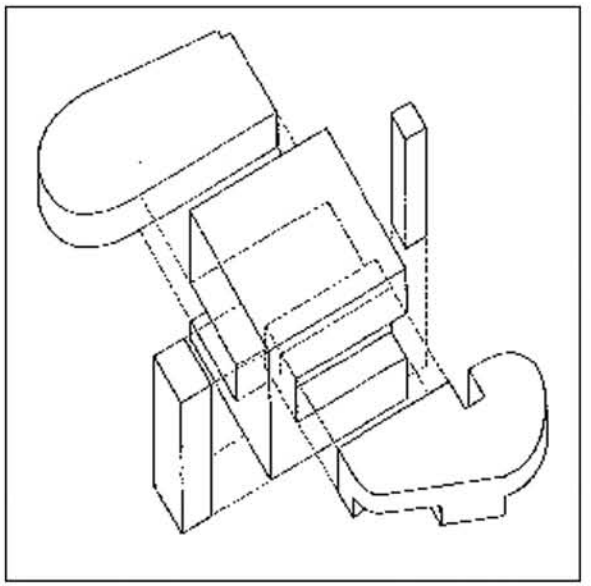
1 Le Corbusier. *Towards a New Architecture,* Dover Publications, New York 1986, pp. 45 & 48.

2 The terms "served" and "service" spaces must be attributed to Louis I. Kahn

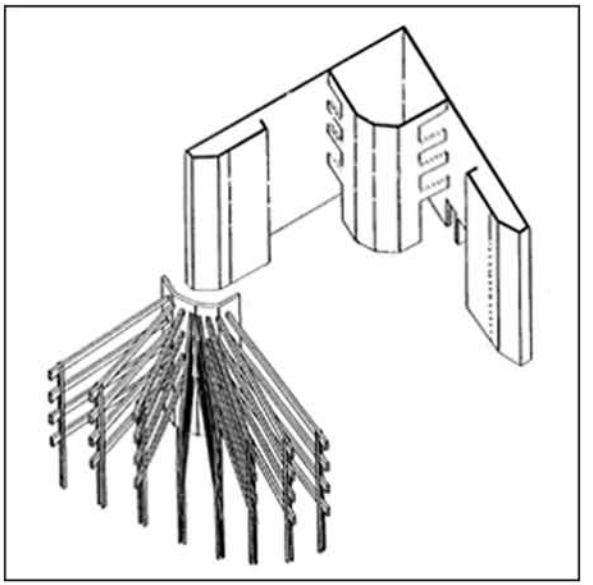
3 Weber, Hanno." The Evolution of Place to Dwell" in *DMG-DRS Journal: Design and Research Methods,* Vol. 7 No. 3, Jul-Sep 1973, pp. 207-212.



16. Field Plan -Irregular Network - Orphanage Amsterdam, Netherlands - Aldo VanEyck, 1957

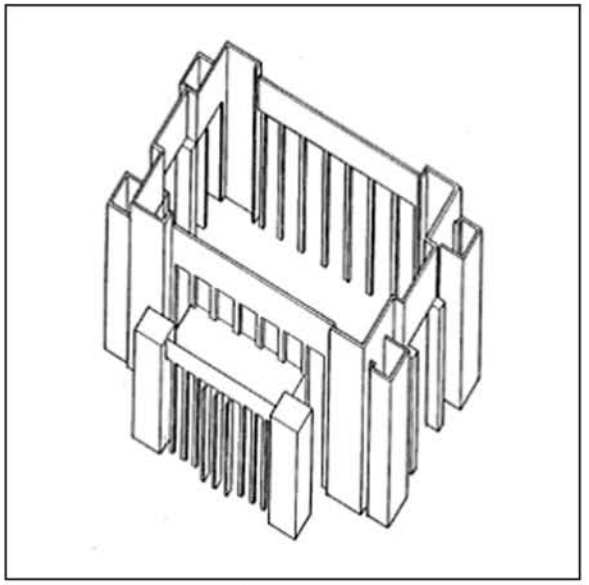


17. Addition to a General Pattern - Harvard Univ Art Center Cambridge, MA - Le Crbusier 1964

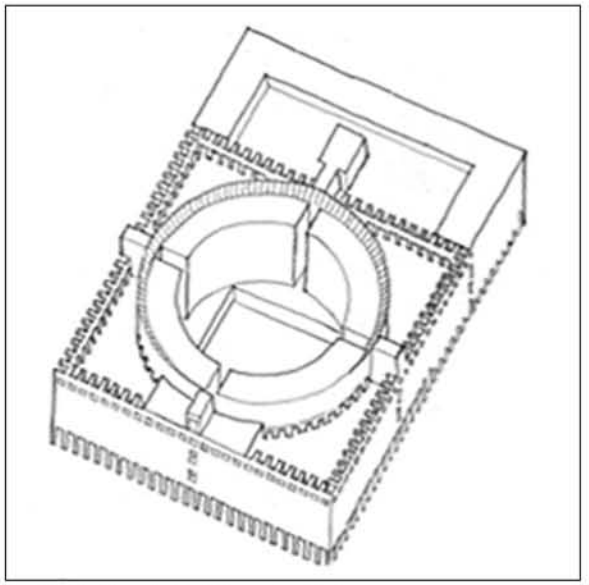


18. Deformed to Accommodate Context - Savings Bank Boston, MA - Kallman & McKinnell, 1975

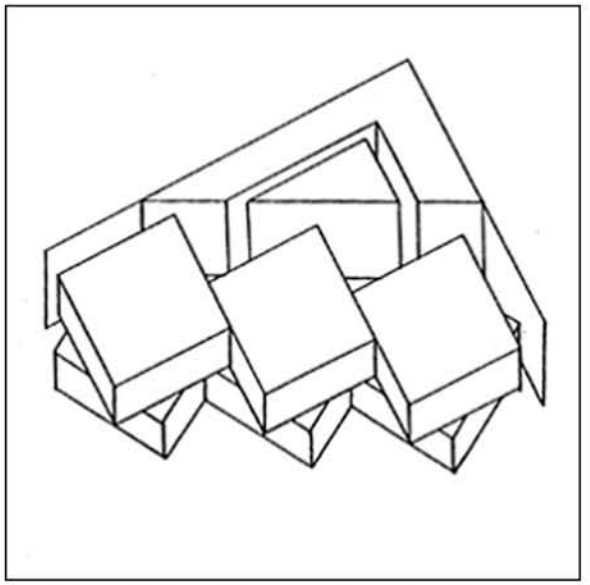
4 Plan Differentiation strategies are cited in a *Problem Syllabus: For a Public Shelter Place* by Edward Baum while teaching at the Graduate School of Design, Harvard University in 1976.



19. Separating Out Functions
Larkin Building , Buffalo NY - Frank Lloyd Wright 1903



20. Embedment of a Disparate Order
Hotel , Berlin, Germany - O. Mathias Ungers 1976



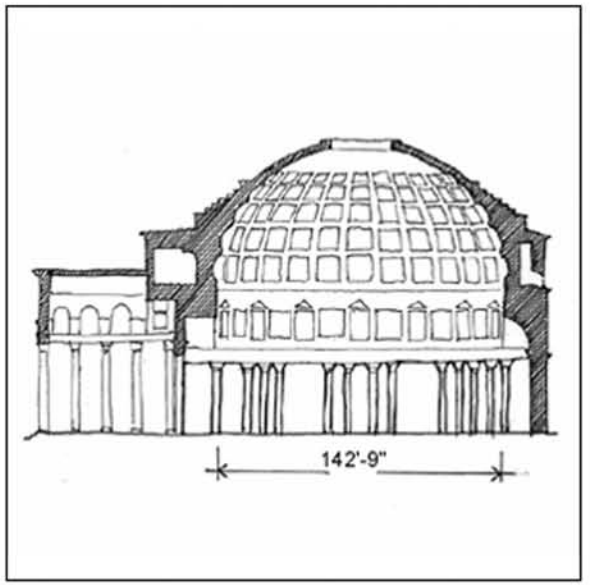
21. Interpenetration of Elements - Elementary School
Columbus, IN - Hardy,Holzman, Pfeiffer 1973

5. THE ORDER OF STRUCTURE

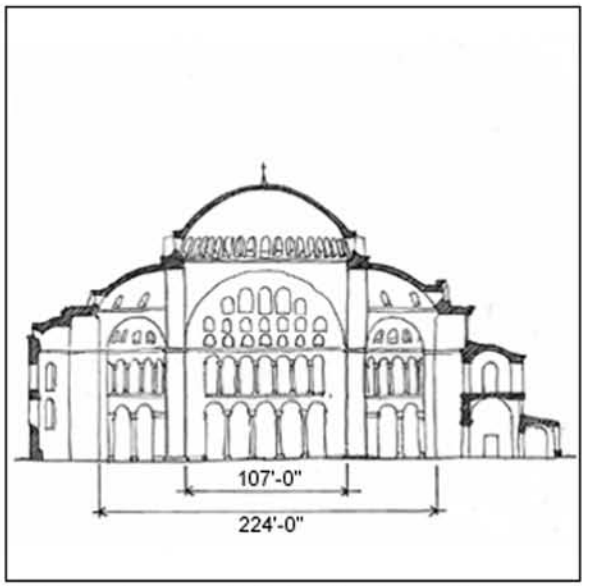
Whether structure contributes its own typological order to a building, or in fact is a distinct spatial element giving order to a building plan, is really inconsequential. Essential, is grasping that the primary structure impacts the configuration and character of a building from the outset; that a structural system unavoidably contains within its conception architectural ideas and compositional intentions; and that the presence of calculation in support and spanning systems imposes shape and size.

The ordering of structure in the design of buildings is the domain of the architect, not just a role for a structural engineer. For structure is at the root of architecture – columns modeled in sun light – noble walls and beams giving form to space – they are the primal moves in shaping space. [1] Structure is not a means of propping up a stage set. It can be made evident; it can be expressed or not, as the occasion warrants . It is unavoidably real and always a major factor in giving order to a building. And all through the ages, architects of different stylistic and philosophical persuasions, have found in the patterning and articulation of the primary structure, an unending opportunity for making form and embodying meaning.

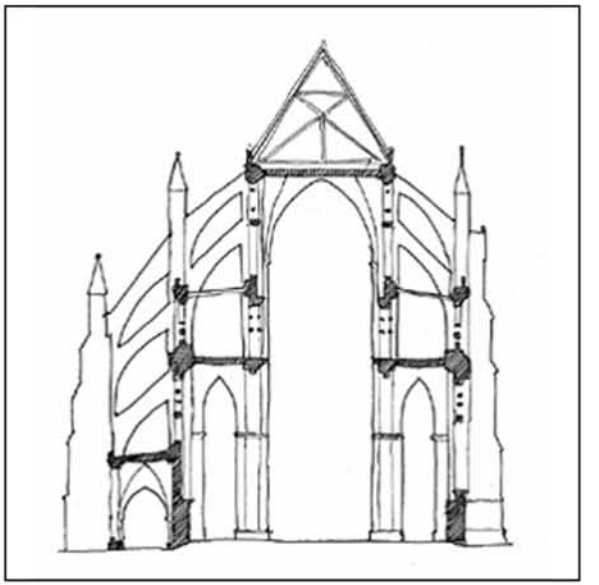
A structural system is made up of elements and of relations among the elements. As in language, we find words - a vocabulary - and a syntax or grammar. Structural systems have elements: columns, walls, beams, vaults, and relations among the elements, ordering patterns, dimensions, capacities, connections. It is the relations, which are more difficult to see and objectify, that are more significant and more revealing to a typology.



1. Massive Structure : Pantheon , Rome, Italy
During the Reign of Hadrian AD 118-128



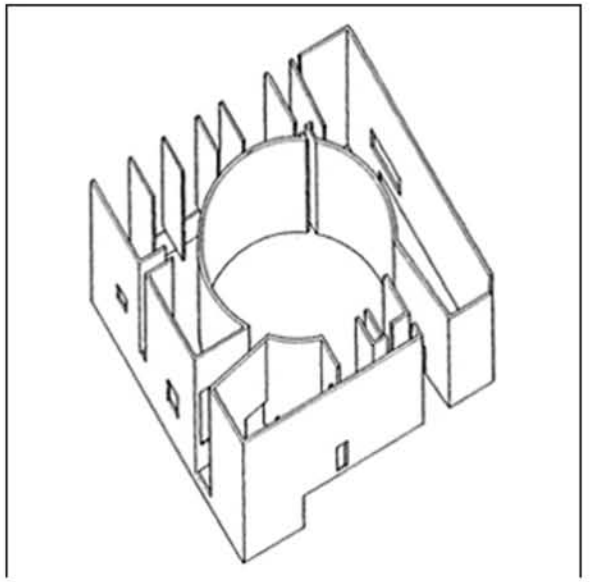
2. Massive Structure : Hagia Sophia, Istambul, Turkey
Arthemius of Tralles & Isidorus of Miletus, AD 532 - 537



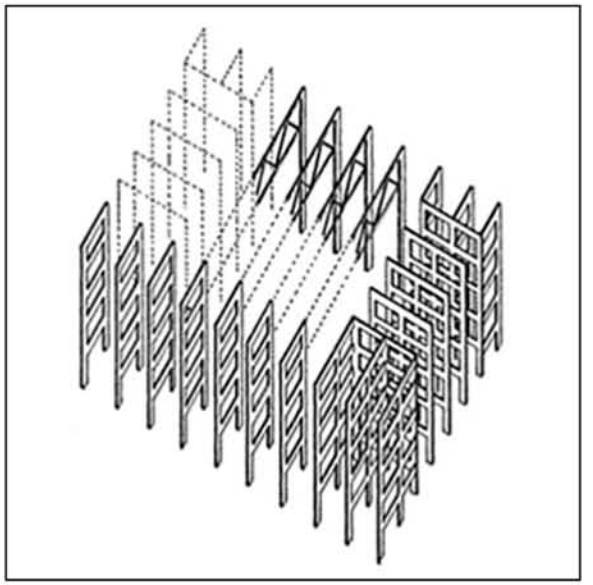
3. Frame & Infill : Westminster Abbey, London, England
Attributed to H. Reyns of Glocester. 1245-1280

There are two basic types of structural systems: massive and skeletal. Massive structures both support and enclose a building and usually consist of materials that are either cast concrete, or assembled from cellular masonry components such as bricks. We associate massive structural systems with elementary or figural shapes such as domes and vaults, where the size and placing of openings is restricted. Even though the Romans achieved the covering of large spaces and considerable diversity of programs with massive structural systems, as in the Pantheon AD 118-128 with a dome spanning 142'-9" (See Drawing No. 1) or at the Baths of Carcalla, AD 212-216, it is Justinian's Hagia Sophia in Constantinople AD 532-537 that best represents massive types. A dome buttressed by semi-domes defining a space 224'-0" x 107'-0" and engendering a "hollow mountain" wherein every bit of the fabric is in compression. (See Drawing No. 2)

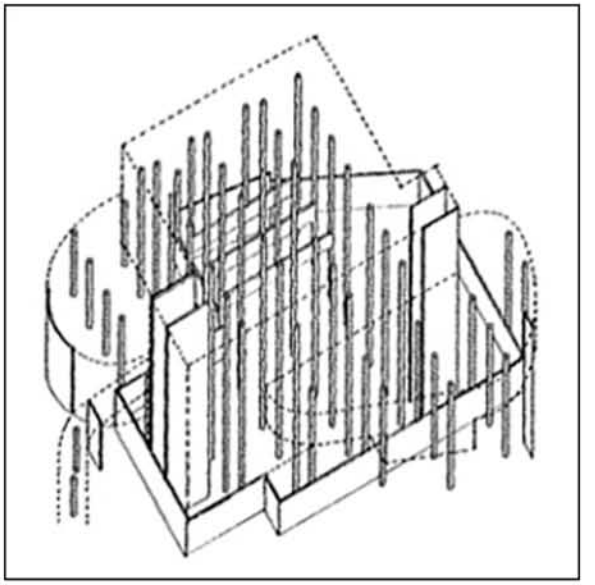
Roman builders articulated their figural volumes with surface elements to suggest the presence of skeletal components. The ribs in the dome of the Pantheon, however, were motivated by compositional intentions. [2] It was a desire for daylight that must be credited for the transformation, better yet the liberation from massive structural systems into skeletal frameworks where the support was separated from the enclosure. In gothic cathedrals, the large window openings and their stained glass infill, were essential to present religious messages through pictures to illiterate believers. In due course infills evolved into the integral assemblies of a frame structures - skeletons, with independent and detached coverings and eventually by-passing or free-standing skins - curtain walls. (See Drawings No. 3).



4. Bearing Walls ; St. Halvard Church - Oslo, Norway
Kjell Lund & Nils Sloato, 1966



5. Frames : New England Aquarium, Boston MA
Cambridge Seven Architects, 1969



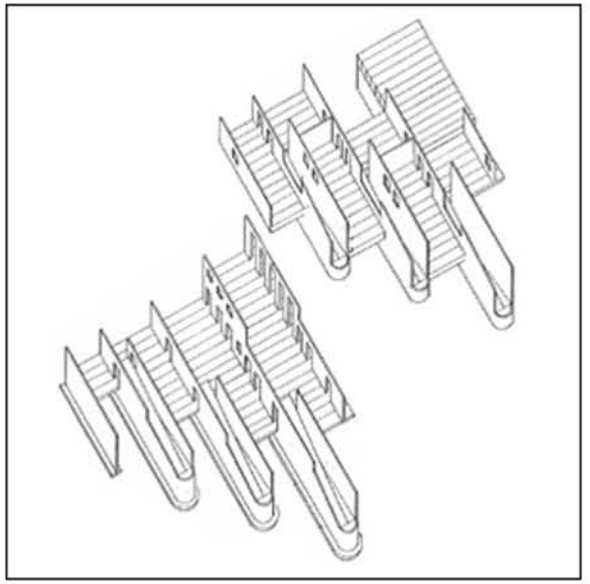
6. Columns & Slabs : Carpenter Art Center, Boston MA
Le Corbusier with Jose Luis Sert, 1994

STRUCTURAL TYPOLOGY

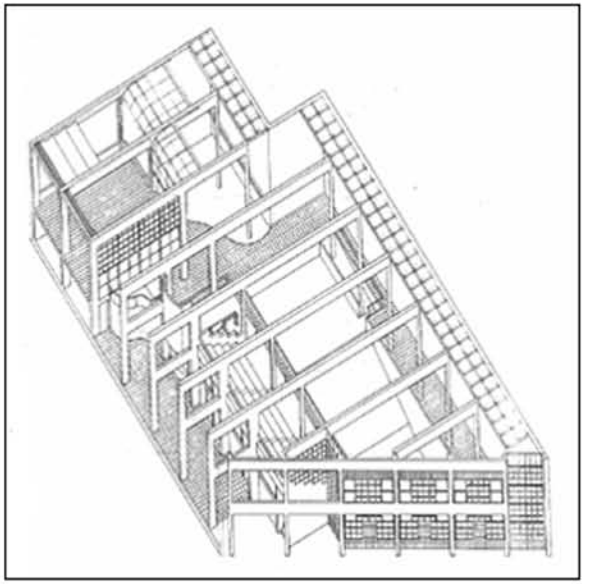
Without discounting the presence of lighter systems such as shells and membranes, applicable to large spans and unique geometric conditions, the normative skeletal systems in widespread use today are: **bearing walls**, **frames** and **column supported slabs.** All three possess a formal order that relies on the repetition and as structural types evolved from bearing structures acting only in compression, where stone and masonry were the principal materials, requiring considerable mass to achieve stability. With the advent of materials that could withstand tension and bending stresses and the knowledge necessary to use such materials, the mass of structural systems was reduced into those components that were in fact performing the work : skeletal systems consisting of planar and linear elements – walls, columns, beams and slabs. (See Drawings 4, 5 & 6)

Parallel **bearing walls** as a supporting structural system define directional slots of space or when arranged at right angles create fields of interlocking spaces. The walls can be varied in length, interrupted and modified in their spacing to accommodate larger volumes and punctured with openings in order to establish connections between functions or gain exposure to the outside. Even though we associate bearing wall systems with the past, they provide an architectural order with the visual power of insistent repetitive planes capable of transcending simply the support of floors and roofs. (See Drawing No. 7)

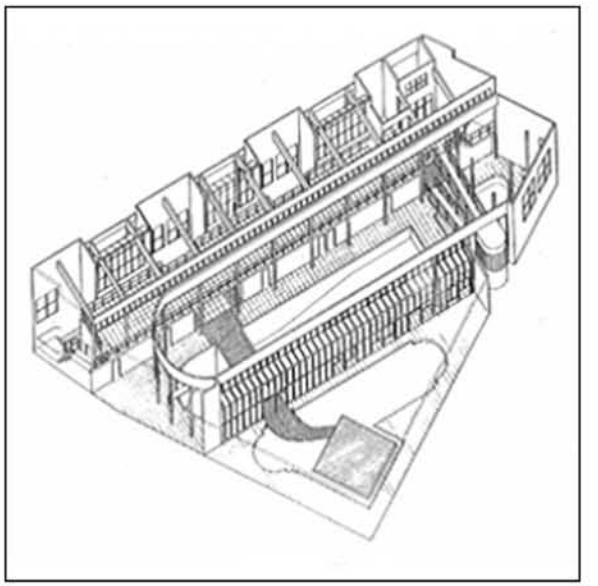
The presence of a grid of columns superimposed by beams - a **frame** – defines repetitive three-dimensional modular units of space that share a common order. As with field plans,



7. Bearing Walls
Day Care Center, St. Louis, MO - Student Project 1979



8. Frames
Swimming Hall, St. Louis, MO - Student Project 1980

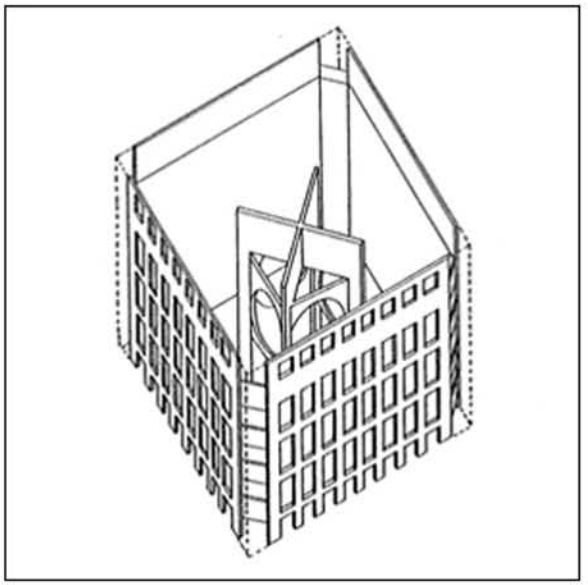


9. Columns & Slabs
Swimming Hall, St. Louis MO - Student Project 1980

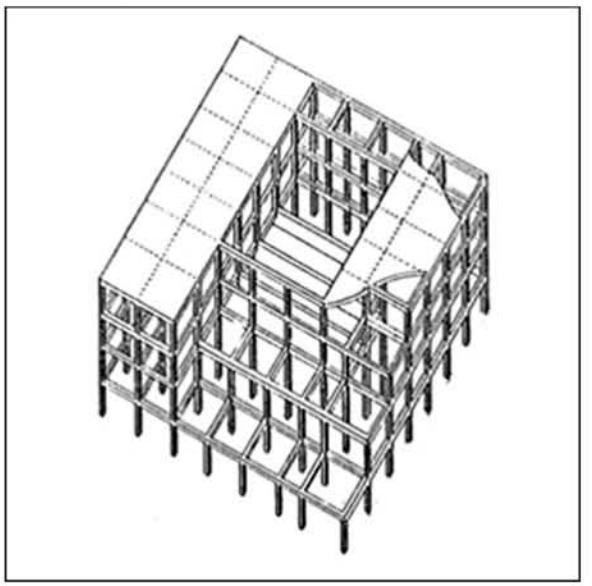
frames can be transformed by altering their spacing or by adding and subtracting modules to create a hierarchy of cells varying in size, proportion or position. In skeletal frames, the architect has a structural system forming a logical whole of standardized parts, which offer a rich opportunity for articulation while playing an integral role in the architectural conception. (See Drawing No. 8)

Unlike frames, where column spacing and space layouts correspond, in **column supported slabs** spaces can be freely formed within a field of regularly spaced bearing points, using non-bearing internal partitions and external envelopes. In effect, Le Corbusier's "free plan" [3] wherein spaces can respond to program requirements and are not determined or restricted by the structural pattern. Column supported slab structures, made feasible by reinforced concrete and the opportunities to cantilever floors and set the columns back from the enclosure, engendered a spatial order that truly liberated structure from enclosure. (See Drawing No. 9)

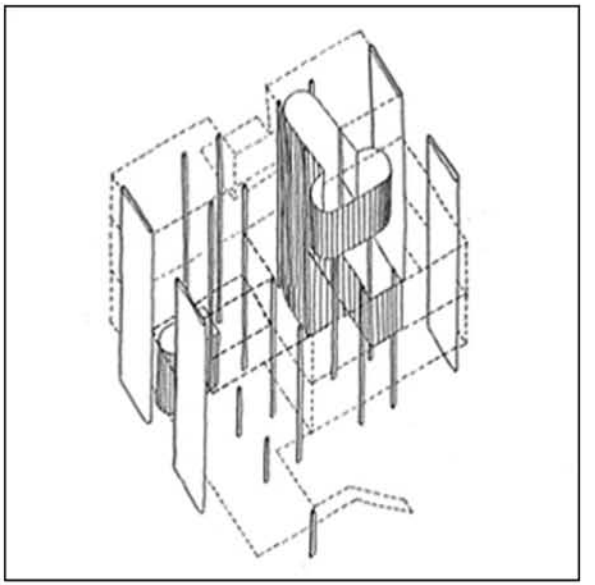
In the separation of support from skin, surfaces a second compositional concern that is linked to the interrelationship between structure and a building's subdivision and enclosure wall systems. When the outer skin and structure are in the same plane as coincident systems they are referred to as **punctured wall** enclosures. Inherent in coincidence is the "punching of a hole" in a wall. As an evolution of massive structural systems, planar punctured walls derive their order from rational and repetitive windows or from more amorphous constructions that respond to contextual or programmatic idiosyncrasies. In either case the width of openings in walls depends on the tensile strength of lintels or the compressive configuration at the head of the openings.



10. Punctured Bearing Wall
Phillips Exeter Library, Exeter NH - Louis Kahn 1972



11. Infilled Frame
Casa del Fascio, Como, Italy - Giuseppe. Terragni 1932



12. By-Passing Skin
Villa at Garches,Vaucresson, France - LeCorbusier 1927

(See Drawing No. 10)

When the wall systems, both internal and external meet and engage the structural members, they intercept the columns and beams resulting in an **infilled frame;** the building enclosure and internal partitions, literally infill the skeletal frame. Support and enclosure become distinct elements and the openings become an integral part of the infill system. Incidental or regular perforations are replaced by the removal of the wall and the structural frame assumes a visual importance, a formal presence often leading to an expression of the construction. Although there is no compositional imperative to convey a "structural honesty" – to show the columns and beams – infilled frames offer rich opportunities for the articulation of the structure in a building . (See Drawing No. 11)

The separation of enclosure from the structure is best represented in **by-passing** systems. When columns are set back from or project beyond the enclosure, by-passing skins provide the obvious complement to column supported slab structures; they are Le Corbusier's "free façade" – light membranes that wrap the skeleton without interruption. [4] Since the wall systems do not engage the structure, except at the edges or surfaces of floor slabs, by-passing systems contribute to the presence of columns as free-standing elements within interior spaces or on the exterior surfaces of buildings. (See Drawing No. 12)

Structural types integrated to the entire assembly of a plan, root a building organization in the tangible reality of a tectonic physical event. They are not just abstract ideas or amusing design issues, but that initial encounter with Architecture, as an endeavor that deals with building; a creative human activity that goes far beyond images for the consumption of visitors to a gallery. It is structure that reminds architects they are in a constant struggle with gravity and with the lateral forces engendered by wind and seismic loads. It is structure as it engages plan types that accommodate and shelter through Architecture human activity, while providing comfort and protecting its occupants from the elements. And it is also structure as an inherent extension of plan, that invites Architecture to transcend the ordinary and convey the formal ideas that engender its conception.

A coherent morphology of plan and structure contribute only two essential components to a design strategy. Designing in Architecture is very much like juggling and keeping just two balls in the air, does not make a juggler.

NOTES:

[1] Paraphrased from Le Corbusier's "reminders to Architects" cited in *Towards a New Architecture,* first published in 1923: "Architecture is the masterly, correct and magnificent play of masses brought together in light".

[2] Norberg-Schulz, Christian. "Technics" from *Intentions in Architecture.* M.I.T. Press, Cambridge, MA, 1965, pp. 161-166.

[3] Le Corbusier and P. Jeanneret. "The Five Points of a New Architecture" cited in *Œuvre Complète 1910-1929* , p. 128. Les Editions d'Architecture, Zurich 1956.

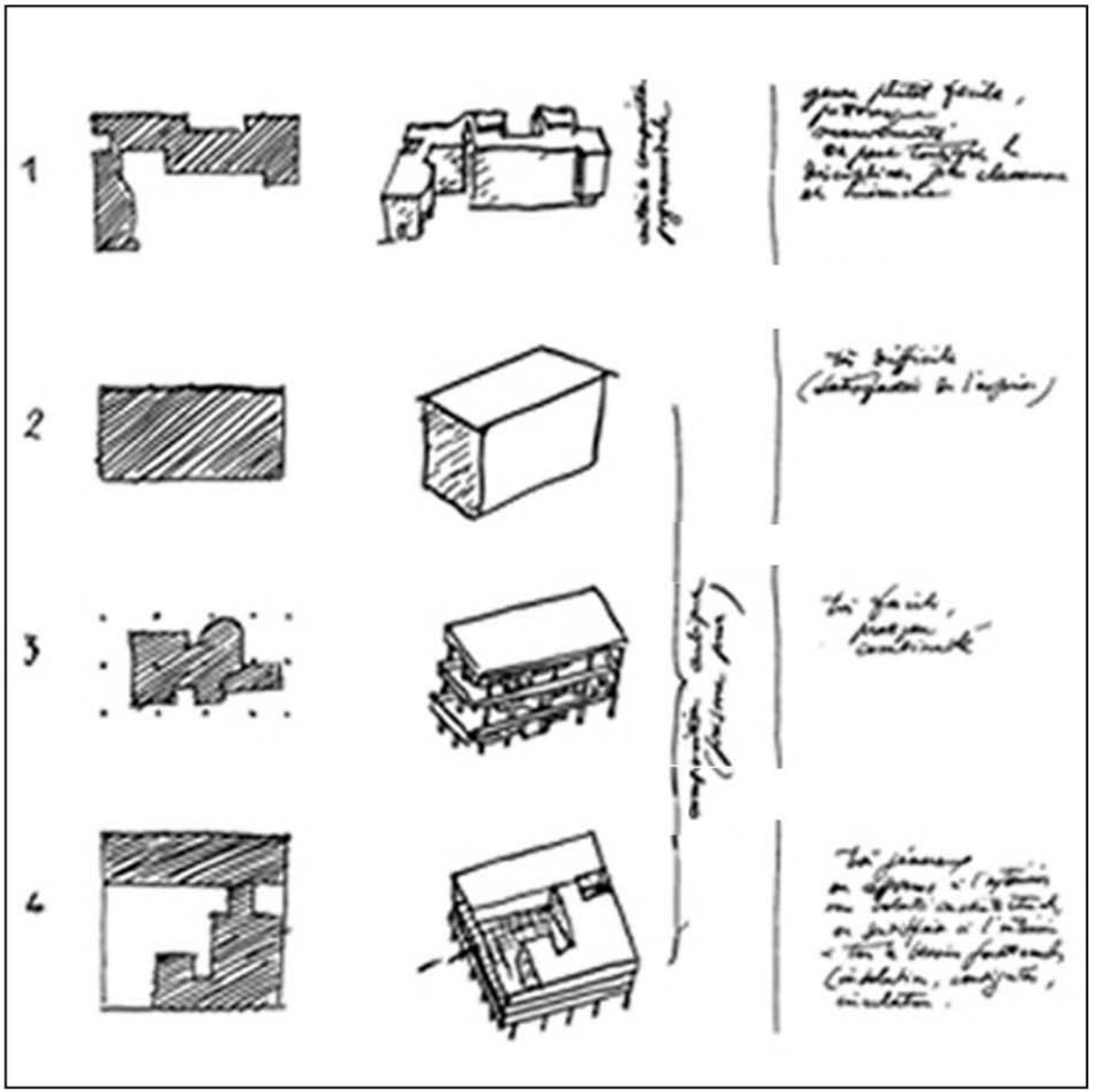
[4] *Ibid.*

6. VOLUMETRIC ASSEMBLIES AND THEIR MORPHOLOGY

If the **plan**, that austere abstraction carried for LeCorbusier the very essence of sensation, then **volumes**, provided the opportunity for an architecture as "the masterly, correct and magnificent play of masses brought together in light". 1

As noted previously in the segment on "Modernity and Typology", LeCorbusier left us that set of sketches for the cover of Volume II of the *Ouvre Complète published in 1935.* He typified the composition of four of his houses: *Villa LaRoche,* 1923; *Villa Garches,* 1927; the house at *Weissenhof* in Stuttgart, 1927; and *Villa Savoye* at Poissy, 1929. by providing insightful comments written beside each house He conveys a morphological analysis/synthesis of the building volumes as "types" – an inner conceptual structure that juxtaposes memory and reason.(See Drawing No.1)

He characterizes *Villa LaRoche* as, " a rather easy type, picturesque and full of movement, which can be disciplined by classification and hierarchy". He is describing an additive assembly of forms or elements. *Villa Garches,* the *Weissenhof House* and *Villa Savoye*, in



1. House Types - Ouvre Complete - Le Corbusier 1935

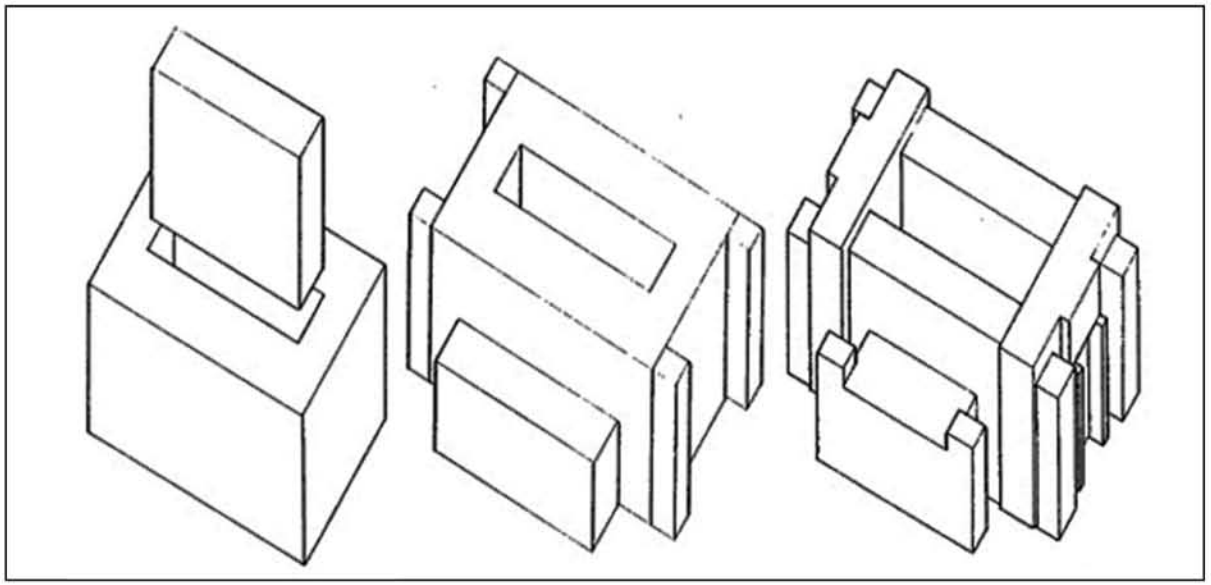
turn are collectively classified as "cubic compositions (using) pure prisms". *Villa Garches* is perceived as "satifying the spirit, but very difficult", since the dwelling is contained within an unaltered geometrical figure. In the *Weissenhof House,* LeCorbusier infills the figural volume with a program of irregular spaces that leave a border of unoccupied selvage surrounding the embedments: the composition is typified as "a very easy and convenient way of combining"(functions). *Villa Savoye,* "a subtractive form, is very difficult (but also) very generous".It begins as a figural volume, which is then eroded to "satisfy on the interior all functional needs (light penetration, spatial continuity, circulation)" and to "confirm on the exterior, an architectural will". [2]

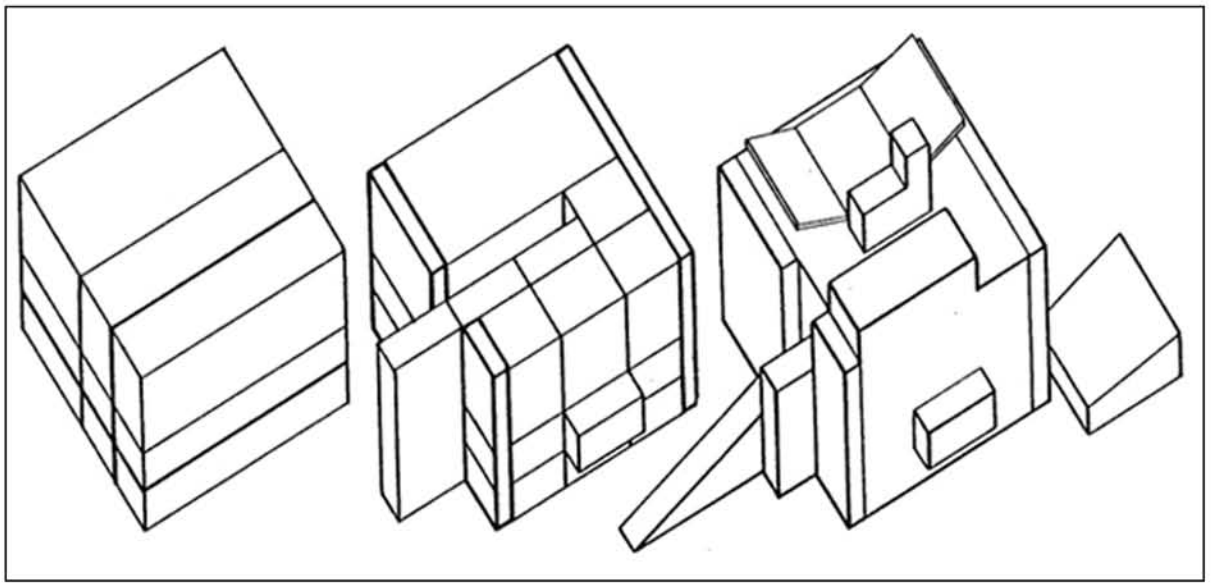
LeCorbusier's sketches and critical commentary on four of his houses focuses on a morphological analysis of the building volumes, and very much influences this writer's perceptions about the underlying logic of volumetric assemblies. Those four sketches again remind us that much of architecture has been reduced to either packaging or incrementalism. Under packaging must be included those tendencies among architects to engage the formal properties of volumes, without any other reference than idiosyncrasy or personal whimsy. In turn assemblies that rely entirely on and only satisfy functional adjacencies, offer solely the three-dimensional version of clustered bubble diagrams.

The seeking of an order, a memorable abstraction which ought to result from forethought before action, can only materialize from a conscious and intentional intervention by a designer. Buildings and places are schematizations - idealized transformations - which attempt to approximate an "essence" in the organization of spaces and volumes. Such formal conceptions evolve; they often start as an ideal solid or void, that is then subjected to subtractions, additions, deformations, and all sorts of topological displacements. A useful example of a volumetric transformation, which must be taken as a speculation, follows. (See Drawing No. 2)

We know that Frank Lloyd Wright acknowledged his kindergarten experience with a set of wooden *Froebel Blocks*; more than likely they made a deep impression. The rectangular blocks assembled within a box in a tartan pattern appear to have influenced much of Wright"s early work and suggest an uncanny formal origin for the Larkin Building. The speculative transformation also reflects the maintenance of matter in an intrinsic relationship of parts to the whole that was advocated by Froebel's pantheistic ideas on Natural Law applied to education. Wright in effect reuses the internal volume removed for the atrium to configure the service wing, the stairs and mechanical shafts. [3]

Similar transformations, based on formal constructs, can be encountered in the work of other literate architects. Le Corbusier relies on square and "golden section" armatures to discipline a vast array of volumetric conceptions. [4] The Mill Owner's Association cube is reconfigured by carefully placed subtractions and additions guided by the "regulating lines" inherent in the geometry. (See Drawing No. 3) James Stirling uses both Cubist and Constructivist elements, in assemblies that try to retain the ideal shape of the components without distorting or forcing them into structural modules or preconceived building shapes. At the Cambridge University History Faculty, the book stacks,





2. Transformation of an Ideal Conception : Larkin Building, Buffalo, NY - Frank Lloyd Wright, 1903
3. Transformation of an Ideal Conception : Mill Owner's Association - Ahmedabad, India - Le Corbusier 1954

reading room, offices, lecture hall, classrooms and even the elevator shafts are allowed to take their individual and intrinsic form within the larger assembly.

(See Drawing No. 4)

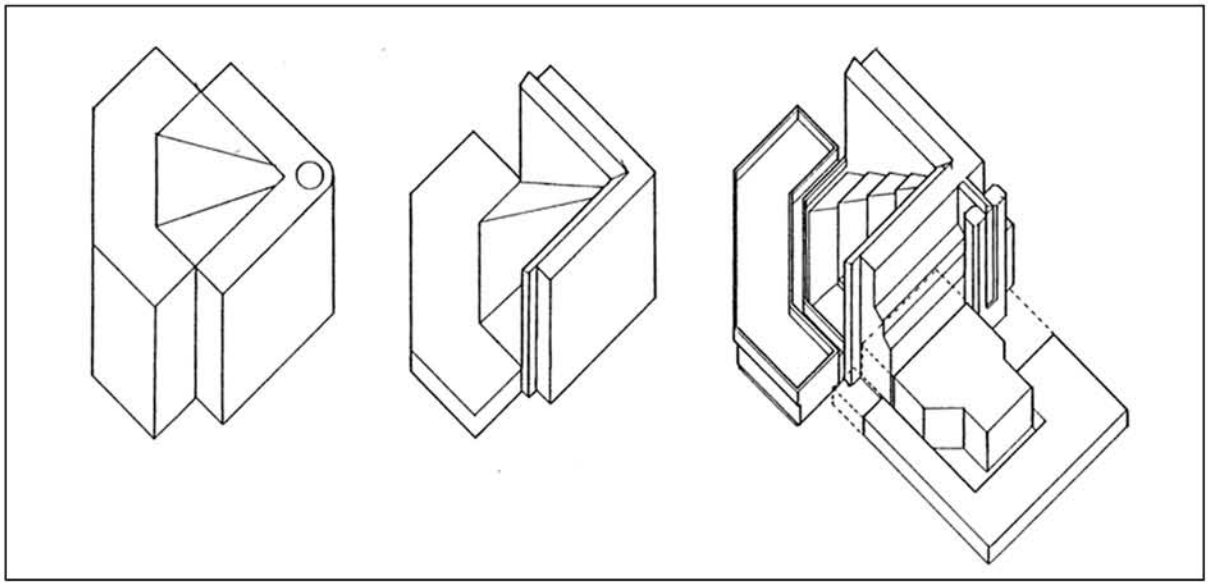
A VOLUMETRIC TYPOLOGY

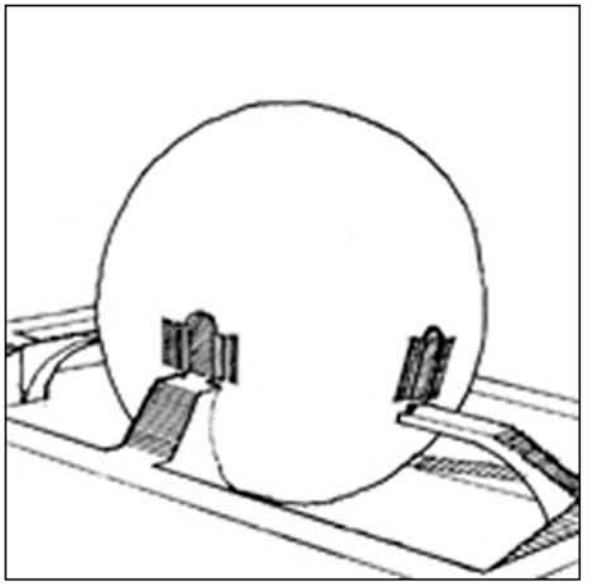
Significant buildings are conceived by consciously and intentionally manipulating and juxtaposing volumes in relationship to ideal spatial and compositional datums or referents. There are two compositional datums: the first, Classicism, comprises most of the building prior to the liberation from masonry by the new building technics that could cope with tension and bending moments. The second must be associated with the presence of steel and reinforced concrete, which freed both the plan and enclosure in a building, but more importantly reflected the inherent spatial conceptions of "Constructivism" and "Cubism".

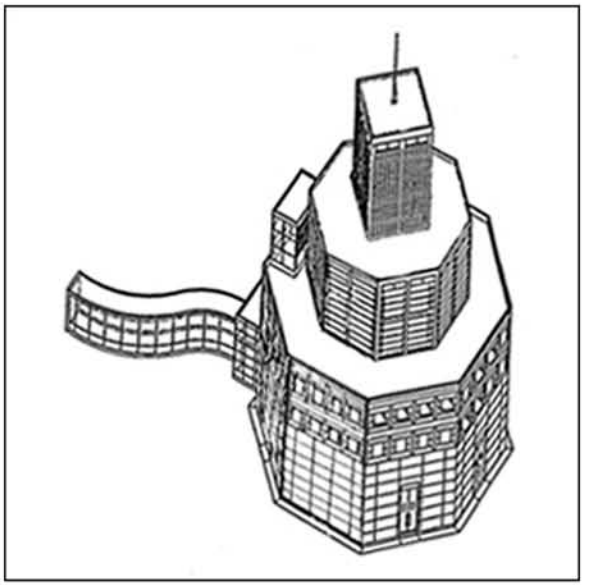
Within the grammar of Classical assemblies, volumes are highly recognizable forms, simple in geometry. In most cases they retain their identity without the deterioration of the enclosure. Space is defined and contained by the architecture and in

larger assemblies, pavilions are linked by interstitial gaskets and/or connective circulation.
The Modernist liberation of enclosure from structure and the associated rhetorical and ideological overlays, engender the second design grammar. If Constructivism and Cubism had one compositional mission, it was and still is to enable, if not encourage space to escape and extend beyond the evident or tangible limits of enclosure in a building, or the frame in a painting. The design intent also seeks to intentionally, violate and/or decompose volumes through interpenetration, layering and juxtaposition.

In Classical single block volumes, or **figural** compositions, the structure/ enclosure usually delimits the spaces. Rooms are defined by walls or piers, and the singular building forms are complete entities and closed wholes. **Figural** buildings are usually associated with Platonic solids: spheres, cylinders, cones, pyramids and cubes wherein the parts result from subdivision and are subordinated to the whole or do not compete with the whole. As readily perceptible entities to which nothing, or very little can be added without an awkward disruption, figural volumes



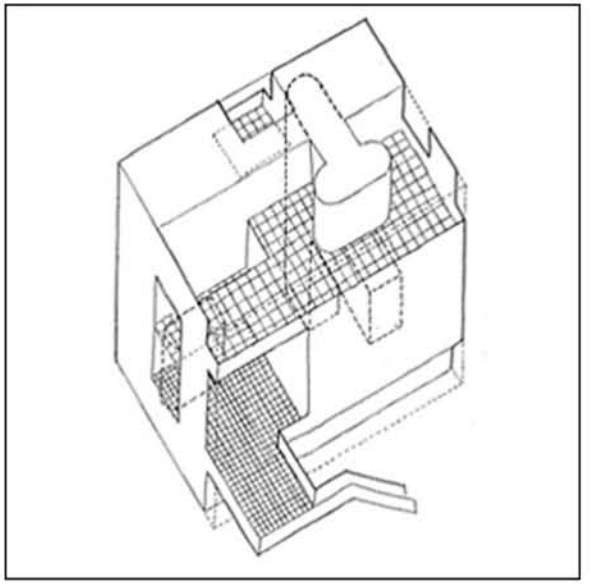


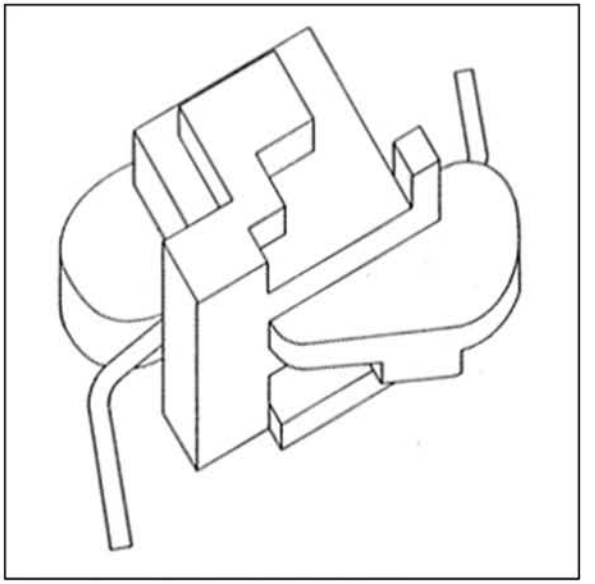


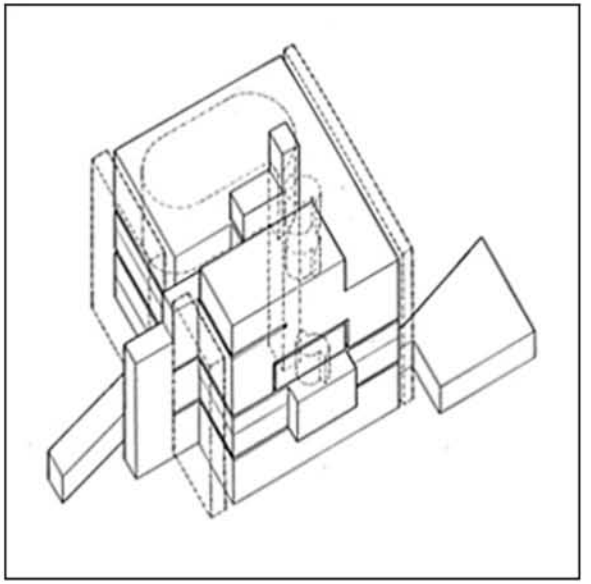
4. Transformation of an Ideal Conception : History Faculty, Cambridge, England: James Stirling, 1966
5. Figural Volume : Rural Caretaker Quarters Coulominiers, France - C.N. Ledoux ca. 1780
6. Figural Volume : Busch Museum, Hannover, Germany - Gustav Peichl, 1994

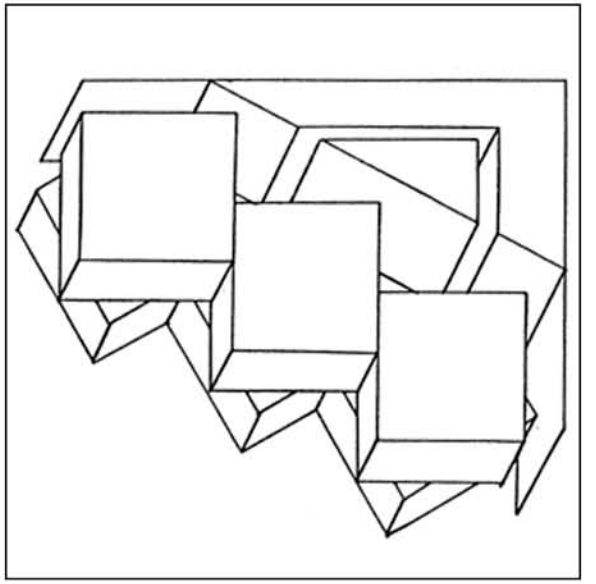
have enclosures wherein little or no differentiation or identity is given to the programmatic components within.[5] C.N. Ledoux's "sphere dwelling", G. Peichl's "octagonal museum" and Le Corbusier's "house within a golden section" are obvious examples of this volumetric genre. (See Drawings Nos. 5,6 & 7).

When tight figural envelopes are "attacked" to liberate space, and the enclosure is freed from the structure, the resulting volumetric compositions can be characterized as **eroded** or **exploded.** Interpenetration, juxtaposition and decomposition, seek to engender a new order focused on movement, tension, and incompleteness in opposition to and often layered against the regularity of a skeletal structural order. Le Corbusier's 1926 *Five Points of a New Architecture*, "the free plan, the free façade, the horizontal banded window, the building on *pilotis* and the roof as a terrace", were all possible by the use of that neutral grid of columns which enabled the subtractive accommodation of functions and enclosure, while at the same time anchoring and grounding the dynamism in the volumetric composition. [6] There are few examples better than the work of Le Corbusier and his descendants, to









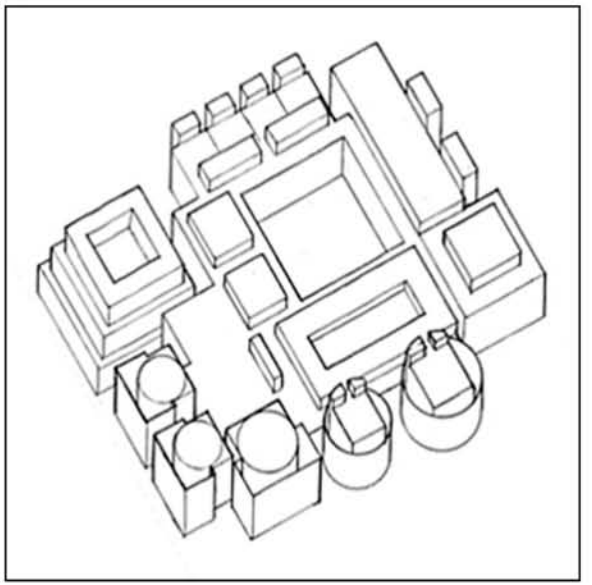
7. Figural Volume : Villa At Garches , Vaucresson, France Le Corbusier 1927
9. Eroded / Exploded Volume : Mill Owner's Association Ahmedabad, India - Le Corbusier 1954

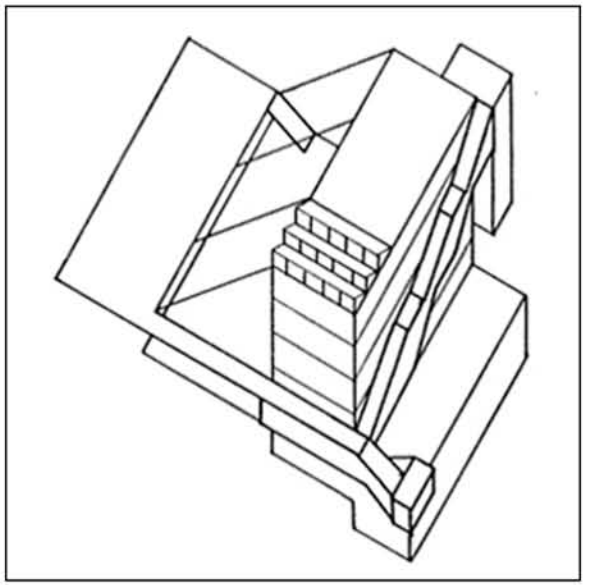
8. Exploded Volume ; Harvard University Art Center Cambridge, MA, - Le Corbusier 1964
10. Eroded Volume ; Elementary School, Columbus, IN Hardy, Holzman, Pfeiffer, 1973

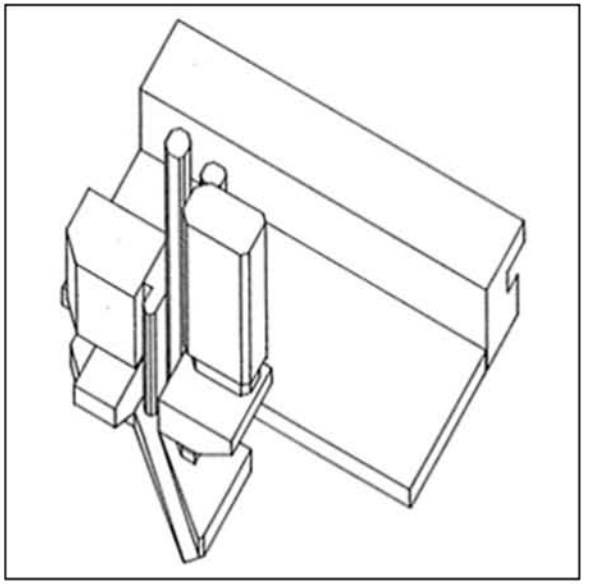
illustrate this volumetric type. (See Drawings Nos. 8.9 & 10)

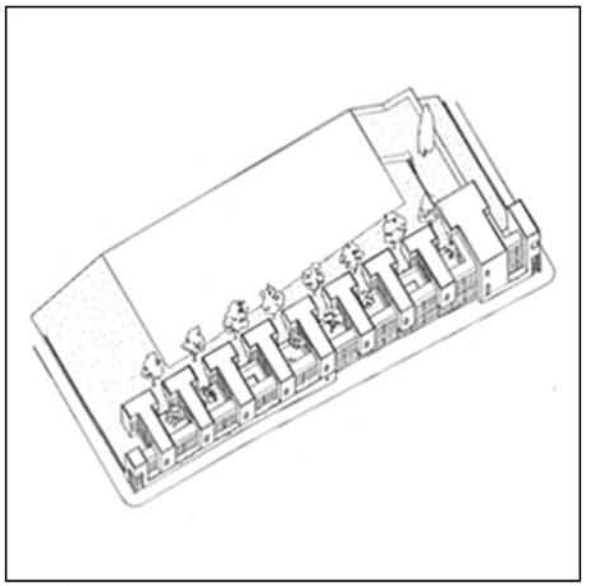
In contrast to the subtractive volumetric types of **figural** and **eroded/exploded** compositions, there are two distinctive additive assemblies. The first capitalizes on the difference and uniqueness of the various elements - the rooms - that form a building. In **elemental** assemblies whether they are conceived under a Classical or Constructivist/Cubist grammar, the programmatic components are particularized and readily perceived as volumes and enclosures. In a composition, the whole is subordinated or does not compete directly with the parts, and the entire assembly is not disrupted by subsequent extensions. Articulated or **elemental** compositions may be incorporated into **nodal** or **linear** plans which provide flexible armatures to either link or juxtapose components. (See Drawings Nos. 11, 12 & 13).

The second additive volumetric order relies on incremental or **cellular** assemblies of identical or similar components. These repetitive "cells" have the capacity as single or multiple units to accommodate varied functions. Not unlike bee hives, the idealized cells of **cellular** compositions can be



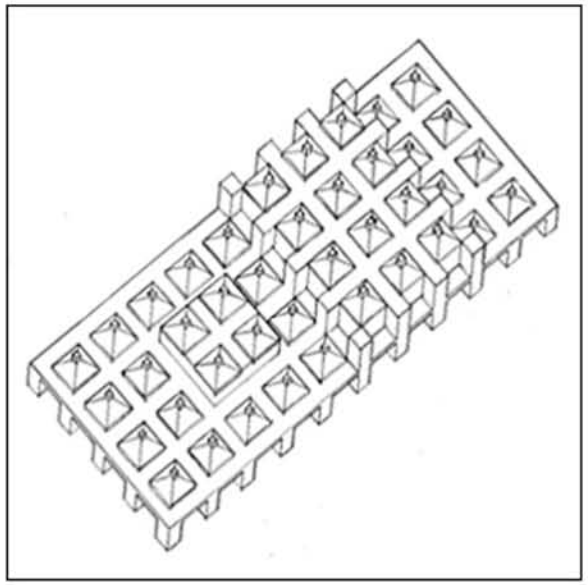


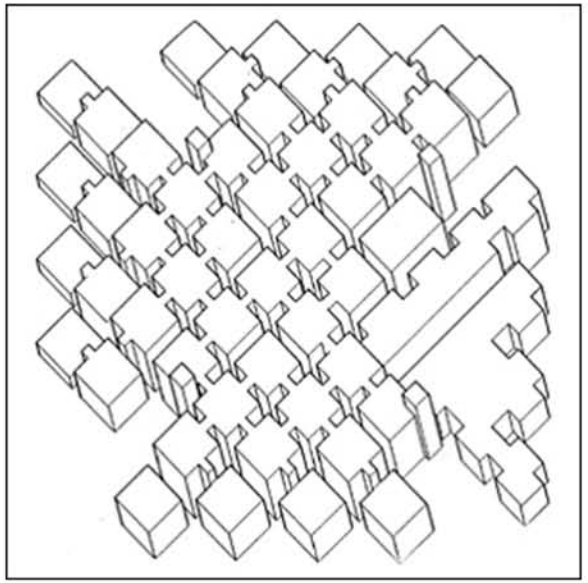




11. Elemental Connected Volumes : Salk Institute
    La Jolla, CA - Louis Kahn 1959-1965
13. Elemental Intersecting Volumes ; Engineering Building
    Leicester, England - James Stirling 1961

12. Elemental Adjacent Volumes : Open Air School
    Basel, Swizerland - Hannes Meyer 1926
14. Linear Cellular Volumes : Day Care Center
    St. Louis, MO - Student Project 1979





15. Cellular Volumes Grid: Jewish Community Center Trenton, NJ - Louis Kahn, 1954-1959
16. Cellular Volumes Field: Central Beheer Office Appledorn, Netherlands - Herman Hertzberger 1972

aggregated into extendible and open-ended tissues. In these non-hierarchical fabrics, equivalent to **field** plan organizations, the presence of the whole is subordinated to the repetitive cells and there is little or no interest in providing functional identity to the programmatic components. [7] Cellular assemblies are more than an abstract grid or a field of columns. As illustrated in the examples, they are armatures of three-dimensional components, sharing a common denominator , repetitive cells that dictate and control the spatial and volumetric order .(See Drawings Nos. 14, 15 & 16)

When the above volumetric typology is overlaid on the plan and structure organization of a building, Architecture as a human, creative endeavor that seeks to transcend the ordinary , begins to surface. The design activity is engendering a building fabric - a weaving, meshing and binding of many components into patterns, geometric and volumetric relationships that organize and give significance to human inhabitation. Still missing from the fabric are the building **enclosure** and the conceptual filters with which to assign buildings a role on a specific site and context.

NOTES:

1 Le Corbusier. *Toward a New Architecture,* Dover Publications, New York , 1986, p. 29.

2 Le Corbusier & Jeanneret, Pierre. *Œuvre Complète de 1929-1934.* Willy Boesiger, Ed. Les Éditions d'Architecture, Zurich, First Editions 1935 and cited in:

Benevolo, Leonardo. *History of modern Architecture, Volume II.* The M.I.T. Press, Cambridge, MA 1971, p. 439.

3 MacCormac, Richard C. "The Anatomy of Wright's Aesthetic" in *Architectural Review*, Vol 143, No. 852, February 1968, pp 143-146

4 Rowe, Colin. "The Mathematics of the Ideal Villa" in *Architectural Review*, Vol. 101, No. 603, March 1947, pp.101-104.

5 Buildings in the form of Platonic solids, were postulated by Etienne-Louis Boullee, Professor at the French Royal Academy of Architecture and Claude Nicolas Ledoux, true products of the "Age of Reason" prior to the French Revolution. Refer to *Visionary Architects*

- *Boullee, Ledoux, Lequeu,* the catalog to the exhibition held at The University of St. Thomas, Houston 1968.

6 Le Corbusier and P. Jeanneret. "The Five Points of a New Architecture" cited in *Œuvre Complète 1910-1929* , p. 128. Les Editions d'Architecture, Zurich 1956.

7 Cellular compositions are often identified with vernacular assemblies of dwellings around the Mediterranean. Less familiar is the extensive use by the architects of the Ottoman Empire in the design and construction of mosques, religious schools or *madrasas*, and all sorts of secular buildings ranging from markets or *souks,* to *caravanserais,* the 15th. century merchant hotels that accommodated camels on the courtyard level.

7. THE ORDER OF ENCLOSURE

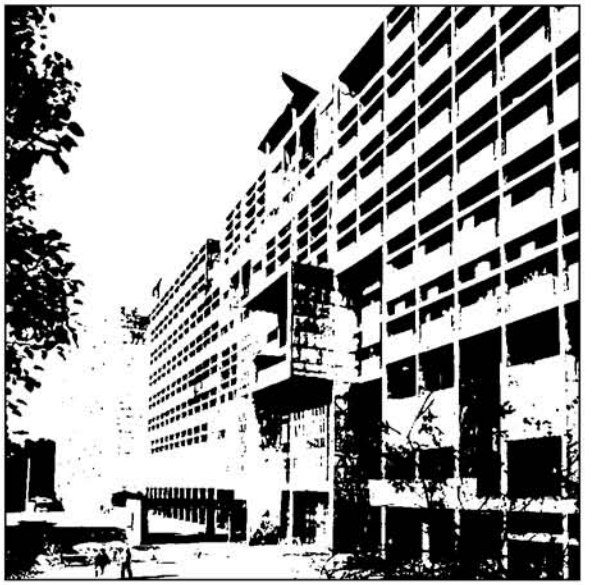
The most evident integral part of the building fabric is its enclosure. Like the skin enclosing our bodies it has many purposes. The enclosing layer protects and contains that which is within; it helps maintain appropriate temperature and fluid balance; it sometimes conforms to the rigid order of structure, while it can also assume forms quite different from the structure. The most significant role of a building's enclosing layer, however, is conveying on the outside, the character within; it is the text, the surface reality of the whole. We use the term façade, derived from "face" and both share the same root.

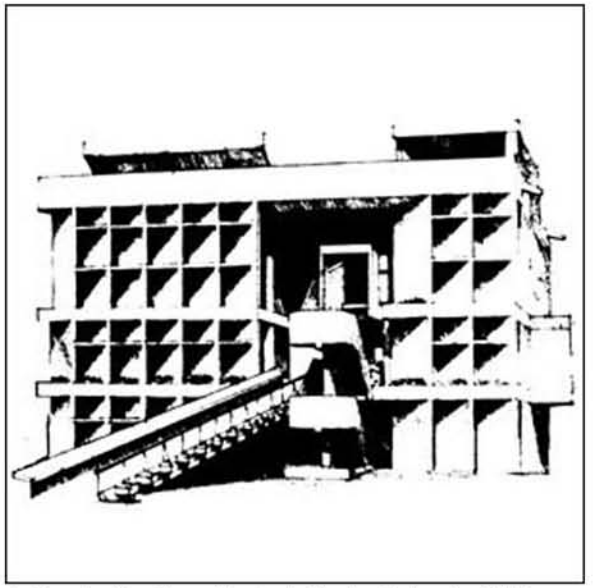
Yet despite its rather obvious importance in the design process of buildings, enclosure is perhaps the least understood and least practiced component. How many times have architects spent countless hours, manipulating a plan, and then, without any time left and unwilling to make any changes to the plan, almost as an afterthought , extended that plan into "elevations"?

An excuse or explanation is probably not recognizing that plan and enclosure are equivalent in the actual and conceptual organization of buildings. Not only are they physically intimately related, but also they are similar in the issues they raise and the attitudes we as architects employ in resolving those issues. Both are accountable to use, the functions, their size, and their relationship, whether applied to rooms or exposures. Both are bound up with the systems that support the building. Both are made up of parts, identical or different, that are disposed according to intervals, hierarchies, rhythms, layers and geometries. Both are the result of the complex process of sorting, grouping and interrelating that engender buildings. And lastly both plan and enclosure make commentary – intentional or not – on the people and activities we associate with buildings.

ENCLOSURE & ITS MORPHOLOGY

Like other typologies in the design of buildings, enclosure can be seen as generalized patterns responding to conditions that undergo transformations and thus invite particularization as special or anomalous conditions are encountered and resolved. Generalized patterns address things that are equal, while particular responses engage





1. Secretariat , Channdigarh, India - Le Corbusier 1959
2. Mill Owner's Assoc., Ahmedabad, India- Le Corbisier 1954

differences. The same timeless interplay of theme and variation that guides most of design, whether it is in music or in architecture. (See Drawing No. 1)

Enclosure patterns are derived from **functions**, from their **tectonic role**, from their **organization** and **articulation**, and from their **composition**.

FUNCTIONS

In the most utilitarian terms, enclosure has many functions. It must act as a barrier , filter or modulator between inside and outside of heat/cold, light, view, sound, air flow, particles and moisture. Protection from rain and snow, dust and insects, from solar radiation, and from thermal variance are the least that a building skin ought to perform. It should also insulate from unwanted noise, allow natural ventilation and provide daylight and the visual connections - views - for pleasure or information. (See Drawing No. 2)

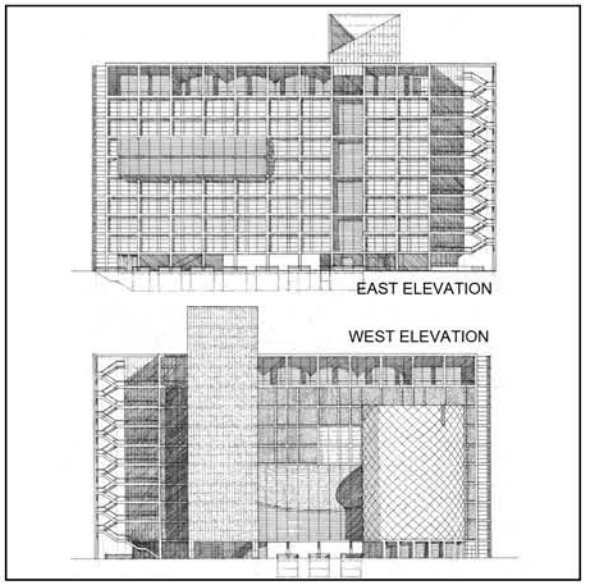
What could be more obvious to inform a building enclosure than the sun. Just the simple fact that it rises on the East, sets on the West and depending on which hemisphere and what season it travels over one building exposure, should be enough information to design skins that either shade or admit solar radiation. This should tells us that each face ought to be distinctive, if not different, to take advantage of the thermal gain and sun light, or protect the building from these conditions. (See Drawings No. 3)

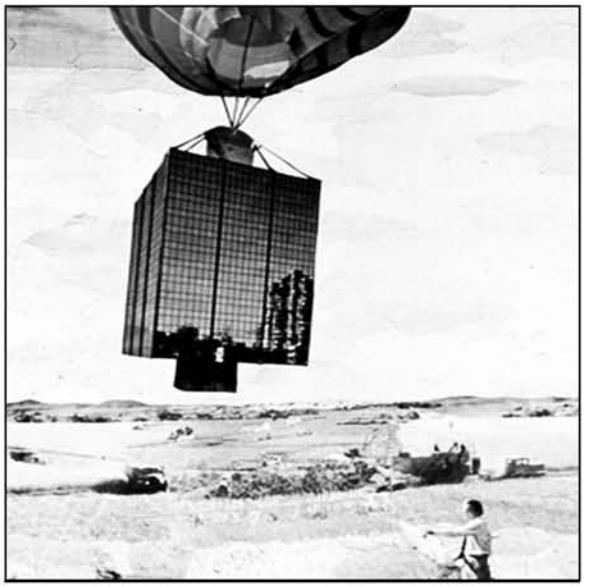
Yet architects often squander the opportunity to provide both identity and a functional role to the enclosure by taking the easy or lazy course of indiscriminately wrapping building volumes with reflective glass. This cuts the admitted daylight levels to only 25% and in turn forces having to operate artificial lighting, presumably intended for night time use, during the entire day time. (See Drawing No. 4)

Enclosure often plays the primary structural role and transmits the lateral wind loads while providing both the exterior and interior finish to resist weather, wear and abuse. Building enclosures may also incorporate other functions by embedment within or attachment , such as seating, storage or equipment, thereby creating deep walls.

TECTONIC TYPES

A conventional view of enclosure is its



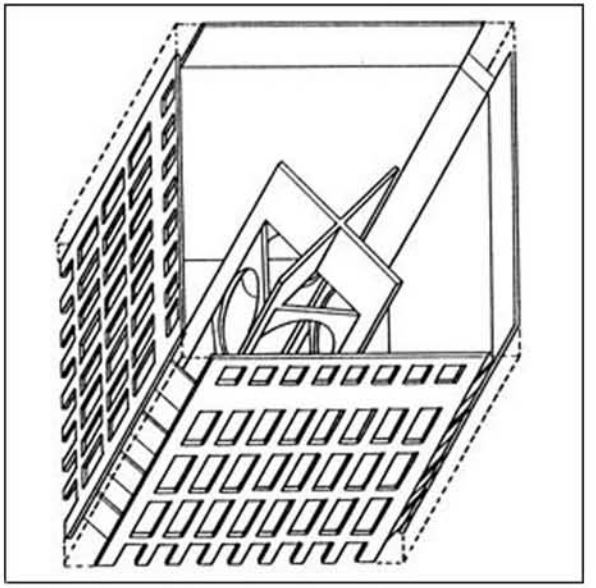


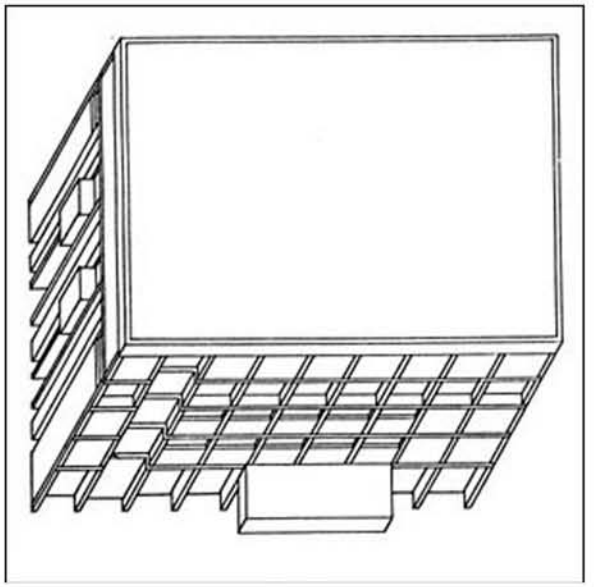
3. Fisheries Cooperative, Pusan, S. Korea - H. Weber 1996
4."The Architect Landing a Glass Box" Collage N.O.Lund 1980

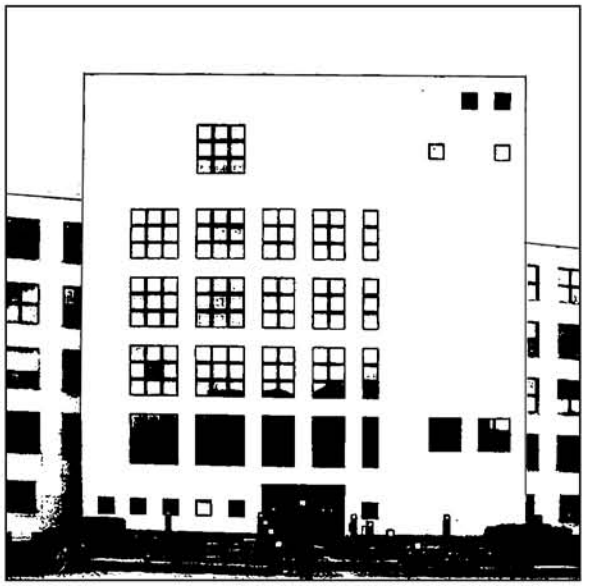
identification solely with materials. This surface description offers limited usefulness in the making of architecture. More applicable are the relationships between structure and the skin previously presented in the segment describing The Order of Structure. There are really only three types: **pierced bearing and non-bearing envelopes, infilled frames** and **by-passing membranes.**

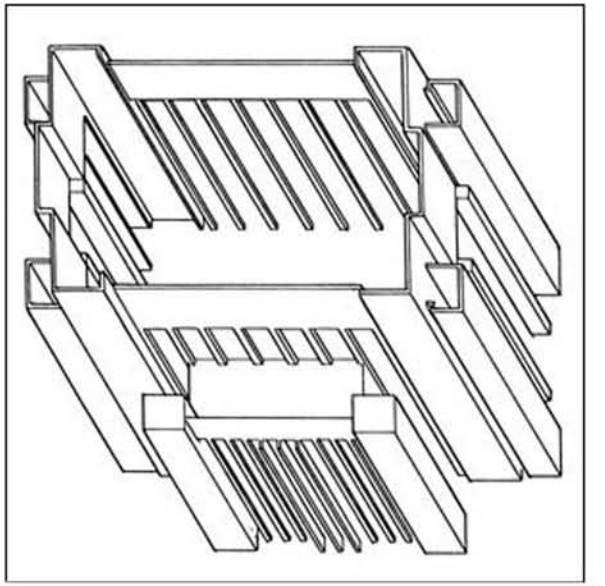
Bearing enclosures are an integral part of the primary support structure, a role that greatly constrains the size and shape of openings in walls. Until a century ago, most of architecture operated within these limitations. **Pierced envelopes** are made when relatively small areas of material are removed from a continuous solid wall. The continuity of the wall is essential, and the openings, usually figural in form, are subordinate and bounded by the surrounding field. (See Drawings Nos. 5 & 6)

Pierced openings occur typically in masonry bearing walls, but may also be used in non-bearing surfaces. And at times bearing materials are utilized in non- bearing roles, requiring from the designer the articulations alluding to that fact.









5. Library Exeter Academy, Exeter, NH -Louis Kahn 1972
6. Family Court Bluiding, Berlin,Germany-O.M.Ungers 1995
7. New England Aquarium,Boston MA-Cambridge Seven 1969
8. Larkin Building, Buffalo, NY - Frank Lloyd Wight, 1903

Non-bearing enclosures support only themselves and thus gain a level of independence from the primary structure thereby becoming a distinctive tissue within the building fabric. The coincidence of structure and non-bearing enclosures engender **infilled frames**. This combination of a skeletal framing system and the filling of the voids , cause the inevitable dominance of structural cells which when glazed, are generally associated with much of modern architecture. Infilled frames are also found in historical precedents, where the skeleton is infilled by solid walls. (See Drawings Nos. 7 & 8)

Also non-bearing, are **by-passing membranes** – Le Corbusier's *façade libre* - free of the supports, either to the inside or the outside of the structure. In this enclosure type, the entire surface becomes a potential opening, and thus field and figure are present in the membrane which in turn can be organized to regulate the disposition of generalized design components, and articulated to engage changes, transitions or discontinuities. (See Drawings Nos. 9 & 10)

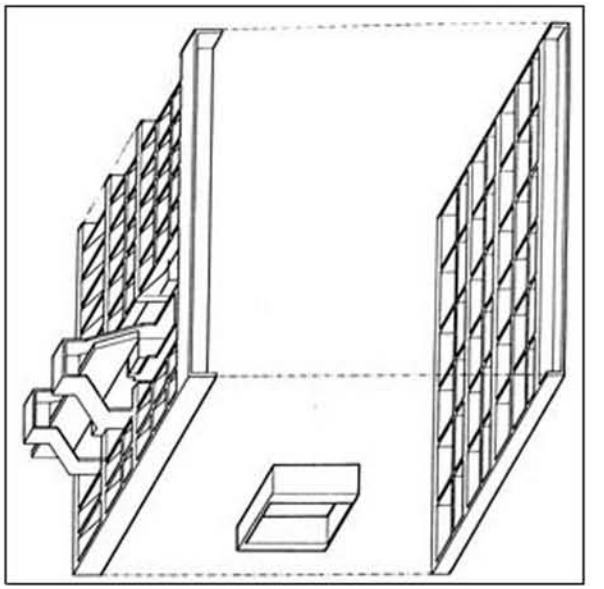
ORGANIZATION AND ARTICULATION

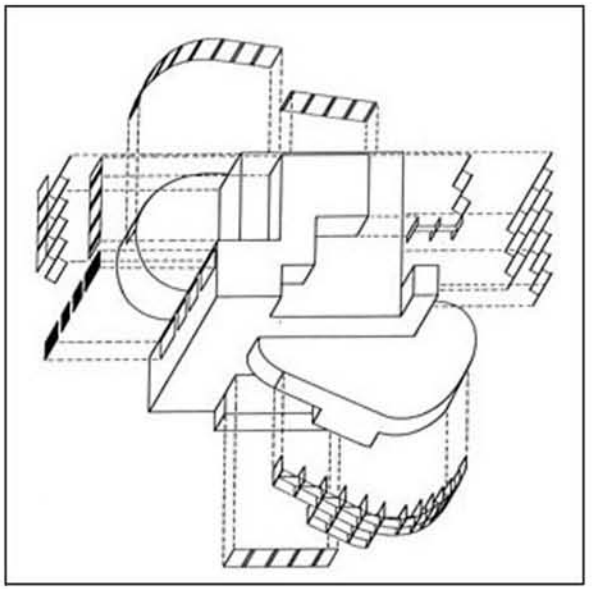
The **organization** of a field is characterized by constancy and repetition in geometry, material and function. Contributing to constancy are dimensional relationships , grid patterns, that serve to regulate the disposition of elements according to design intentions. The sources of regulating lines or grids include :

a. Systems of dimensions and proportions externally derived from the physical neighboring and historical context such as the adoption of basic rhythms and the surface figure/ground of adjacent or surrounding buildings. (See Drawings Nos. 11 & 12)

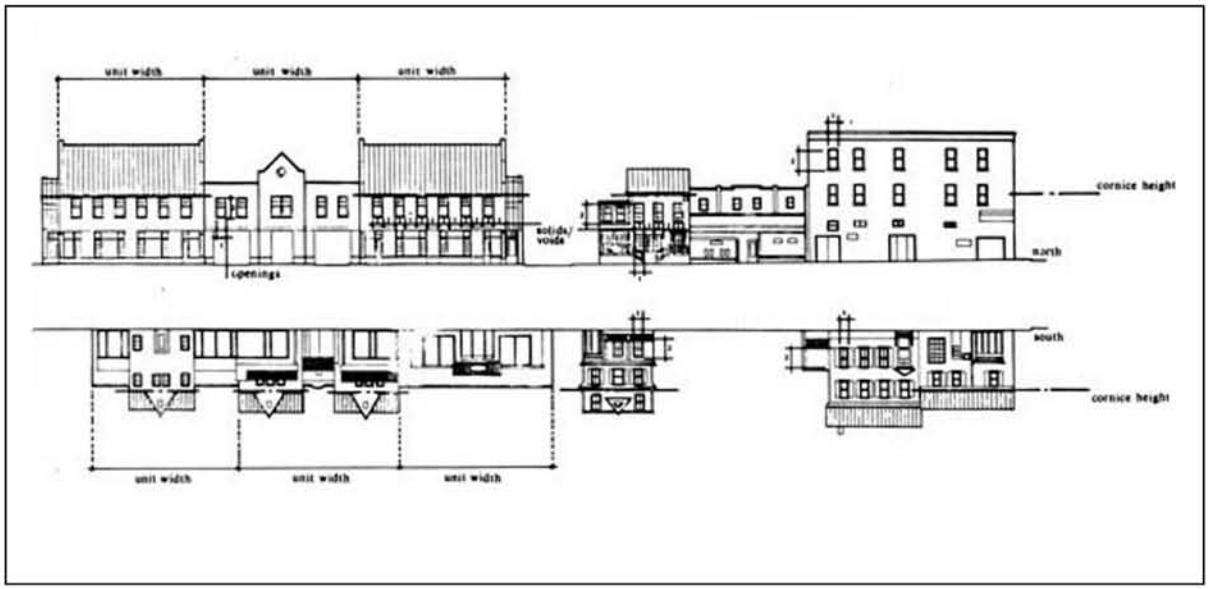
b. Systems of proportions internally derived from geometrical or mathematical relations, such as squares or significant rectangles. We know that F.L. Wright often if not always began by laying out a tartan grid [1], and that Le Corbusier in much of his work depended on the Classical tradition of the "Golden Section "[2]. (See Drawings Nos. 13 & 14)

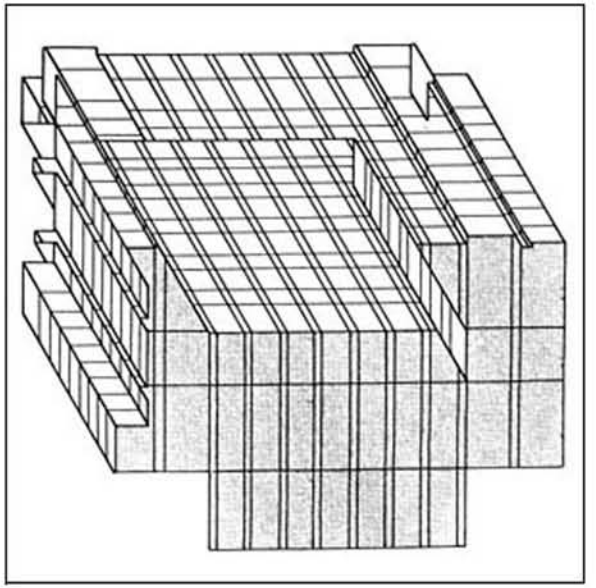
c. The configuration and dimensions of other building fabric elements that require coordination with the enclosure, such as the spacing of primary structure – columns, floor heights

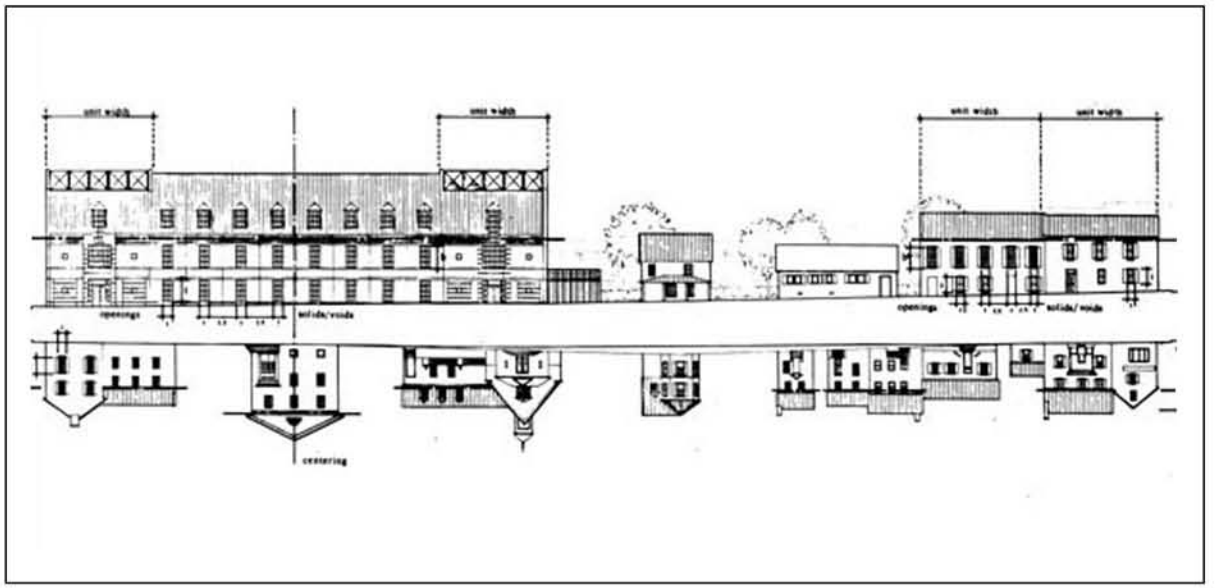


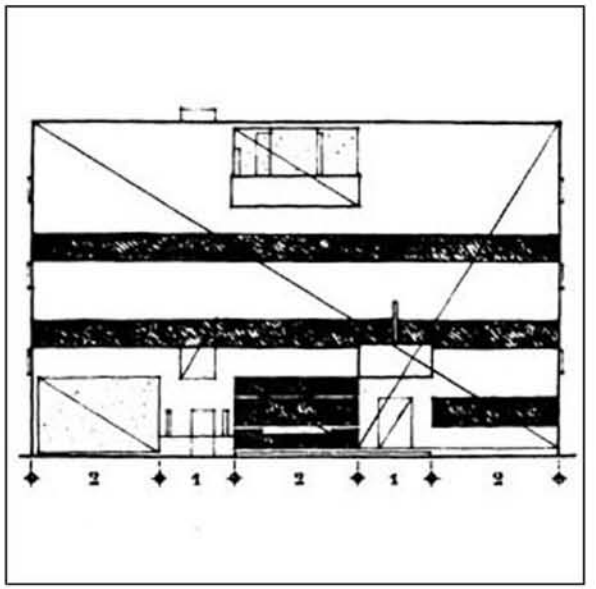


9. Mill Owner's Assoc., Ahmedabad, India -LeCobusier 1954
10.Carpenter Art Center, Cambridge, MA - LeCorbusier 1964









11. & 12. Municipal Govenment Center ; Leesburg, VA -- Hanno Weber & Associates, 1987

13. Larkin Building, Buffalo, NY - F.L. Wright , 1903
14. Villa at Garches, Vaucresson, France - LeCorbusier 1927

and environmental control equipment – lighting intervals and air handling outlets.

d. Materials and processes used in the fabrication of enclosures such as masonry modules, glass areas, window wall framework spacing, panel dimensions – all limited by either technical requirements or economics.

e. And of course people and their activities on either side of an enclosure; the proper dimensions for standing, sitting and reclining, or the placement of furnishings and equipment against exterior walls influence view, privacy, the admission of light and air and contribute to the establishing an order. (See Drawing No. 15)

When general conditions no longer are applicable , and the organization of the fabric infers changes, transitions or discontinuities , the enclosure invites **articulation**. Situations which typically demand articulation are most often dictated by recognizing that façades, although we refer to them as fabric, are not sold by the yard , as cloth. They meet the ground; the engage the sky; they turn the corner, they are interrupted by openings, by entrances, and places that denote importance; and they insist on the identification of building units, layers, and at times even floor levels.

The convention generally quoted that "buildings have a base a middle and a top" acquires typological significance, when we understand that the base of a building is intended to wear and take abuse. Even in the humble wattle and daub buildings of rural Latin America, the bottom 90 centimeters is rarely white washed and left as raw clay. The splatter from the unpaved surrounding ground during the rainy season, which is the same raw clay, therefore, never defaces the surface. See Drawing No. 16)

Similarly buildings engage the sky. Some require eaves to shed the roof; others cornices or parapets with cutouts not as hats, but as design devices to convey by means of the shadows cast from overhangs, or the openings which let you see the sky, where the building stops. Articulation is also essential when buildings turn a corner. In the classical grammar of masonry buildings the ratio of wall surface to openings in the end bays is usually greater. And Mies van der Rohe took incredible pains to anchor and articulate the edges of each and everyone of his metal and

15. Ayub Hospital, Dhaka, Bengladesh - Louis Kahn 1969
16. IIT Crown Hall, Chicago, IL- L. Mies vander Rohe 1956

17. High Court, Chandigarh, India - LeCorbusier 1959
18. 910 N. Lake Shore Dr.,Chicago, IL-Mies vander Rohe 1956

glass curtain walls with distinctive corner details that differ from the field mullions.
(See Drawings Nos. 17 & 18)

COMPOSITION

If façades are not simply the projection or extension of a plan or section, punctured with openings, and enclosures become intentional and a priori conceptions about the outermost layers of buildings, then very much like plans and volumetric assemblies, they insist on **composition.** The composition of building enclosures relies on the dialogue or conflict between **constancy** and **particularization** within a perceptual field.

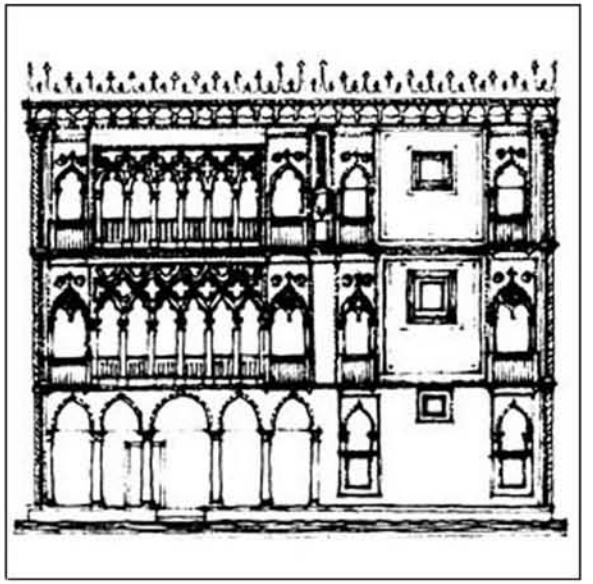
Constancy relies on repetition and coninuity. Changes and transitions, invite variation and deformation. And it is this graphic deliberation between formal systems, that engenders the intellectual / visual inquiry and distinguishes Architecture from just building. The sources of constancy which establish general fields include

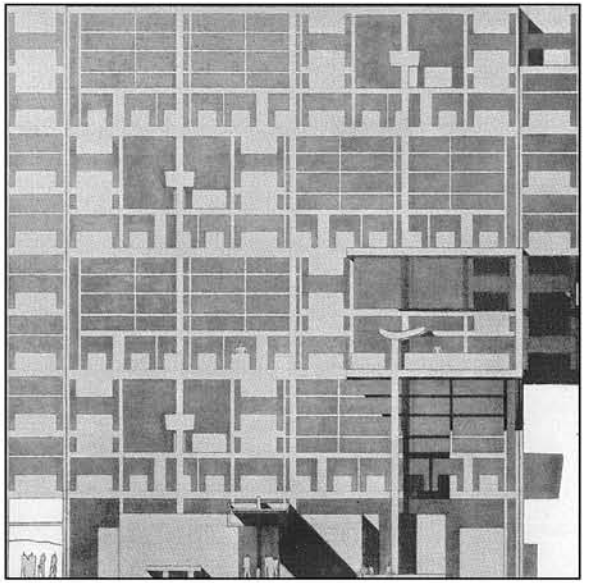
a. Using major lines and profiles , which may be broken, but are then aligned to maintain figural, easily recognizable outlines and profiles.
b. Using planes that retain their continuity and constant materials, textures and colors.
c. Repetition of dimensions, proportions and identical or similar elements. (See Drawing No. 19)
d. Associating and organizing components as parts within a whole aligning on a common axis or line.

The drum beat of constancy is differentiated by intentional actions or operations taken against the general order. Such actions would include:

a. Breaking the constancy of line, plane volume or shape, by adding subtracting or altering the aggregation or subdivision of elements.
b. Deforming elements and relationships and changing materials textures and colors.
c. Introducing or embedding high contrasting or opposing elements and relationships. (See Drawing No. 20)
d. Layering and making simultaneously perceived composites of elements and patterns. (See Drawings Nos. 21 & 22)

When the above enclosure typology is overlaid on the plan and structure





19. Palazzo Farnese, Rome, Italy- Antonio da Sangallo, 1534
20. Palazzo Farnese Embedment, of Front Door & Balcony

21.Ca d"Oro,Venice,Italy - Giovanni & Bartolomeo Buon,1424
22. Secretariat, Chandigarh, India - Le Corbusier 1959

organizations and on the volumetric intentions of a building, a coherent morphology - a logic of form, emerges. The design activity becomes explicit; it weaves and meshes a building fabric consisting of many components, patterns, geometric and volumetric relationships through a design language with a grammar and syntax based on type. And it becomes an architectural literacy about type, just like fluency in any language, that enables the architect to engage form giving as a set of conscious choices within a knowledge base that is inherent in the discipline

NOTES:

1 MacCormac, Richard C. "The Anatomy of Wright's Aesthetic" in *Architectural Review*, Vol. 143, No. 852, February 1968, pp 143-146

2 Rowe, Colin. "The Mathematics of the Ideal Villa" in *Architectural Review*, Vol. 101, No. 603, March 1947, pp.101-104.

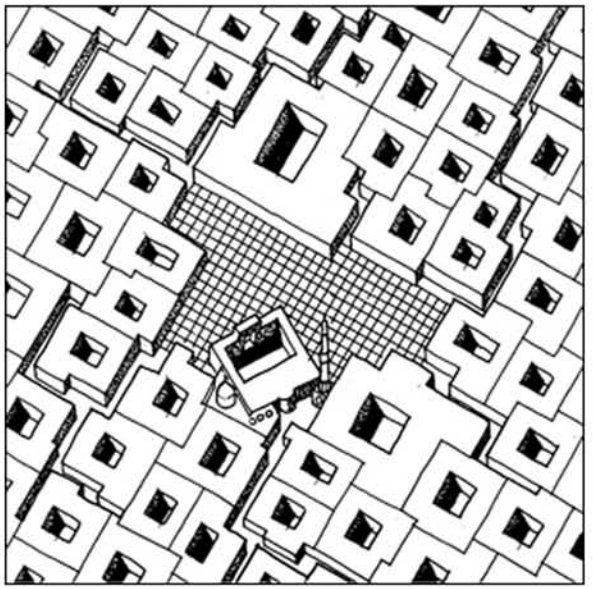
8. RESPONDING TO A CONTEXT

The preceding segments have presented an inclusive overview that conveys the need for a literacy that typifies, that systematically selects and characterizes attributes that are shared, and which in turn become available to architects as they search in their experience and memories for the formal responses to the design tasks they confront.

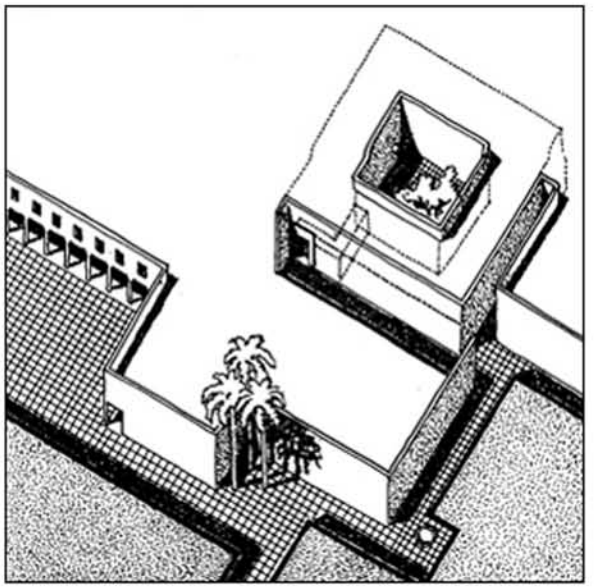
If typology has anything to offer architects, it is an array of choices with which to make judgments about appropriateness to suit a situation at hand. Typology invites us to speculate and subsequently postulate, whether a particular condition is best served by a **nodal, linear** or **field** composition to satisfy the programmatic demands of **coincidence, intersection, adjacency** or **connection.** Typology also prompts inquiry on what structural order implications best suit a particular plan organization, and in turn engenders volumetric assemblies and enclosure compositions. Note that in each case reference has been made to multiples; that is, the testing of distinctive and equivalent alternates that invite and require assessment and eventually selection in the making of buildings and places.

Far too often, architects rely solely on internal factors to configure buildings. The predictable results are preconceived objects that are subsequently dropped unto sites, with little or no consideration given to their contexts.

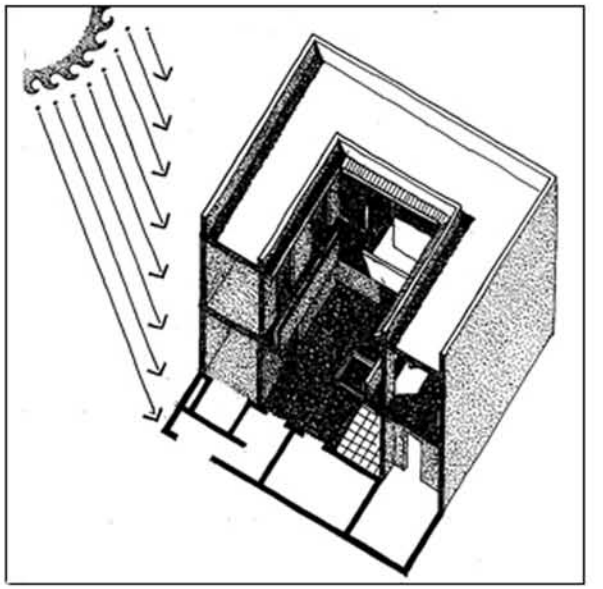
The least that an architect ought to consider in a context as an external factor to engender form , as elaborated in the previous **enclosure** segment, is orientation, with particular emphasis given to sunlight. Natural conditions such



1. Responding to a Context Microclimate: Cellular Fabric



2. Shaded Netwroks



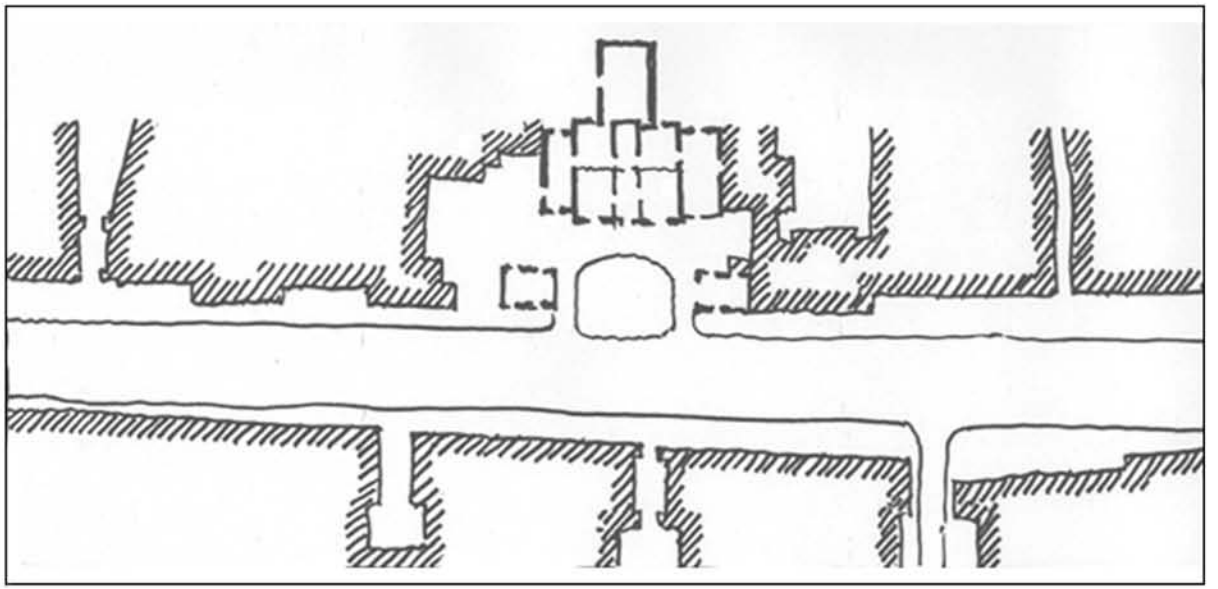
3. Limited Exposure : Hanno Weber 1981

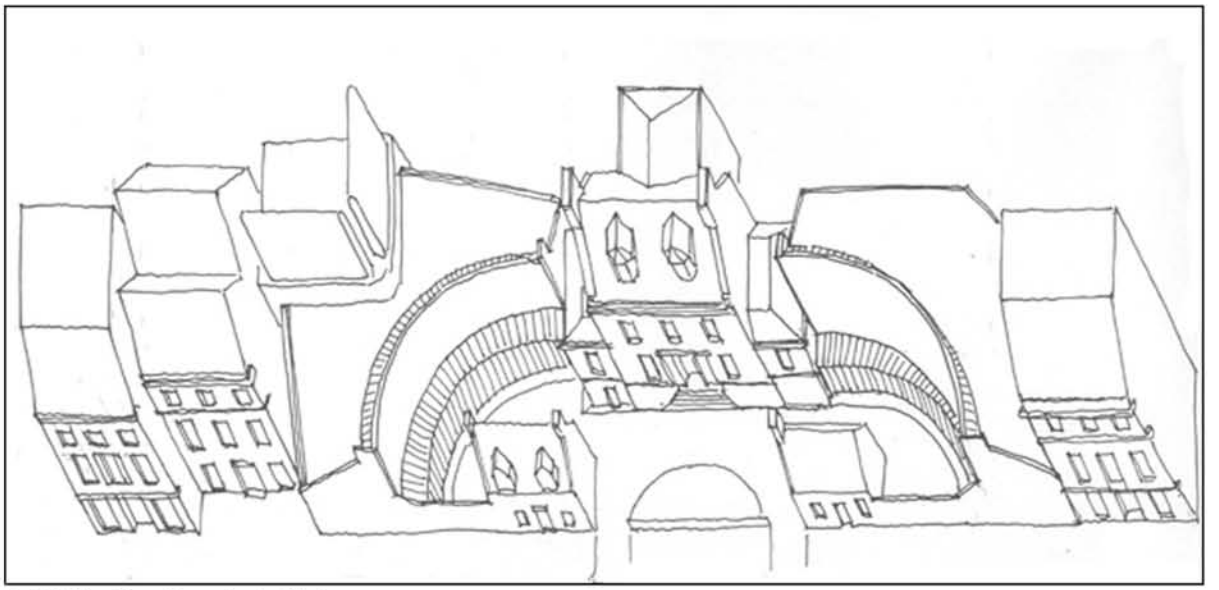
as the microclimate, the ecology and the topography of a place, can serve to delimit the range of suitable or equitable building organizations and enclosures. I refer you to Chapter II, wherein I described a building morphology that transcends its contextual limitations and is firmly rooted in arid /desert environments. (See Drawings 1,2 & 3). I noted how that built environment creates a related socio-cultural reference that contributes precedence – a building order equally attributable to the cultural ideals that value privacy and protection.

Such a response that is related to both cultural and physical factors is probably the most reliable filter for the selection of appropriate formal types. Ignoring or avoiding the contribution that a context offers to making or finding building form, is not only a lost opportunity, but a negation that every place on earth is in fact unique and distinct, and tantamount to pretending that "there is no there, there".1

CONTEXT STRATEGY

There are two basic strategies that an architect can exercise in the acknowledgement of a context. Buildings either **merge into** or **claim** their sites and





4. Exiisting Condition prior to Design
5. Art Center, St. Andrews , Scotland - James Srirling 1971

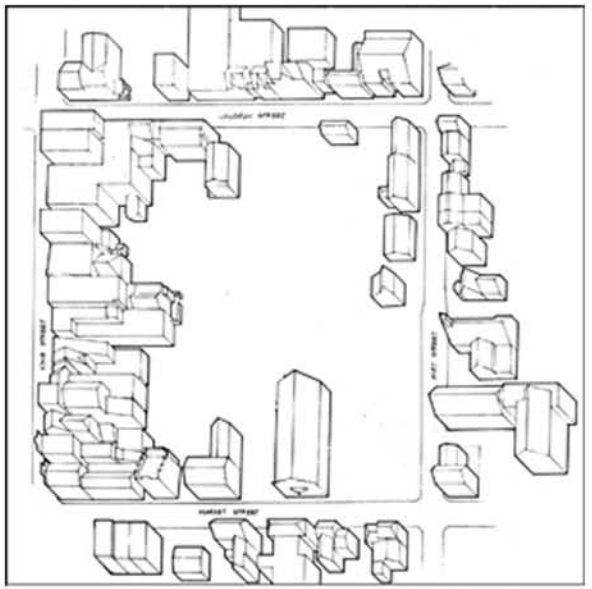
surroundings.

When **merging**, designers accept and emulate, without necessarily mimicking the existing built or natural order encountered, or has preceded them. An attempt is generally made to restore the fabric of a built setting, or to least disrupt a natural setting.

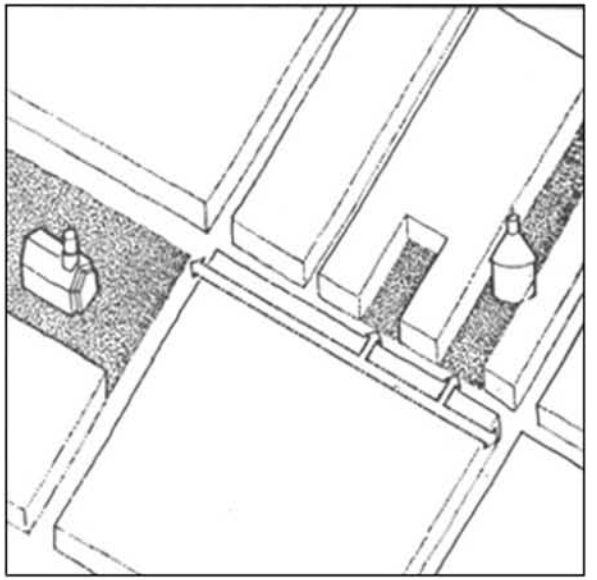
A **merging** intervention by a designer seeks to leave a context better off than prior to the addition of a new building. And there is probably no better practitioner of merging in an urban setting than James Stirling during the decade of the 1970's. One salient project is the Art Center at St. Andrews University in Scotland, regrettably never implemented. The architect seamlessly inserted an art gallery, a theater workshop and studio space for painting and sculpture into the existing *poché* of an urban house flanked and connected to side lodges. The resulting composition not only maintains, but also features the existing buildings, while creating an elegant entry forecourt – a new urban outdoor room. (See Drawings 4 & 5).

A second example of **merging** in an urban setting is illustrated by the Municipal Government Center in Leesburg, Virginia, U.S.A. This writer was retained as the architect in 1987 after winning an international design competition that attracted 200 entries. The design task required accommodating a 380 car parking structure and a new town hall in the frayed site occupied by surface parking and broken up by structures which could not be removed.
(See Drawing 6)

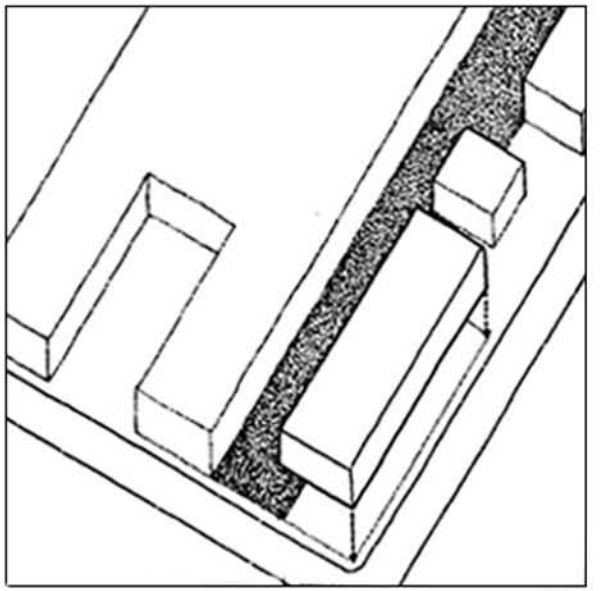
Within the grid fabric of an American Colonial town, the neighboring 19th. Century County Court House, surrounded by a lawn and cast iron fence, furnished



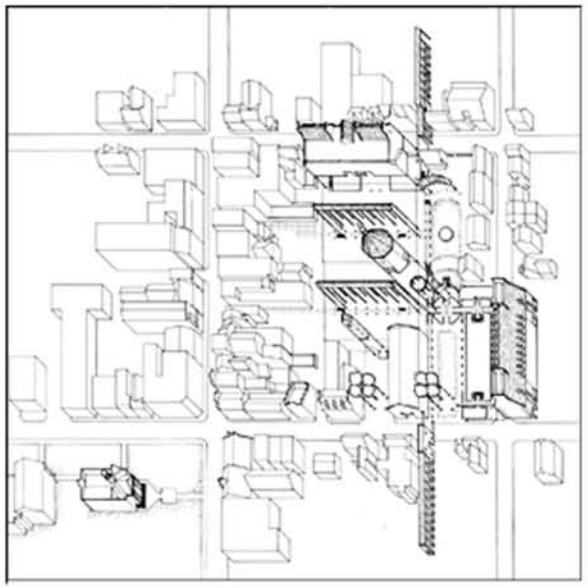
6. Existing Conditions, Government Center- Leesburg, VA

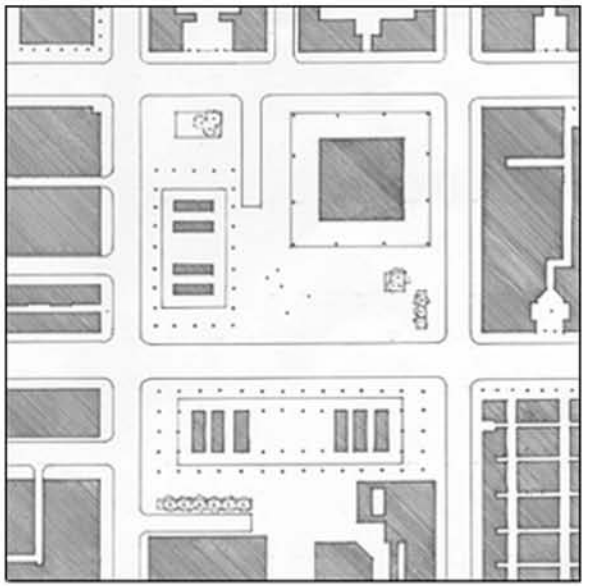


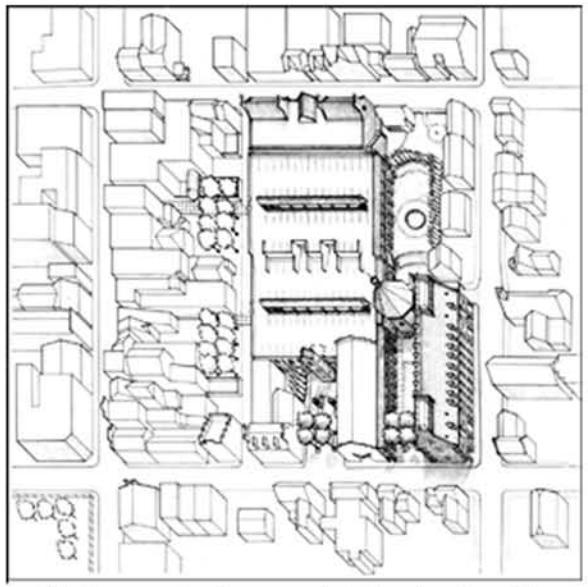
7. Context Reference : Object in a Town Green

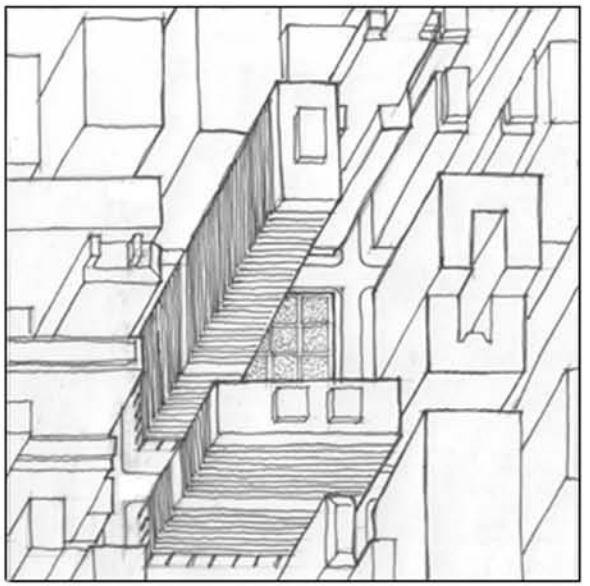


8.Town Hall & Parking , Leesburg,VA-H.Weber & Assoc.1987









9. Site Components - Government Center, Leesburg VA
10.Government Center Leesburg VA - H. Weber & Ass. 1987

11. & 12. Federal Office Complex , Chicago, IL
Ludwig Mies van der Rohe, 1959-1963

the first contextual reference to a design *parti* – the need for a civic space – a "town green"- containing an "object building" and enfronting the green. Given the need to embed and hide the incongruous, large footprint of the parking structure, the town green became a long and narrow open space, punctuated by the council chamber. (See Drawings 7 & 8) This formal response was shamelessly borrowed, as a reduced version, from Thomas Jefferson's lawn and rotunda at the University of Virginia in Charlottesville, Virginia (1817-1826).

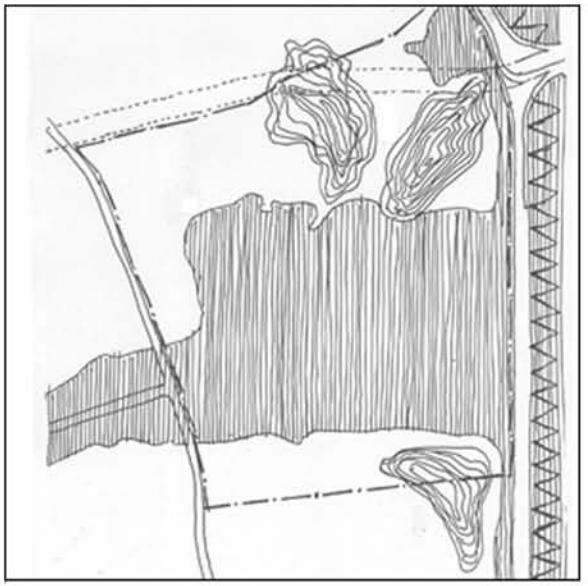
The linear body of the Town Hall, in turn contains the green, restores the street edge and emulates the neighboring cornice heights, using a gable roof with dormers, to reduce the scale and house a third level (See Drawings 9 & 10). The building enclosure also reflects the neighboring fabric of punctured brick walls and metal roofs. This **merging** design intervention in the best traditions of architecture and urbanism, practices "good manners" – the public behavior and deportment by an architect, and thereby prevents private indiscretions.

The second intervention strategy seeks to **claim** a context. Claiming requires designers to consciously juxtapose and contrast their contribution on a site.

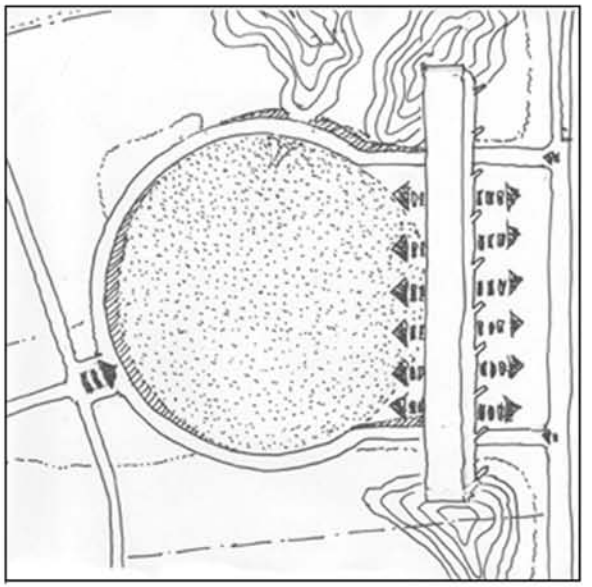
Claiming is a far more complex and difficult task than merging, particularly when it is pursued as a serious design effort, and not just "bad boy" behavior by a designer, only to be novel and attract attention. **Claiming** a context, first of all requires an intimate and thorough knowledge and understanding of a place. It then demands a motivation that seeks to alter the structural organization of a place in order to accomplish desired improvements. In fact the design intervention must assert that the claiming act is essential to benefit the situation.

There is no better model to illustrate **claiming** than a project by Mies van der Rohe in Chicago. The fabric of this city is based on the 19th. Century convention of an urban grid as a vehicle to subdivide land for speculation. It so happens that the unbroken Chicago grid is an extension of the survey system adopted by the U.S. Continental Congress for the disposal of western lands in 1785. With military precision, modified only by the occasional topographic accident or water course, the grid extends to the Pacific Ocean, dividing land into townships, 6 miles square, each township then divided into 36 square mile sections of 640 acres. Chicago's city blocks, sometime 12 and other times 16 to a mile, were developed to the street edge, creating dense unrelieved urban canyons. 2

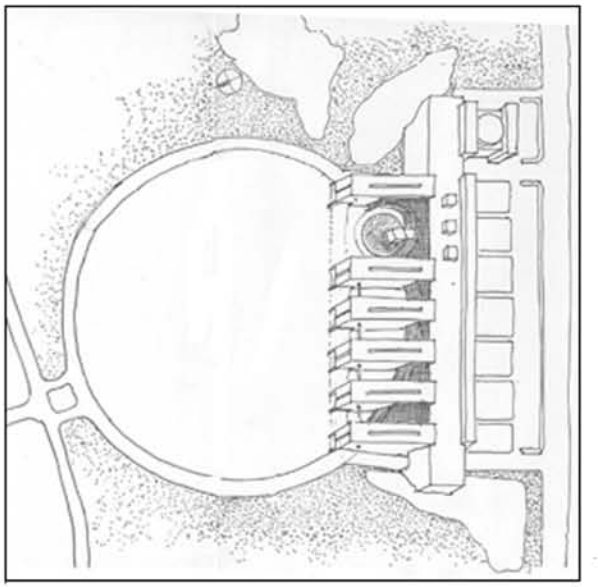
When Mies van der Rohe was retained to design the Federal Office Complex in 1959, he inserted a 20th. Century constructivist or cubic composition within the existing 19th. Century container. He claimed the site and in the process contributed a public open space within the city grid. The composition of carefully related prisms is intended to allow space to extend, better yet to escape, under and through the legs of buildings. The boundary of the existing buildings is



13. Han River 100 Year Flood Boundary in Seoul, S. Korea



14. National Museum Design Competition, Seoul, S. Korea



15. Hanno Weber & Associates w/ Il Shin Architects, 1995

essential to the composition as in the Federal Center when Mies did not have closure on one side of the open space, he built one as an integral part of the composition. The claiming of the context is accomplished, only because the existing urban order has been understood, acknowledged and included in the composition. (See Drawings 11 & 12)

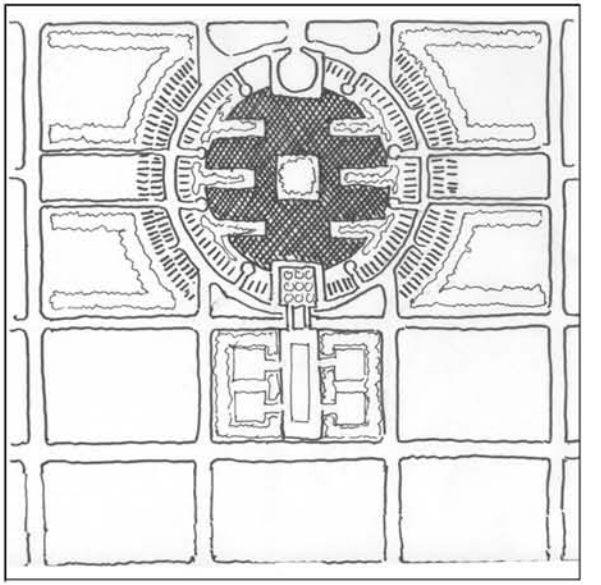
In a second example, this writer as the design architect in association with Il Shin Architects of Pusan, has also sought to **claim** a context in the 1995 design competition proposal for the National Museum in Seoul, South Korea. The program placed the new museum on a site used as the Yongsan Family Park which is prone to 100 year floods from the adjacent Han River. The park, a flood plain bowl, adjoins an arterial road parallel to the river and is heavily used by nearby residents, especially on Sundays. The bowl is surrounded by higher flood-free land and is punctuated at each corner by distinct projecting hills. (See Drawing 13).

The design strategy takes its first clues from these topographic conditions – a museum structure that is raised above the flood level as a bridge spanning between the hills. The linear bridge building, turns its back on the highway and becomes an edge to the site. The park then, is maintained as a perfect circular meadow, that could become a lake when the river floods, bounded by a retention berm and access road, raised to the building level and accented with flanking flowering trees. (See Drawing 14)

Exhibit galleries extend as fingers from the linear building into the meadow, establishing within the Platonic ring boundary an indelible figural presence in the landscape . This juxtaposition between the inserted abstraction and the existing natural setting, not only accommodated the new program – the museum, but also retained the use of the site as a public park. (See Drawing 15) The composition **claims** the context by imposing the new geometric order of a raised building, connected to and interpenetrated by the formal ring road.

CONTEXT COMPOSITION

Given one of the two context strategies the placement of buildings on and the occupation of a site, are clearly more than simply the centering of a structure within the property boundaries and its required zoning setbacks. At times **centering** may be appropriate as is the case of a design competition proposal by this writer for the Government Center in Taejeon, South



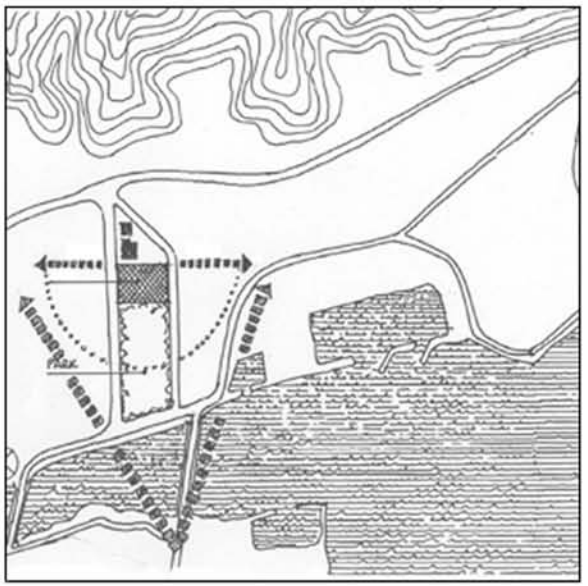
16. & 17. Federal Government Center, Design Competition
Taejeon, S. Korea - H.Weber & Assoc. w/ Chong Hap, 1991

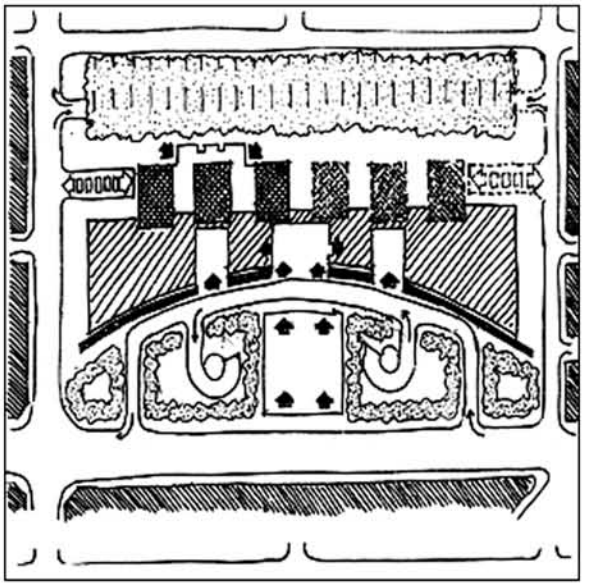
Korea . The nodal assembly of eight ministries around a courtyard and common facilities was engendered by access to the surrounding surface parking and its siting on rural land. (See Drawings 16 & 17)

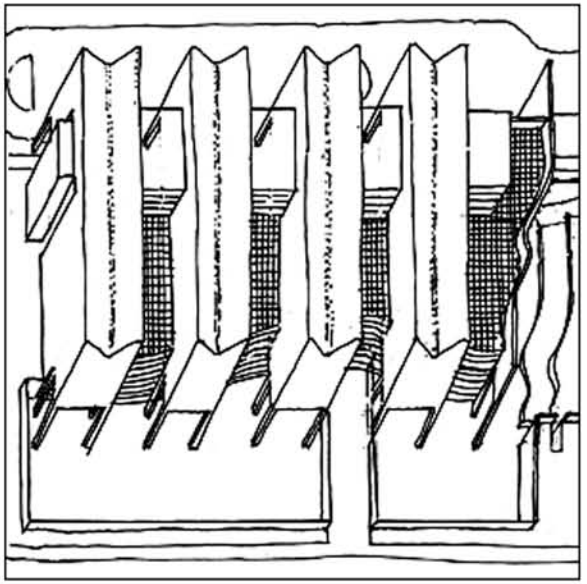
Most often public institutions seek to **enfront** a boundary or approach path. In the design competition proposal for the Pusan Metropolitan Art Museum, the **cellular** composition of galleries, threaded by a circulation spine, **enfronts** the adjacent assembly park, but more importantly the approach from a bridge over the Suyong Gang River. (See Drawings 18 & 19)

Similarly, in the design competition proposal for the Chin Ju City Hall Complex, the **elemental** assembly of the office towers and council chamber, connected by curving plinth wall, **enfront** the Gaeyang Habchum National Road . A curved wall also provides an enclosure containing a forecourt. (See Drawings 20 & 21)

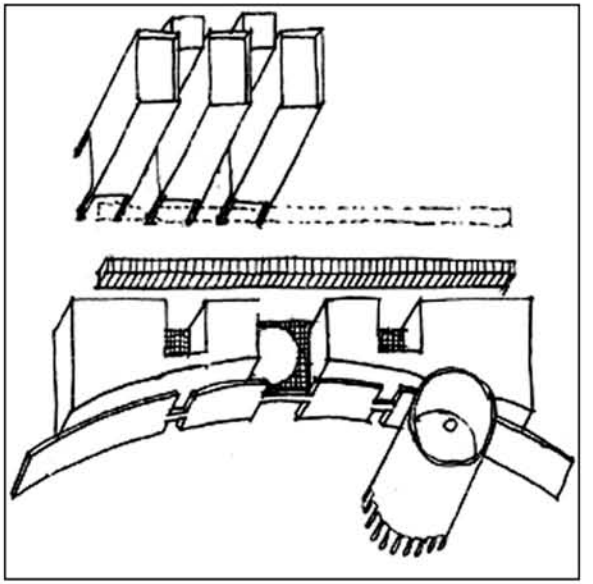
When space is at a premium, buildings seek to **surface** a context, by using the ground entirely, regardless of the geometry and configuration of the boundaries, that are generally incorporated into the building footprint. A







18. & 19 Metropolitan Art Museum, Design Competition
Pusan,S. Korea - H.Weber & Assoc. w/ Il Shin Architects 1993

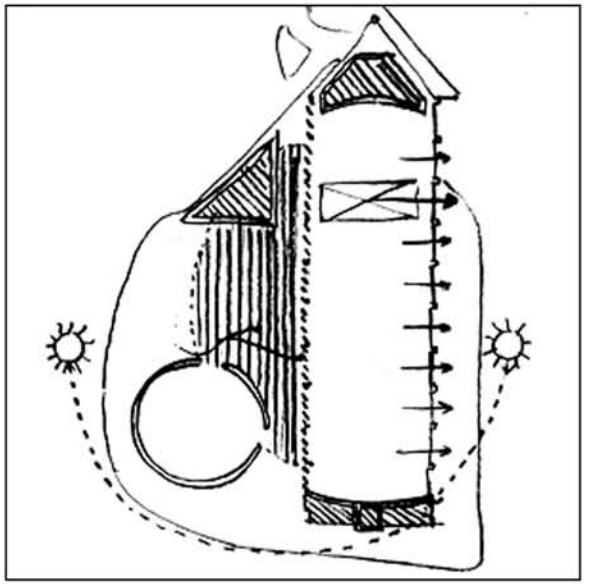


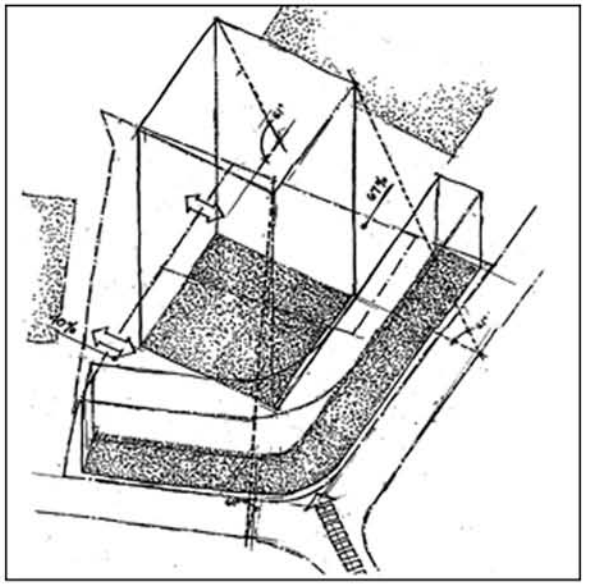
20 & 21. City Hall Complex , Design Competition
ChinJu,S.Korea - H.Weber & Assoc.w/ Il Shin Architects 1996

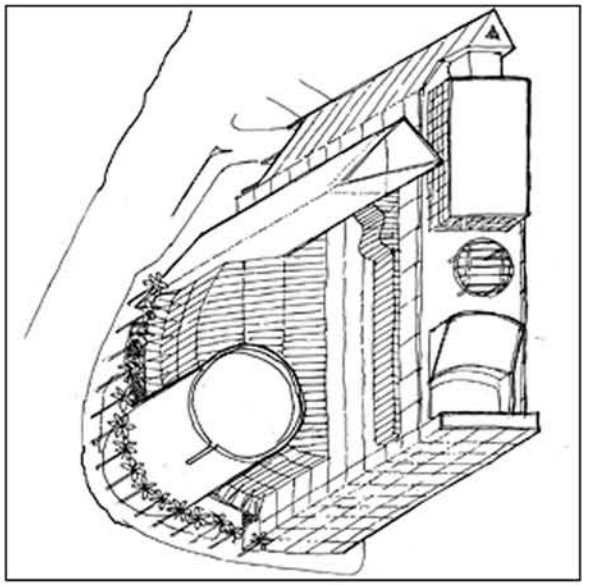
useful example of a building surfacing a site is the design competition proposal for the Korean Fishing Cooperative along the Pusan waterfront in the Dadae dong, Sahan Gu district. In that context, the building fills the irregular site with a constructivist **elemental** composition of interpenetrating Platonic solids – a cylinder, a triangular prism and a crescent engaging a rectangular slab that holds the only regular boundary, parallel to the waterfront and serves as a backdrop on the land side to the other components.

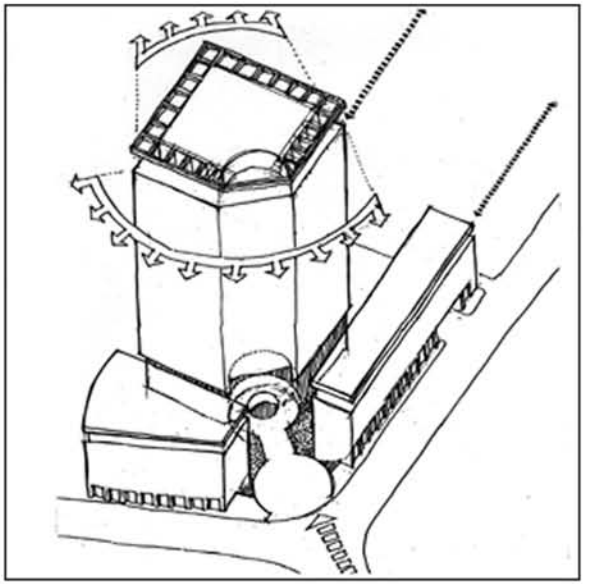
(See Drawings 22 & 23).

Surfacing can also be akin to **edging** a context with a wall as a defensive response to surrounding nuisances or as a means to create a protective precinct. **Edging** a site is also a device to wrap a layer of lower building volumes around a higher structure that would be intrusive and inappropriate against a street boundary occupied by smaller scale structures. Assigning a building the role of a site edge is illustrated by the design competition proposal for the National Tax Administration in Seoul. In this context, the setback and ground cover regulations contributed to a volumetric order of a central block, surrounded by a layer of open space and a lower building skirt on the street frontages. (See Drawings 24 & 25)



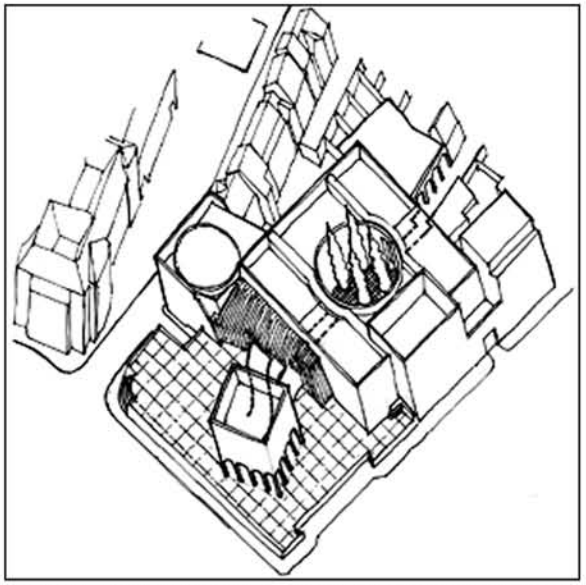






22 & 23. Korean Fisheries Cooperative - Design Competition
Pusan, S. Korea - H. Weber & Associates w/ Il Shin 1996

24 & 25. National Tax Administration - Design Competition
Seaoul, S. Korea - H. Webert & Associates w/ Il Shin 1998



26. & 27. Existing Condition & Design Competition Proposal
Museum for N. Rhine Westphalien, Duesseldorfd, Germany
J. Stirling & M. Wilford, 1975

The last in this series of topological actions to engender context compositions, is best characterized as **embedment** or the enclosure of an existing or new structure by another. Often this site order is also given the role of a link or **connection.** In the case of the Stirling and Wilford 1975 design competition proposal for the North Rhine Westphalien Museum in Düsseldorff, Germany, the building not only fulfills the programmatic requirements, but is inserted into the existing city fabric to maintain a public pedestrian path through the site. The device of a circular garden **embedded** within the building to accomplish the **connection** also organizes the museum gallery plan. (See Drawings 26 & 27). Stirling and Wilford eventually implemented an equivalent *parti* and context composition in 1983 at the *Staatsgallerie* in Stuttgart, Germany.

The above referenced context composition models only offer coarse topological design actions, which may be used singly or in combination. They should make explicit for architects the responsibility to assign buildings a formal role on a site – a contextual task, which will contribute to and engender their disposition and organization. This argument proposes that a design task begins by delving into a context – a typological inquiry looking into major variants of building plans, spatial sequences, volumetric assemblies and enclosure compositions with reference to a particular site and the immediate urban, ex-urban or rural fabric. It would then explore how formal types - precedents - might suggest design inferences to alternate design compositions that could be applicable to a given program. And finally it would evaluate and select the most appropriate variants to configure the building program. The argument re-asserts:

1. That architecture does not materialize without a literacy of precedent.

2. That design is a continuous process of the reinterpretation and transformation of precedents, not as nostalgic parodies of the past, but as an ongoing mutation of the built landscape within a context, whether natural or urban.

3. And that judgments about architectural alternates, or whether one merges into or claims a site, as well as what formal roles are assigned to a building, must be based on contextual referents.

NOTES:

1 Stein, Gertrude. *Everybody's Autobiography,* Reprint Edition, Sep-

tember 1993.

Stein referring to not finding her childhood house in Oakland, California when she returned from Paris to the U.S. on a lecture tour in the 1930's.

2 Reps, John W. *The Making of Urban America,* 1963

9. CASE STUDIES PREFACE

This and subsequent segments on architectural design will focus on "practicing what has been preached" in the previous seven segments on building morphology as a tool in the search for the origin of forms, their arrangements and their relationships. The logic of form, as a design language and grammar that seeks to structure the design activity will be illustrated using case studies – wherein this writer has been the Design and Architect of Record, or the Design Architect in collaboration with another Architect of Record.

Several of the case study projects were developed as design competitions. About one quarter were awarded first place and the subsequent architectural commission and another quarter achieved second and third places. This level of relative success can only be attributed to the clarity of the Design Intent and the resulting formal compositions that could only be conveyed graphically and anonymously, without the benefit of a verbal presentation to selection juries consisting of other architects as well as laymen.

A more explicit application of morphological choices was exercised on commissioned project case studies. With the presence of a representative client group throughout the design process, the grammar provided a literacy to systematically develop an array of alternatives - typologies - which could be graphically and verbally presented, openly discussed and evaluated, and eventually selected as appropriate options to suit a particular design solution. In these case studies, the design activity was effectively demystified from something inscrutable and only in the mind of the architect or urban designer, to an endeavor, wherein designers share their literacy by making it accessible to others and thus are forced to make the subject matter tangible.

It is also essential to warn the reader that the case studies describe only a *parti* - a point of departure - in an architectural composition that engages its context. Much happens thereafter to realize a building, but without that initial *parti,* that intellectual foundation that underlies an informed design process, there is no Architecture, with a capital "A". Each *parti thus* rests and depends on a formal literacy that is inclusive and therefore has no "stylistic axe to grind" and is equally sympathetic to classical precedents and constructivist underpinnings, hopefully without falling into literal mimicry.

10. CASE STUDY I

MUNICIPAL GOVERNMENT CENTER
TOWN OF LEESBURG, VIRGINIA USA

DESIGN COMPETITION ARCHITECT
FIRST AWARD 1987
ARCHITECT OF RECORD 1988-1991

PROGRAM

On an oddly shaped site occupying portions of a square block in the Town's colonial grid, and containing a surface parking lot and an assortment of buildings that had to be retained, (See Drawing No. 1) the Design Competition brief listed: A Town Hall accommodating 31,000 sq. ft. of office and ceremonial spaces and a Parking Structure for 320 cars as well as a list of objectives for the new development that was expected to:

A. Preserve and reinforce the presence of the urban block as the "Town Center".

B. Be compatible with the small scale of neighboring existing buildings.

C. Provide a new iconic symbol for the town government, distinct from the nearby County Court House.

D. Engender new public open space for public assembly and comfortable pedestrian precincts within and through the site.

E. Enable a phased implementation in order to avoid the relocation of existing functions.

F. Facilitate the future expansion of vehicular traffic and parking.

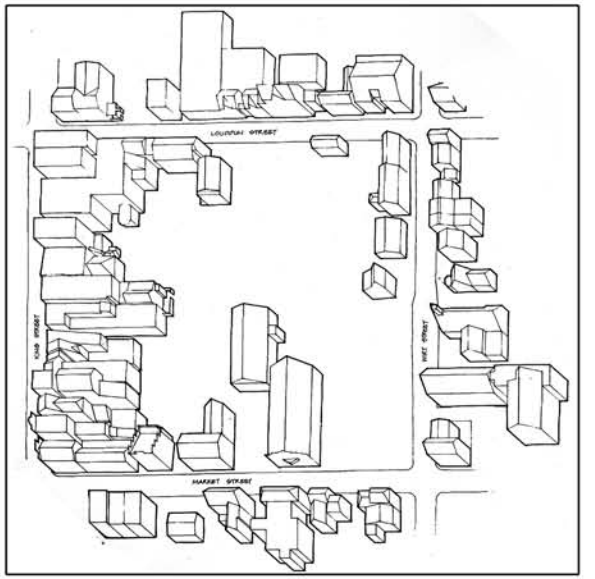
CONTEXT

Leesburg, Virginia at the time was a community of 14,000 inhabitants on the edge of the rapidly expanding Washington, D.C. Metropolitan Area. The Town received a matching grant from the National Endowment for the Arts to conduct a design competition for a parking structure and a new town hall within its historic district. (See Drawing No. 2)

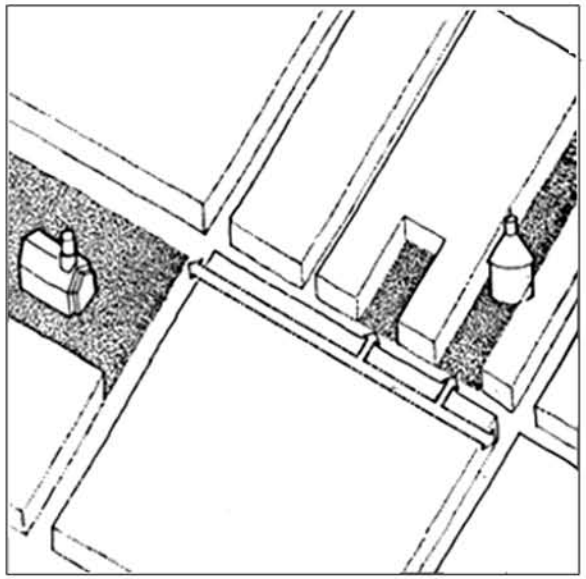
URBAN STRATEGY

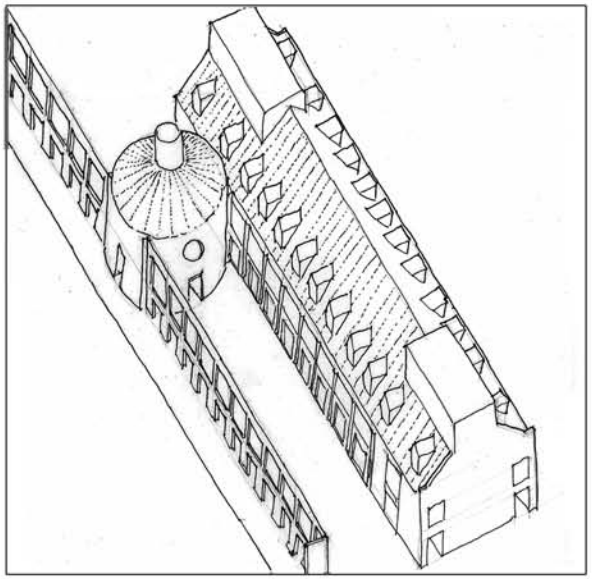
The existing 19th century County Court House, surrounded by a lawn and cast iron fence on the corner of King Street, the town's main street, and Market Street, one of the Competition Site boundaries provided the first reference to a design *parti*: To extend the civic character of the Court House precinct toward the Town Hall site and establish an equivalent "Town Green" containing and serving as a forecourt to a symbolic "object building" (See Drawing No. 3).

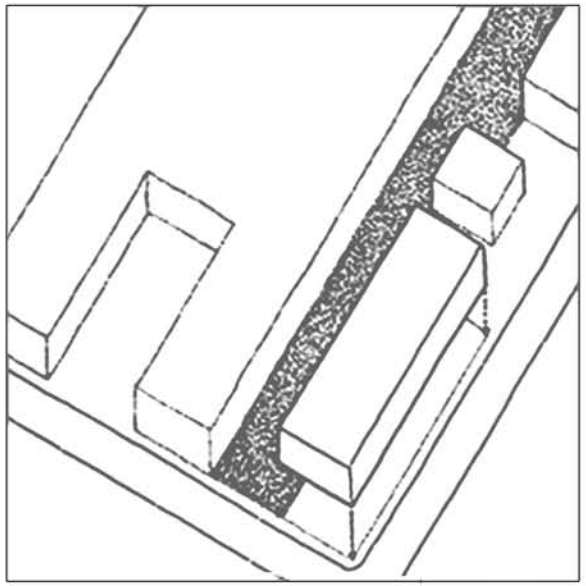
To contain and define the Town Green,

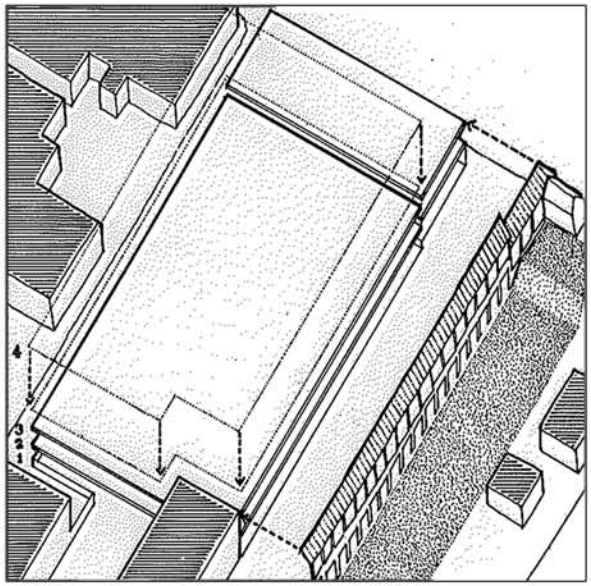


1. Project Site: Existing Condition prior to Design
2. Project Site in Town Context









3. Town Green Forecourt to an Object Building
4. Office Body Restoring the Street Edge
5. Long Narrow Open Space Punctuated by Council Chamber
6. Embedment of the Parking Structure.

the Town Hall program would contribute a linear building volume to re-establish the urban edge on the Northwest corner of the site along Wirt Street. (See Drawing No. 4) The resulting long and narrow open space, punctuated by a symbolic "object building" containing the Council Chamber and what eventually became the building's Entrance Hall, were shamelessly borrowed in spirit as reduced versions of Thomas Jefferson's 1826 lawn and rotunda at the University of Virginia in Charlottesville, VA (See Drawing No. 5).

The need to minimize the presence of an incongruous large footprint, and the requirement for an above grade parking structure, open to the sky in order to accept expansion, suggested embedment behind existing buildings and a masking new arcade, as the obvious tactic to least disrupt and preserve the small scale of the context. (See Drawing No. 6)

Embedment was complemented by an impetus to make the garage, user friendly, light and airy. This prompted puncturing it with day-lighted cross paths that extended existing mid-block pedestrian mews and would link the Town Hall and Town Green through the parking structure to King Street, the

Town's main street (See Drawing No. 7) The widths of the Town Hall, Town Green and Parking Structure were derived from the 50'-0" house lots that formerly occupied the site.

VOLUMETRIC STRATEGY

The integration of the Town Hall into the neighboring delicate urban fabric was accomplished by the elemental massing that separated offices as an adaptable and efficient linear loft from the ceremonial spaces. Maintaining the existing cornice lines as adjacent street sloped, allowed the higher floor to floor heights of a modern office building and the use of a steep gable roof with dormers enabled the building to house a less conspicuous third office level, and reduced the scale of the new urban edge along Wirt Street.

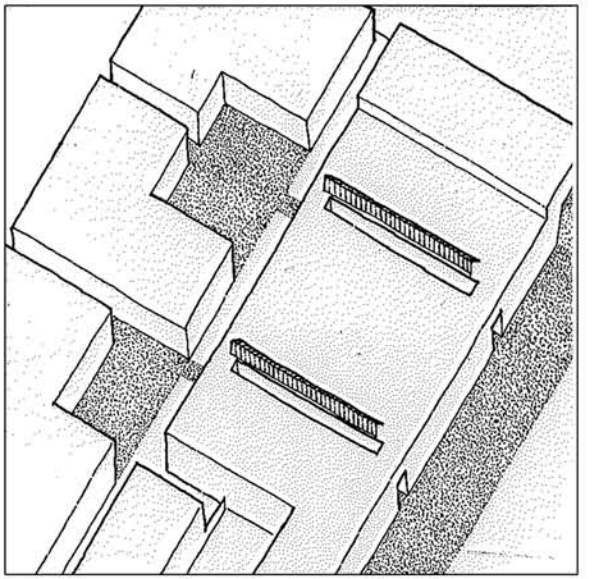
The Council Chamber and Entrance Hall in turn, contained within an ideal "figural object building" – refered to Platonic forms coupled to steep roofs with the intention to convey images associated with public assembly, such as Gunnar Asplund's Woodland Chapel in Stockholm (1920) and to Williamsburg's Capitol Building (1832). (See Drawing No. 8).

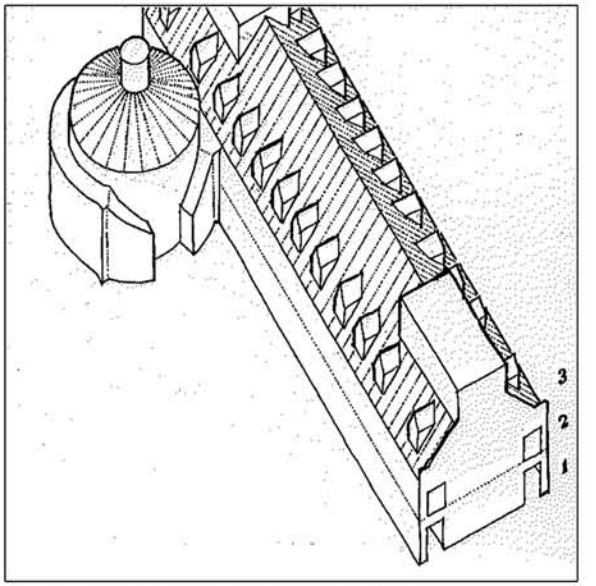
BUILDING ENCLOSURE

The elemental mass of the Town Hall office wing responded to the prerequisites of orientation with punctured masonry walls – windows – which reduced the exposure to the West, provided privacy from the street and together with the metal roof, engaged the neighboring street fabric. (See Drawing No. 9).

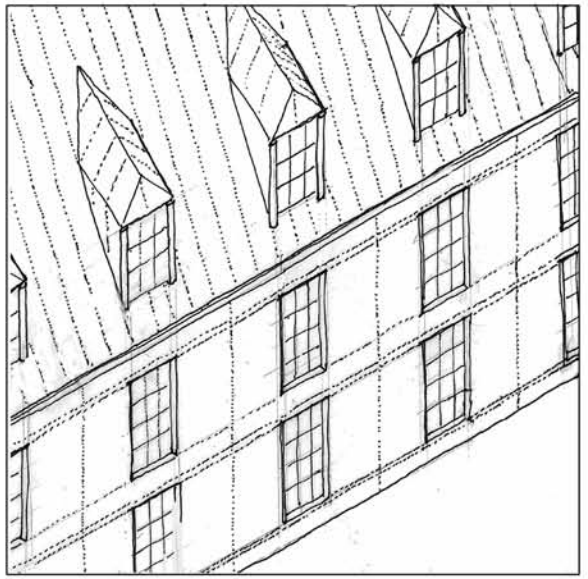
Facing the Town Green, the East wall of the office wing established a more open skin which was mirrored by an arcade that screened the blank wall of an existing building and the new parking structure. The more solid "object building" was thus framed by the rhythmic façades enfronting the Town Green and thereby became the lynch pin around which the entire urban composition revolved. (See Drawing No. 10).

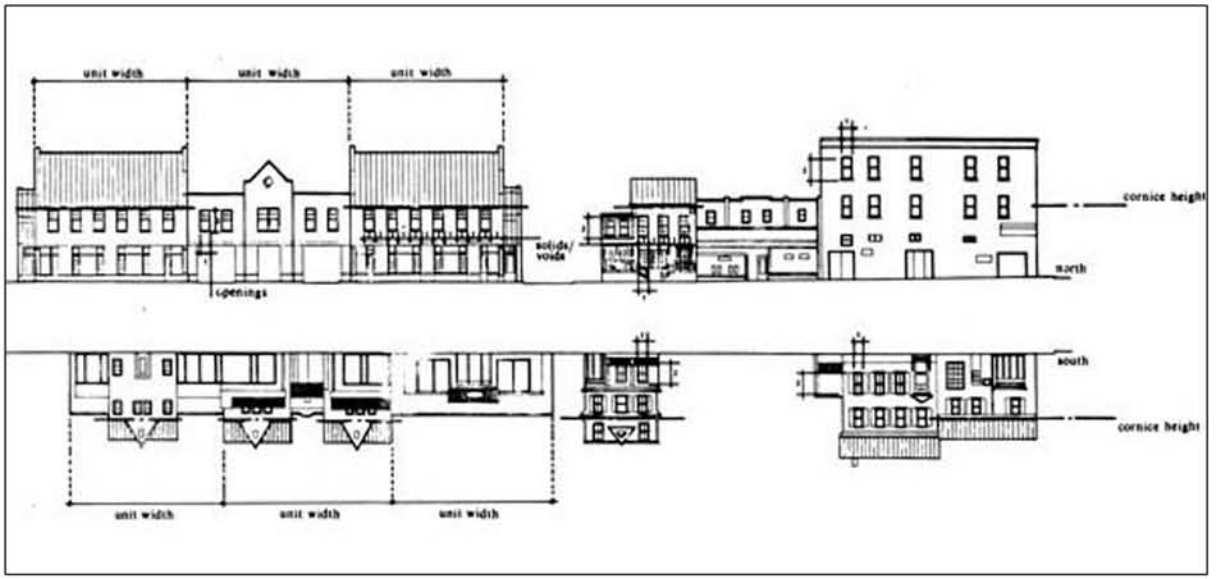
The building enclosure also engaged the surrounding context by establishing a dialogue with the neighbors across the street. On both Loudon and Wirt streets the existing proportions of windows, their surface figure/ground and spacing rhythms, and the widths of building segments contributed to regulate the geometry and dimensional relationships

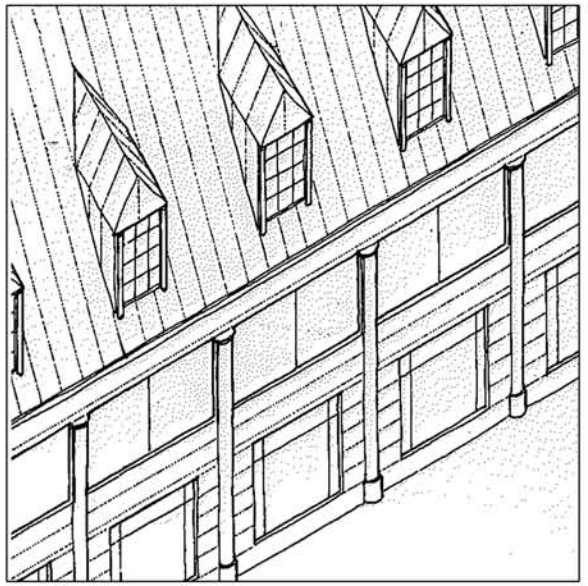


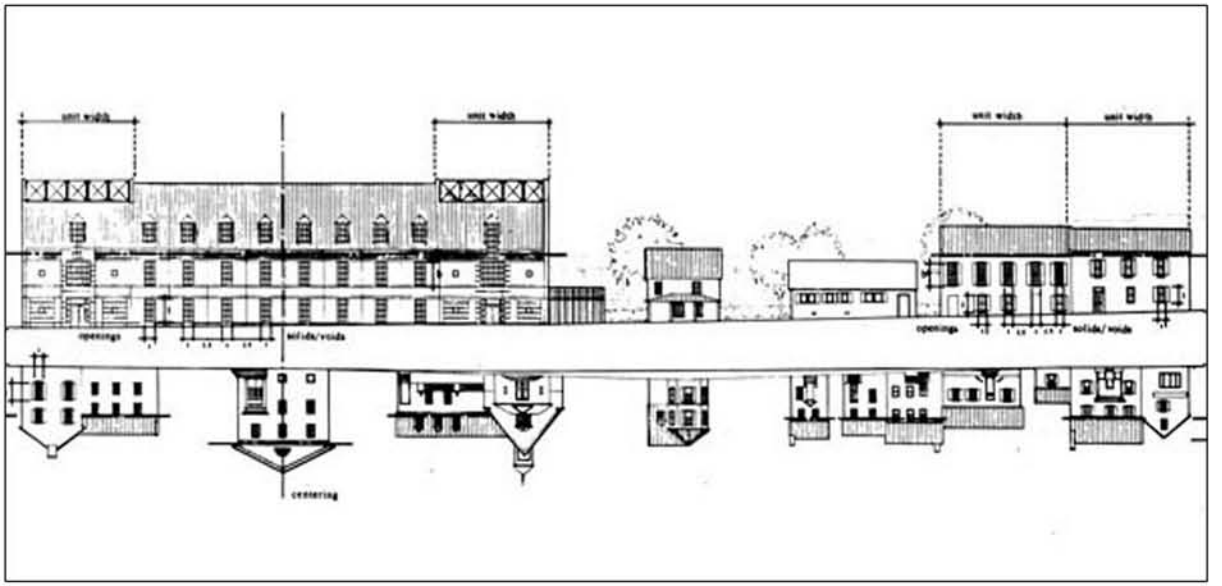


7. Sky Lighted Pedestrian Mews in Parking Structure
8. Elemental Assembly of Linear Volume and Figural Object









9. Town Hall Punctured West Enclosure
10. Town Hall Infilled Frame East Enclosure

11. & 12. Externally Derived Enclosure Organization: Figure / Ground Proportions, & Rhythms

in the building's street façades. (See Drawings 11 & 12)

TOWN HALL PLAN AND STRUCTURE ORDER

Unlike the traditional architectural conception process where the plan generates a composition, in this design sequence, the building plan and structure were subservient to the volumetric and enclosure demands. The linear Town Hall element became a single loaded corridor armature with the arcaded more open enclosure facing East unto the Town Green, while the private, management offices lined the punched window West wall facing the street.

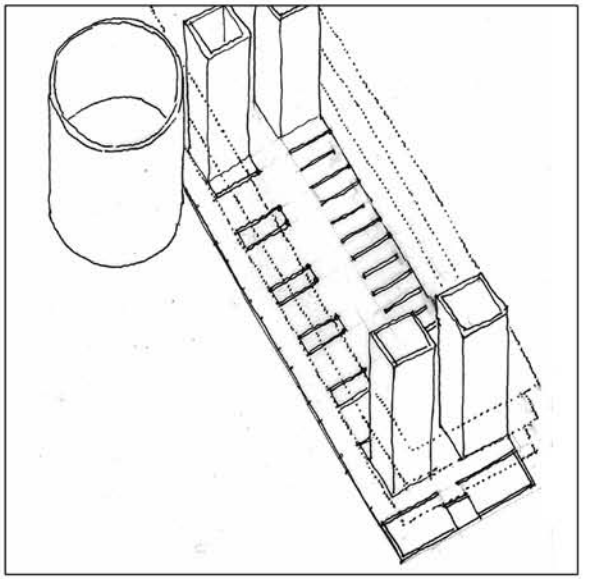
Similarly, the placement of vertical circulation cores was a by-product of the linkages to the Council Chamber and to one of the passages through the parking structure and pedestrian mew to the town's main street. (See Drawing No. 13). The building structure in turn, responded to the plan – with exterior columns fully embedded in the perimeter masonry walls and the interior framing, within partitions that cross the linear plan and derived their location from the bay spacing of stair and service cores and an open plan office module.

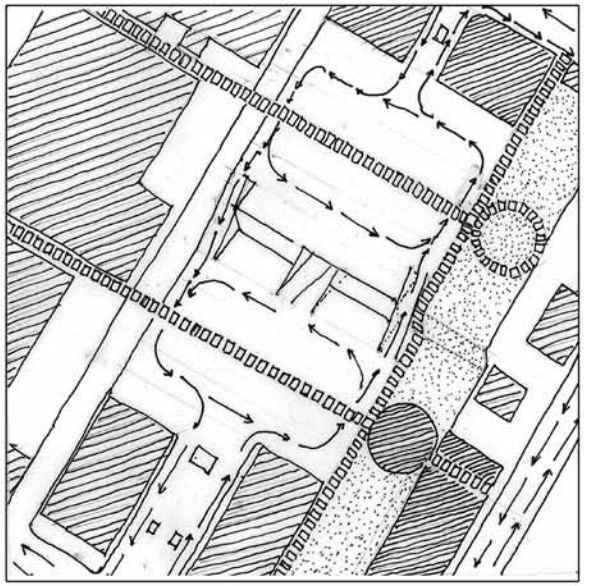
PARKING STRUCTURE PLAN AND STRUCTURE ORDER

The parking structure was also configured by contextual responses, beyond the mandate to embed the large foot print behind smaller scale elements. Two free span driveway and parking stall segments straddled each of the sky lighted slots that aligned with the existing connecting mews and the side door to the Town Hall entrance lobby. The slots in turn served as pedestrian refuges and contained at each end open stairs connecting three levels that were offset between segments by a half level and scissor ramps, in order to merge into the context slope. (See Drawing No. 14)

EPILOGUE

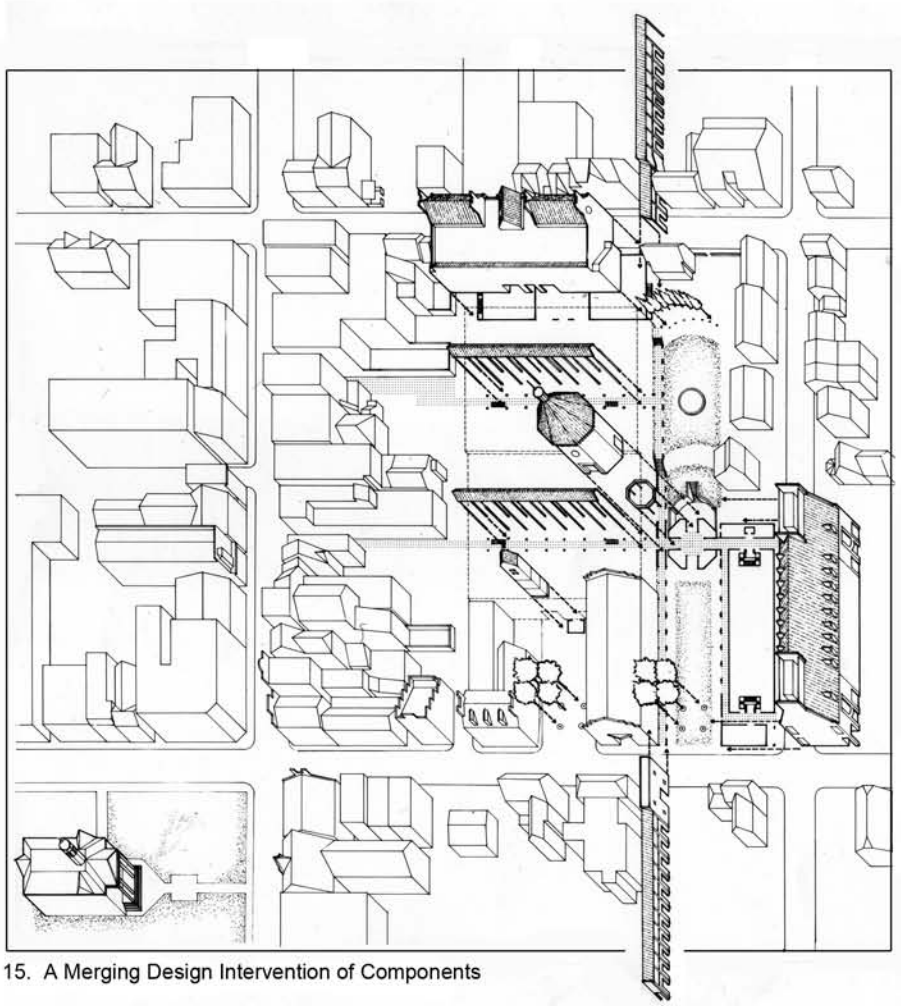
The resulting unobtrusive siting, the uncluttered urbanism and its austere clarity were selected by a jury from over 200 design competition entries in 1987 and subsequently , once implemented, lauded in 1992 by the American Institute of Architects with one of its inaugural Urban Design Awards of Excellence and by the Chicago Chapter of the A.I.A. with an Interior Architecture Citation of Merit. (See Drawing No. 15)



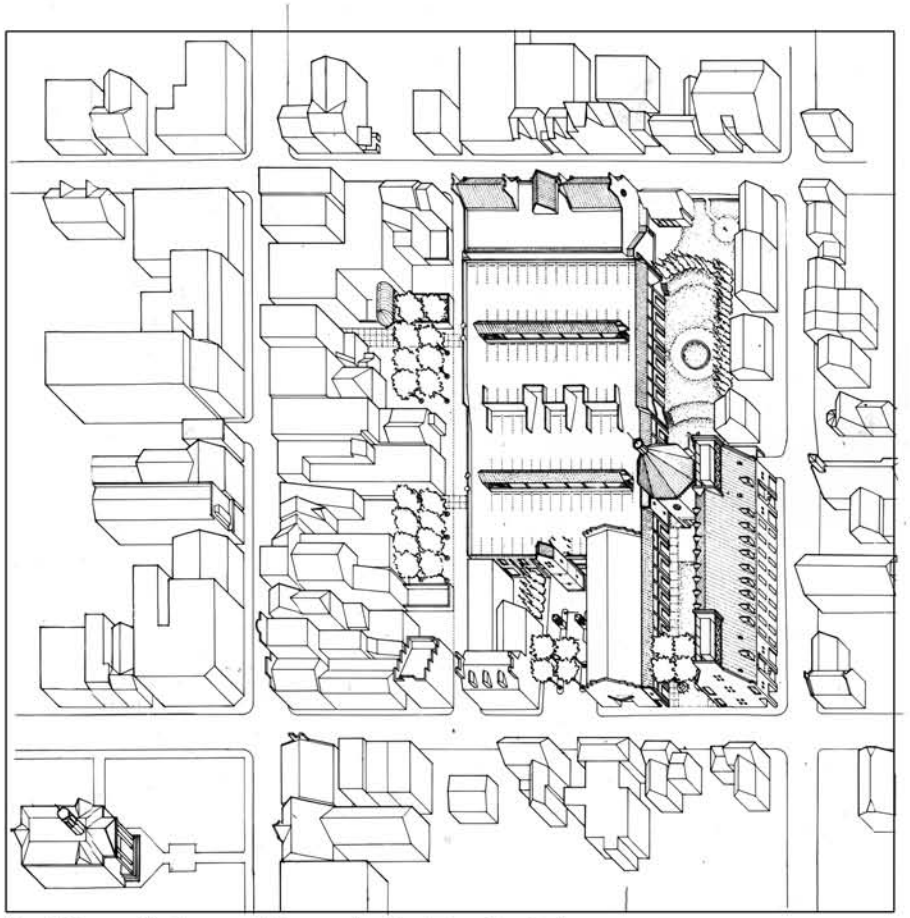


13. Town Hall Plan & Structure Order
14. Parking Structure Plan Order

As a new civic complex, the architecture alludes to historic elements as iconographic responses to create a Town Center. The urban composition respects and merges into the remaining historic street fabric, provides connections for pedestrian traffic and contributes a memorable sense of place as well as a new town symbol – the council chamber with its towering roof and cupola. (See Drawings No. 16).



15. A Merging Design Intervention of Components



16. A Memorable Sense of Place and a New Town Symbol

17. Aerial View from the North
19. Street View from the North

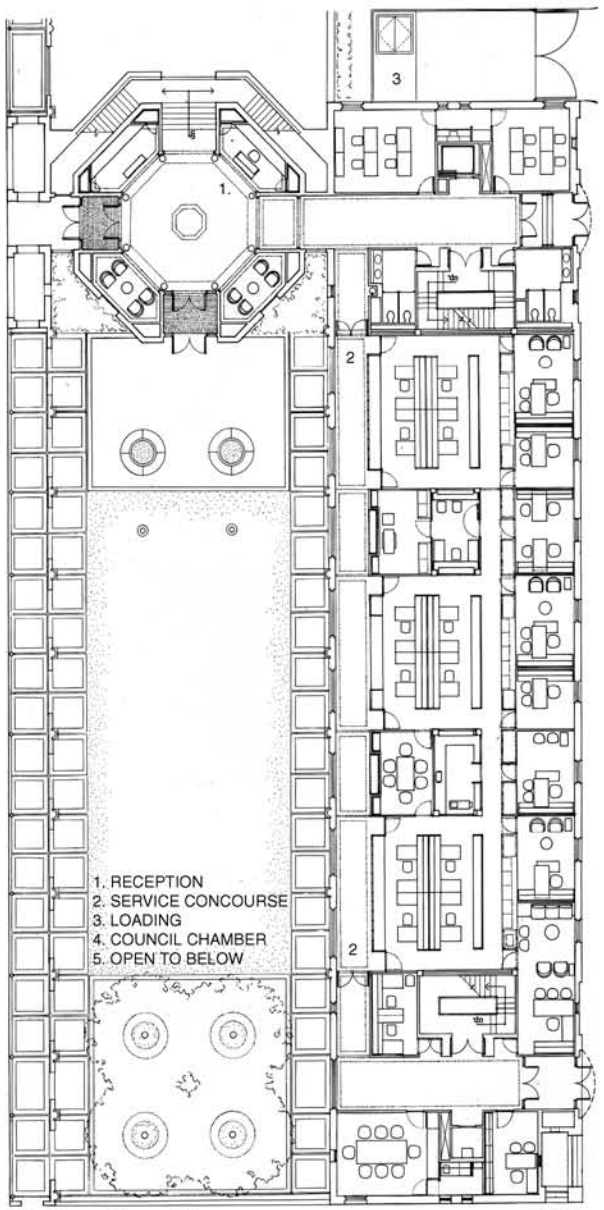
18. Aerial View from the Northeast
20. Street View from the Southwest

21. Town Green Forecourt

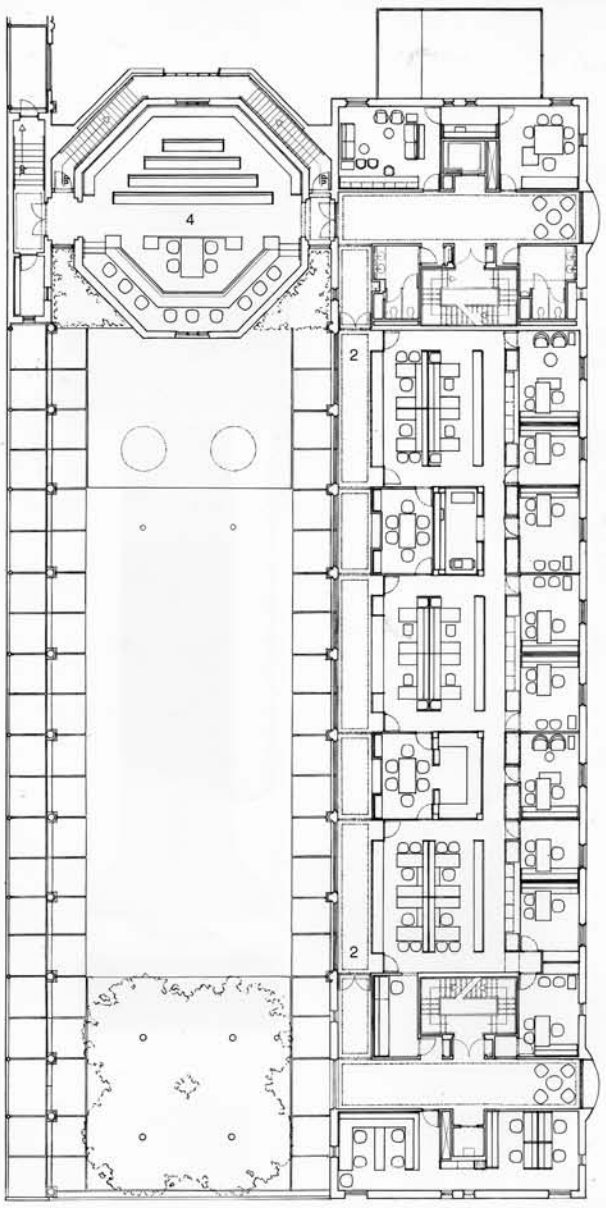
22. Town Green Arcade

23. South Tonw Green

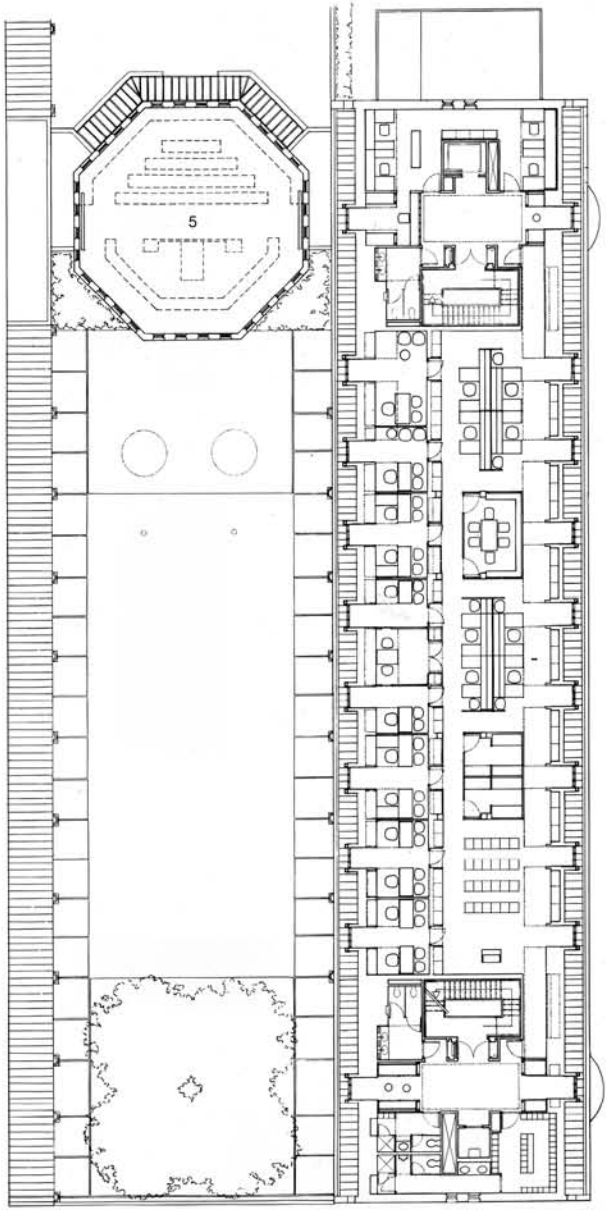
24. South Town Gren / Parking Structure Arcade



25. Ground Level Plan



26. Second Level Plan



27. Third Level Plan

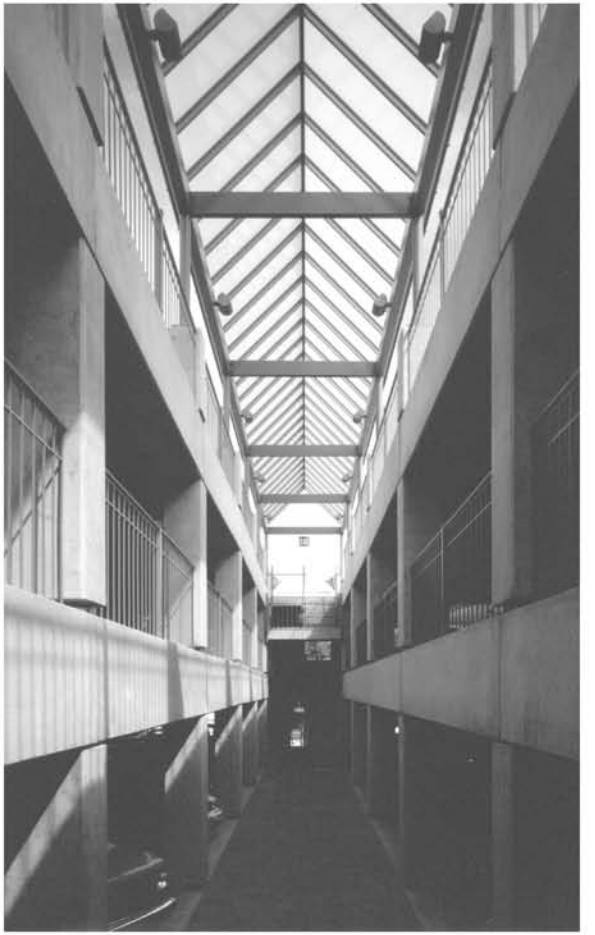
28. Entrance Hall and Reception
29. Second Level Public Service Concourse

30. Council Chamber
32. Town Manager Office Reception

32. Ground & Second Levels Open Plan Offices
33. Third Level Open Plan Offices

34, Cround & Second Level Typical Shared Office
35. Lower Level Staff Lunch Room

36. Parking Strucrture Entrance



37. Parking Structure Sky Lighted Stair Mews

38. Parking Structuyre Skylights

11. CASE STUDY II

METROPOLITAN ART MUSEUM
HAEUNDAE GU - PUSAN, S. KOREA

DESIGN COMPETITION ARCHIITECT
FIRST AWARD 1993
IN ASSOCIATION WITH
IL SHIN ARCHITECTS & ASSOCIATES
ARCHITECT OF RECORD 1993 - 1998

PROGRAM

Sited at the North end of a liner park, bordered east and west by streets as rails of a ladder, and directly opposite from a bridge landing at the mouth of the Suyŏng Gang River, a 150,000 square feet program included:
One third of the space dedicated to permanent, traveling, local history and craft exhibits.
A second third to curatorial, archival and education spaces and the last third, to public, managerial and maintenance spaces.

The program also required parking for 110 cars, a sculpture garden, a maximum building height of three levels or 60 feet and the following performance objectives:

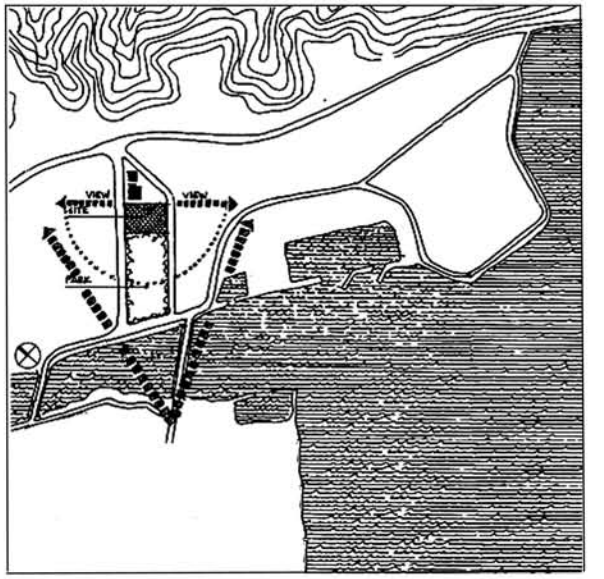
A. To create in Pusan a modern exhibition facility to present Korean art and history.
B. To contribute to an awareness, to the education and to creativity among all Korean citizens.
C. To design a museum directed toward the aspirations of a new generation.
D. To help redefine the role of Korean art at a time when Korea is entering the international scene.

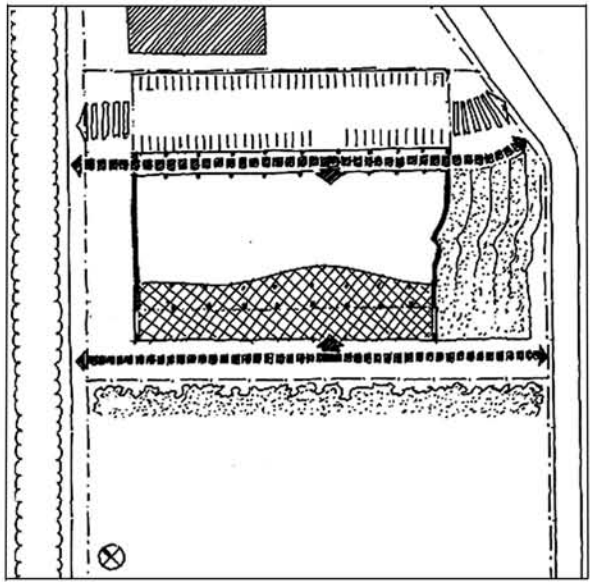
CONTEXT

Pusan, the second largest city in Korea after Seoul, its capital, is the major seaport at the southernmost tip of the Korean peninsula. With a population approaching 4 million, it is ranked internationally as the fifth busiest seaport. The museum site is located on the newer northeast side of the city along Suyŏngman Bay, off the Korea Strait , in the administrative district of Haeundae Gu.

URBAN STRATEGY

The given site between streets, enfronting a park and a river suggested the obvious initial response of a cross-





1. Existing Urban Context & Sight Lines
2. Layered Site Development with Inflections to Shore Lines

connecting armature that eventually evolved into a layered composition.(See Drawing No. 1). The back of the site was assigned to vehicular access and parking as the first rung in a ladder linking the side streets. A pedestrian path crossing the site and defining the edge of the building area followed. The third layer, containing the museum building, is then buffered from the park by the required sculpture garden, as a sunken court – a moat that is bridged to the building from a tree lined, second pedestrian cross path bordering the park.

This initial zoning of the site also suggested the use of inflections in the building enclosure that could make references to the neighboring shore lines of the river to the south and the bay east of the site. (See Drawing No. 2)

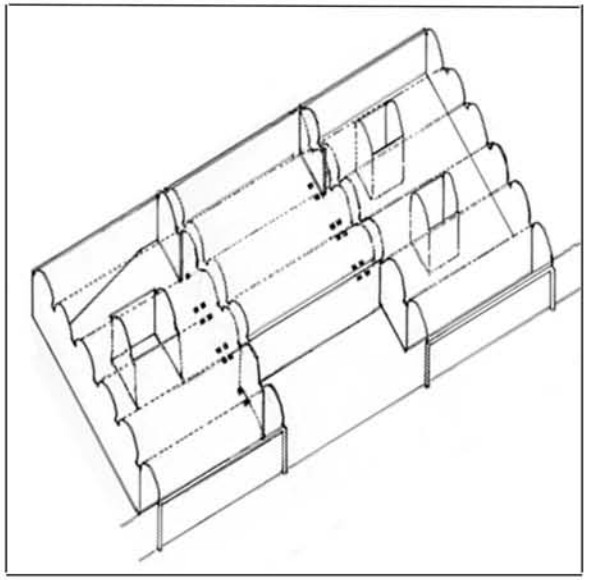
PLAN ORDER

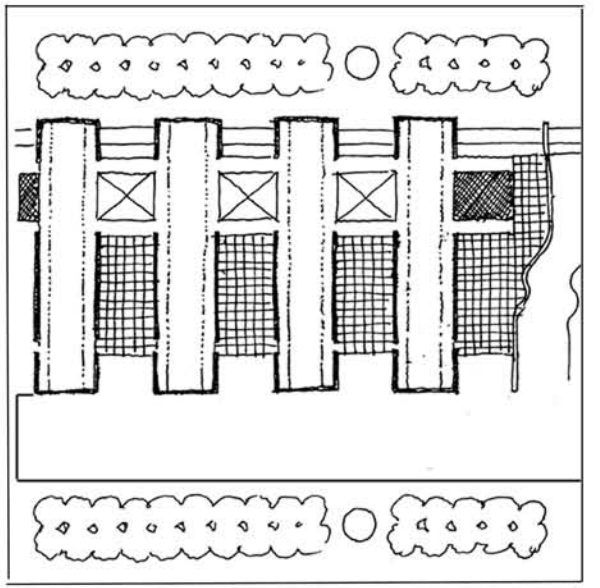
Controlled daylight to the permanent exhibit spaces and the basic requirement to maximize wall surfaces on which or against which art is displayed, were the primary concerns in the search for a primary form giving *parti*.

The top lighted long and narrow galleries of Louis.I Kahn's Kimball Museum in Forth Worth, Texas USA (See Drawing No. 3) were emulated without hesitation and transformed into 12 x 56 meter spaces as repetitive cells in a row for the permanent exhibit spaces on the top floor. The linear galleries would be lighted from clerestories and separated by terraces open to the sky, thereby enabled using most of their perimeter as display walls. The galleries and interstitial terraces, in turn were threaded as fingers by a circulation spine, a backbone to the building, that also served to link the lower levels through open wells (See Drawing No. 4)

On the second level, the linear gallery walls could be reduced to columns and thus allowed an open floor plan, a loft that was ideally suited to accept flexible, movable partition systems and could be dedicated to temporary visiting exhibits.

The solid wall extensions at the ends of the cellular fingers became "chapels" for history and craft exhibits, and the idiosyncratic undulating wall segment at the east end of the building, facing the nearby, accepted special functions, such as the library, the gift shop on the ground level and cafeteria on the lower level (See Drawing No. 5)





3. Kimball Art Museum, Fort Worth TX - Louis Kahn, 1972
4. Cellular Assembly of Permanent Exhibit Galleries.

Spacious and welcoming entrance halls on the ground and lower levels, placed off center to engage the vertical circulation and public services in the liner composition complement the formal access to the building from both the parking area and from the park across a bridge and over the sunken sculpture garden. The ground and lower levels also accommodate the education, curatorial and managerial spaces against the undulating glazed south wall opening toward the park while archive and storage functions provide an opaque and solid layer against the parking levels on the north side (See Drawings Nos. 6 & 7)

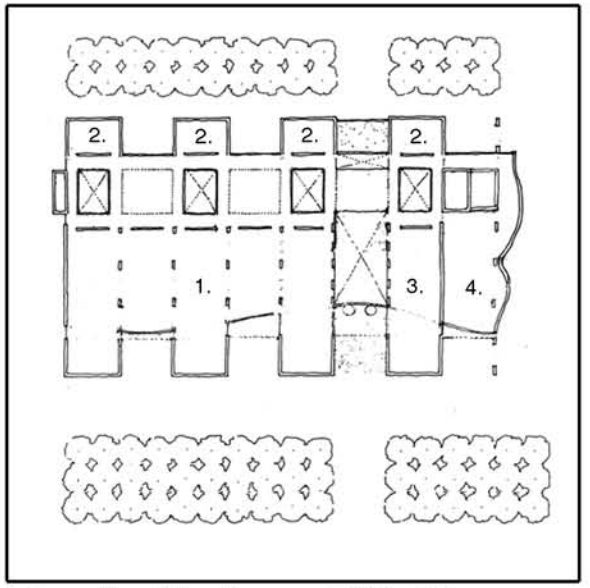
VOLUMETRIC STRATEGY

Given a cellular plan of repetitive fingers, prompted extending them outward and projecting their legs to the ground so that could hover over the undulating plinth of the lower levels. The composition also relied on the chevron section that was given to the galleries as a result of the clerestory lighting tactic. Its projection unto the façades contributed an articulated profile that enabled the building to engage the sky and reinforced the formal presence of the museum enfronting the park. It also contributed an iconographic symbol that identified the institution and was visible from the approach bridge over the Suyông Gang river. (See Drawing No. 8).

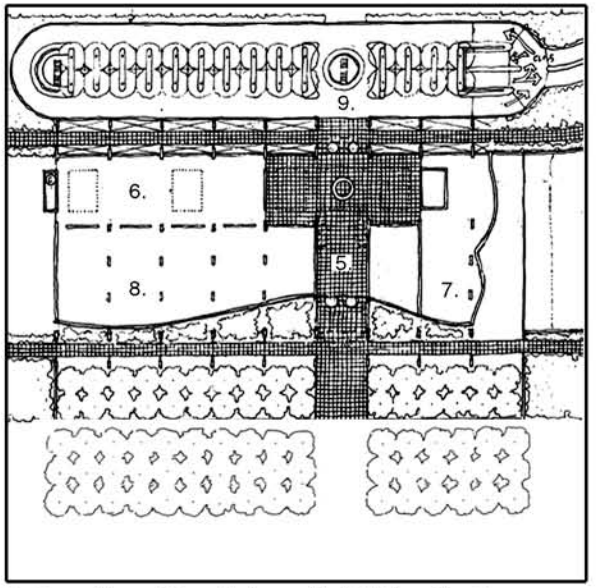
The cellular composition thus conveys to a visitor the building contents while engaging its context as a terminus at the edge or end of a park.

BUILDING ENCLOSURE

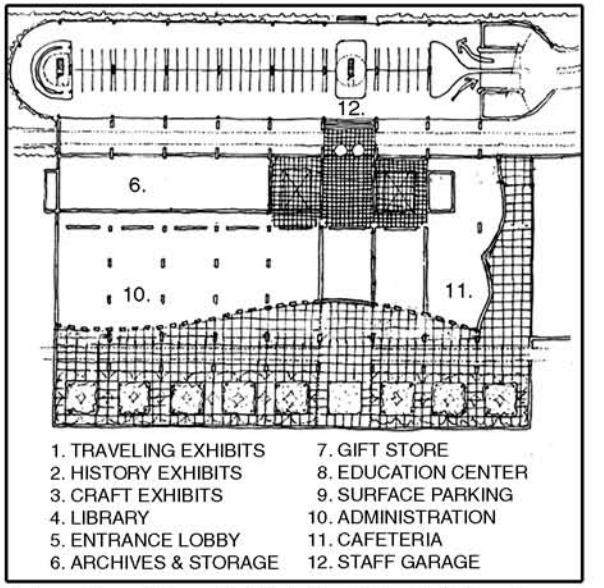
If museums have a unique characteristic that contributes to form finding, it is the opportunity they present to use and



5. Second Level Plan: Temporary Exhibits & Library



6. Ground Level Plan: Entrance Hall & Education Spaces



7. Lower Level Plan: Administration & Curatorial Services

control both natural and artificial light. The easy route is clearly to avoid daylight and rely entirely in a technology that need not confront the hazards of infrared and ultraviolet exposure to art object.

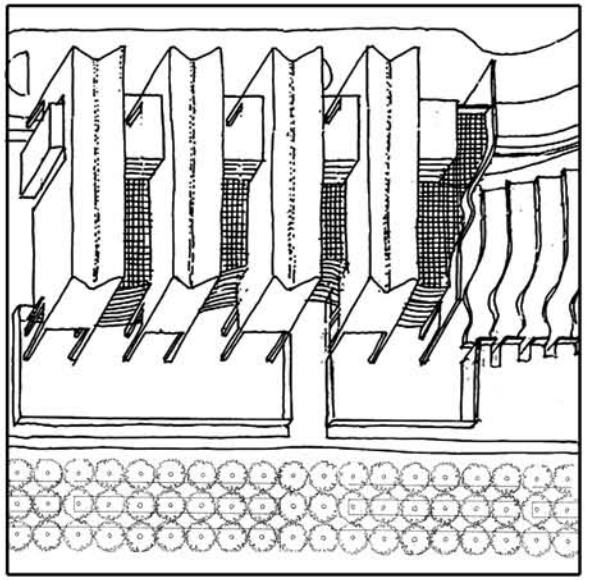
Yet the presence of daylight in a museum gallery offers the richness and variation resulting from the time of day, the weather and the seasons that no amount of theatrical controls can emulate with artificial lighting. The design intent was therefore to illuminate at least the permanent galleries with controlled and filtered daylight, supplemented by indirect artificial lighting. In Pusan the intensity of the sun as well as the vulnerability to typhoons argued against the use of skylights and in favor of bathing highly reflective gallery ceiling plenums with the light of louver controlled and diffusing glass clerestories. The design sought to create a translucent luminous ceiling with the added flexibility of additional accent lighting and general, indirect and color controlled light fixtures. (See Drawing No.10)

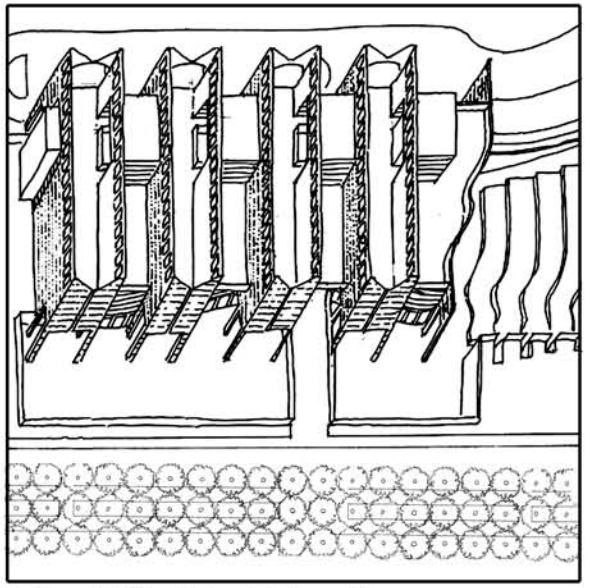
The resulting cellular assembly is enhanced by an enclosure strategy that juxtaposes and straddles the upper level gallery fingers against a plinth which engages the ground. The galleries are clad in horizontal metal panels which are articulated by deep reveals; the plinth in turn provides the undulating glass gasket separating the galleries from a stone base punctured by windows. (See Drawing No. 9)

EPILOGUE

The resulting design proposal provides a welcoming civic presence supported by an equally vibrant interior of the multi-level atrium openings within the central spine that thread the building. The museum offers a serene environment to display art, where the architecture is experienced but never dominates and the overall spatial experience is effortless due in part to its simplicity. (See Drawing No. 11)

During the construction, the original design composition had to cope with a change to the adjacent urban fabric. The addition of an elevated arterial highway along the east street boundary required relocating the parking entrance to the west street and the shortening of the stepped terraces descending into the sunken garden. Neither of these had a significant impact on the final product.

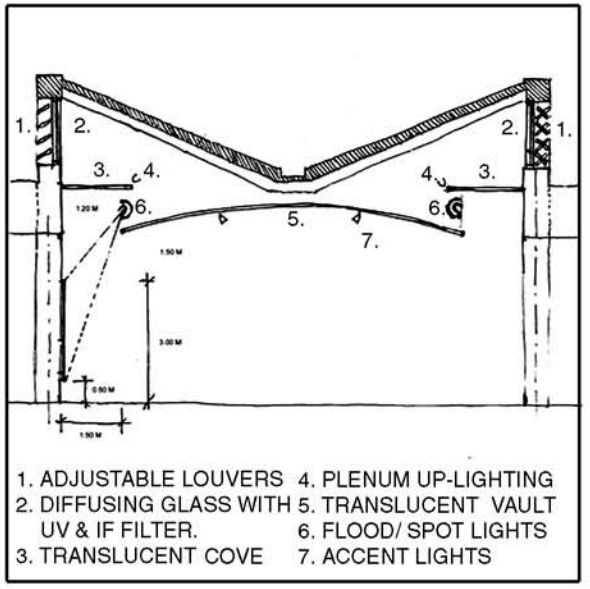




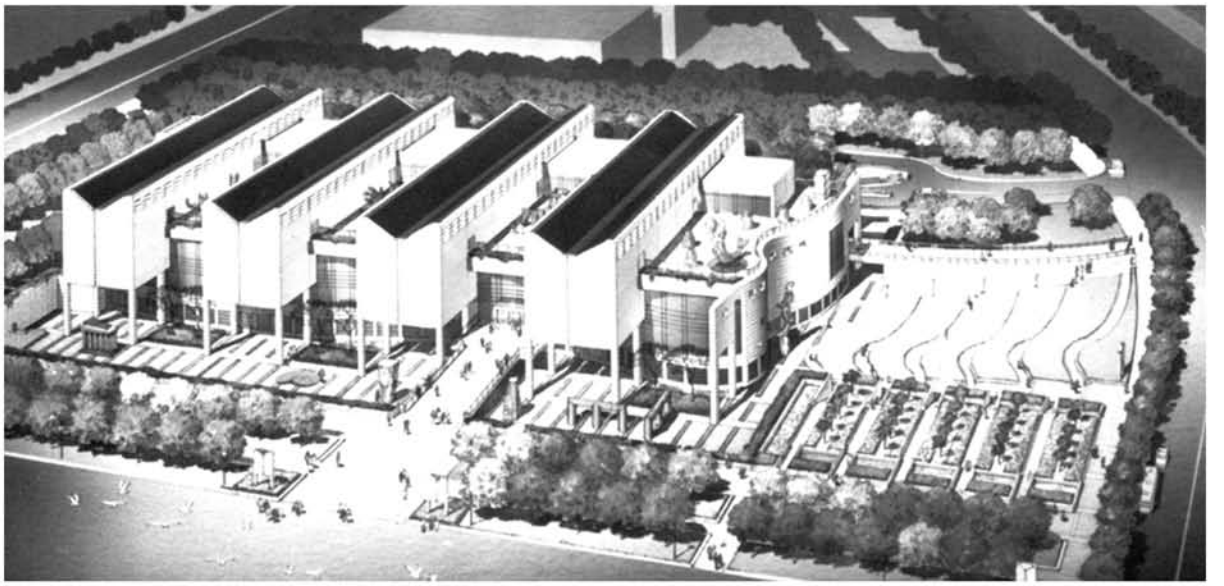
8. Liner / Cellular Volumetric Assembly
9. Metal Clad Cells,Glass Gaskets & Stone Plinth Enclosure

Two revisions to the permanent upper level galleries, however, did alter the spatial conception. The original design intent sought translucent ceilings in order to capitalize on the controlled clerestory daylight and when necessary indirect artificial light. Regrettably, light admission was limited to perimeter coves, the vaulted ceiling was made opaque and the galleries were prevented to glow with light.

A second revision allowed the galleries to be cut into segments by the circulation spine and atriums and thus disrupted the intended continuity and spatial extension between the linear gallery volumes and the atriums. Nevertheless the implemented building maintains almost all the design intentions, particularly its volume and enclosure conceptions, which were executed superbly to a very high level of detail and workmanship.



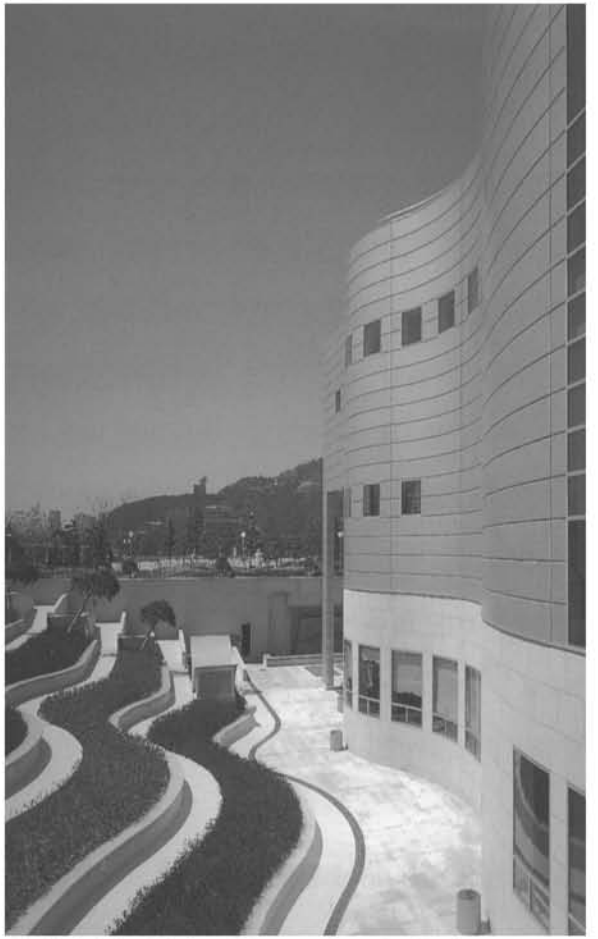
10. Clerestory Lighting in Pemanent Exhibit Galleries



11. Design Competition Image Submittal

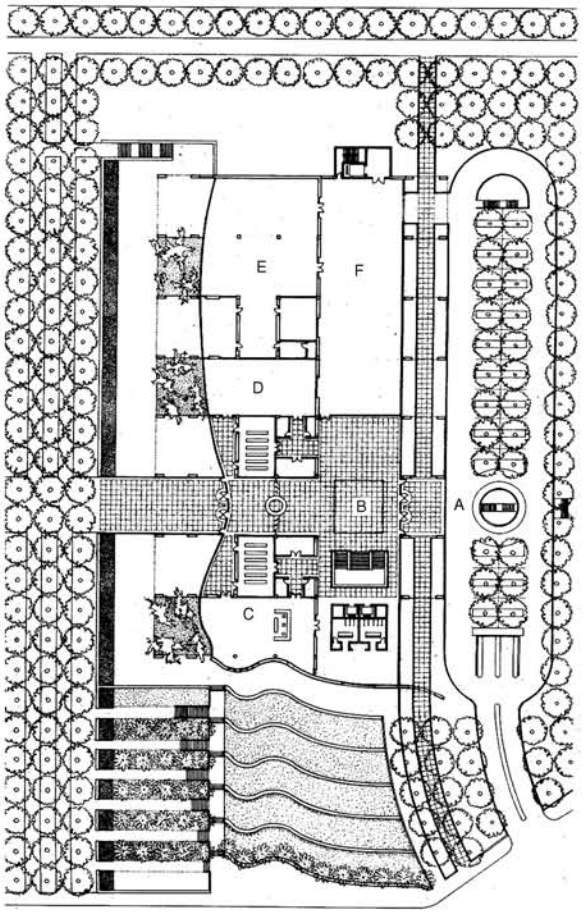
12. Night View from the Suyong Gang River Bridge

13. Lower Level Sculpture Garden from the Southwest



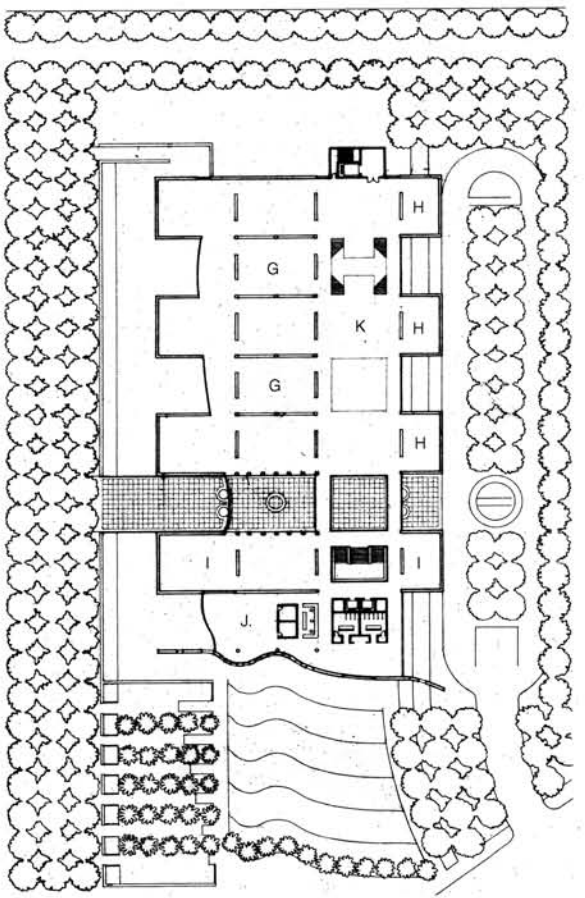
14. Undulating Wall and Terraces from the Northeast.

15. Street Level Vehicular Entrance from the Southeast



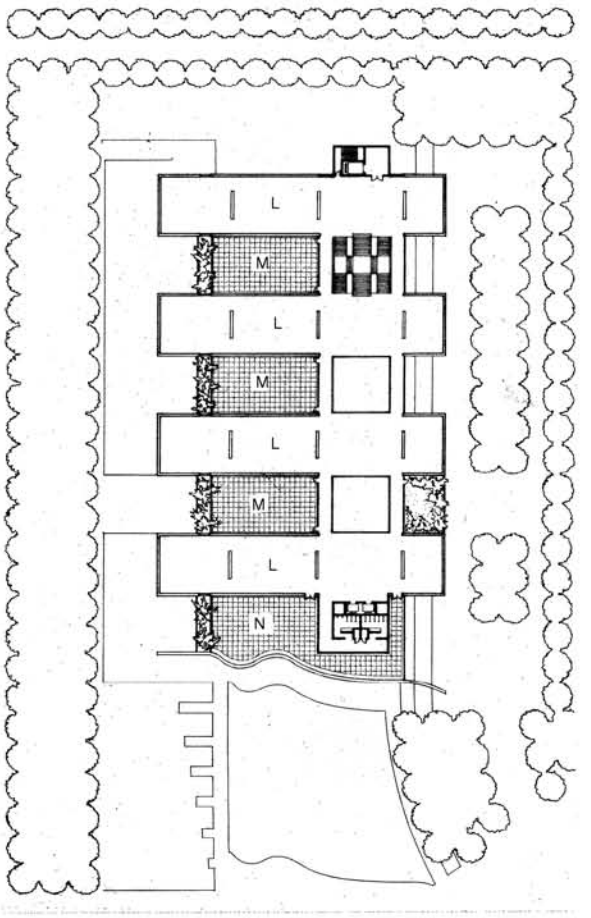
A. VISITOR PARKING
B. ENTRANCE HALL
C. GIFT SHOP
D. EVENT HALL
E. ADMINISTRATION
F. ARCHIVES

16. Ground Level Plan



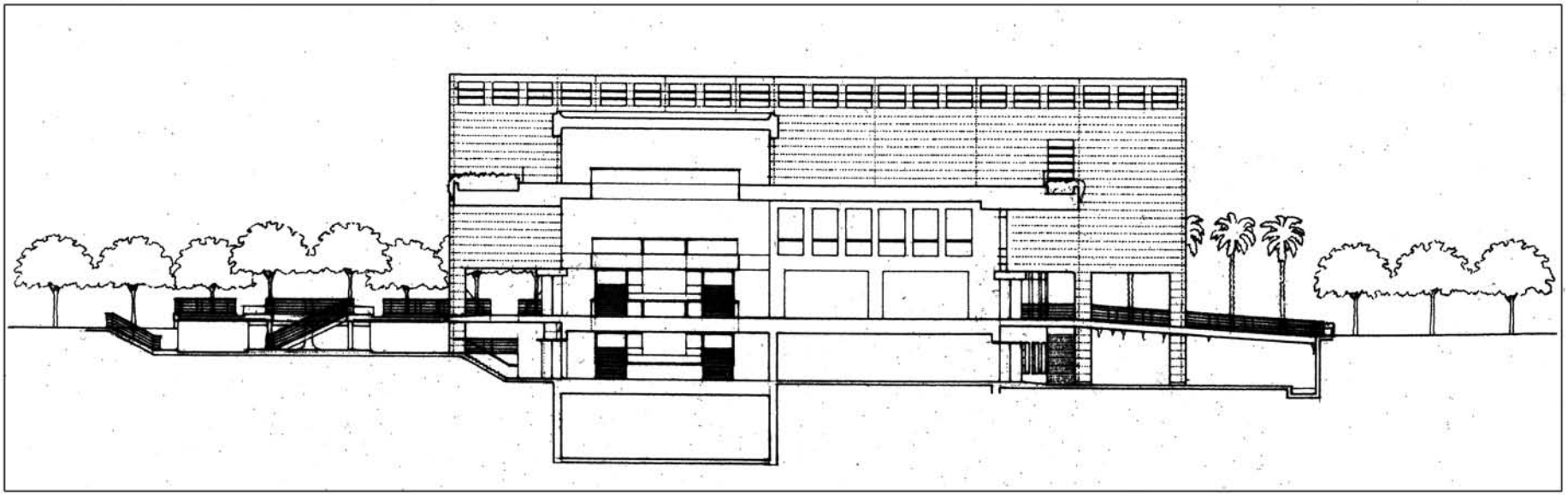
G. TRAVELING EXHIBITS GALLERY
H. HISTORY EXHIBIT
I. CRAFT EXHIBITS
J. LIBRARY
K. SCULPTURE COURT

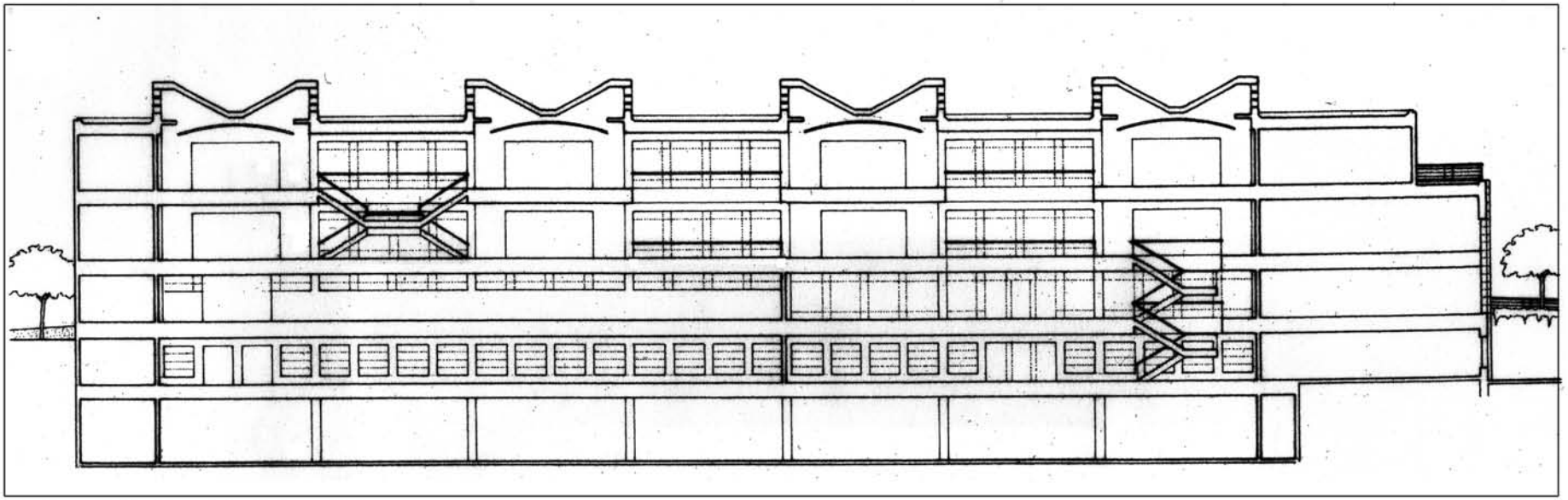
17. Second Level Plan



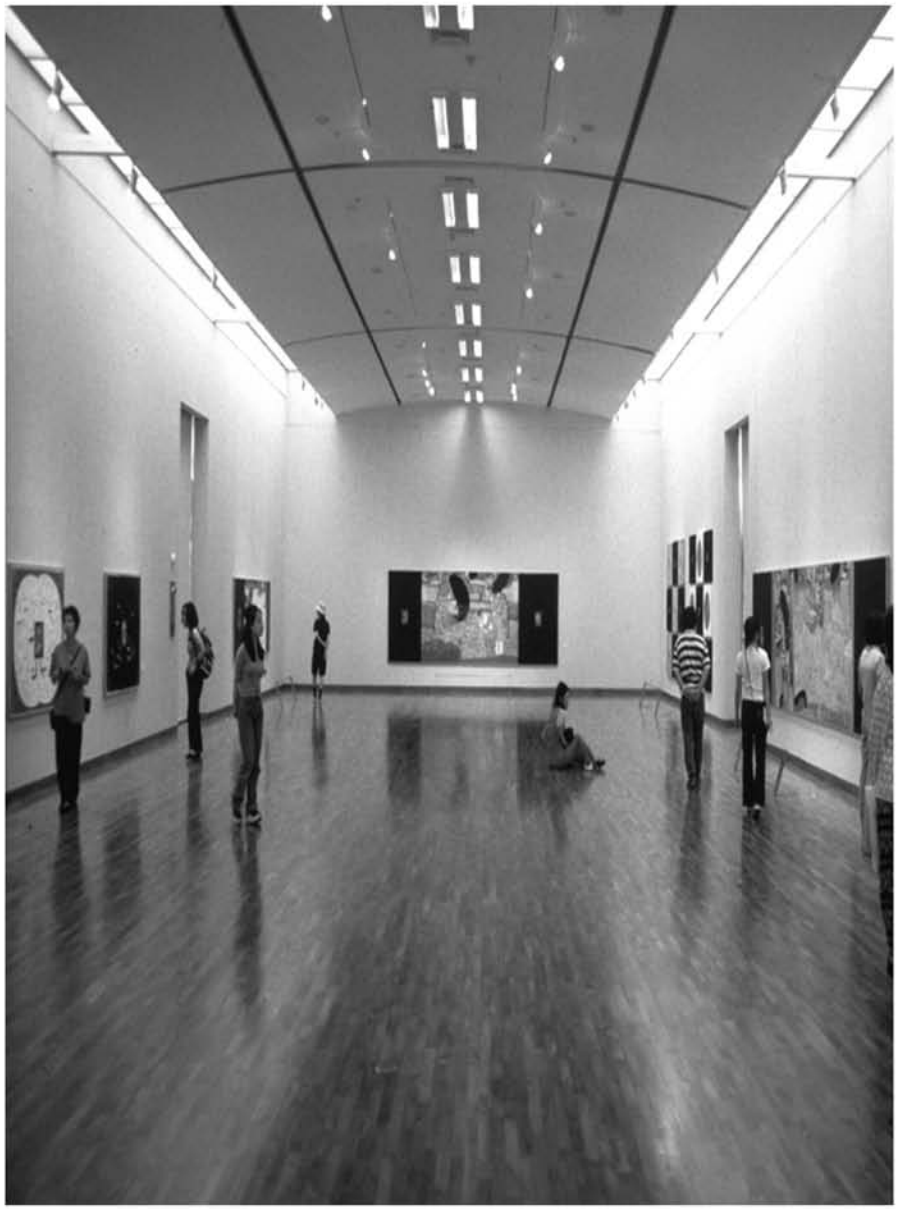
L. PERMANENT EXHIBITS GALLERY
M. SCULPTURE TERRACE
N. OUTDOOR CAFE

18. Third Level Plan

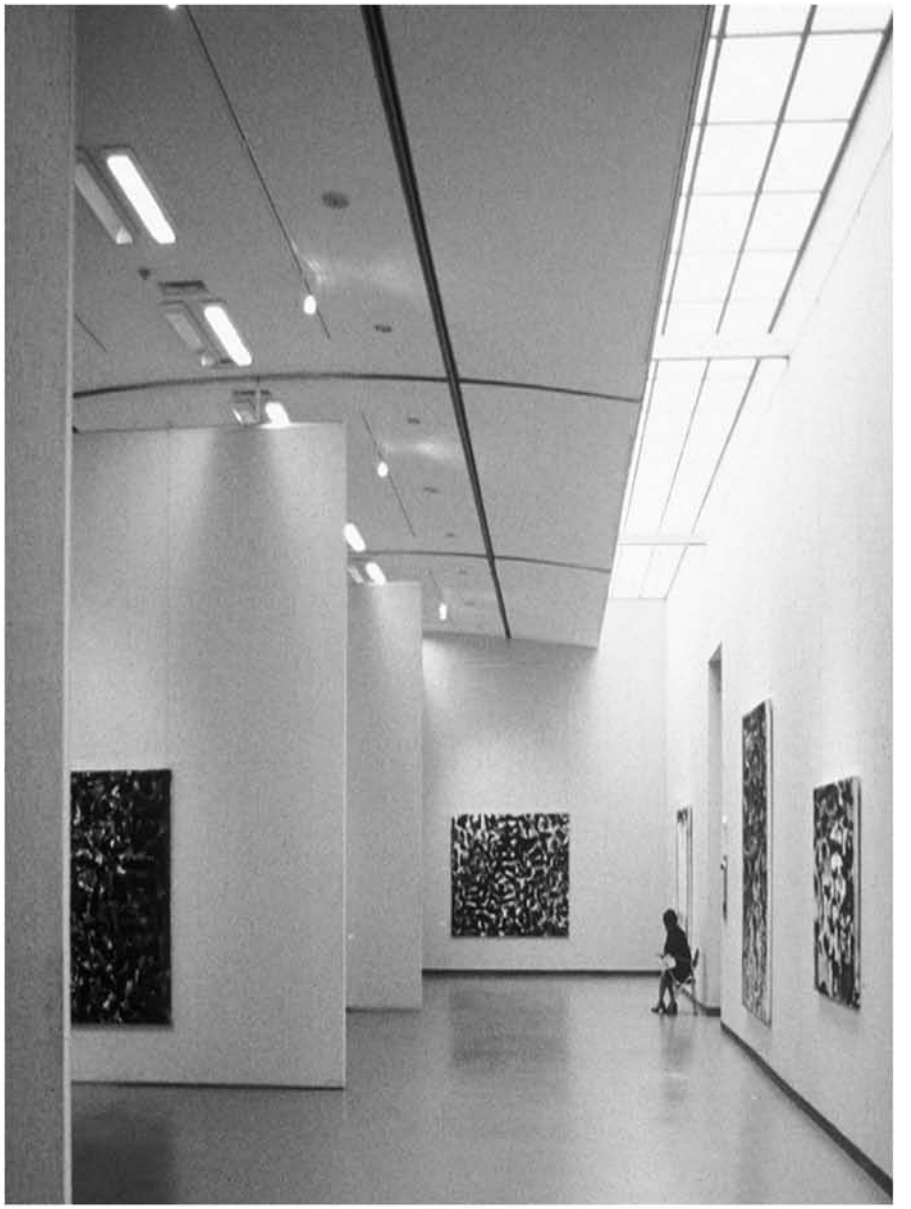




19. Cross Section through the Entrance Hall
20. Longitudinal Section through the Atrium Spine



21. Permanent Exhibit Gallery



22. Divided Permanent Exhibit Gallery

23. Night View from Lower Level Sculpture Garden

12. CASE STUDY III

KOREAN FISHERIES COOPERATIVE RETAIL & RECREATION COMPLEX
SAHA GU - PUSAN, SOUTH KOREA

DESIGN COMPETITION ARCHIITECT
FIRST AWARD 1996
IN ASSOCIATION WITH
IL SHIN ARCHITECTS & ASSOCIATES
DONG GU - PUSAN, SOUTH KOREA

CONTEXT

On the westernmost inlet of Pusan Bay, opposite a fleet fishing pier and its wholesale auction house, an irregular, triangular, 50,000 square foot site, surrounded by streets was assembled from the small individual parcels belonging to the members of a fishing cooperative. (See Drawings Nos. 1A & 1B) Their intention was the development of a commercial and recreation center to serve the work force of nearby industries, while retaining the original factory functions of the site which included the freezing and packing of sea products, the retail sale of live and processed fish and raw fish restaurants in traditional market stalls operated by individual members of the cooperative.

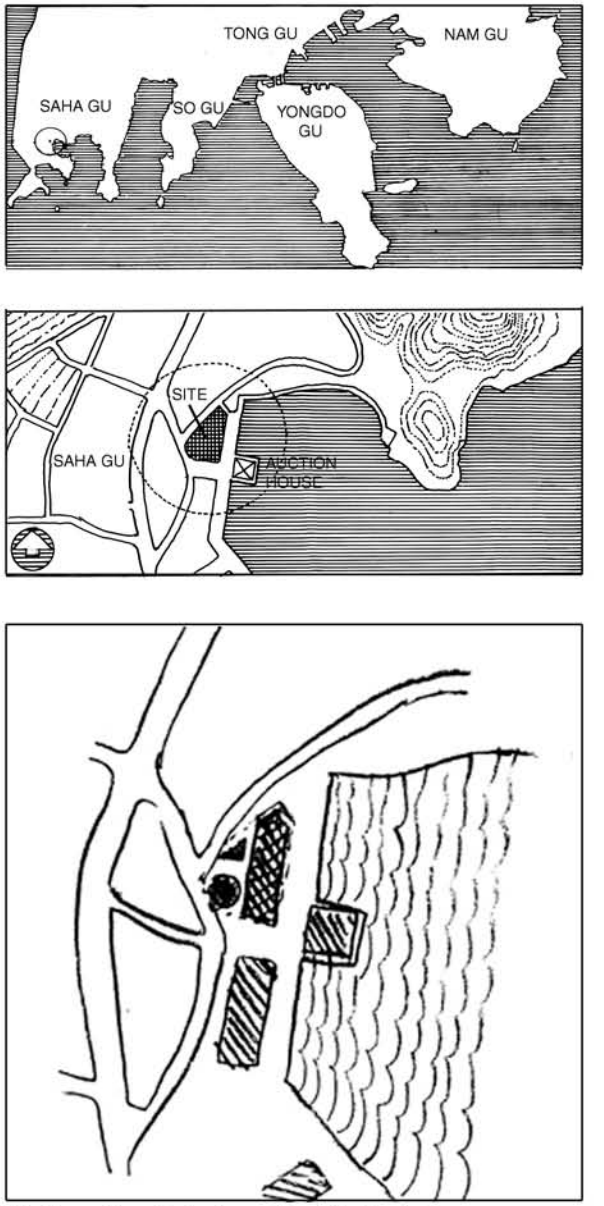
PROGRAM

The building program , not only had to recreate several hundreds existing fish market stalls, and raw fish restaurants plus the sea product packing functions, but add new recreation and sport functions as well as a bank, a wedding hall, an aquarium and an I-Max theater. The new facility of approximately 450,000 square feet on 9 to 10 levels, would also contain parking for 350 cars below grade.

The freezing and packing factory required 33,000 square feet; the retail live fish, processed fish and raw fish restaurants included 450 stalls, each 30 square feet; and the leisure facilities listed a bowling center, a health club with a swimming pool, offices and art galleries, Karaoke bars and restaurants and an aquarium with a seal show.

One essential program mandate highlighted the need to serve the related fish functions with sea water and insure their ventilation systems seek to minimize fish odors and avoid their migration into and contamination of the recreation areas.

The local building code requirements,



1A. Pusan Bay Context 1B. Site Context
2. Urban Development Strategy: Enfronting the Shore Line

given the extensive public assembly functions, also required three refuge stairs, one outdoor refuge stair and two emergency elevators in addition to the cabs necessary to meet the projected vertical traffic demands.

URBAN STRATEGY

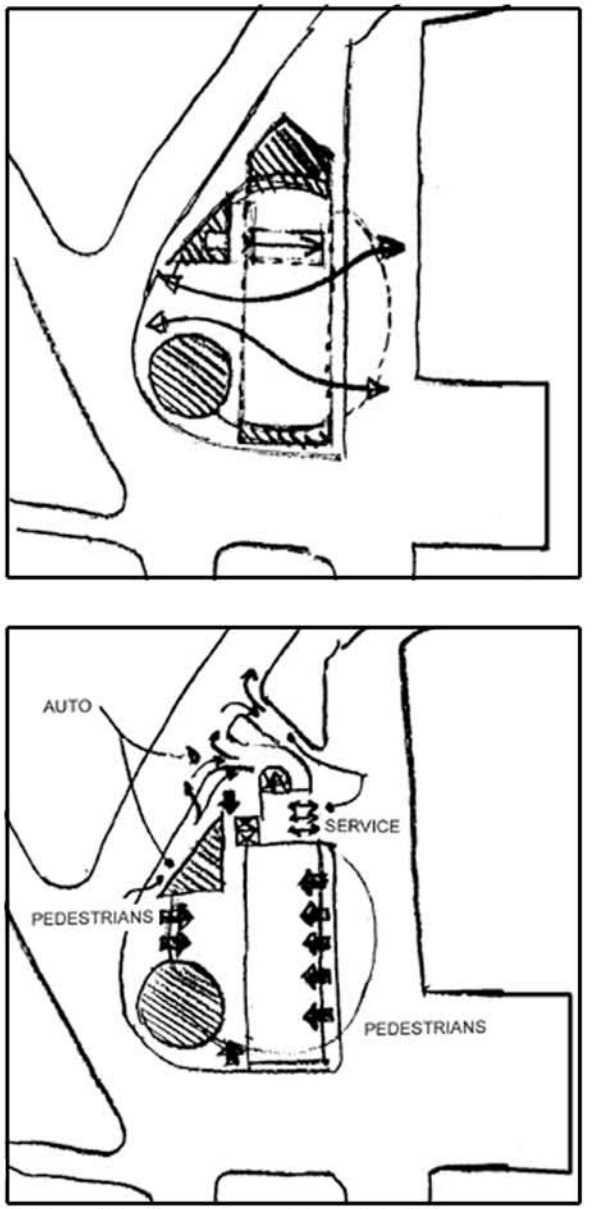
By location and by use, the building had to surface or occupy the entire site, while enfronting the shore line with an edge – a permeable "wall" that would also provide a background to elements on the land side and engage the vistas from the approaching streets (See Drawing No.2) The "wall" would not separate land from sea, but rather promote a link between harbor and city, inviting passage through it and encouraging exchange. By making the lower floors directly accessible to pedestrians from the adjacent streets and dedicating their use to open live-fish and retail processed fish market stalls, extended the sea side life into the citv and as a side benefit afforded natural cross ventilation. (See Drawing No. 3)

The multiple pedestrian access points are complemented by conflict-free automobile and service vehicles connections from the perimeter streets. A gracious vehicular drop-off with easy links to the extensive parking below grade and a separate service access that avoids the usual visual and functional nuisances complete the necessary functional extensions of such a complex facility. (See Drawing No. 4).

VOLUMETRIC STRATEGY

The given multiple program functions, prompted an obvious elemental composition which would reflect the deliberate assignment of a form to each of the components. The special assembly spaces, such as the wedding hall and the I-Max theater, sitting over the bank are housed in a cylinder. Rectilinear uses including the bowling alleys, the health club and pool, the offices and the aquarium occupy the orthogonal, flexible framework on the "wall". Public elevators and toilet cores are contained in a vertical triangular prism, and the entire assembly of parts is integrated by the connective tissue of a crescent that encloses the *raison d'être* for the entire complex – the live and raw fish markets. (See Drawing No. 5).

Below grade the rectangular geometry of the "wall" invites the occupation for four levels by parking, while the more



3. Land / Sea Transparency & Cross Ventilation
4. Pedestrian, Vehicular & Service Access

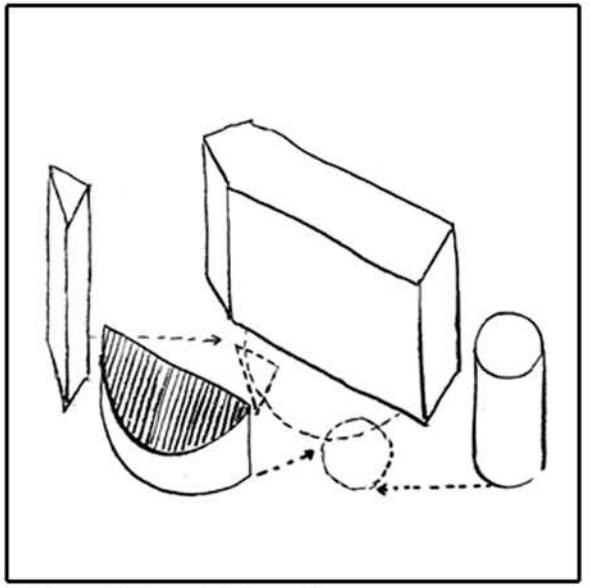
complex geometry and structure of the areas below the cylinder and crescent house the more adaptable functions of the sea product factory and the building's mechanical spaces (See Drawing No. 6)

PLAN ORDER

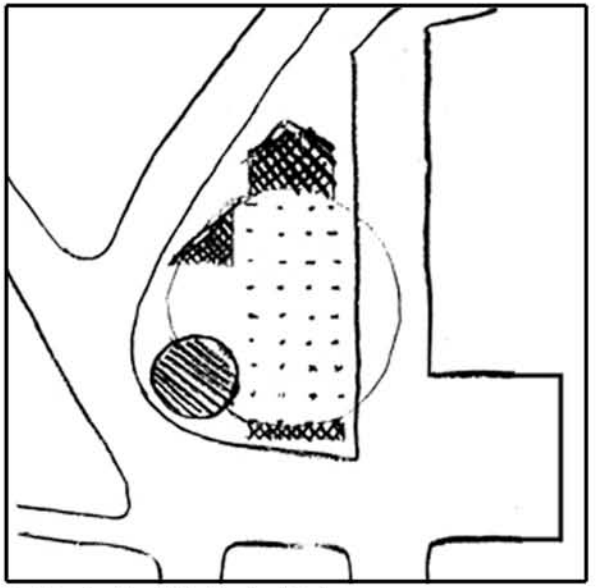
The separation of special assembly functions enabled the wall segment to benefit from a regular structural module and the use of the first basement, ground and second levels by the live and raw fish markets which exploit their openness and connection to the surrounding streets. This in turn allowed the separation of office and recreation functions to the upper levels in a logical progression beginning with the offices and retail and levels 4 and 5, culminating with the aquarium and seal show on the building's roof terrace and level 10. (See Drawing No. 7) The vertical zoning also responded to decentralized mechanical systems, with individual fan rooms occupying the ends of the "wall" on every floor, thereby eliminating the need of large vertical chases and the tailoring of equipment to the needs of recreation functions and their intermittent operation schedules. The special assembly spaces were served from the roof of the cylinder behind a concealing parapet.

BUILDING ENCLOSURE

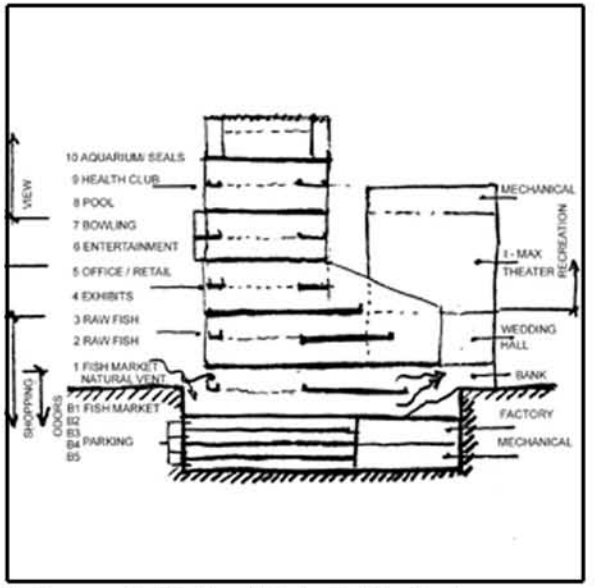
Building enclosure systems respond to both the iconographic demands of the composition and to the microclimate with a palette of appropriate fabrics. Facing the sea on the East , the building offers the most transparent skin consisting of a metal panel clad frame infilled with tinted green glass. Its land counterpart, having to cope with the extremes of western sun, adds a system of small scale external vertical louvers



5. Elemental Volumetric Assembly



6. Structural and Mechanical Order



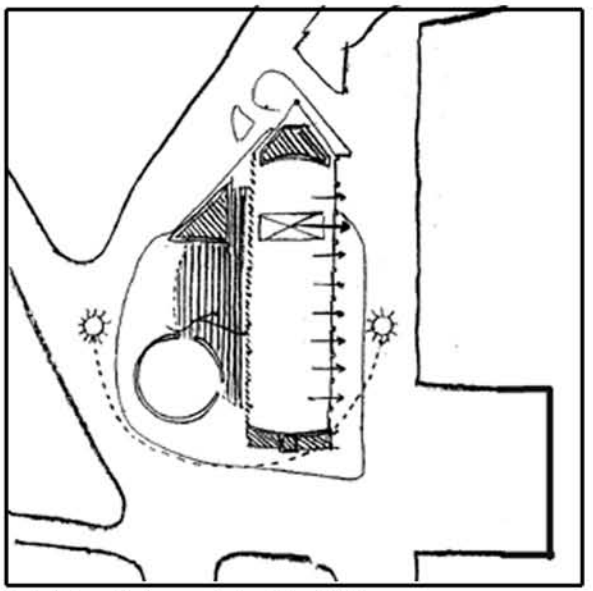
7. Program Distribution within the Building Section

over the glass and metal curtain wall.
The elemental pieces also have unique enclosure systems, selected to emphasize their form. The service core prism is clad in regular, metal panels punctured by small horizontal openings to ventilate the rest rooms that maintain a solid surface that eventually will accept the inevitable super graphic signage on most commercial buildings in the context. (See Drawings Nos. 8 & 9)
The crescent, also facing West, is sheathed in reflective green glass to protect its function as the main circulation space. Reflective glass also encloses the transparent South facing stair cores, the double height atriums within the "wall" and the roof terrace aquarium perimeter curtain wall.
As the most evident element, the cylinder receives a noteworthy skin: metal fish scales to manifest the symbolic underpinnings that engendered the architectural composition. (See Drawing No.10)

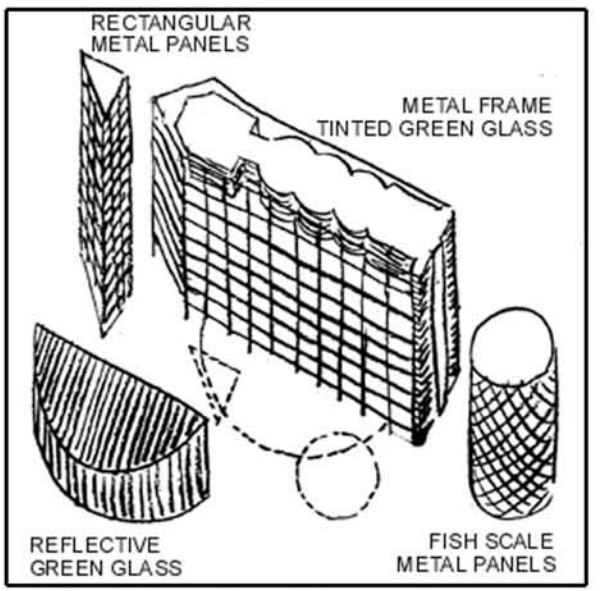
EPILOGUE

The resulting elemental composition illustrates the visual power as well as the adaptability that is inherent in an additive volumetric order, particularly when the assembly is guided by an intersecting and overlapping constructivist grammar.

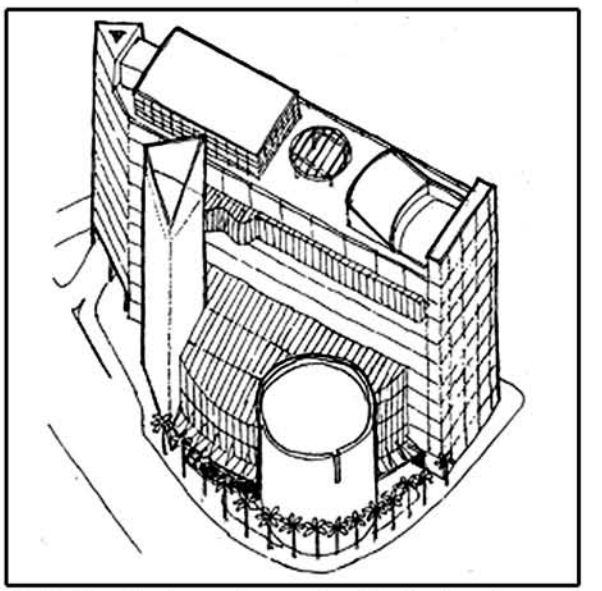
Regretfully, during the evaluation and selection process by the design competition jury, the funding for the project was withdrawn and the design competition was cancelled. The resulting composition juxtaposed memory and reason, and engendered an architecture that could have enriched the sea-side development along Pusan's waterfront, with a vibrant center for the city's urban life that supported a successful economic venture by its sponsors.



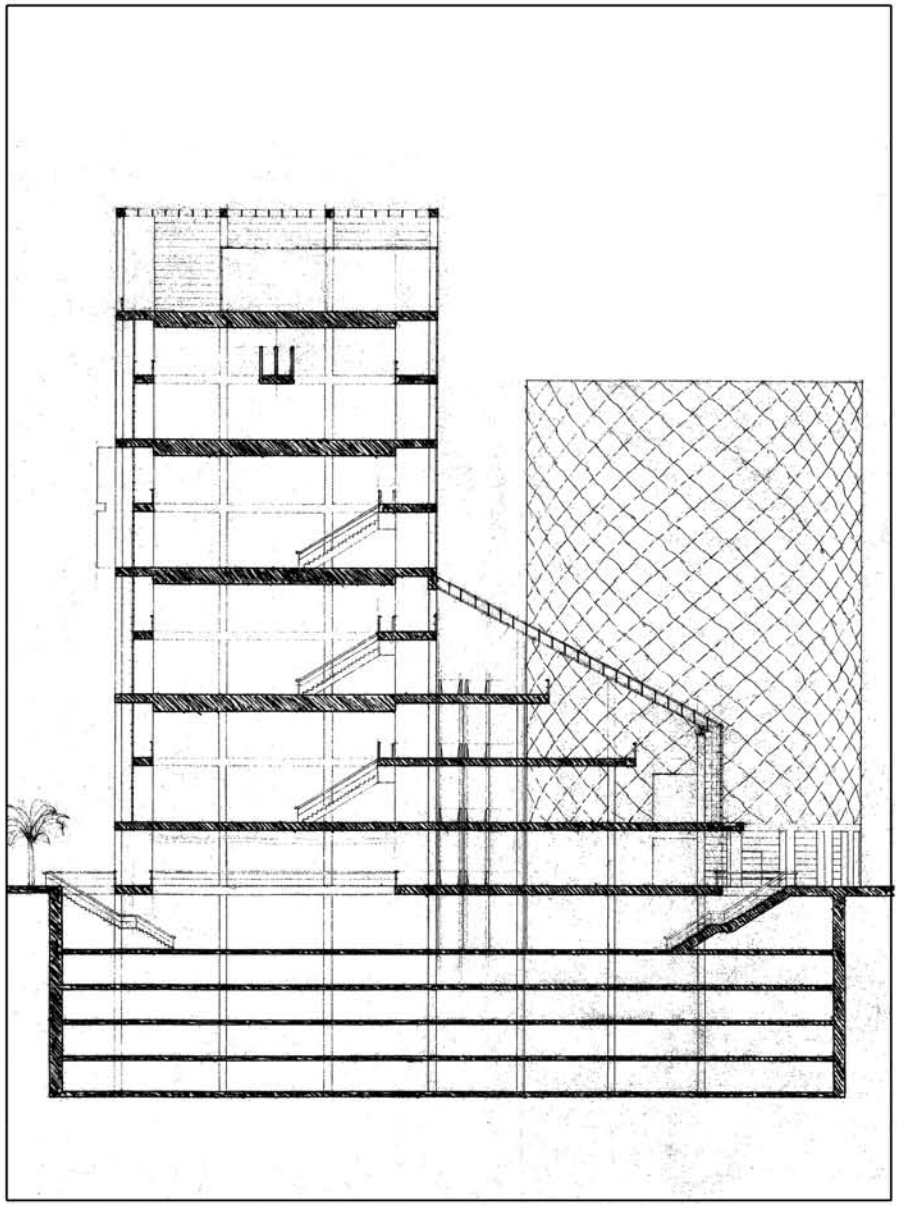
8. Building Enclosure Orientation & View



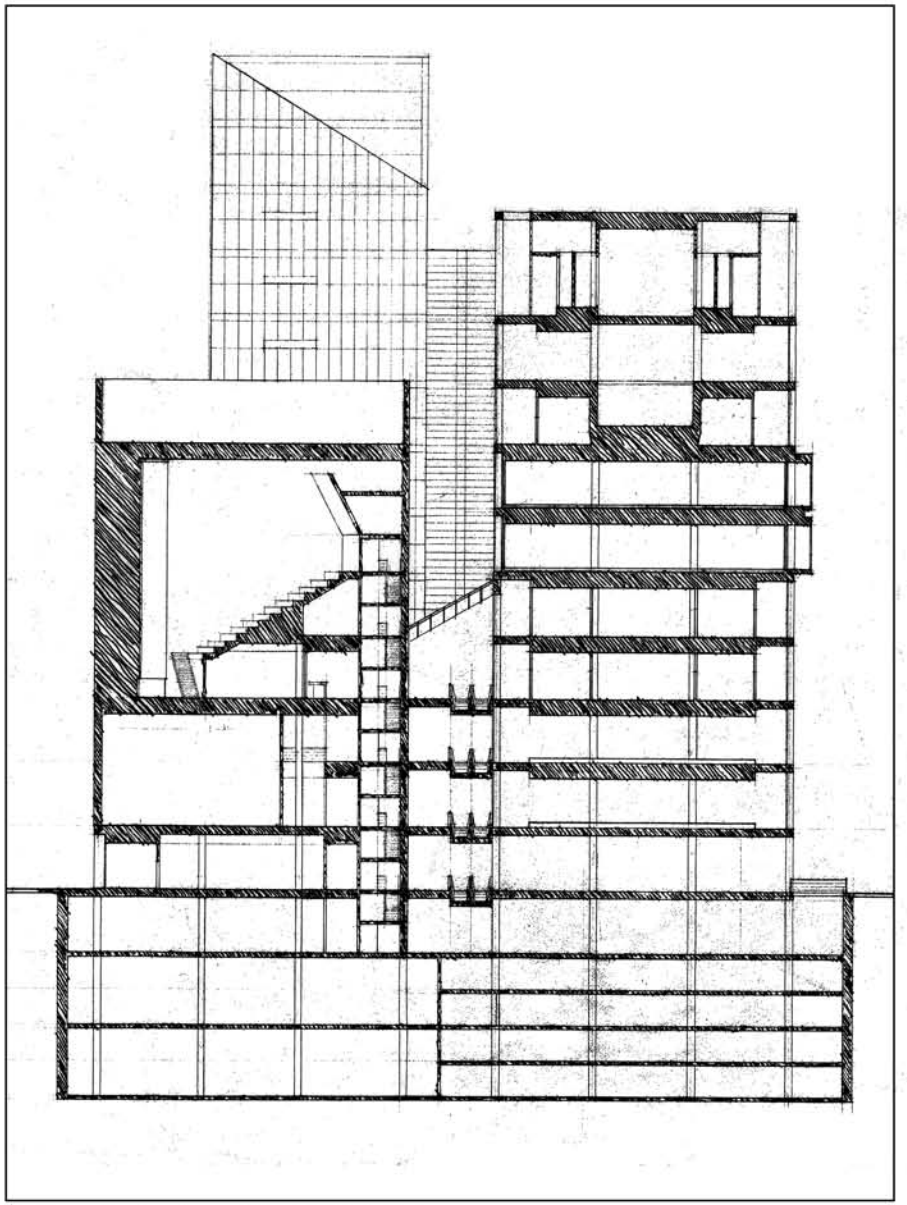
9. Building Enclosure Elemental Components



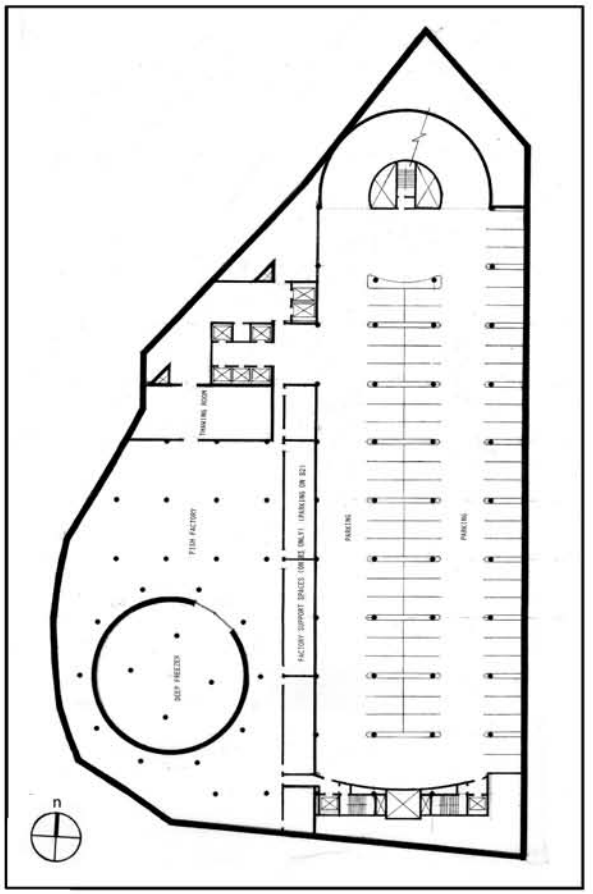
10. Building Enclosure Assemly from the Southwest



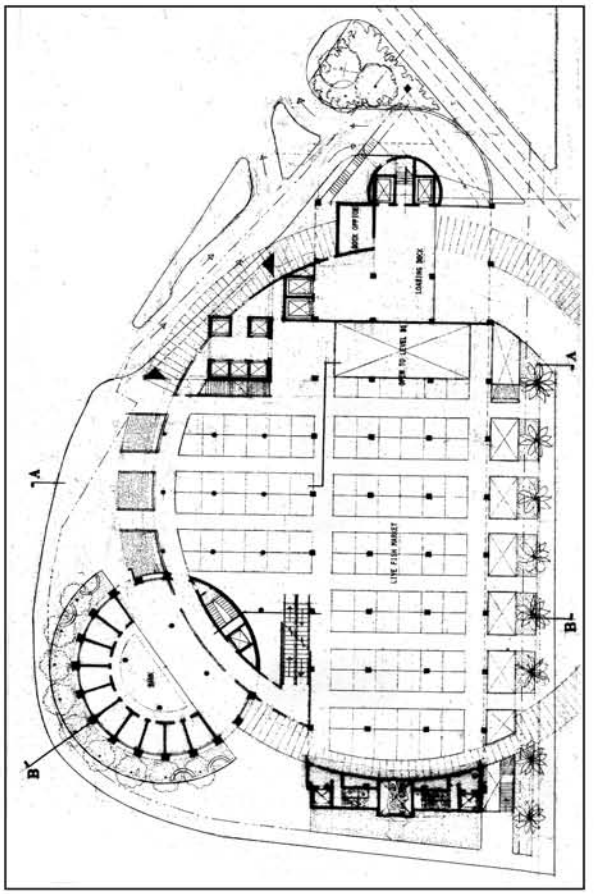
11. Cross Section through the Wall and Crescent



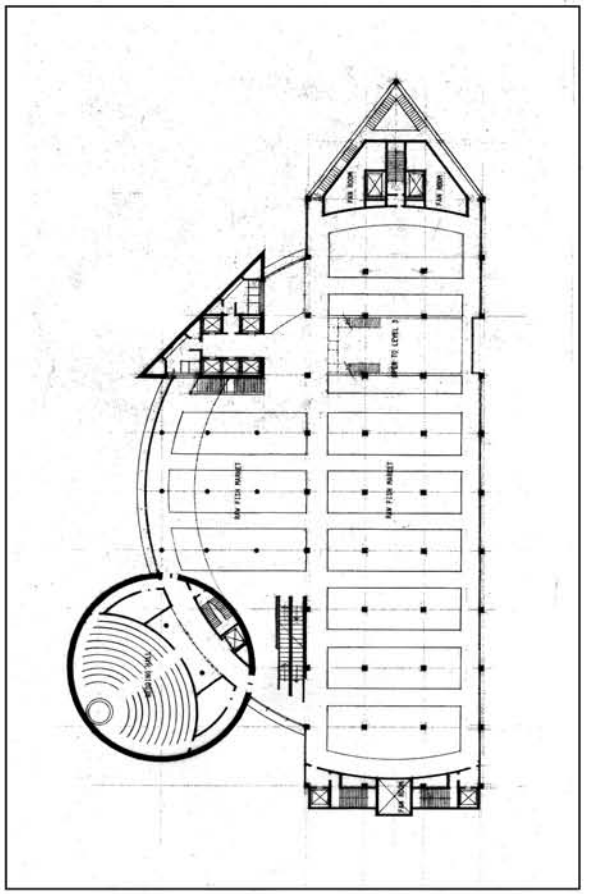
12. Cross Section through the Wall & Cylinder



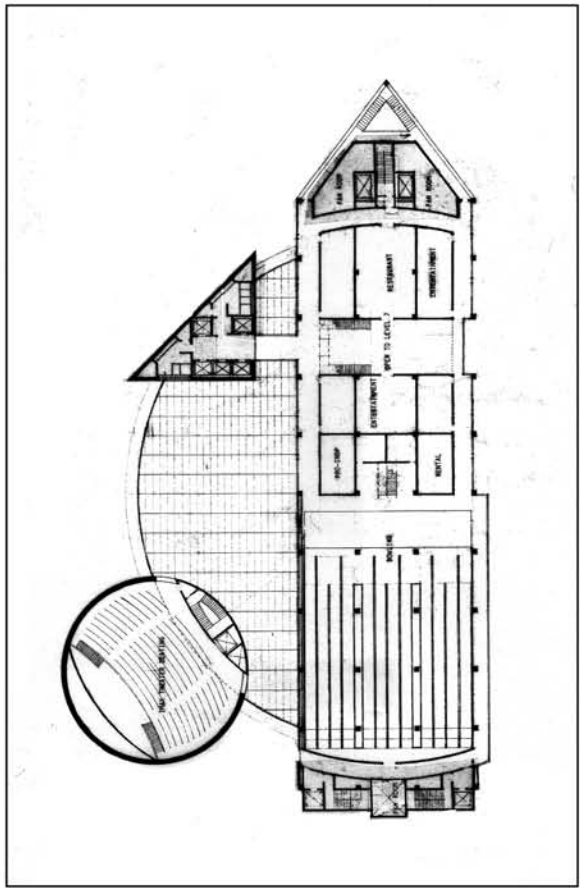
13. Basement Level Plan: Fish Factory & Parking



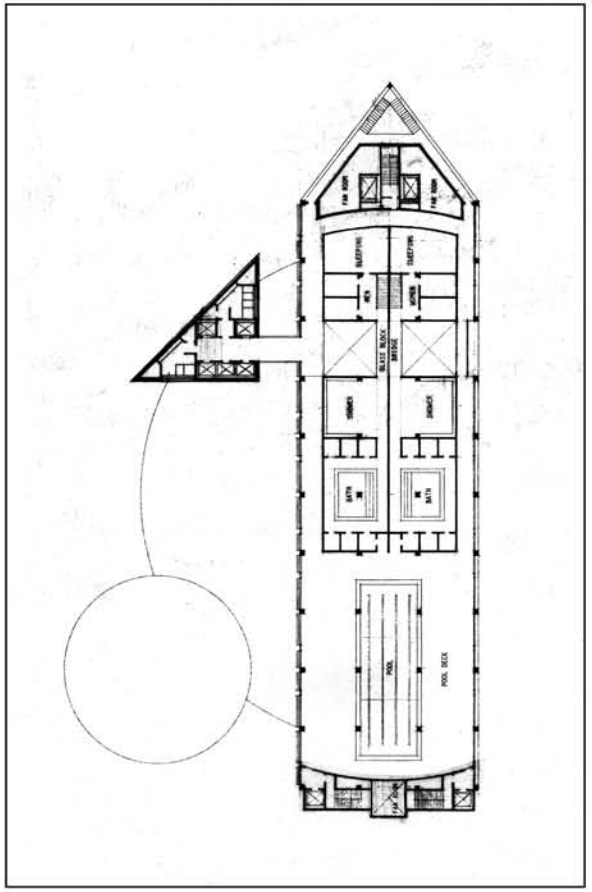
14. Ground Level Plan : Live Fish Market & Cooperative Bank



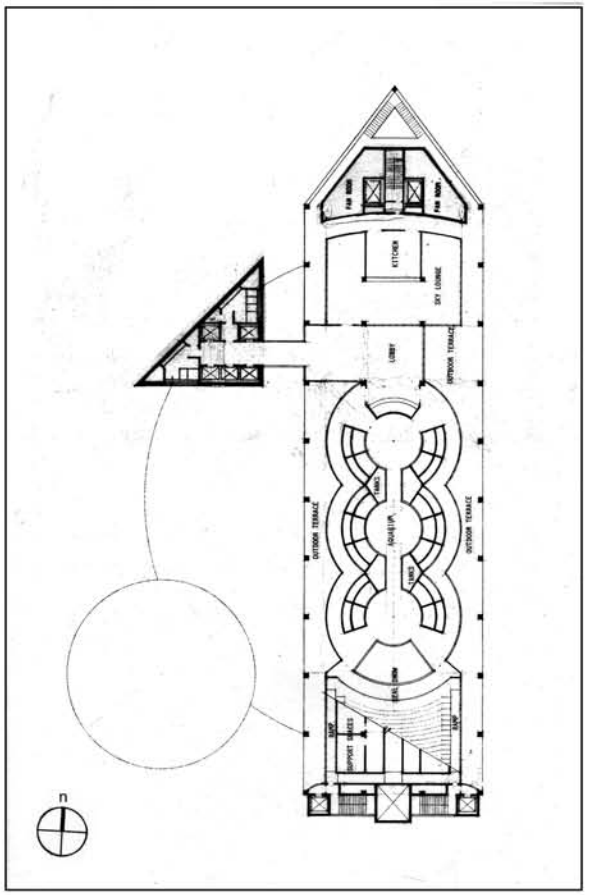
15. Second Level Plan: Fish Market & Wedding Hall



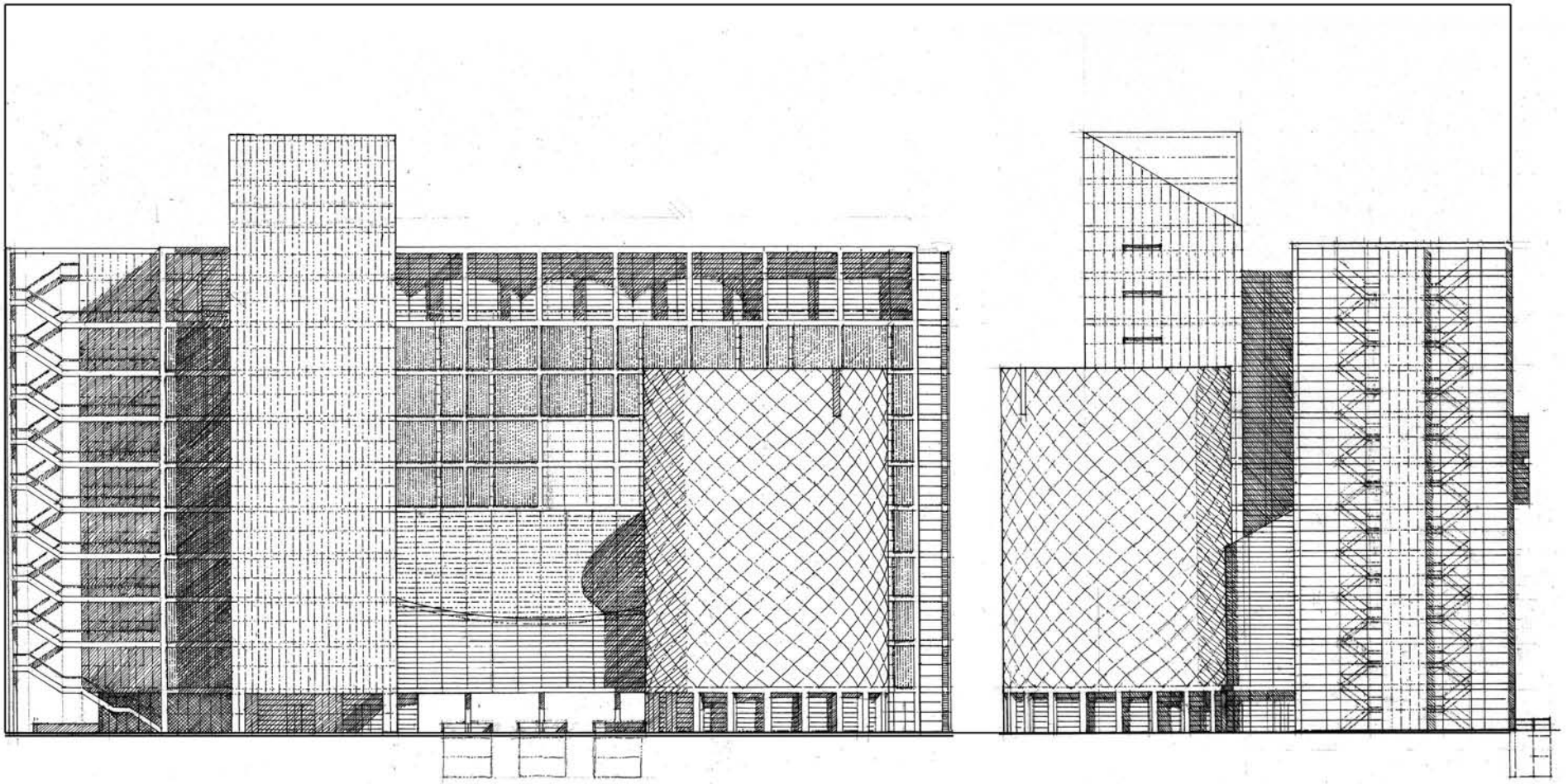
16. Sixth & Seventh Level Plan: I-Max Theater & Bowling



17. Eighth & Ninth Level Plan: Health Club

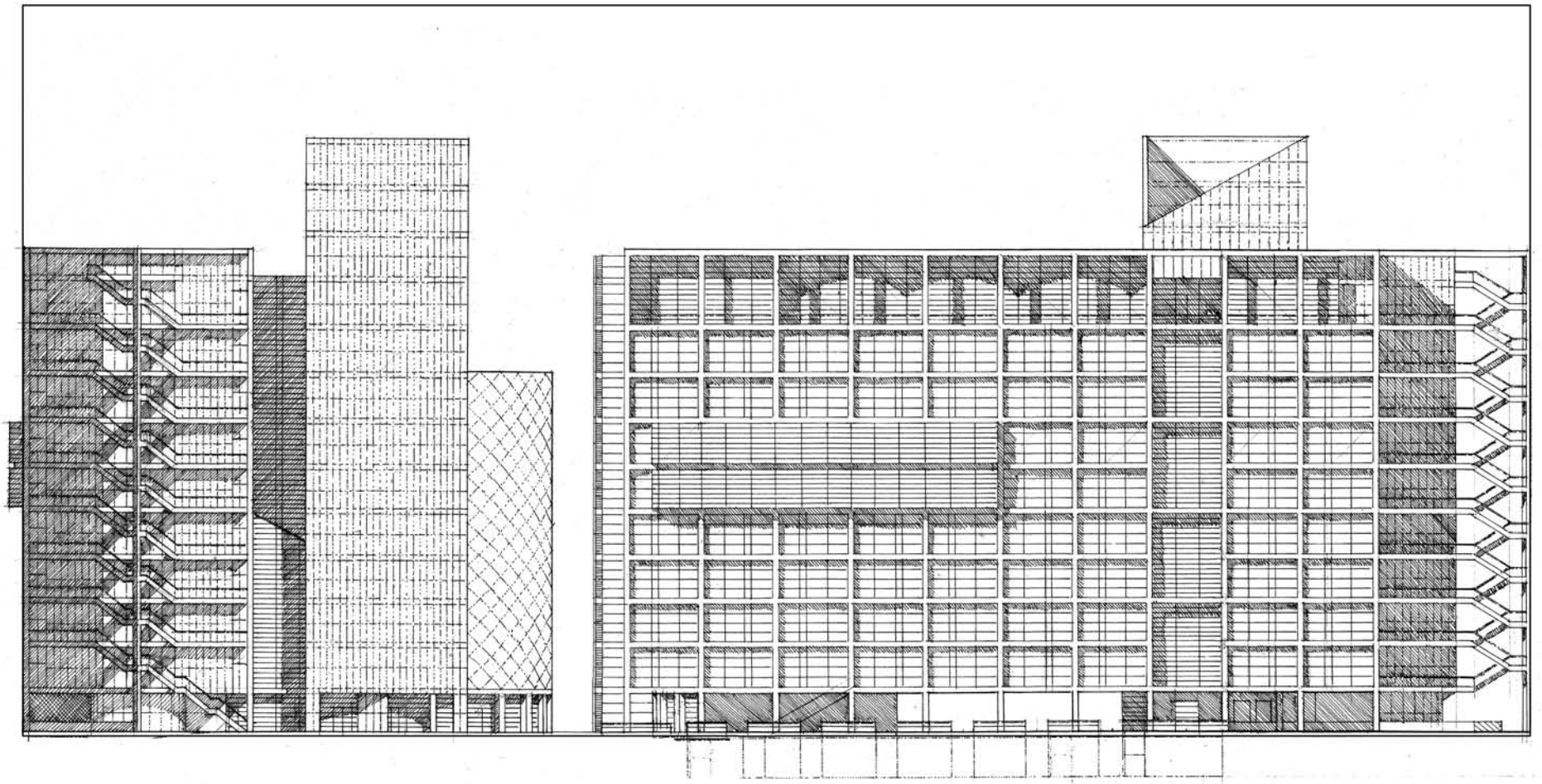


18. Tenth Level Plan: Aquarium & Seal Show



19. West Elevation

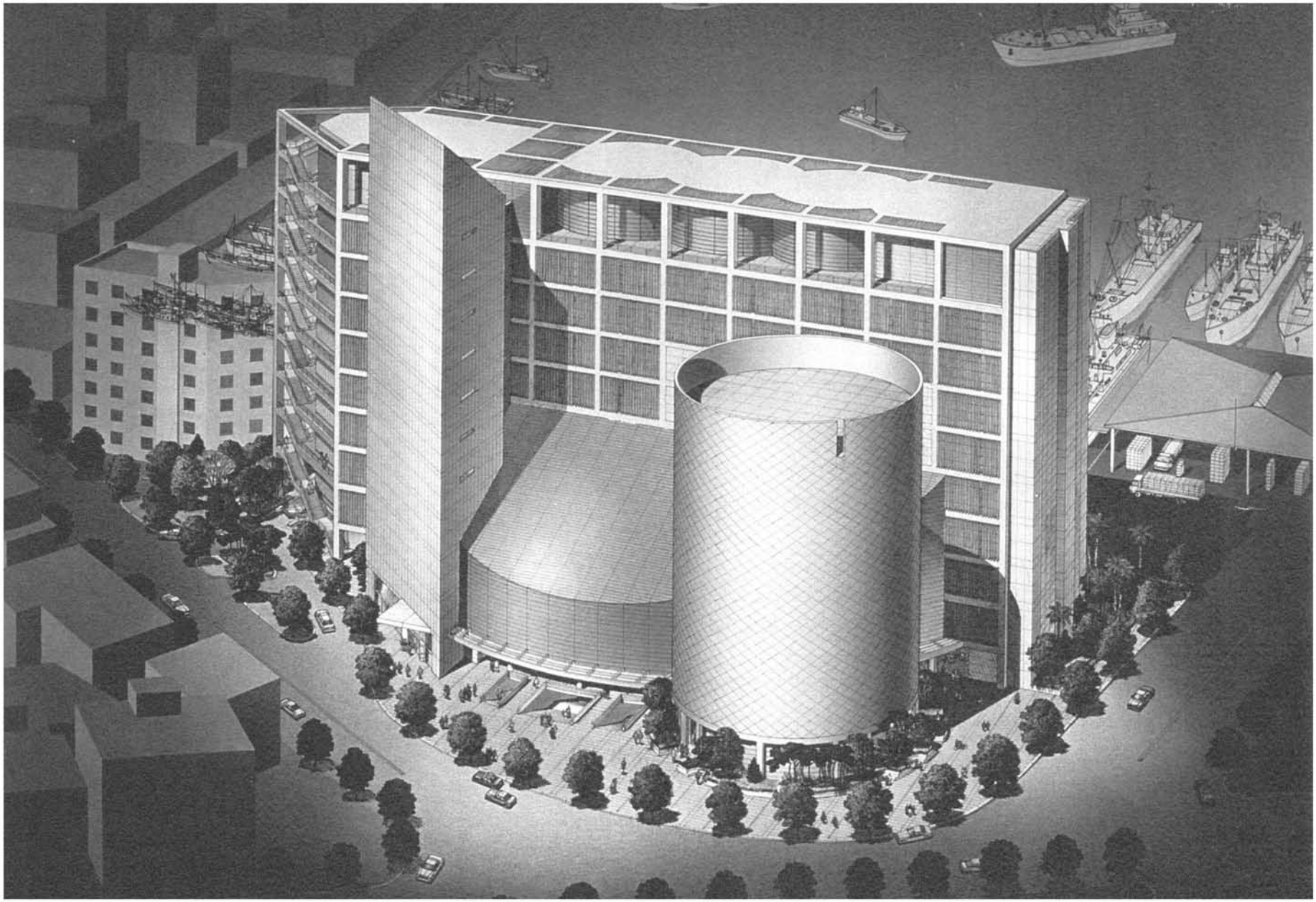
20. South Elevation



21. North Elevation

22. East Elevation

23. East View from the Harbor



24. Southwest View from the City

13. CASE STUDY IV

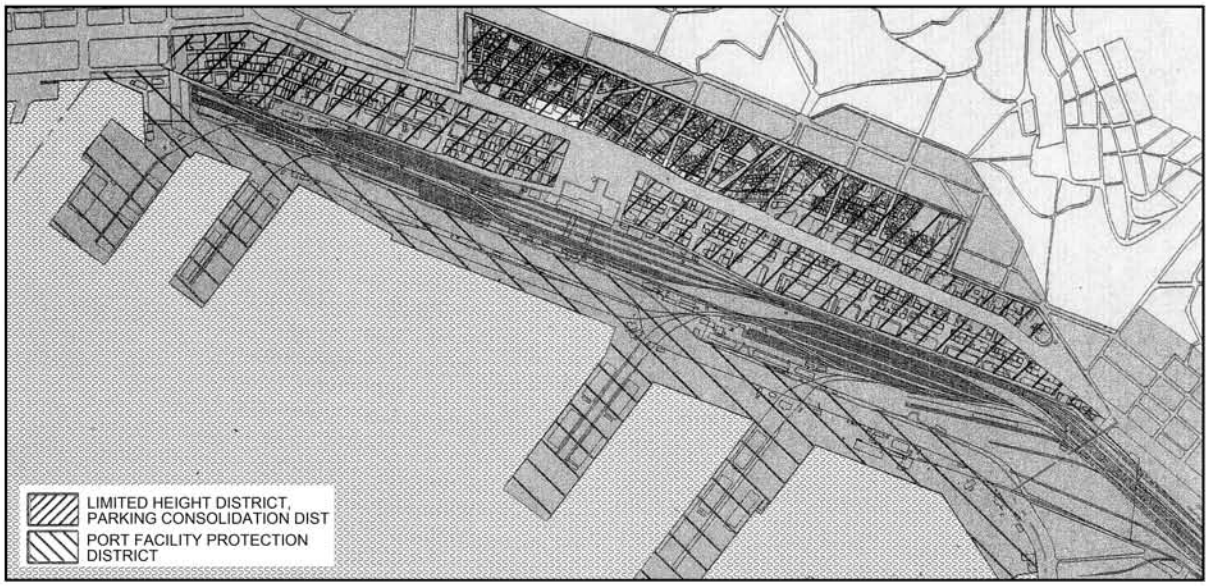
HIGH SPEED RAIL STATION WITHIN AN URBAN DESIGN DEVELOPMENT
PUSAN, SOUTH KOREA
DESIGN COMPETITION ARCHITECT
THIRD AWARD 1996
IN ASSOCIATION WITH
IL SHIN ARCHITECTS & ASSOCIATES
DONG-GU – PUSAN, SOUTH KOREA

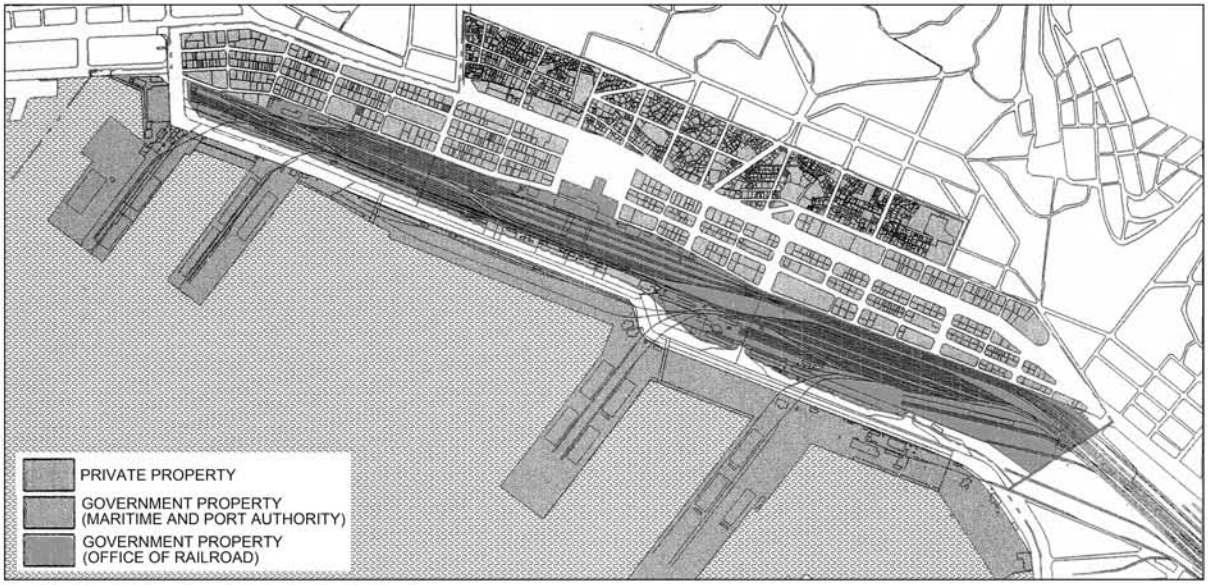
.

CONTEXT

The upgrading of train service in South Korea between Seoul and Pusan, with the acquisition of the French TGV high speed system, designed for Korean standards, motivated the need to design appropriate intermediate stations and a terminal in Pusan. This in turn engendered an international design competition sponsored by the Korean High Speed Rail Construction Authority. A new station presented an opportunity to redevelop the existing and extensive rail yards and adjacent port facilities occupying very valuable land in a prime urban location. (See Drawings Nos. 1, & 2)

These major transport functions had evolved as a linear zone, built on fill into the harbor and parallel to the city's main street. Subsequently, the layered, linear





1. Existing Railyard and Port Context : Zoning
2. Existing Railyard and Port Context: Property Classification

armature was reinforced by the addition of an arterial road, the *Chung Jang Highway*, between the wharfs and rail yards and a subway system under *Chung Ang Road* the city's main street. The flat fill land between the rail yards and main street evolved into small site, privately owned, low rise commercial and manufacturing development serving the existing train station that enfronts the city with a plaza, at the mid-point of the at grade rail yard. (See Drawings 3 & 4)

The unavoidable, existing traffic congestion in the area which affects access to the train station, can be attributed to inadequate parking and the absence of connections between the harbor and the city. There are only two tunnels and one elevated road crossing the rail tracks. The competition program therefore made provisions for a new elevated street system, bordering and crossing the rail yard and thereby giving rise to an ambitious air rights development within which a new station would serve eight platforms: four 450 meter long dedicated to high speed express electric trains and four 370 meter long for conventional diesel equipment linked to a new bus terminal.(See Drawings Nos. 5 & 6)

PROGRAM

The design competition in effect required an urban development plan over the existing rail yard consisting of 7.0 million square ft. , of which 2/3 were dedicated to new office space and 1/3 to hospitality (hotels & restaurants) recreation , commercial and cultural facilities. The station in turn had to serve and integrate the high speed and regular railway systems, the bus terminal with all the associated urban transit - taxis, private automobiles, urban buses and the subway system.

3. Existing Railroad Station & Plaza off Chung Ang Road

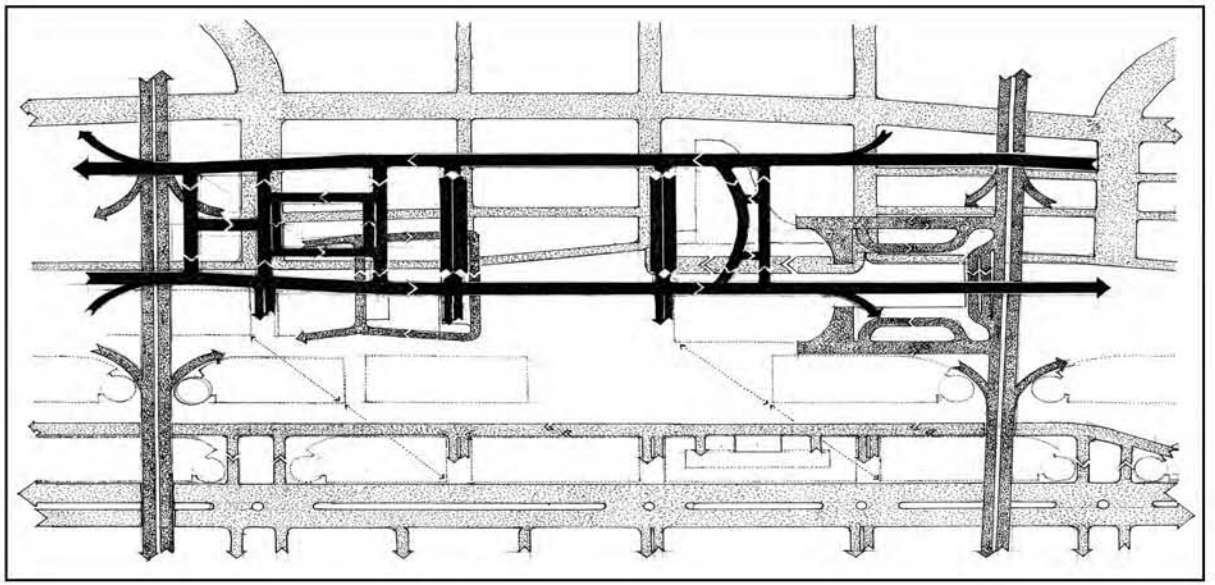
Within the station, the program identified passenger access and waiting spaces, passenger convenience and service facilities, the railway system administration, management and staff facilities and the support areas for the operation and maintenance of trains. In a gross program area of 1.2 million square ft. 70% was assigned to passenger services including an entrance hall, waiting rooms, platform access concourses and platforms. Convenience facilities such as information, travel agencies, financial services, ticketing and rest rooms received 5% as well as the station administration and staff facilities, and the remaining 15% was apportioned to circulation, station support and mechanical/electrical spaces. The bus terminal had an additional area of 200,000 square ft. dedicated to the arrival/departure platforms and 50,000 square ft. to passenger, convenience and operations facilities.

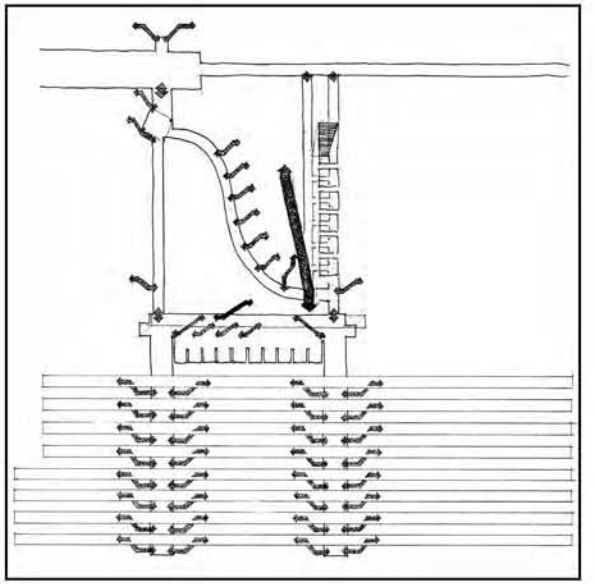
URBAN STRATEGY

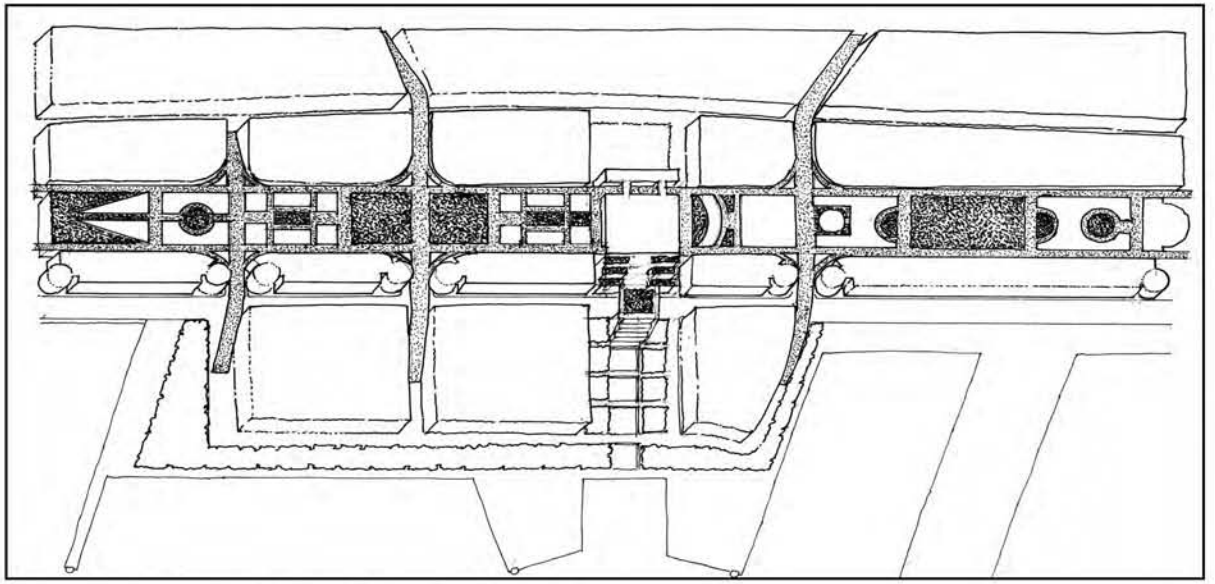
Given the implied intent in the long range development plans to recapture portions of the Pusan waterfront for recreation and urban life, the new station offered a unique opportunity to connect the city to the waterfront. The most significant design act contributing to this scenario, would be to mitigate the chasm of the grade level rail yards and the adjacent highway, by bridging over them with garden terraces, linking the waterfront to the existing rail station plaza, through and over the new train station.

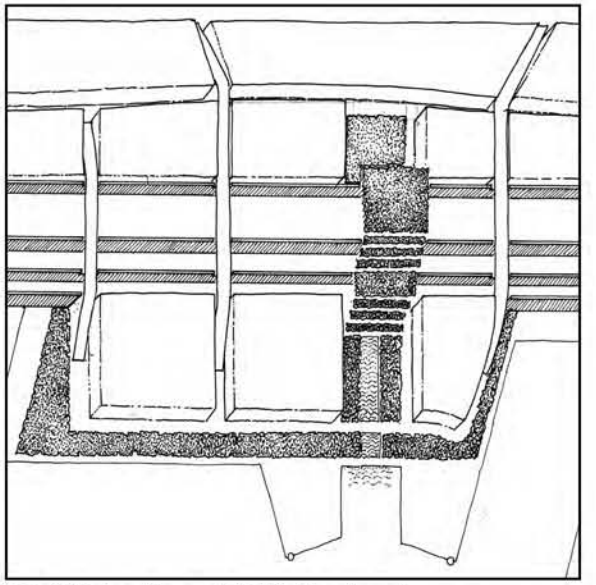
This strategy would incorporate the proposed new raised street network as a new datum serving as a plinth to air-rights development over the rail yards and guide the volumetric and spatial

4. Existing Railyard and Port Beyond









5. New Elevated Boulevard Bordering the Train Station
7. New Elevated Network Containing Development over the Railyard

6. Rail Station Plaza at Rail Platform Level
8. Urban Concept:Bridging over the Chasm of Tracks & Road

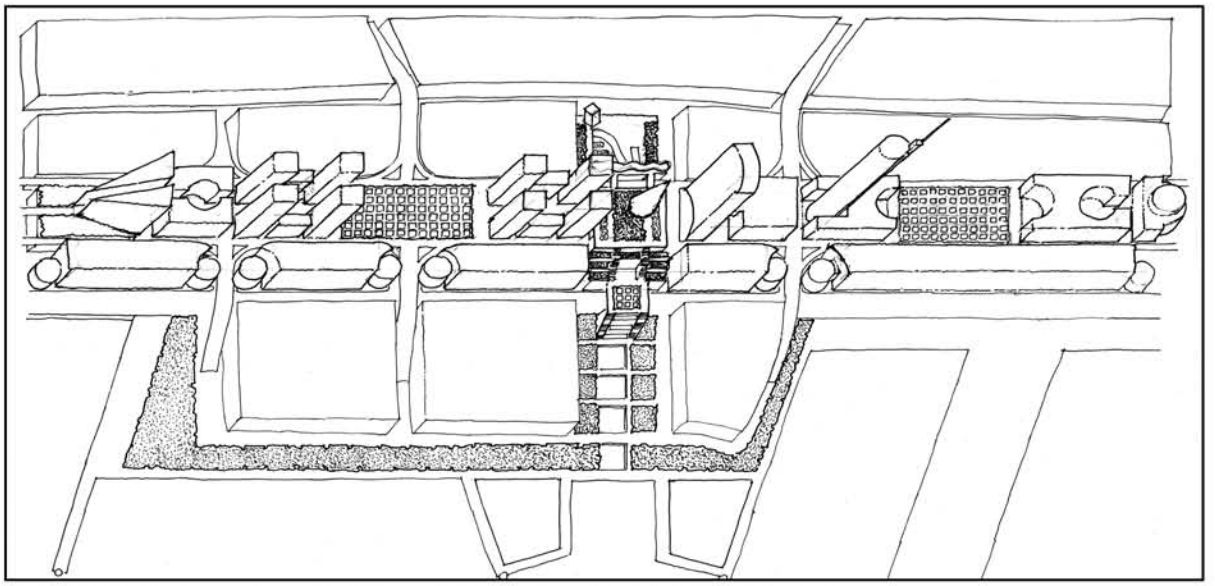
development of the train station as an integral component in a new urban armature.

The raised network would be linked to existing streets at each end and at intermediate crossings and thereby become a boulevard with central islands of development. At its eastern edge and against the highway, a new urban wall would contain the essential parking for the train station, bus terminal and adjacent new development.(See Drawings Nos. 7 & 8)

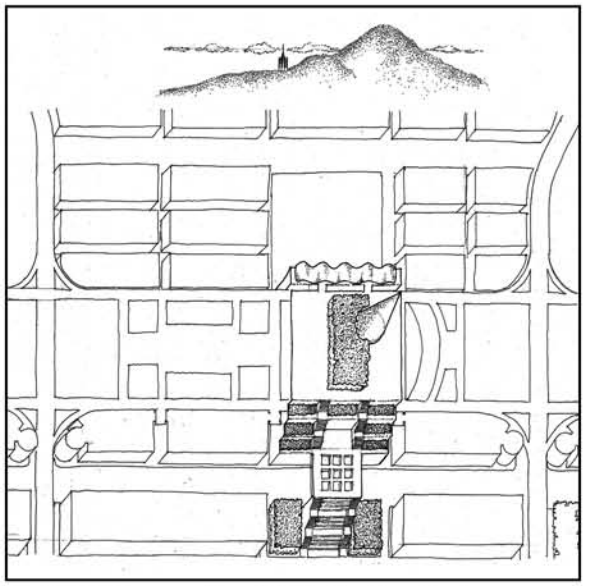
Consideration was then given to the formal presence of the station. The most likely path expected from other competitors was to design a rail station with a "prominent roof".The "significant symbolic statement" requested in the program, more than likely would be interpreted by the competition jurors as an "object building" - a series of functional trays, superimposed by a novel roof.

This design proposal, extended its urban strategy by seeking a conception of the rail station as a "non-building". In effect the integration of the station program under a roof garden that culminates the sequence of terraces extending from the waterfront to the plaza enfronting the station. (See Drawings Nos. 9 & 10)

The roof garden was conceived as a composition of architectural elements and a bosque of shade trees. A metal lattice cone that penetrates through the building to the track level, serves as a ventilation shaft for the conventional diesel trains. The garden is reached from the city by a "porch" - a *"sarangbang"*- the traditional Korean welcoming area that also serves as the glazed entrance hall to the station, and



9. Air Rights Development over the Railyard & Connection of the City to the Waterfront



10. Rail Station as a "Non-Building" under a Garden.

reveals the life within. On the roof garden a wire mesh fabric "cloud canopy" caps the porch. From the waterfront, cone and cloud canopy become a metaphorical response to the mountains in the background. (See Drawings Nos. 11 & 12).

BUILDING CIRCULATION ORDER

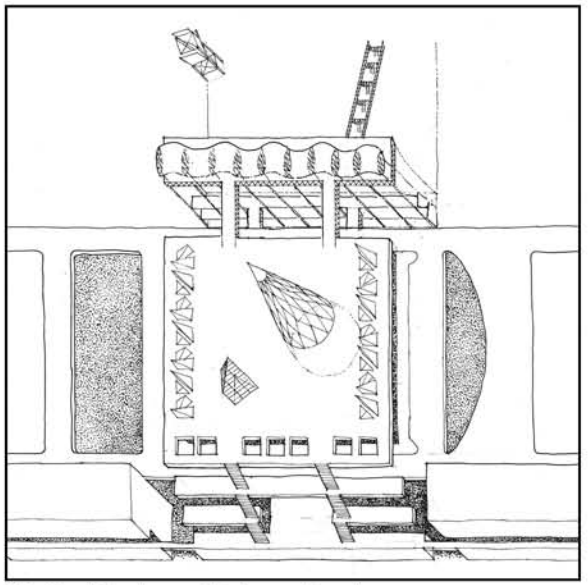
Below the roof garden, the station mediates complex multi-level and multi-modal circulation systems that process the rail passenger traffic from various points of access: the subway, the street level traffic, the raised boulevard traffic and the bus terminal.(See Drawing No13)

Four concourses, two below grade as extensions of the subway system under the city's main street, and two above the tracks, as controlled extensions of a monumental waiting room, have the capacity to process the traffic generated by two high speed trains (approximately 2000 passengers) in less than 5 minutes. The concourses, waiting room, the street level and raised boulevard drop-offs, the direct pedestrian access from the plaza via a ramp and the bus terminal are all intercepted by the multi-level entrance hall where transfer is effected via escalators.

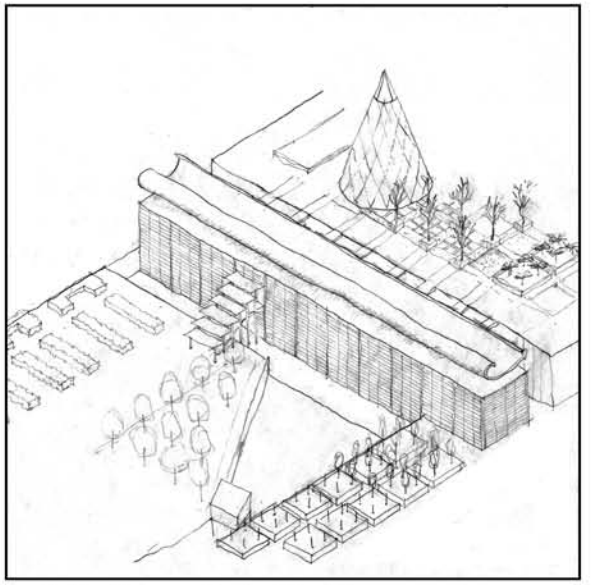
The station's circulation system also addresses the access requirements for disabled passengers via elevators as well as baggage handling and the servicing of trains on all the platforms from a separate corridor and elevator network.(See Drawings Nos.14,15,16 & 17)

BUILDING VOLUMETRIC & SPATIAL ORDER

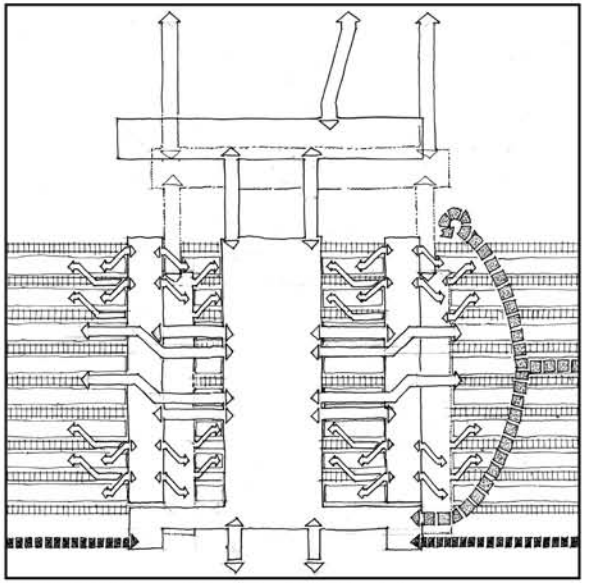
The nodal organization of program components under the roof garden results from the location of the waiting



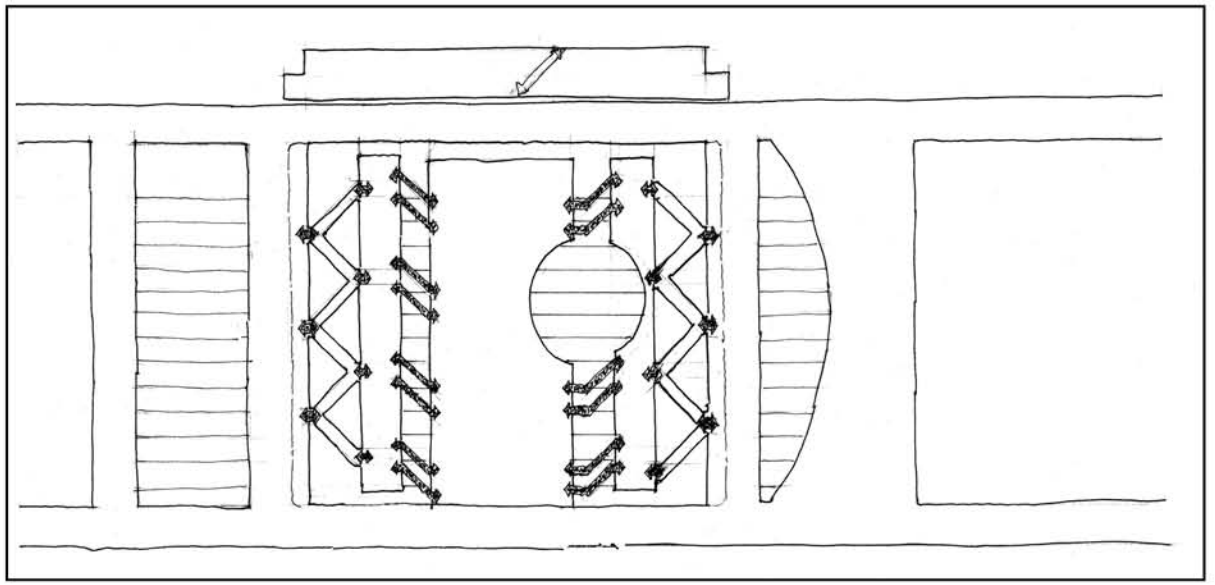
11. Roof Garden and Entrance Porch

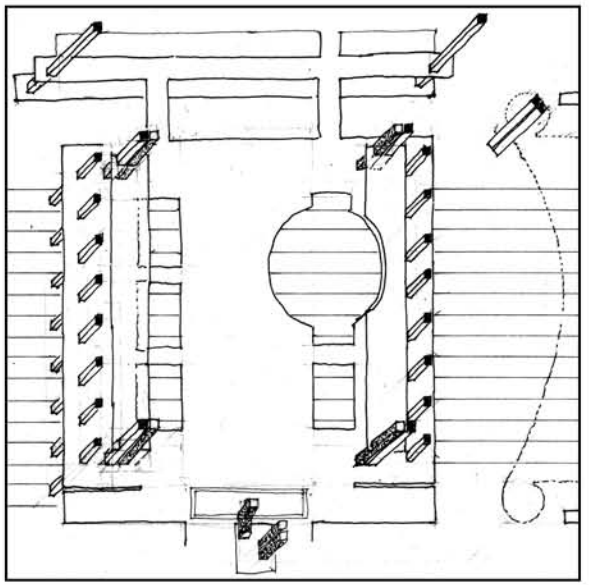


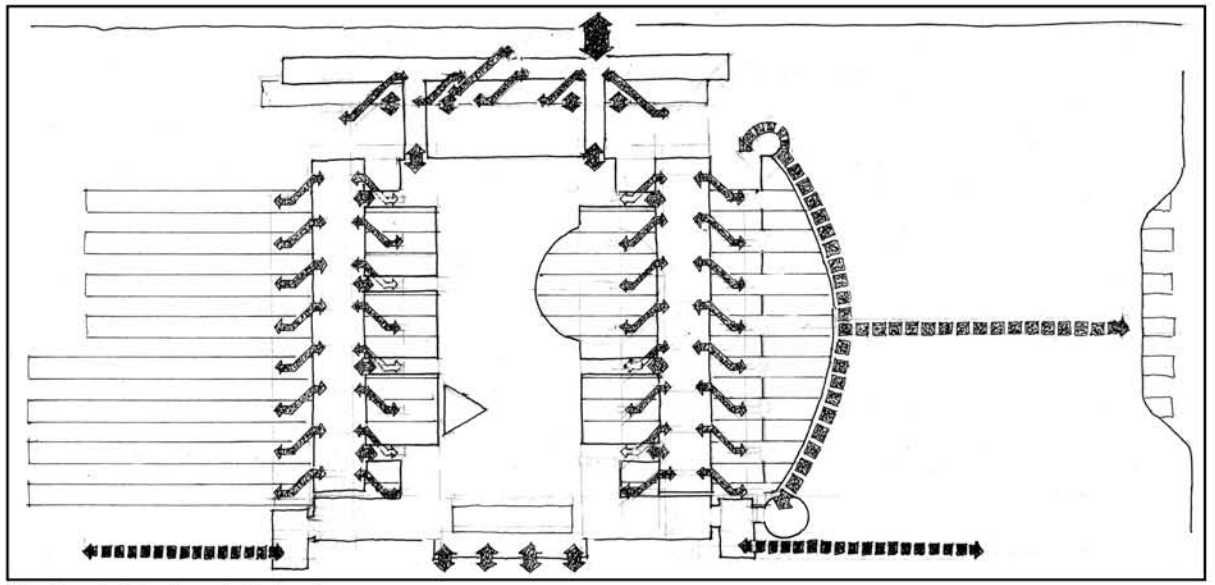
12. Station Entrance Porch off the Plaza

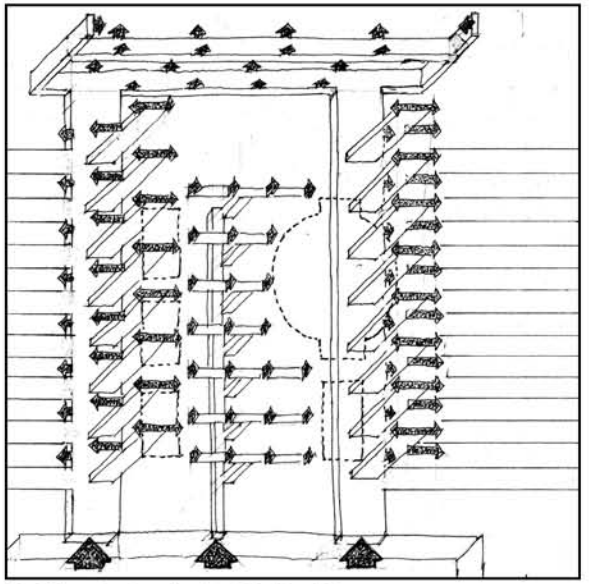


13. Rail Station and Bus Terminal Circulation









14. Elevated Boulevard Station Access
15. Waiting Hall Level & Boarding Concourses off the Entrance Porch and Bus Terminal
16. Elevator Service for Disabled Passengers
17. Baggage Handling and Service Network

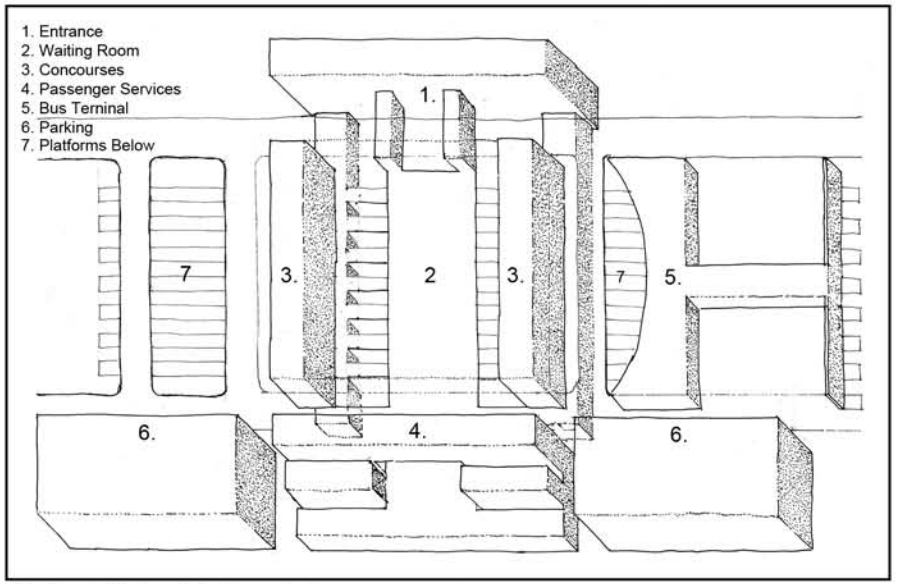
room as a focus around which revolve the glass entrance hall, the concourses, the raised boulevard drop-offs, the attached bus terminal and the terraced station administration and passenger service wing flanked by parking structures. This assembly is embedded into the new elevated boulevard network, respecting the width of the existing plaza which it enfronts.

Within the station, the waiting room becomes a forest of "tree columns" that respond to the spacing of platforms below and which support the planters containing the live trees in the roof garden.The space between the planters, is infilled with translucent glass block and thus creates an airy space bathed in filtered daylight. (See Drawings Nos.18 & 19)

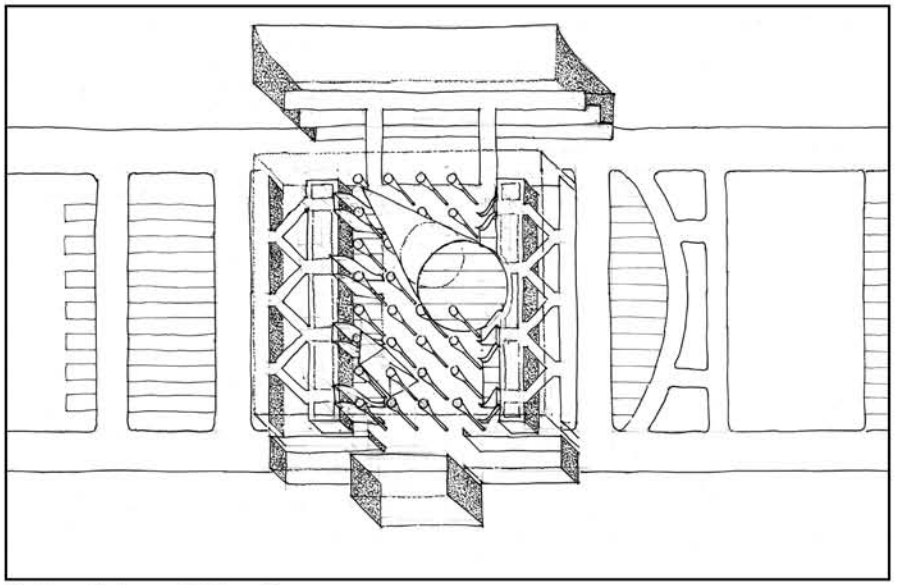
The lattice cone penetrates all levels of the building through the waiting room and together with the prismatic glass shard skylights over the concourses, allows the interpenetration of space and light and the involvement of travelers with the train platforms below and the roof garden above. The station thus achieves the transformation of the ground plane into multiple layers of trays that bridge over the rail yard and are crowned by the roof garden. Trays and garden sit behind and are masked by the transparent porch, the urban façade to the city that reveals the activity within.

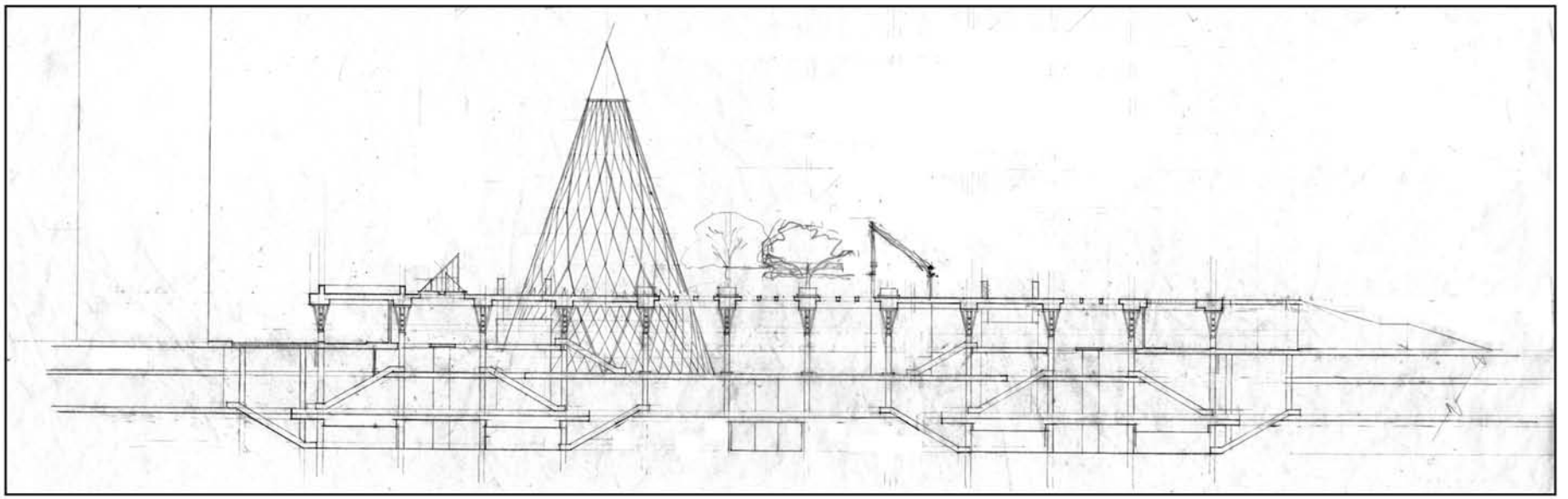
EPILOGUE

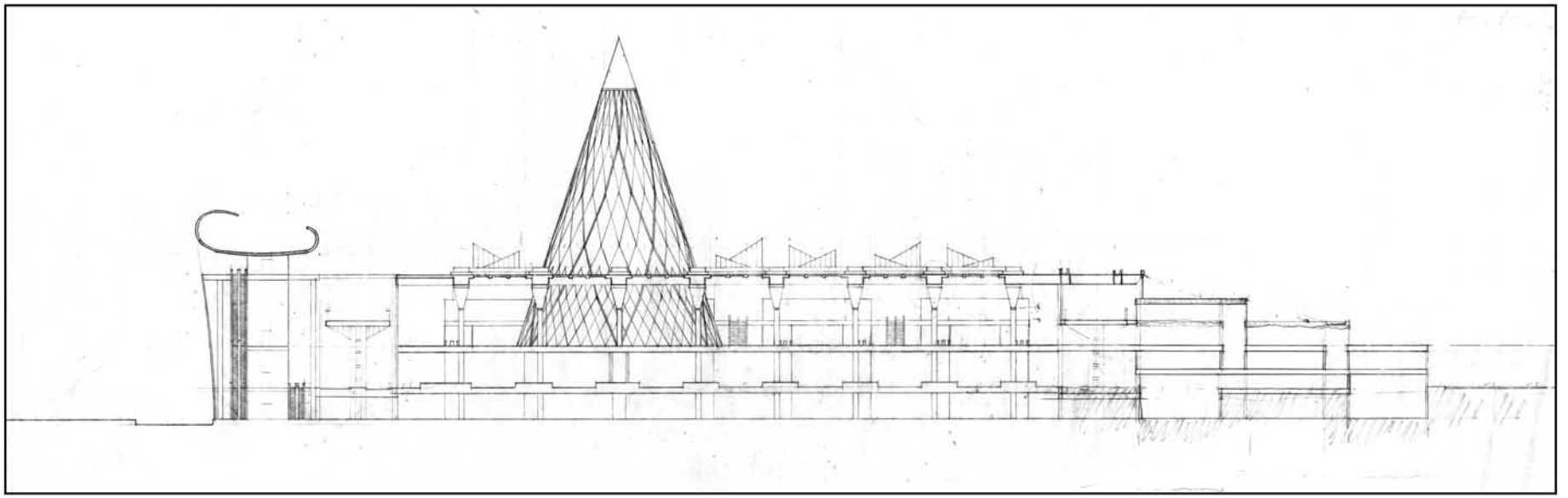
As expected, the competition jury selected "big roof schemes". A dome and an undulated roof were granted first and second places. The "non-building" proposal in this case study . tied for third place with a stayed cable roof proposal. None of the selected station projects, however,were implemented. The High Speed Rail Construction Authority,



18. Nodal Volumetric Organization


19. Tree Columns Waiting Room





20. Initial Transverse Section Sketch Looking East
21. Initial Longitudinal Section Sketch Looking North

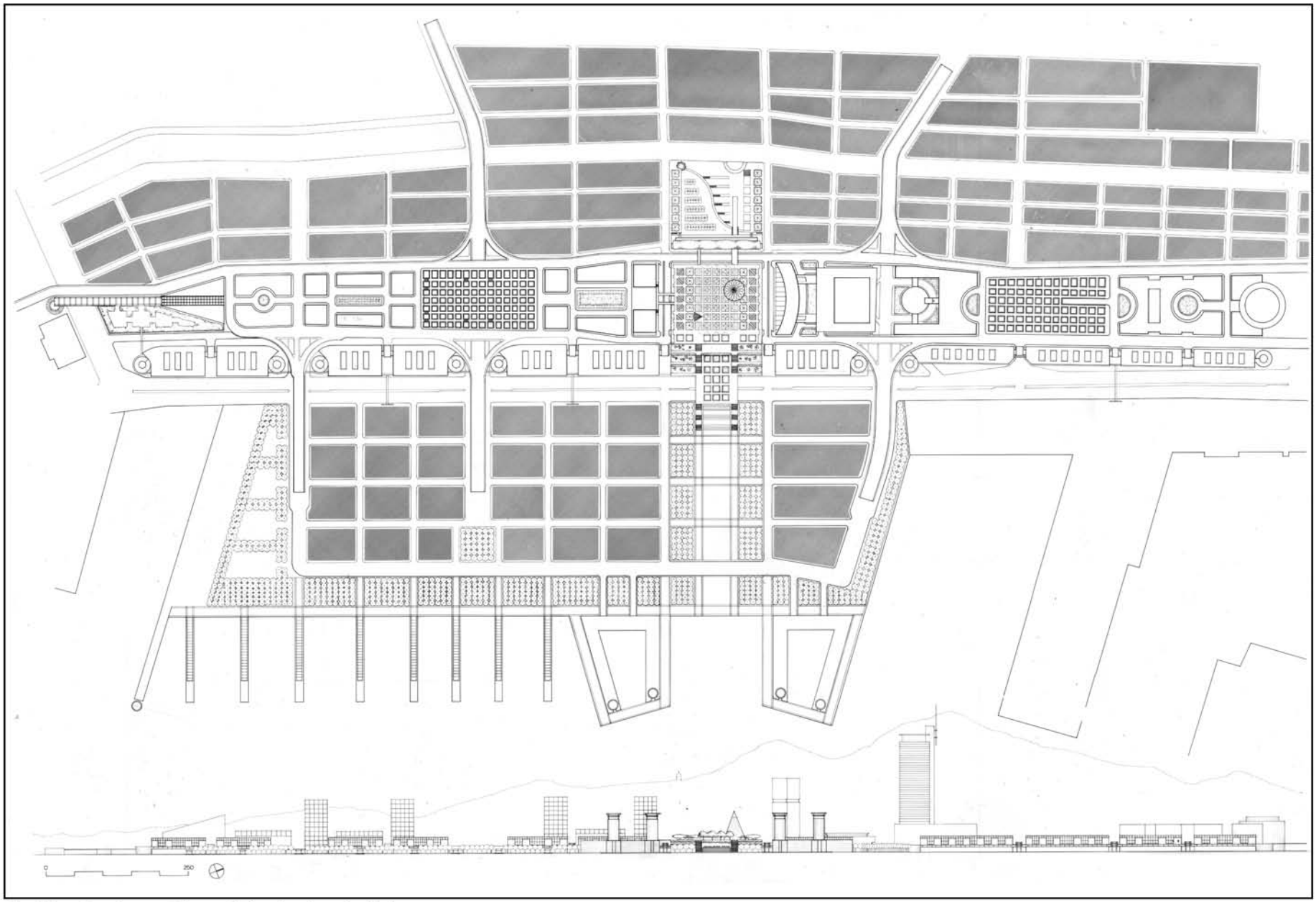
chose to remodel the existing station to accommodate the TGV system that currently serves the Seoul to Pusan rail traffic in less than two hours, at an average speed of 200 km/hr. It should be noted that the high speed train service in Korea, has caused eight regional airports to discontinue service.

The remodeled station, of course did not address the larger urban design concerns related to air rights development within the raised boulevard network, nor the opportunity to link the city to the waterfront. The chasm of the rail yard and the adjacent highway remain.

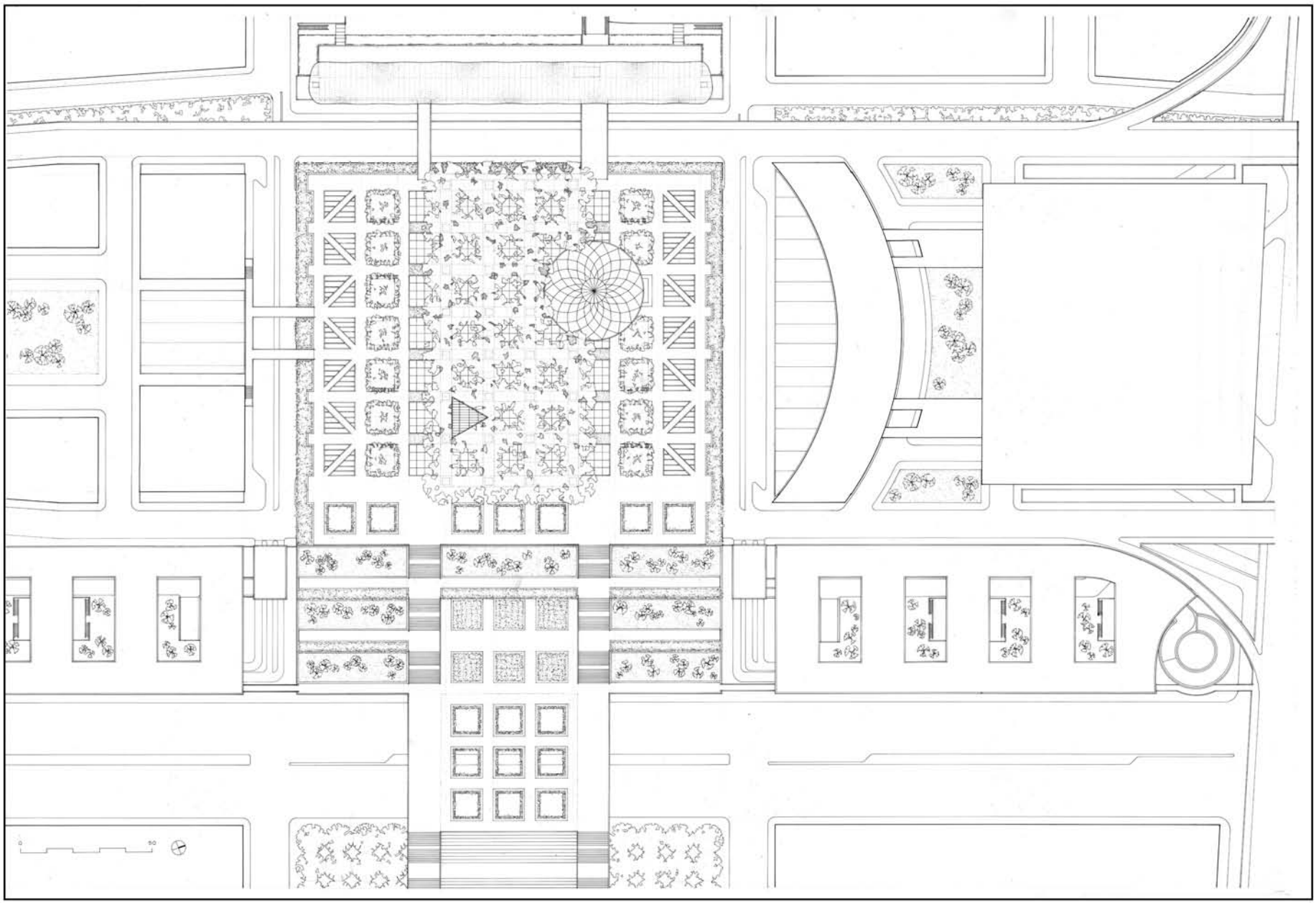
The remodeling did borrow two concepts in this proposal: the glass façade enfronting the plaza and the direct access from the plaza into a raised waiting room. The existing banded concrete enclosure was removed and replaced with a by-passing glass window wall that is punctured by escalators with adjacent stairs, leading directly from the plaza to the station entrance hall. Not as inviting or efficient a means to achieve the required level change as a ramp, but nevertheless a design gesture that invites entrance.

(See Drawings Nos. 22 & 23)

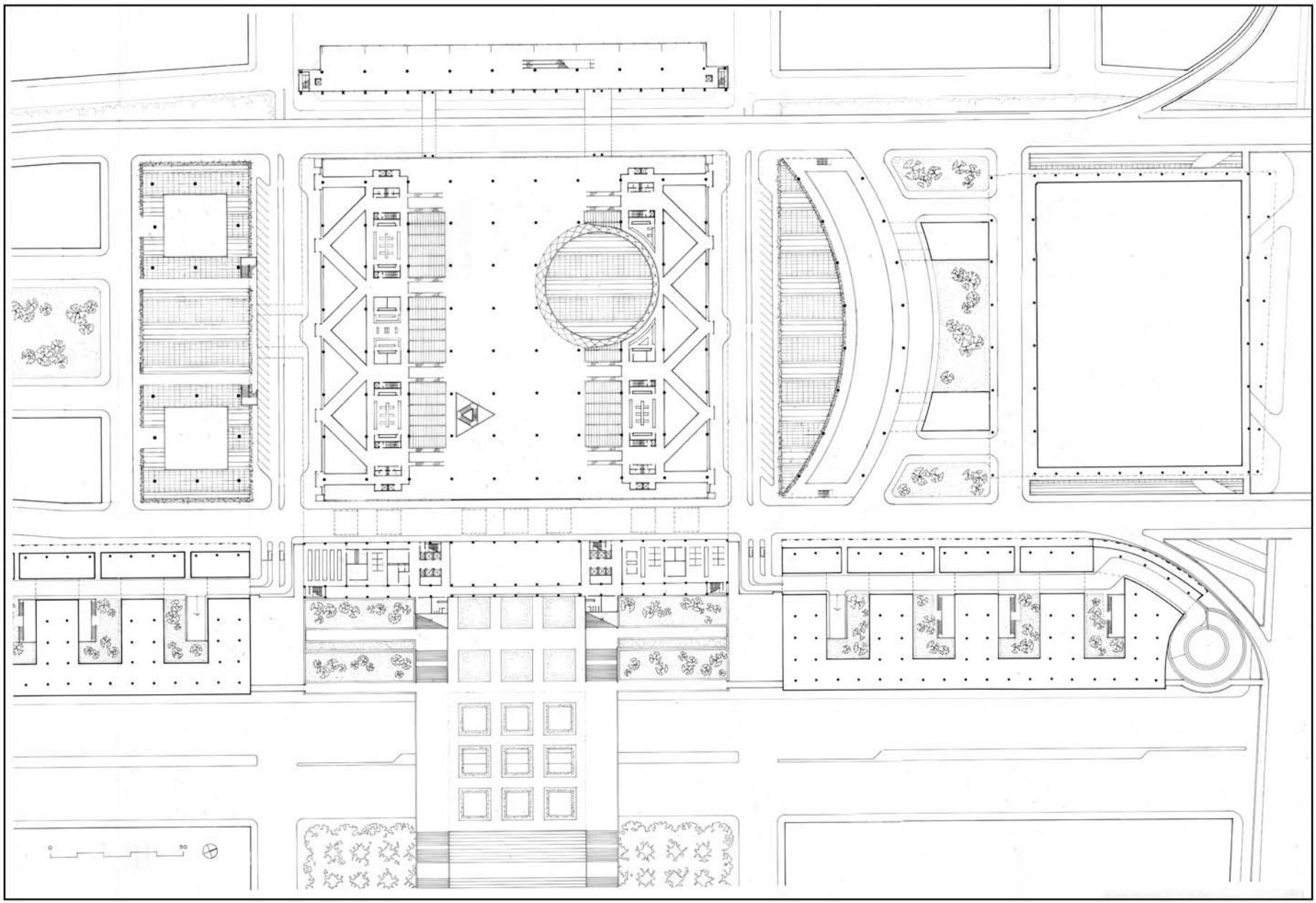
22. & 23 . Remodeled Existing Station: A Glass Facade Enfronting the Plaza with direct Stair and Escalator Access.



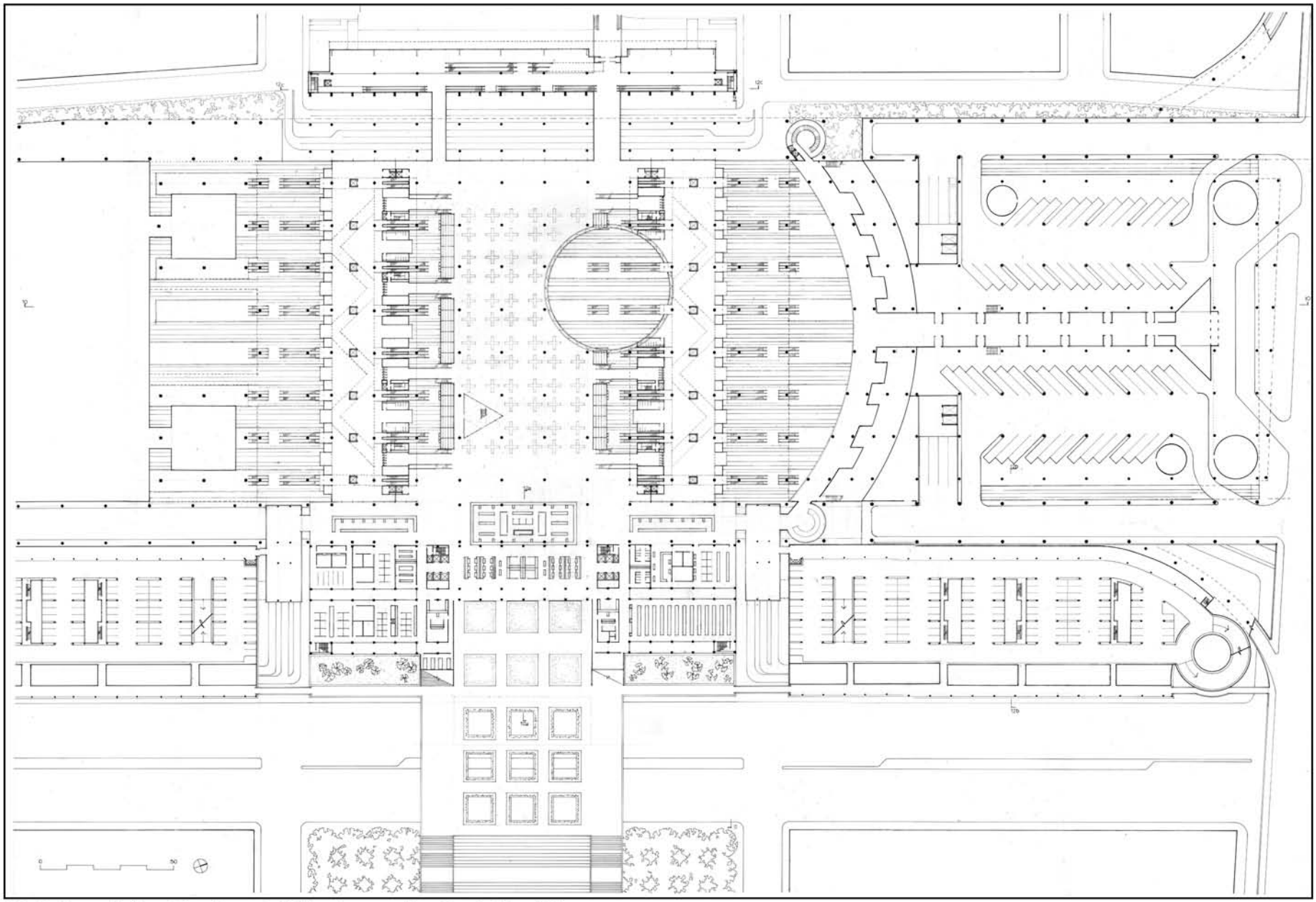
24. Urban Development Plan and Elevation from the Harbor



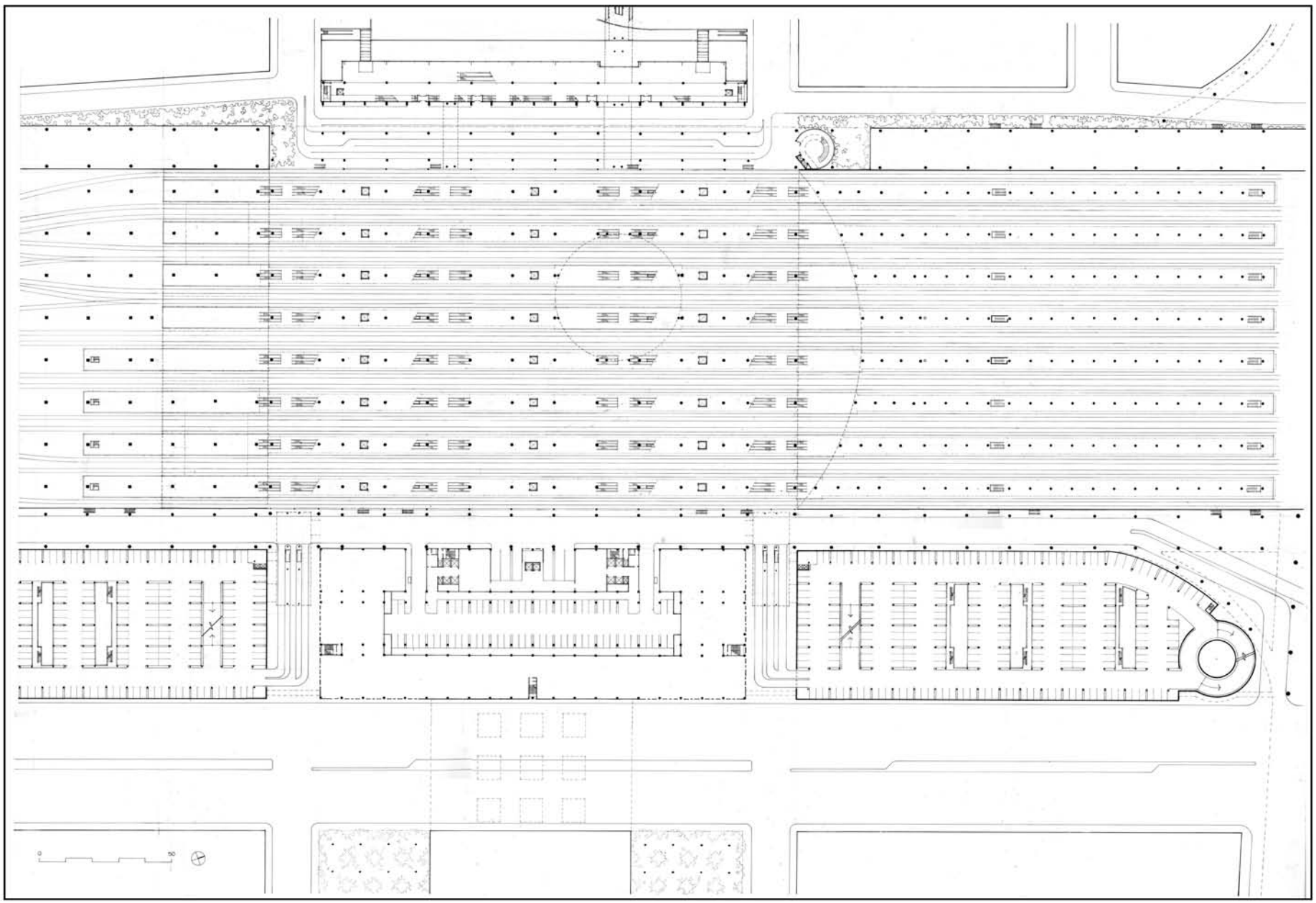
25. Station Roof Garden and Adjacent Development Plan



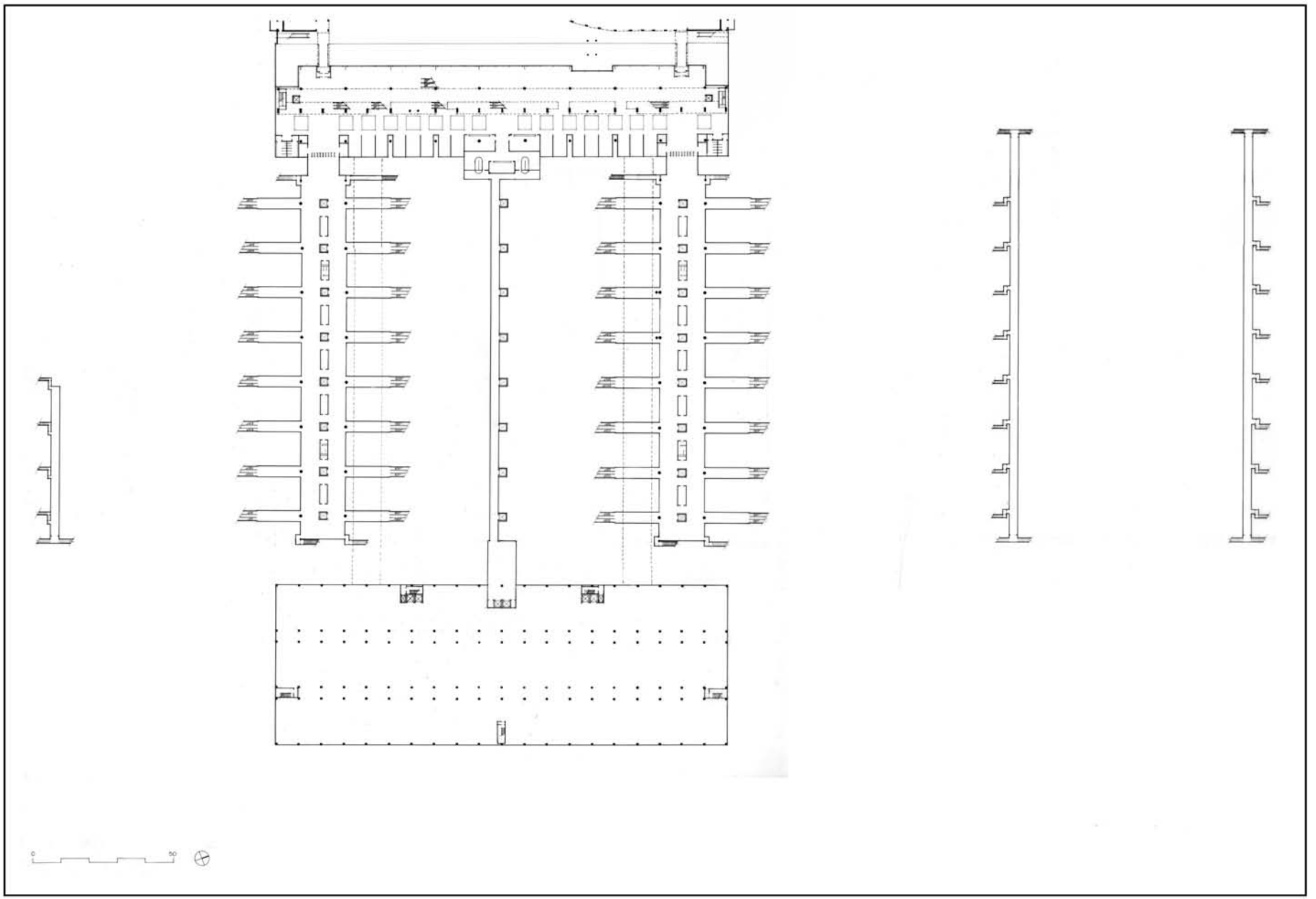
26. Station and Adjacenet Development Raised Boulevard Level Plan



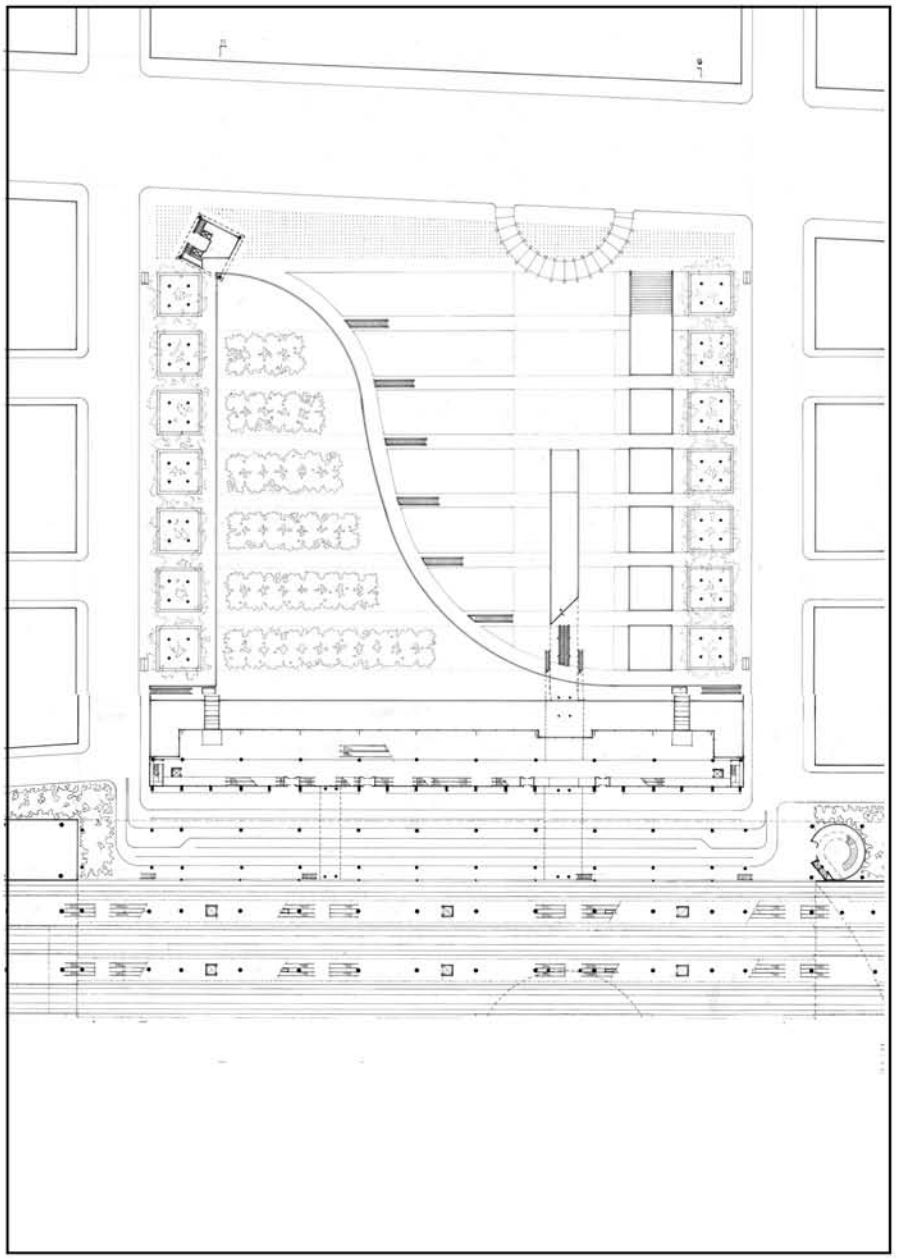
27. Station and Adjacent Development Waiting Room and Bus Terminal Level Plan



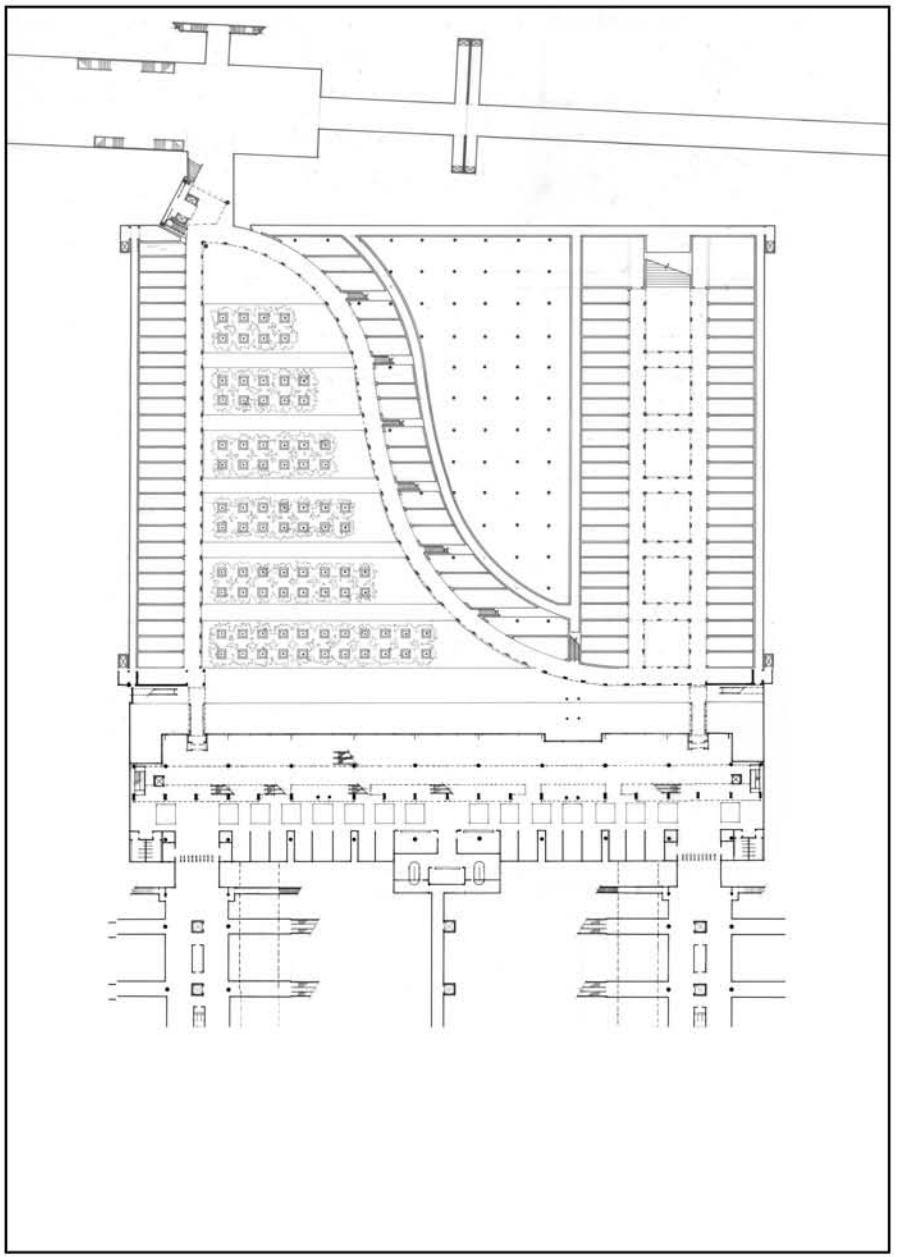
28. Station Track, Platform and Street Level Plan



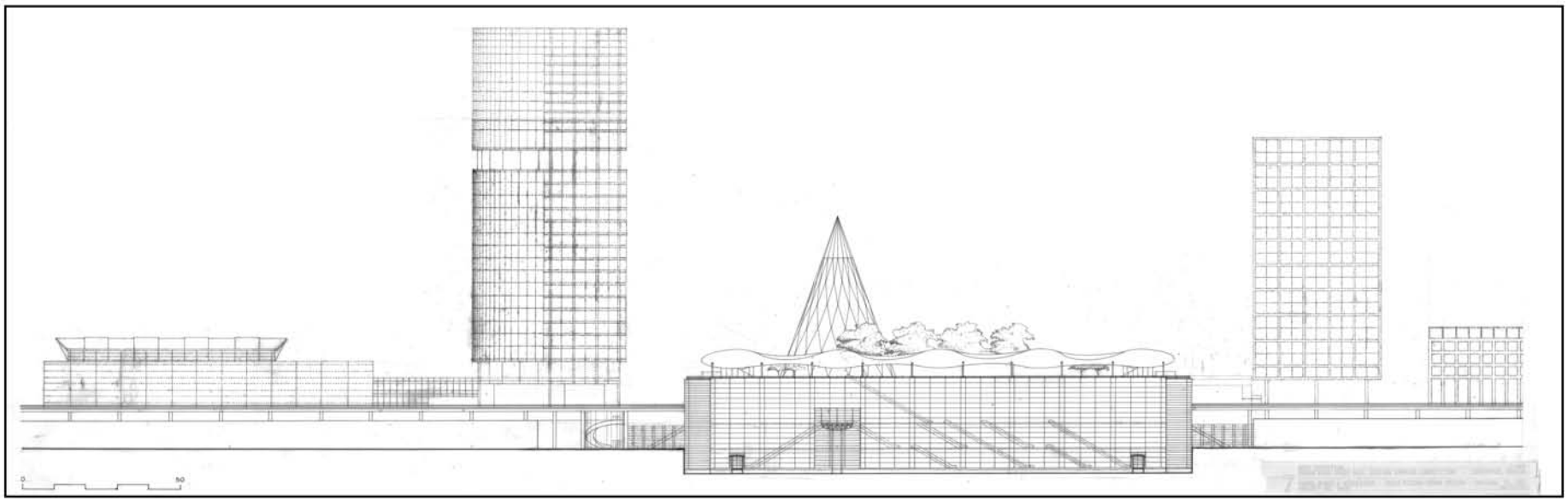
29, Station Lower Level Concourses and Service Tunnels Plan

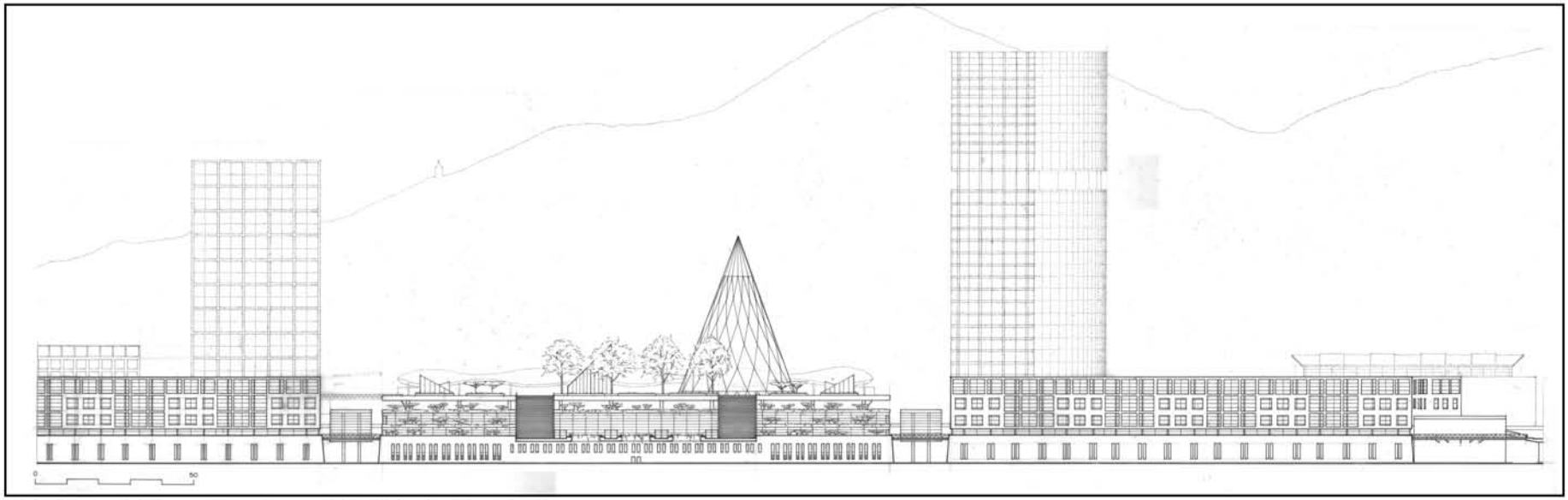


30. Station Plaza Steet Level Plan

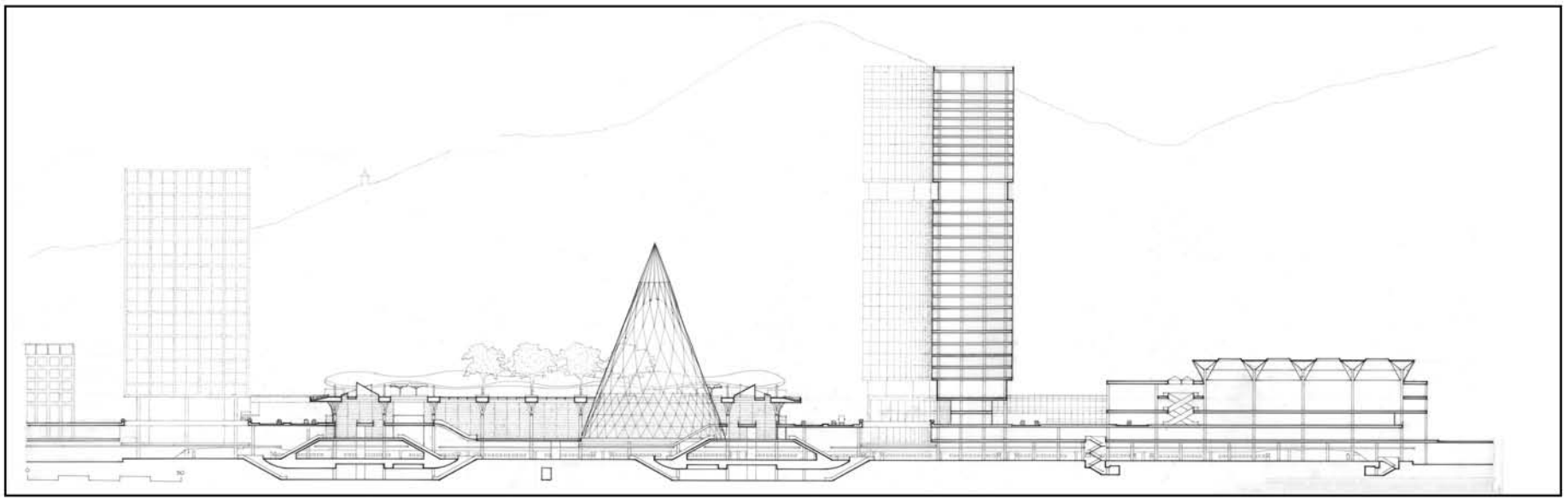


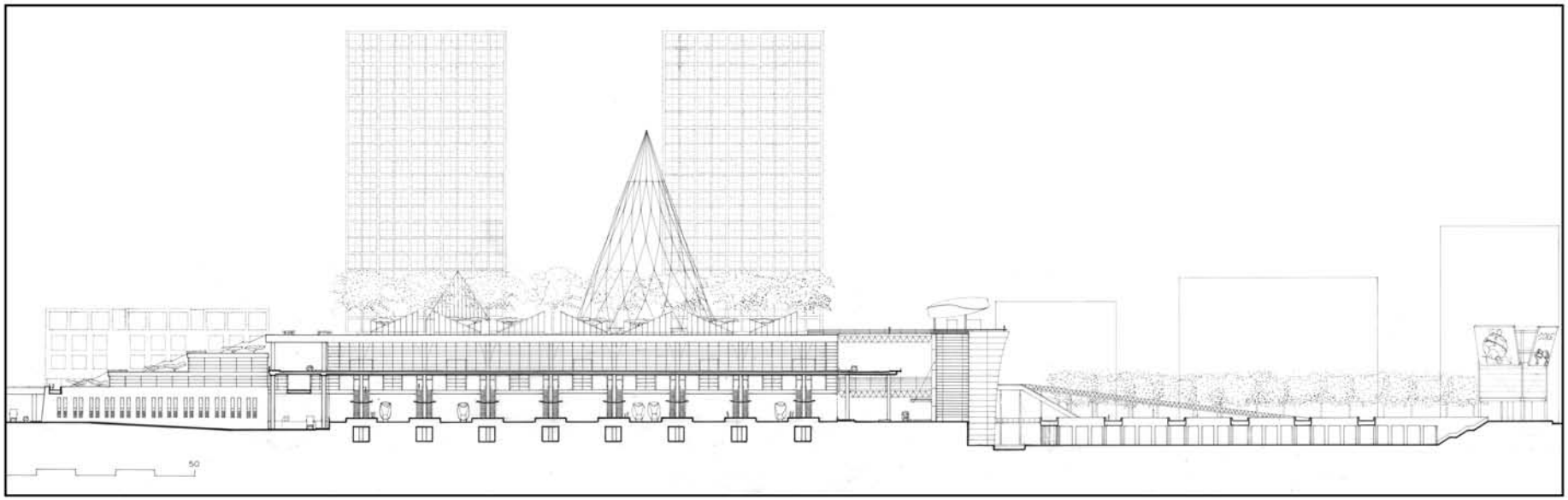
31. Station Plaza Lower Level, Subway and Station Councourses Plan



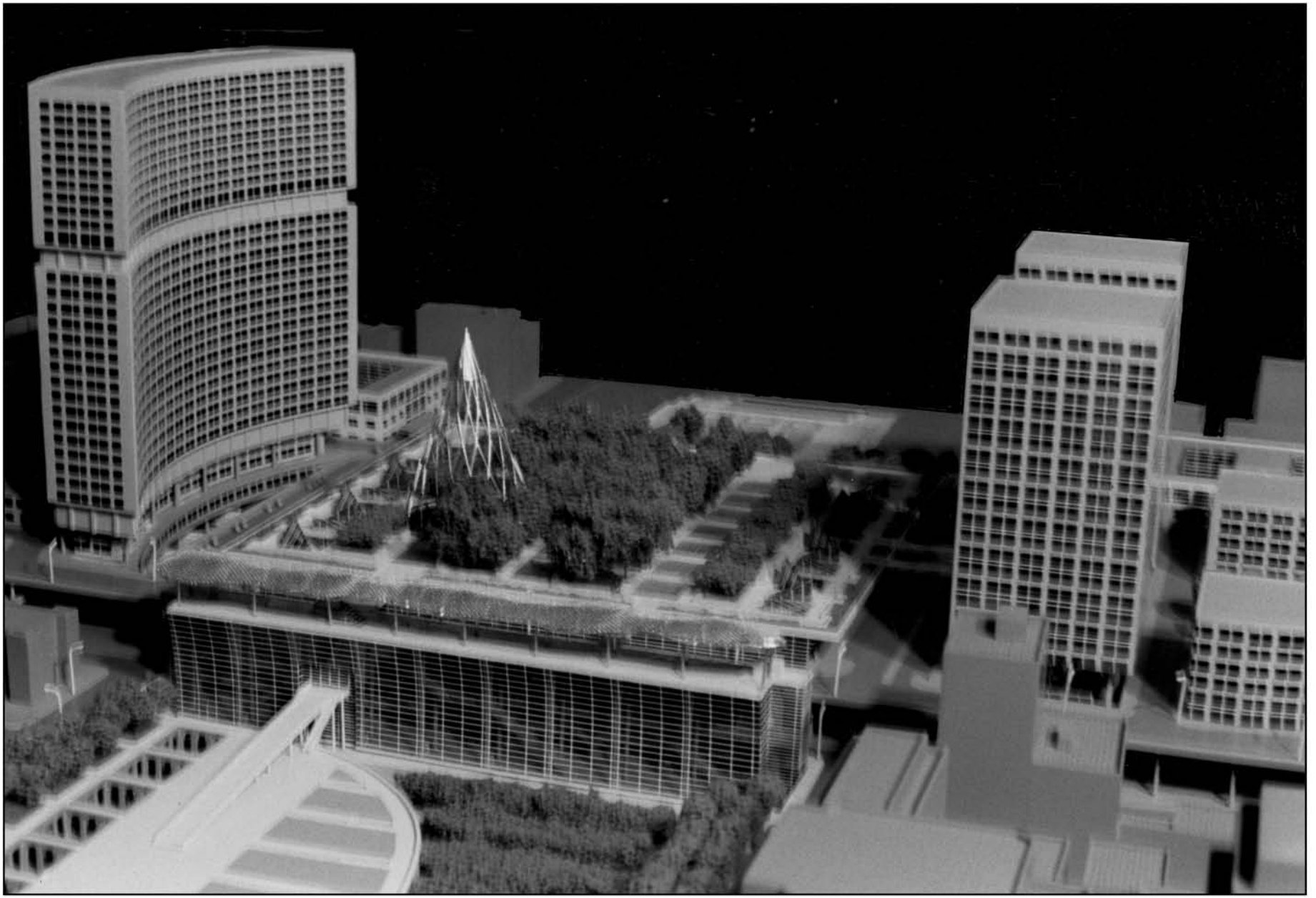


32. Station and Adjacenet Development West Elevation from the Plaza
33. Station and Adjacenet Development East Elevation from the Harbor





34. Station and Adjacent Development Transverse North/South Section
35. Station Plaza and Raised Boulevard East/West Section with Passenger Servoce Wing North Elevation



36. Station Entrance Porch, Roof Garden and Adjacent Development Model from the Southwest.

37. Station Roof Garden, Bridge Terraces and Adjacenet Development Model from the Southeast.

38. Station Entrance Porch, Roof Garden and Station Plaza Model from the West

14. CASE STUDY V

OKLAHOMA CITY MEMORIAL

OKLAHOMA CITY, OKLAHOMA, U.S.A.

DESIGN COMPETITION ARCHIITECT FINALIST 1997

CONTEXT

A three acre square site within the city grid of Oklahoma City, bounded by existing streets on the East and West, on the North by a surviving building formerly occupied by a newspaper and on the South by a parking garage retaining wall. The garage is superimposed by a plaza that enfronted the former Alfred Murrah Federal Building which suffered a terrorist bombing in 1995 and was subsequently cleared.

The two block site which is divided by an existing East/West street completes an axis of federal buildings to the South, which occupy full city blocks, within an urban fabric consisting of an irregular mix of institutions and surface parking lots without a coherent formal order or visual presence. (See Drawing No. 1)

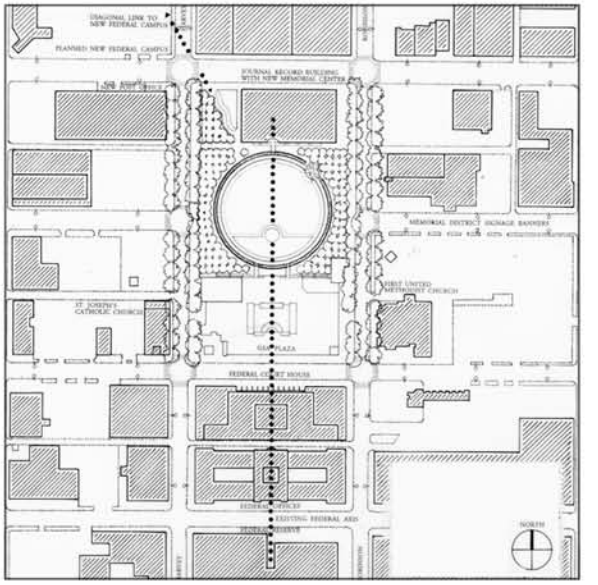
Far more important than the physical context was the emotional context that confronted all consisting of the terrorist blast that ripped away half of the nine story building, killed 168 people, including 19 children and injured hundreds. This attack on a federal facility devastated the lives of survivors and destroyed the sense of security in the United States, previously not breached since Pearl Harbor, fifty plus years earlier. (See Drawing No. 2)

PROGRAM

A symbolic memorial dedicated to the memory of "those who died, those who survived and those changed forever ". A place intended to "offer comfort, strength, peace, hope and serenity".

The memorial had to include a "surviving elm tree and incorporate the names of those who died as well as - but separately - the names of survivors and rescue workers".

The memorial had to be endowed with a "sense of place" which identified its presence within a district or zone and would integrate the remaining existing structures.



1. Memorial Context Plan
2. Murrah Building after Bombing

The memorial had to become a hallowed place, especially the area where the Murrah Building stood - a place that engendered remembrance and a setting where visitors will be able to reflect. The memorial had to convey a sense of loss, but also of hope, and ultimately offer an uplifting experience.

An existing newspaper building, North of the site, was expected to become an information center and museum and thus required connection and integration with the memorial.

SPATIAL STRATEGY

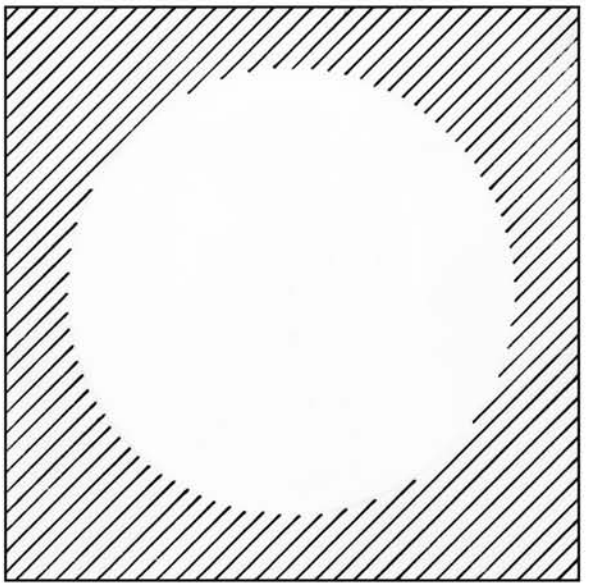
The most powerful and universally shared symbol is the circle. As a reaffirmation of the cosmos - here on earth - circles engender realms that surround us and bring us together to share common experiences and spiritual concerns. This nodal form also conveys in all cultures, the setting apart, the defining and delimiting of consecrated, up-lifting domains. (See Drawing No. 3)

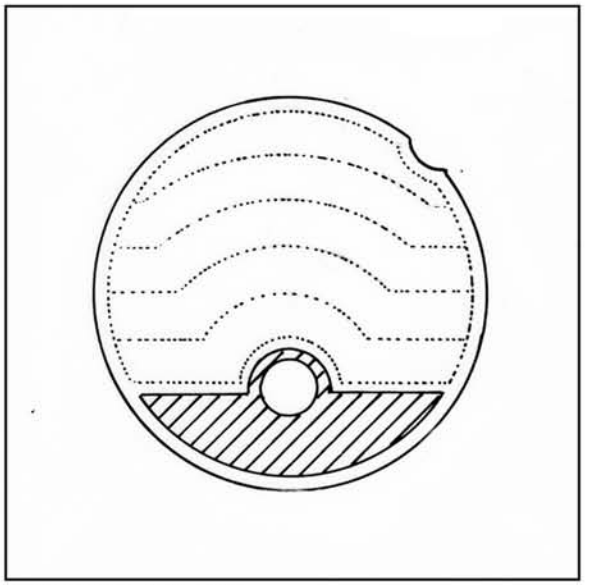
In this design proposal, a thick wall encircles a contemplative setting and removes visitors from the unrestrained, existing surrounding context. The wall coping, in turn, becomes a circum-ambulatory path bordered by 168 columnar evergreen cypresses that accompany the surviving elm. The resulting diadem of trees performs the role of sentinels, as perennial custodians of a hallowed ground.

Within the ring wall, the space is claimed by a peaceful meadow for reverent gathering and personal reflection. The sloping lawn focuses on a water table that occupies a circular segment and preempts most of the former Murrah Building footprint. Water - the source of all life - trickles into a well located at the epicenter of the bomb blast. (See Drawing No. 4)

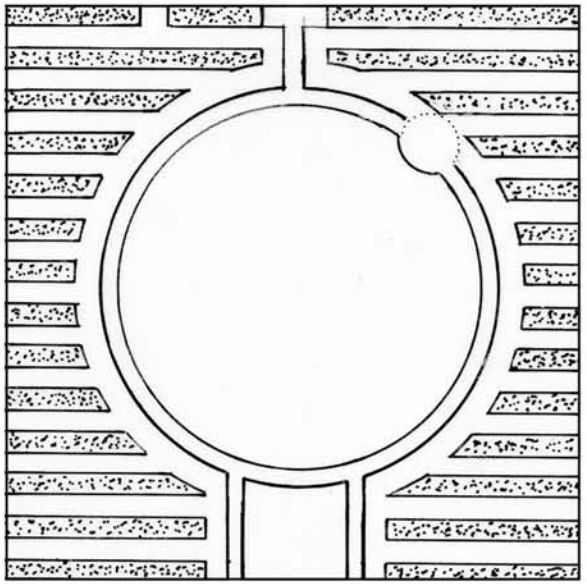
Behind the water table on the adjacent perimeter wall, are remembered the names of those who died.

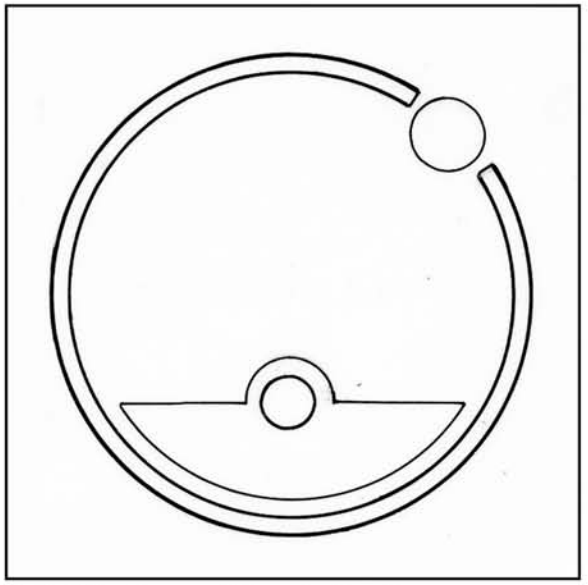
By entering the meadow and descending to the water table, visitors are provided the most immediate and intimate contact with the underlying violent event and sense of loss. However and more importantly, the serenity of this contemplative setting offers the enduring strength of remembrance and the hope of healing to rise above the tragedy.





3. Consecrated Precinct
4. Peaceful Meadow and Water Table





5. Mediating Bosque of Flowering Plum Trees
6. Diadem of Cypress Sentinels and Surviving Elm Tree

URBAN STRATEGY

Outside the ring wall, which essentially occupies the center of the site, a visitor is welcomed by a bosque of flowering plum trees in linear planters that mediate the consecrated precinct to the topography and the East and West city sidewalks. (See Drawing No. 5)

Where the memorial engages the city, street shade trees and distinctive paving at the street intersections in the two block area, provide an identity to the memorial district and provide an evident terminus for the Federal Complex to the South.

Access to the memorial is achieved where the path on the ring wall intersects the sidewalk by the surviving elm tree. It is also offered at bridges that link the ring wall to the existing plaza on the South and an entrance to the proposed museum and information center on the North. (See Drawuings No. 6)

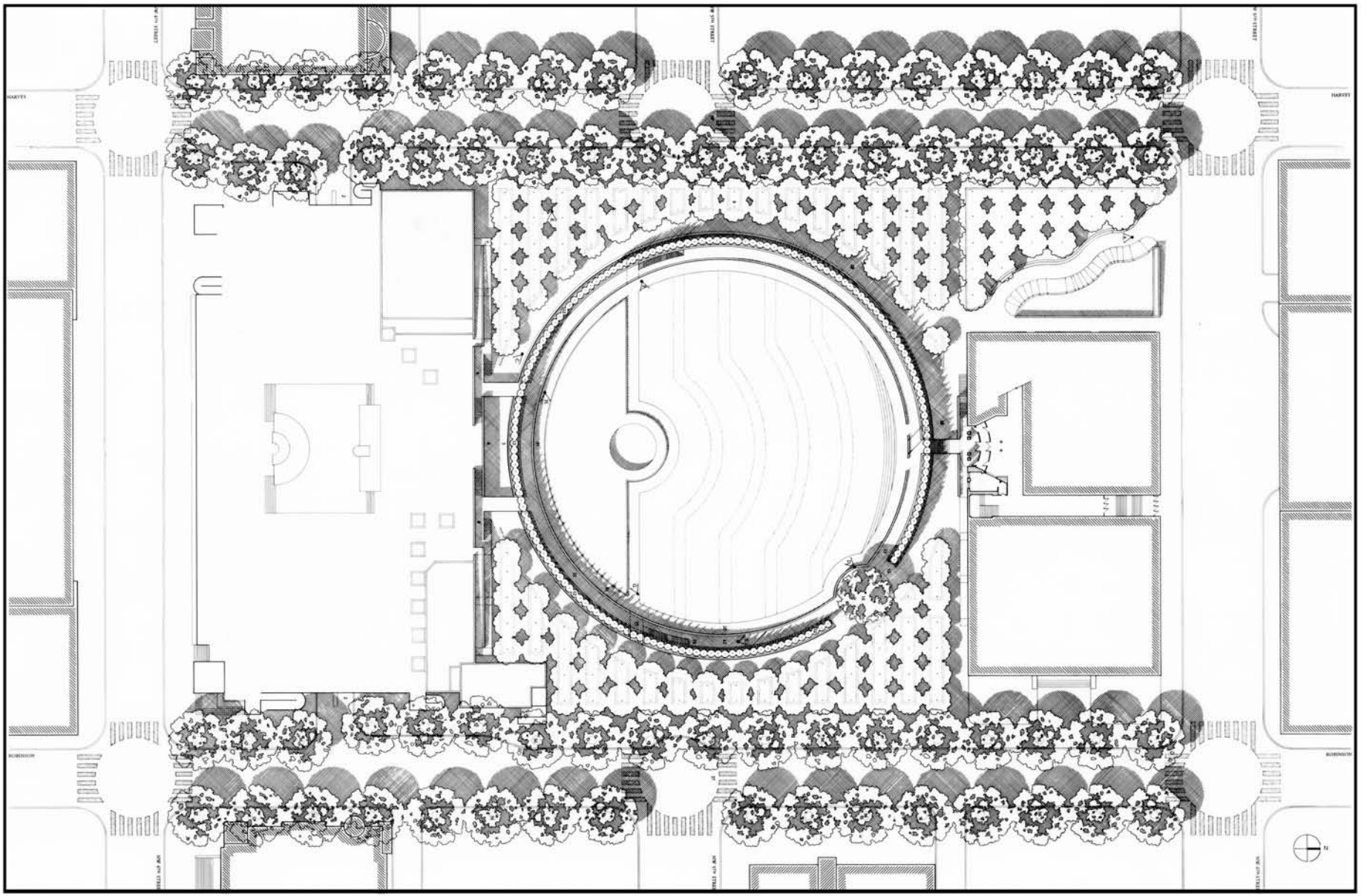
An additional urban link was created on the Northwest corner of the memorial precinct on an unoccupied land parcel West of the former newspaper building, as a children's garden. The West flowering bosque was extended along a sinuous path, a. ɔordered by nineteen water jets - one for each child lost . The water jets are randomly activated by passers by, providing a reminder that even in a place for remembrance and contemplation, the exuberance of children reaffirms both hope and healing.

EPILOGUE

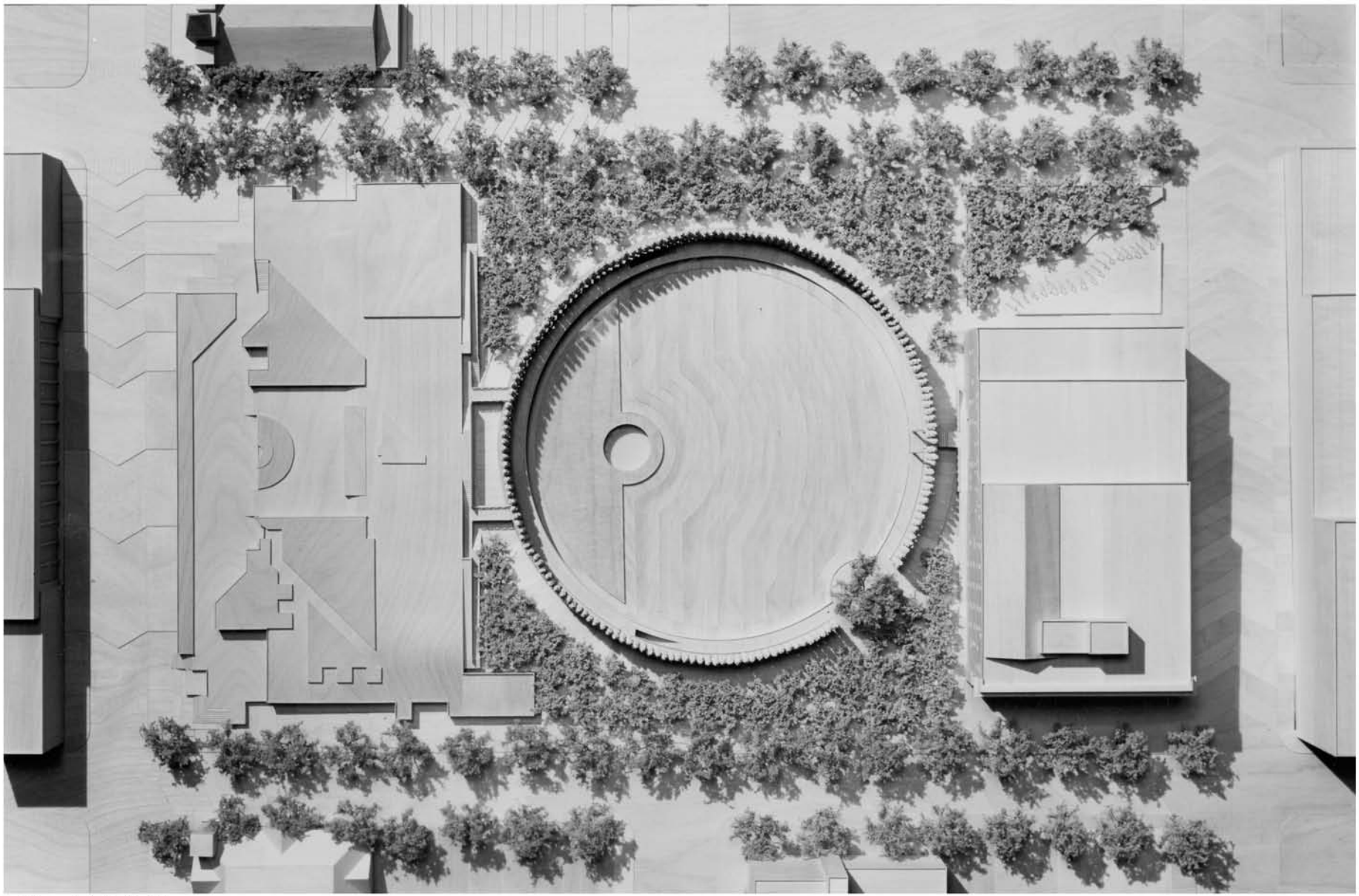
The design competition attracted 624 proposals, from which were selected five first phase finalists for further development by a panel of six design professionals and three survivors and family members of victims.

In the development of the second phase, this design proposal added the children's garden and the bridge connections between the ring wall and the adjacent buildings.

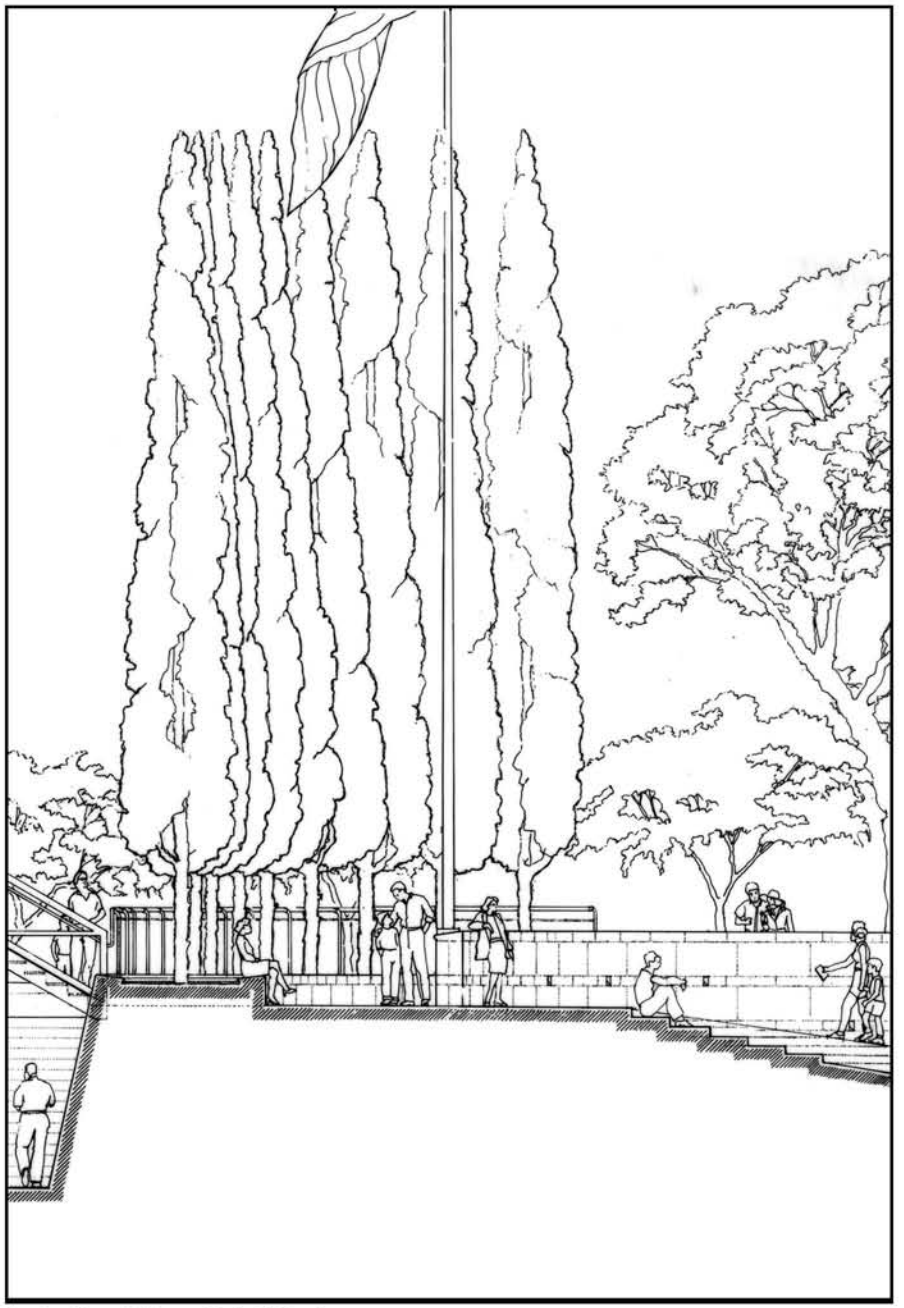
The intent to create an urban setting, fitting for healing and public gatherings, while honoring "those who died, those who survived and those who would be changed forever" was not favored by a different selection panel, and the commission was awarded to another finalist.



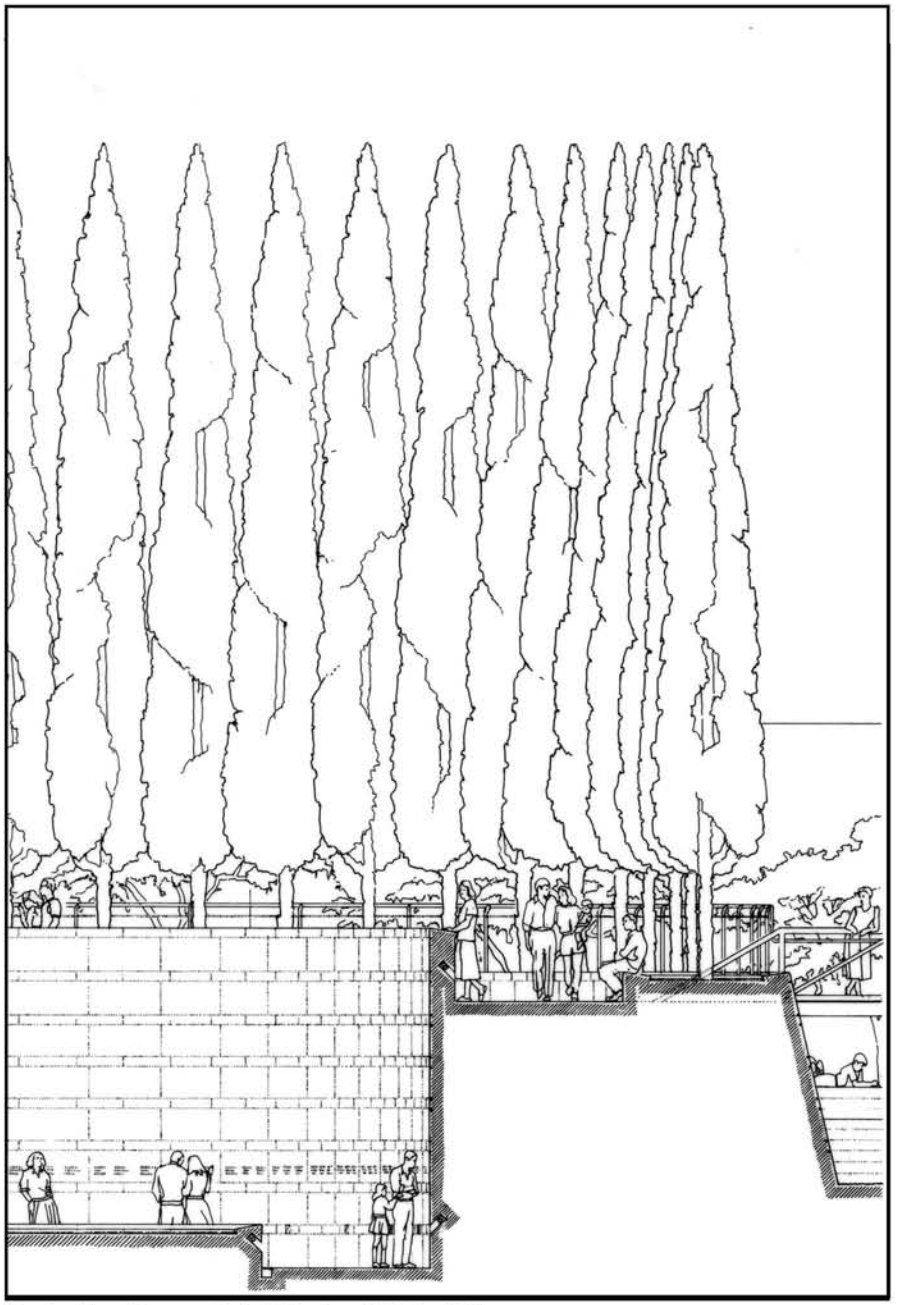
7. Memorial Site Plan



8. Memorial Site Model

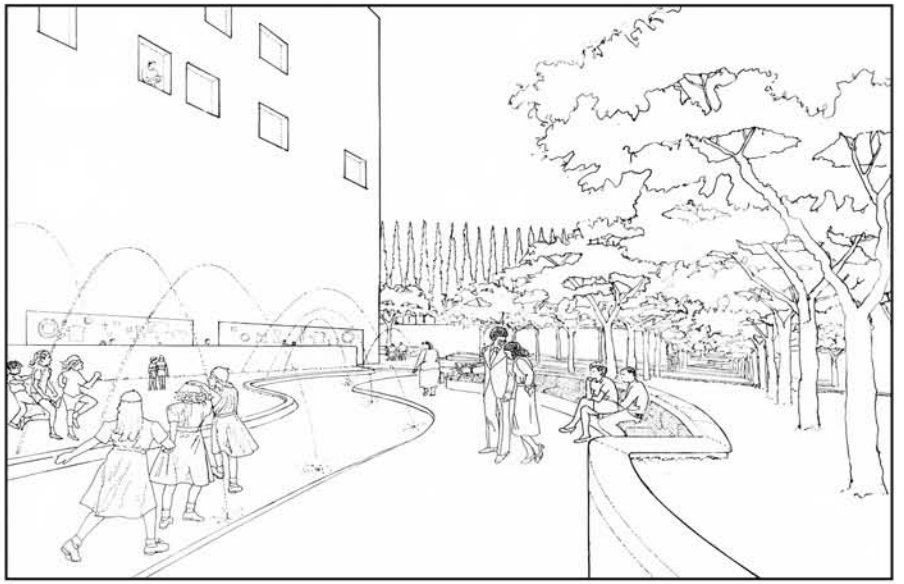


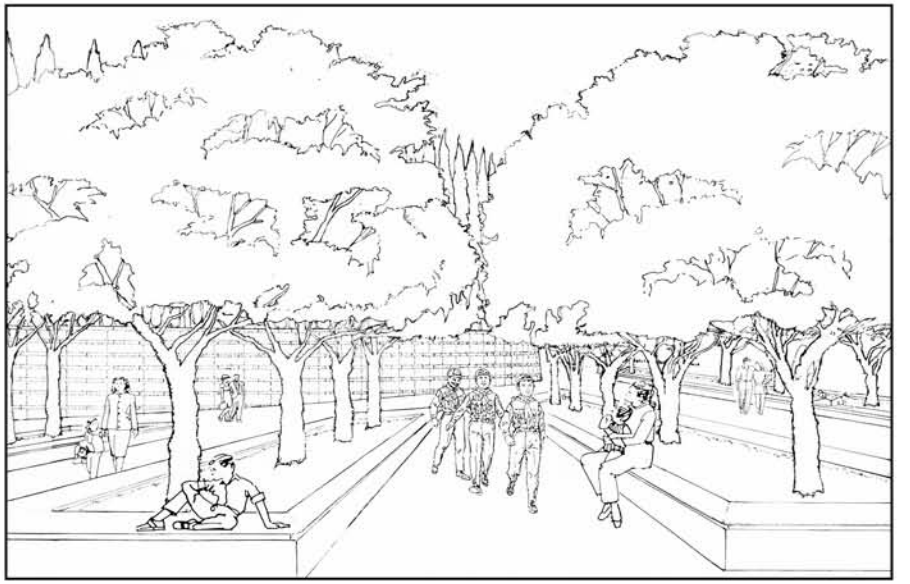
9. Scetion at Upper End of Meadow

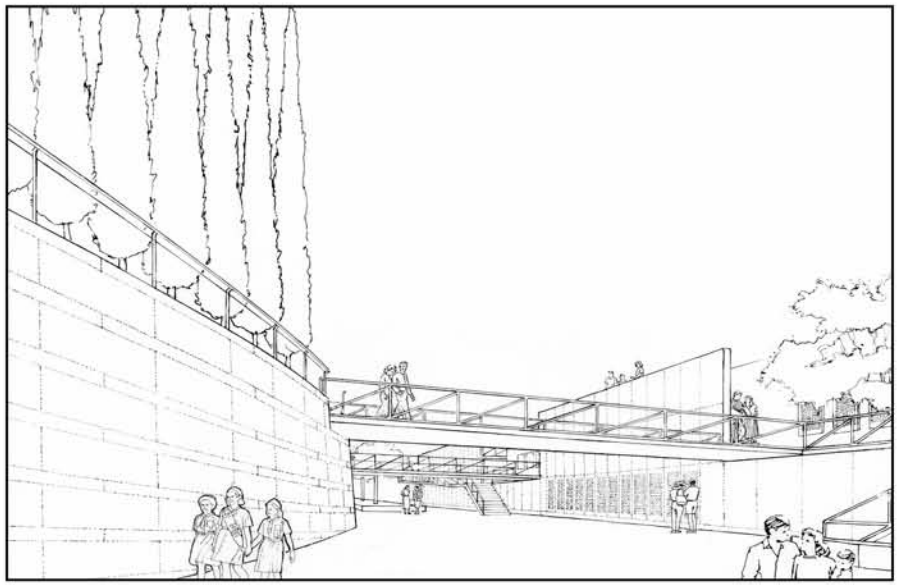


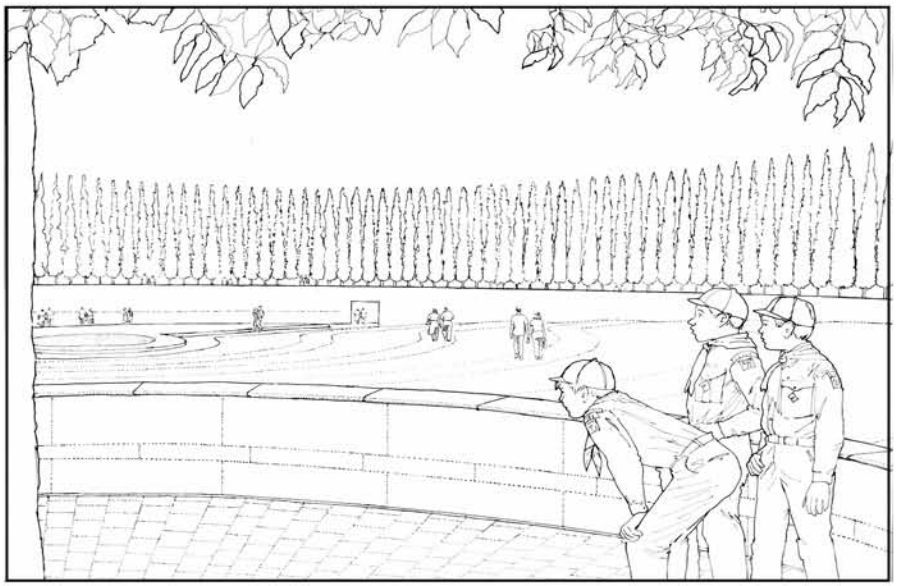
10. Section at Lower End of Meadow & Water Table

11. Northwest View of Memorial Model

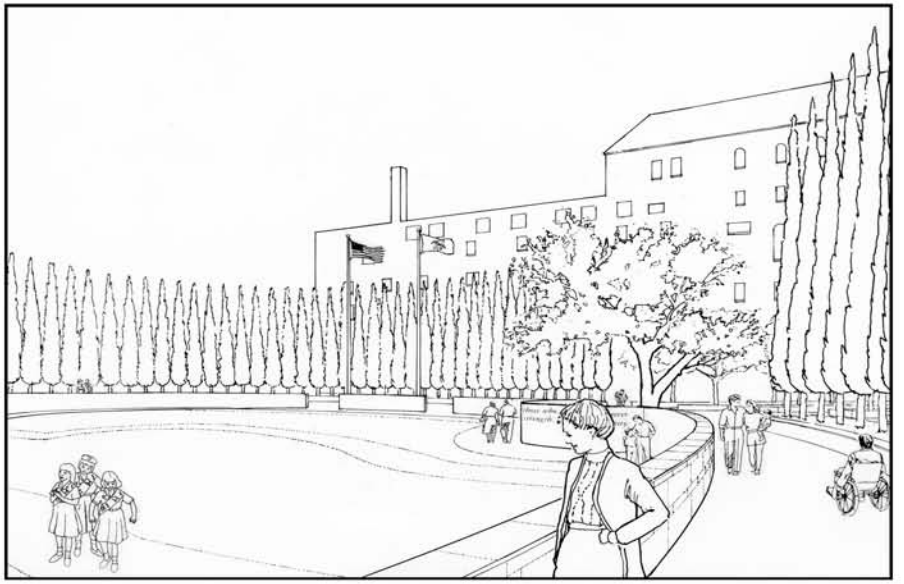


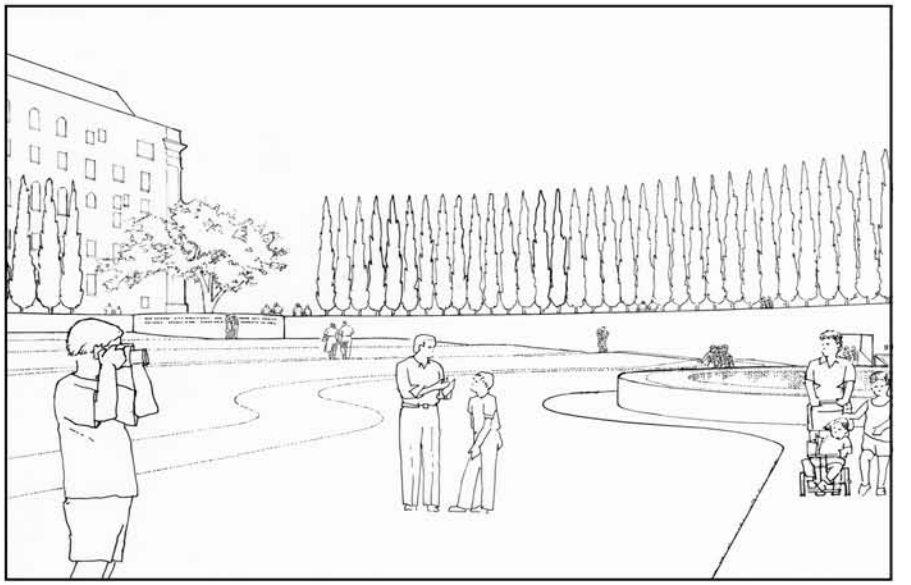


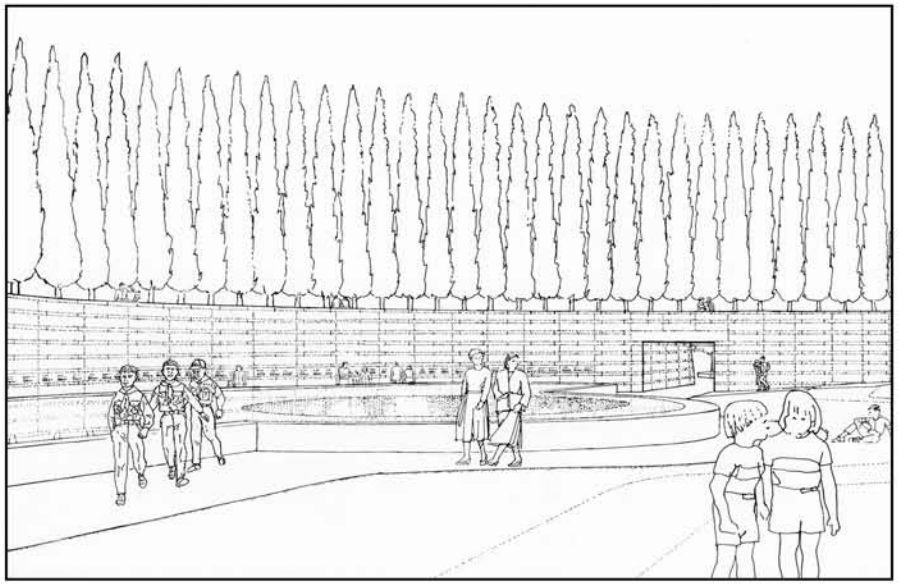




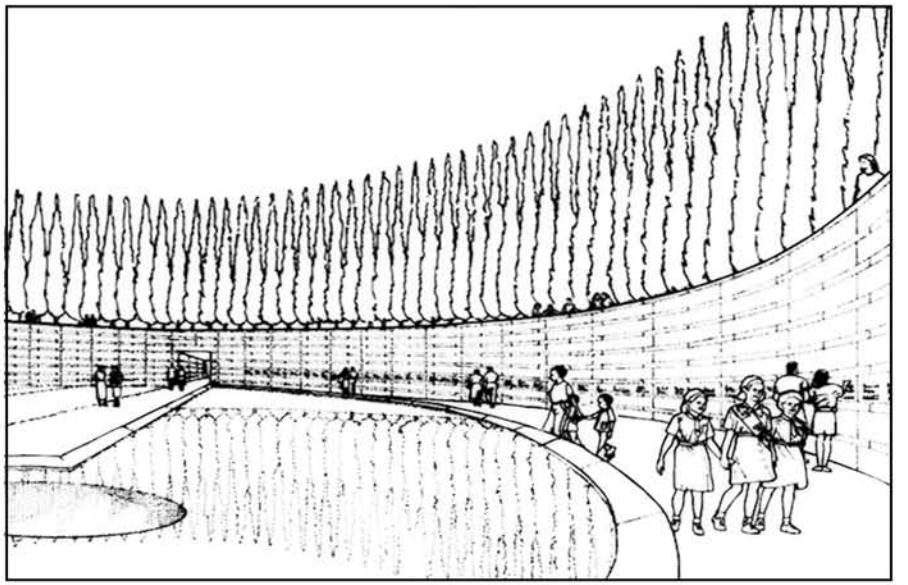
12. Along the Children's Garden
13. The Mediating Flowering Plum Tree Bosque
14. Bridges Linking the Ring Wall to the Context
15. The Meadow from the Surviving Elm Tree



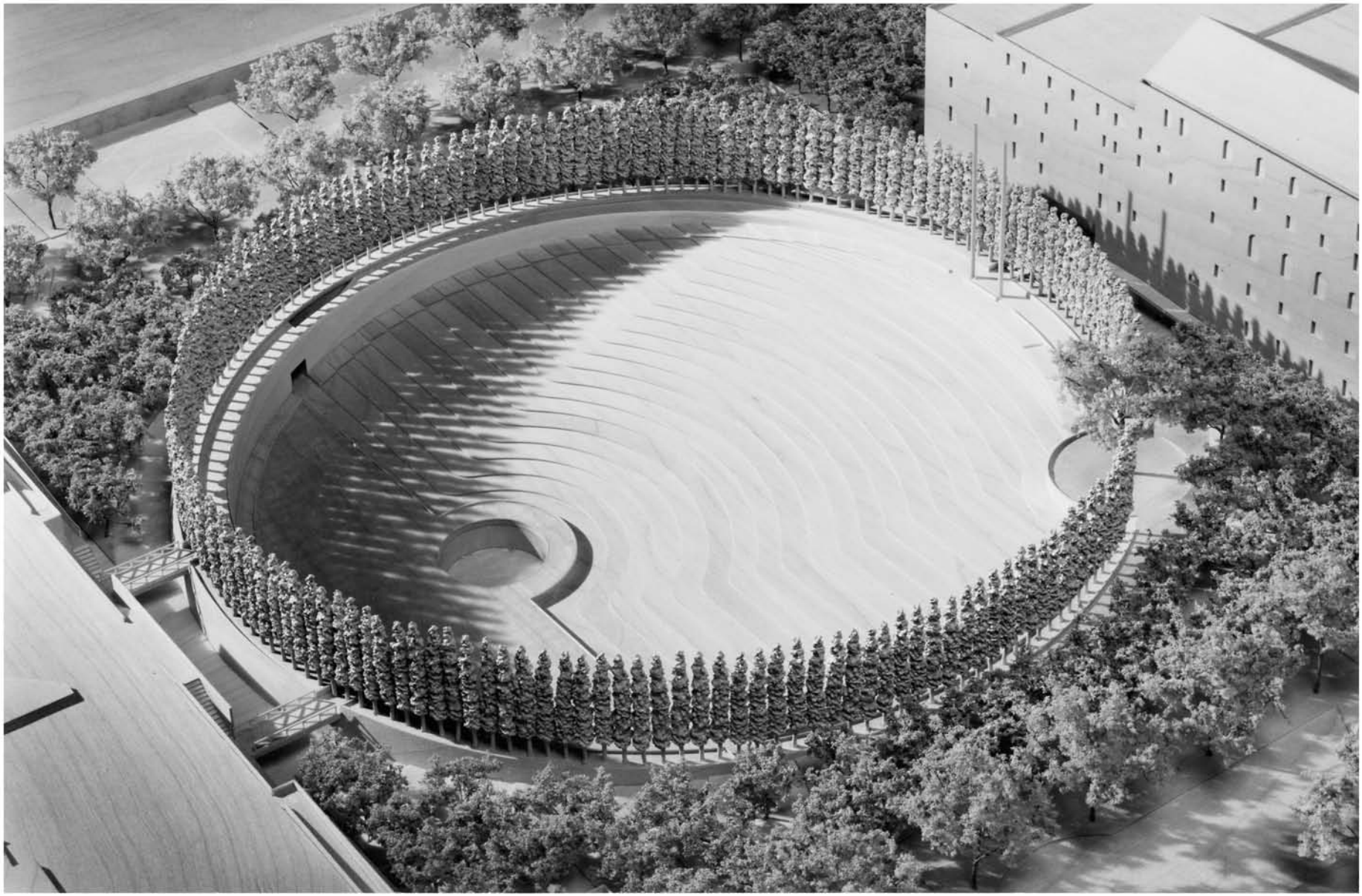




16. On the Ring Wall Looking North
18. At the Base of the Meadow by the Water Table



17. Approaching the Water Table
19. By the Water Table Along the Memorial Wall



20. Southwest View of Memorial Model

15. CASE STUDY VI

HEADQUARTERS FOR THE NATIONAL TAX ADMINISTRATION
CHOGNO GU- SEOUL,SOUTH KOREA

DESIGN COMPETITION ARCHIITECT 1998
IN ASSOCIATION WITH
IL SHIN ARCHITECTS & ASSOCIATES
DONG-GU - PUSAN, SOUTH KOREA

CONTEXT

Off the east side of Sejongno, Seoul's main boulevard, the city axis that leads to Kyŏngbokkung Palace, a 5,500 sq.m. corner site had been selected to house a new headquarters for the National Tax Administration of South Korea.

Ten to fifteen story office buildings that had been set back from the street edge to comply with zoning restrictions surrounded the site and the residual open space had been filled with surface parking lots. The rear of the parcel abutted the garden of Chongyesa Temple and thus contributed an open space passage that could be extended through the project site.(See Drawing No. 1)

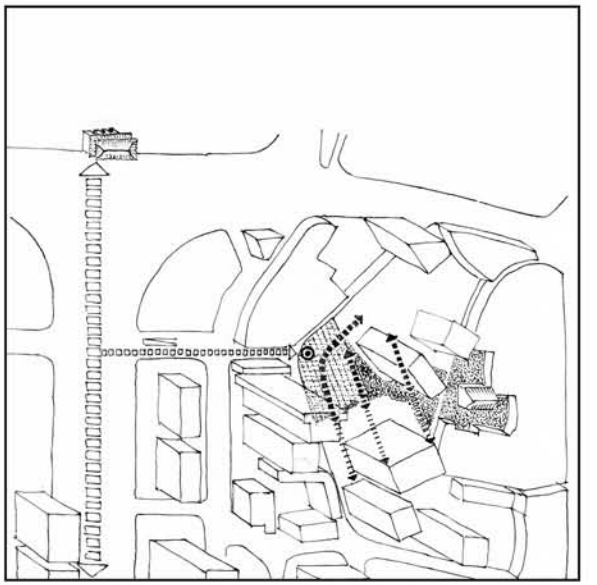
URBAN STRATEGY

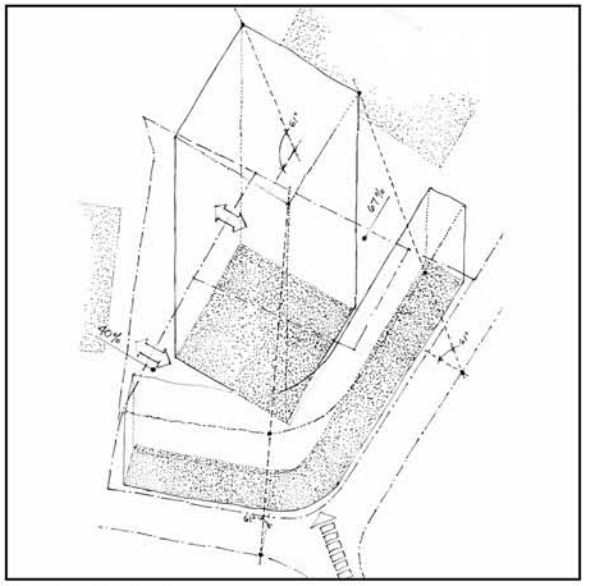
The required zoning setbacks of 1.80 to 1.00 off the streets and the adjacent properties, and the ground cover vs. open space regulations , impose a volumetric order consisting of a 16 storey central building block that respects the setbacks and in turn is surrounded by a lower 5 storey building skirt along the two street fronts.

The latter also conforms to the setback restrictions and is separated from the higher block by an interior layer of open space, which responds to the ground coverage requirements. Together with a vehicular driveway along the North boundary, the interstitial zones establish a link through the site to the adjacent Temple Garden. (See Drawing No. 2)

VOLUMETRIC STRATEGY

Through the selective carving and removal of volume segments from the central block and surrounding "skirt", the site volumes evolved to engender three distinct open spaces:
a. A welcoming pedestrian entrance court that terminates the access from





1. Urban Context
2. Site Zoning Setback Restrictions

below the street grade to bring daylight to the staff service functions on lower levels.
c. A larger open area along the South boundary imposed by the set-back restrictions is assigned to V.I.P. vehicular drop-off and access to underground parking reached from the street only after puncturing the perimeter skirt building.(See Drawing No. 3)

The resulting massing maximizes the available usable space provided with daylight. The taller central block, although equivalent in height to the adjacent office buildings, is oriented toward the open view corridors, while the lower building "skirt" emulates the nearby development that borders the streets and also benefits from daylight provided by the interior open space.

BUILDING ORDER

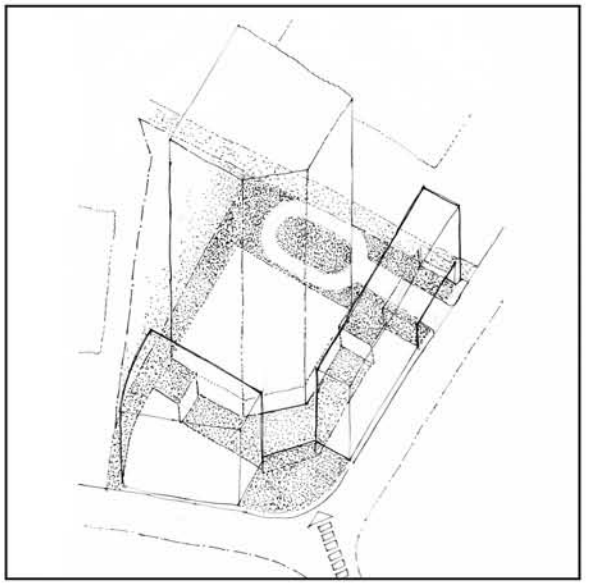
Of the 45,000 square meter program, approximately 1/3 is utilized by the national offices; 1/6 is devoted to the local offices, a conference center plus staff services; 1/3 to underground parking and another 1/6 to equipment, building services and storage.

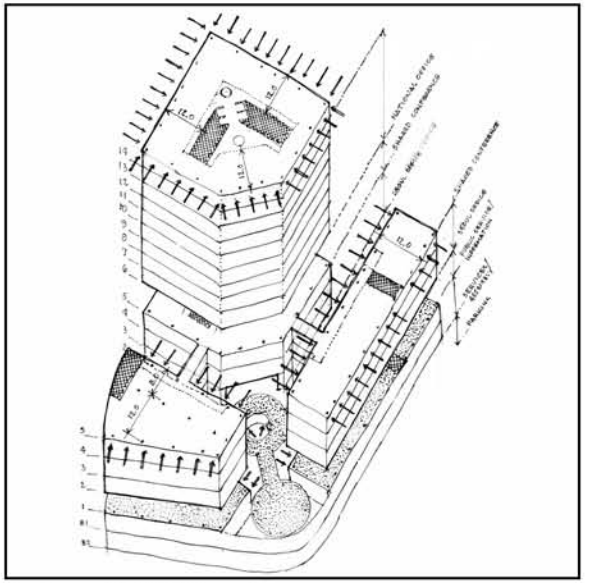
The central 14 storey office block with a chamfered corner engenders three flexible, column free lease spans, 12.0 meters off an "L shaped " core. On the upper levels of the day lighted office tower are housed the national bureaus and offices, while the lower levels provide more convenient access to the Seoul public.

The office tower is in turn bordered and linked by bridges to two 5 storey, single loaded corridor wings that house libraries and public information offices. Staff facilities and assembly functions occupy two levels below street grade that are lighted from the sunken garden courts. (See Drawing No. 4)

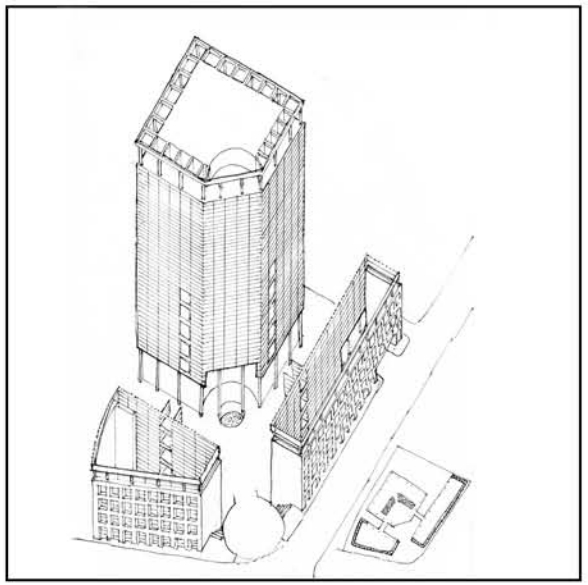
BUILDING ENCLOSURE

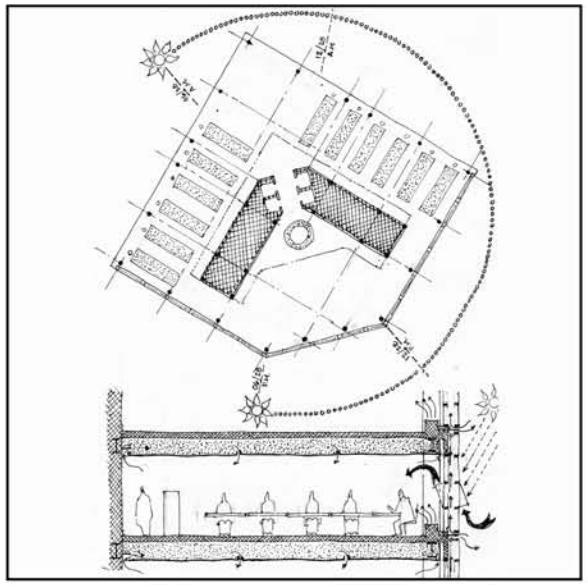
As an extension of the volumetric order and intending to merge into the existing context, the enclosure strategy uses the lower "skirt" building wings to contain and shroud a crystalline central block. On the street perimeter lower building segments, a punctured stone wall is grounded by an arcade and is stopped by a continuous glass band that is set back to form a latticed roof overhang to engage the sky. The end walls of the "skirt" are intentionally left solid to define the arrival plaza and contrast the





3. Tower, “Skirt” & Open Space
4. Building Program Distribution





5. Stone Skirt & Crystalline Tower
6. By-Passing Glass Cavity Skin

geometry of the entrance court. (See Drawing No. 5)

A by-passing glass curtain wall wraps the central block with the three West - facing surfaces capitalizing on an operable, insulated, tinted and low-emissive cavity wall to counter the late afternoon summer sun loads and benefit from the winter sun warming. The glass skin is stopped short at both the base and penthouse to reveal the underlying perimeter column structure. This enables this building volume to present a base and be capped by the lacy crown provided by the exposed framework of the penthouse soffit.

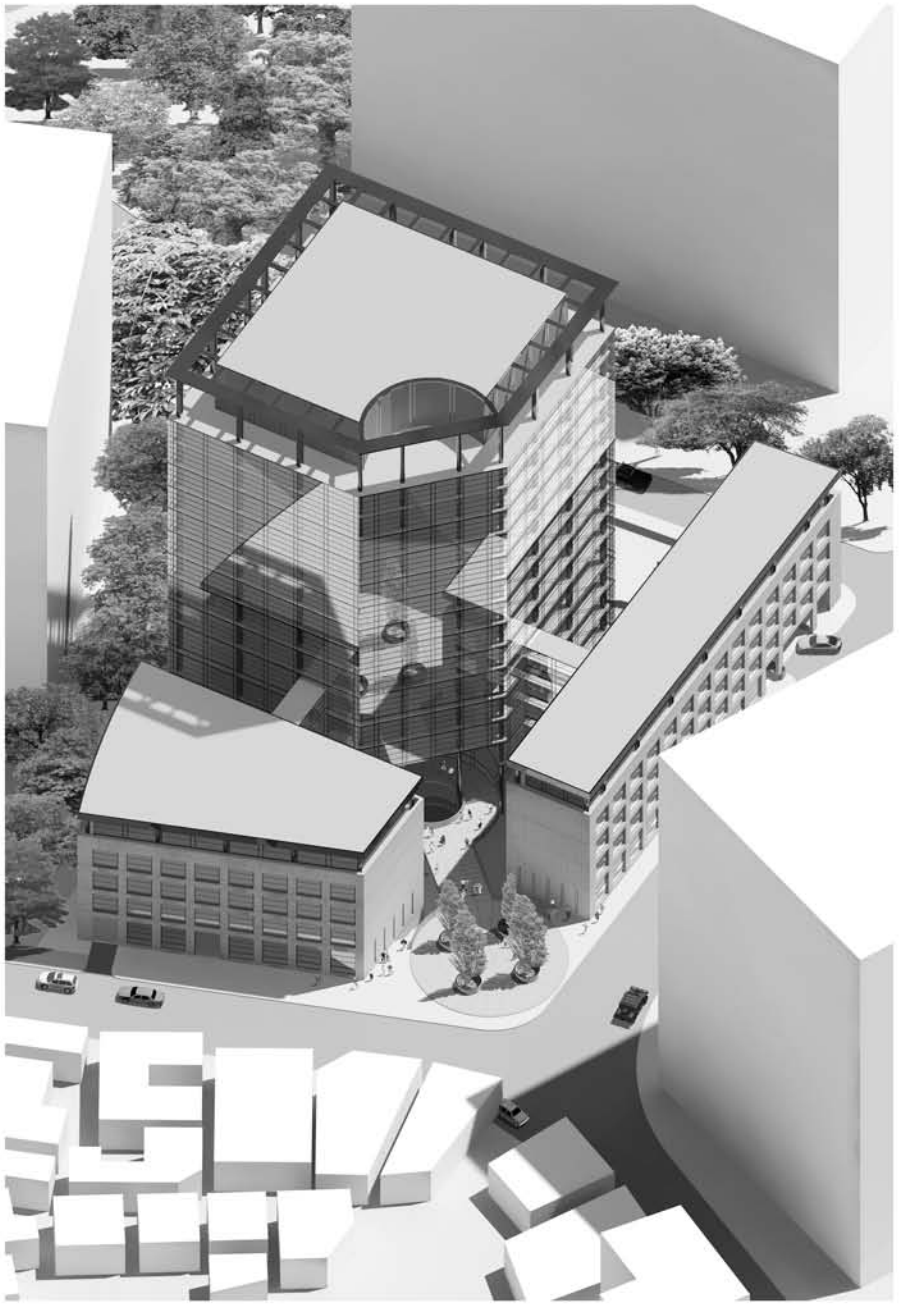
The floor to ceiling glass wall around the shallow 12.0 meter lease span, minimizes the need to rely on artificial lighting during daylight hours, has operable windows to afford natural ventilation and maximize comfort and operating costs. In addition to the microclimatic responses and energy conservation measures, the glass skin conveys a symbolic image of government as visible, transparent and friendly. See Drawing No. 6)

EPILOGUE

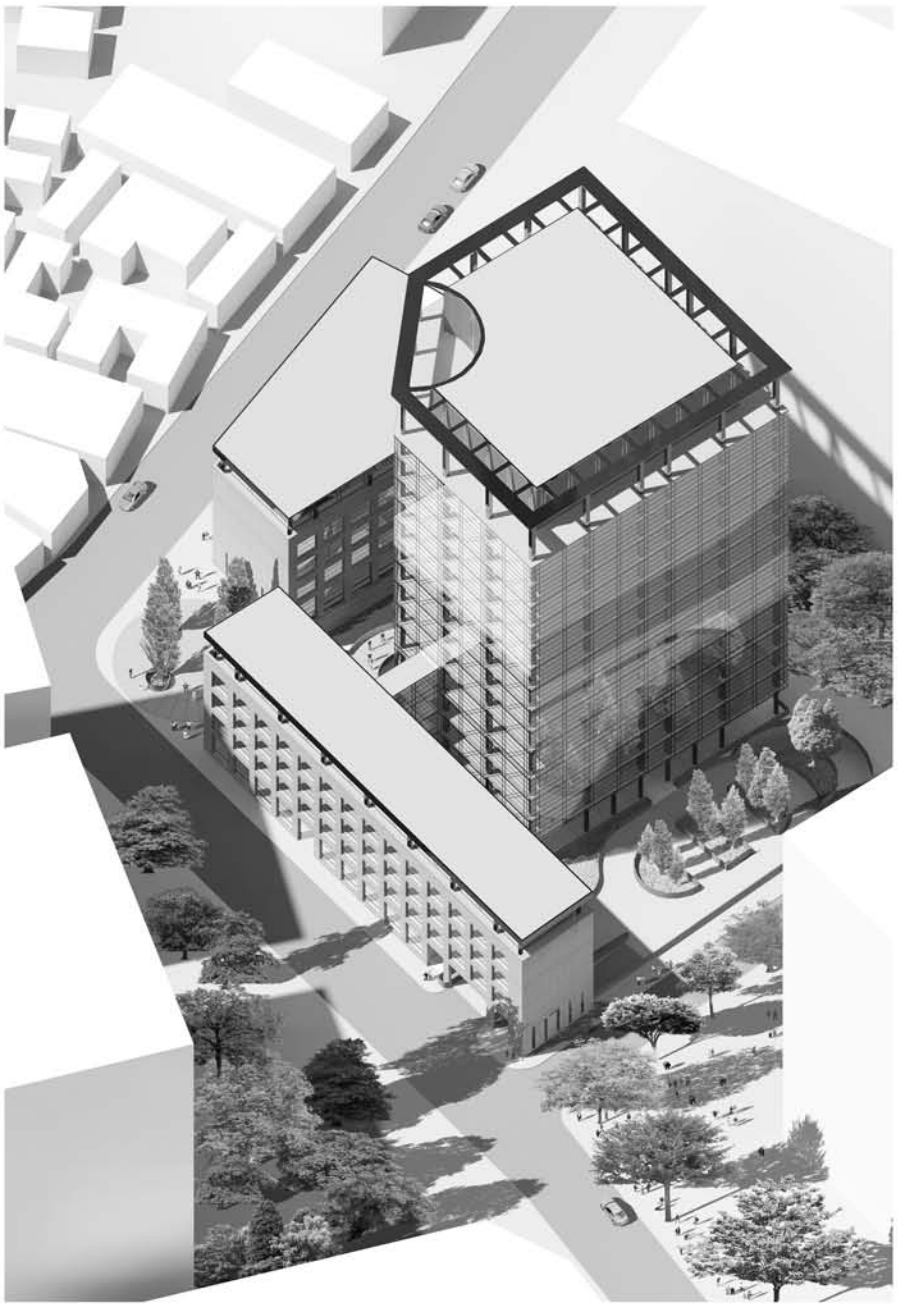
This summary of the critical design decisions represents only a fraction of the process of deliberation and assessment that took place as the design evolved. At least three alternate schemes were developed and evaluated, each responding to the context with a similar premise of an office block within a surrounding "skirt". The resulting design proposal surfaced as the better variant illustrating the weaving of a building composition into an existing urban fabric.

While seeking to restore the surroundings, the design strategy, in fact has claimed the context with a totally new volumetric order based on multiple layers off the public street edge. In the resulting elemental assembly of connected building segments, each undertakes the responsibility to repair the street edge without compromising the primary programmatic user/client expectations.

As a response to a design competition- the conventional method by which architects are selected for public building commissions in South Korea -. this design proposal did not gain acceptance by a jury of academic architects and representatives of the intended building users. The commis-sioned project nor a rationale for its selection were never made public.



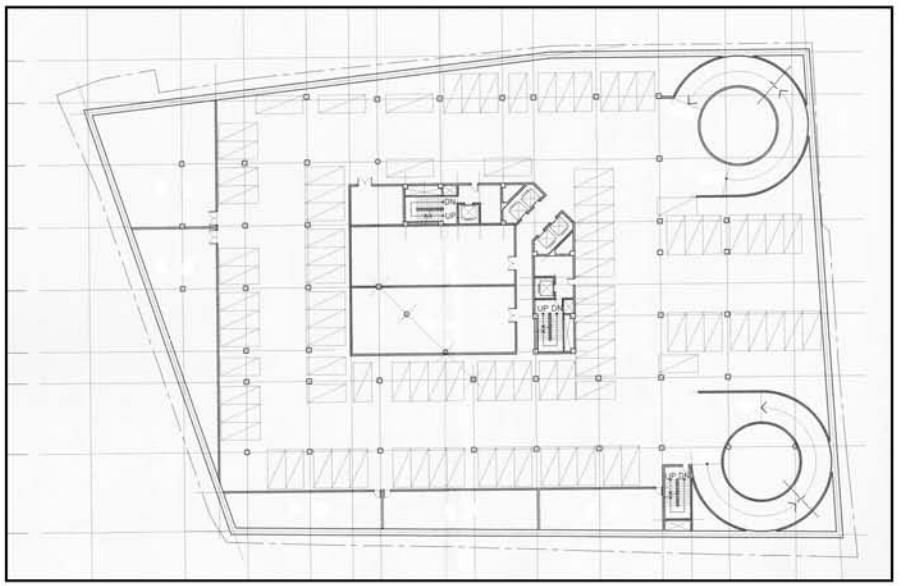
7. Axonometric View from the West

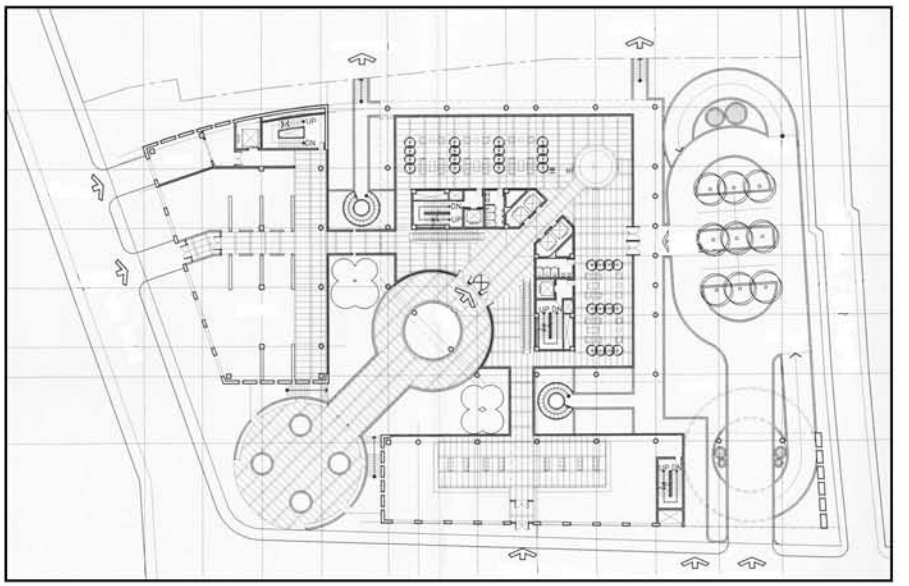


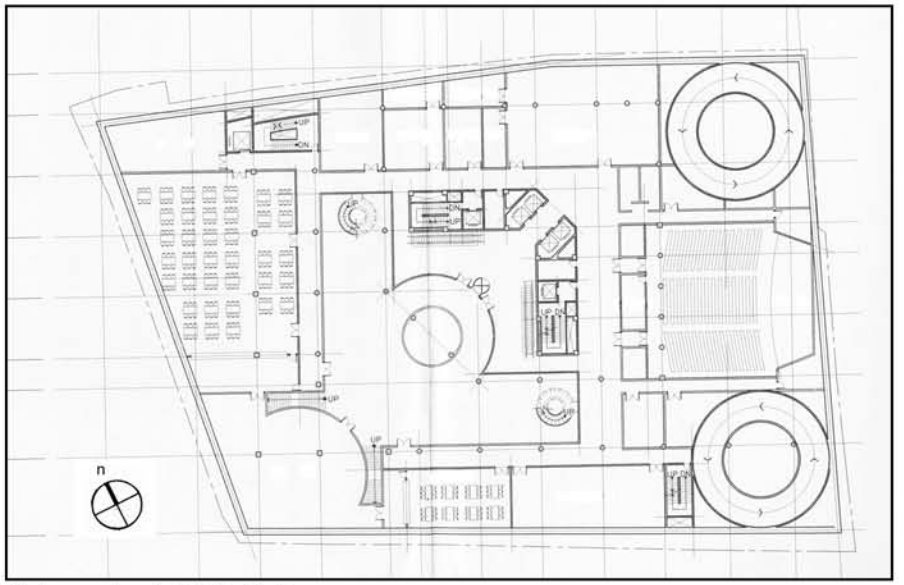
8. Axonometric View from the South

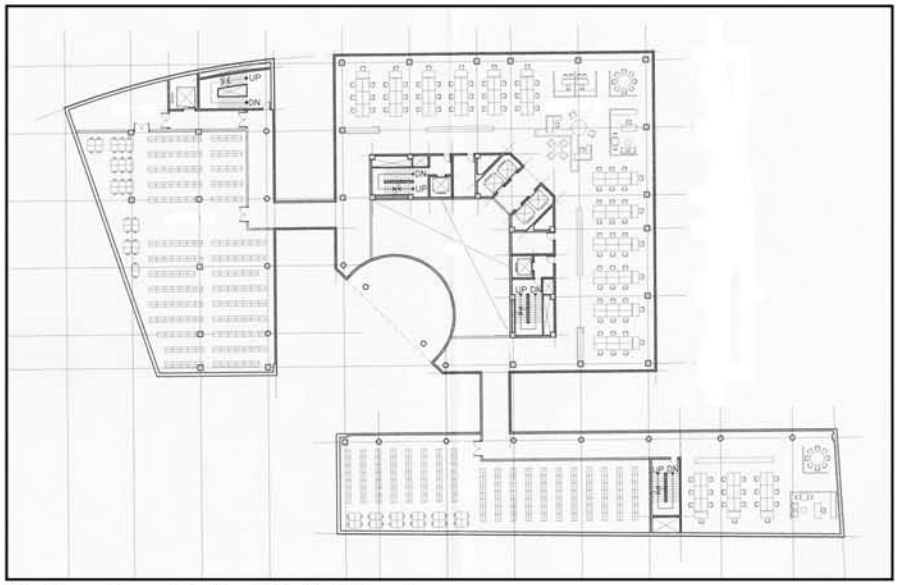
9. Street View from the Northwest

10. Street View from the Northeast

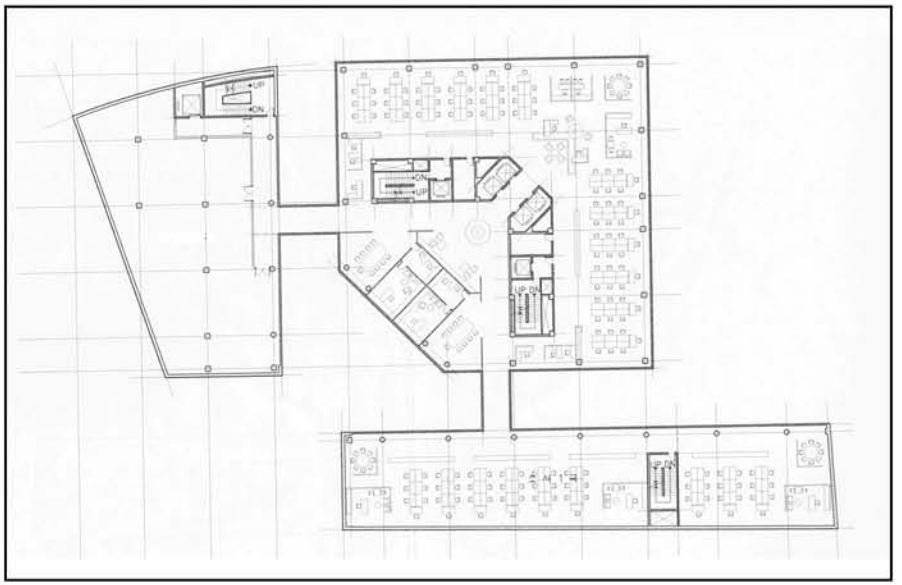


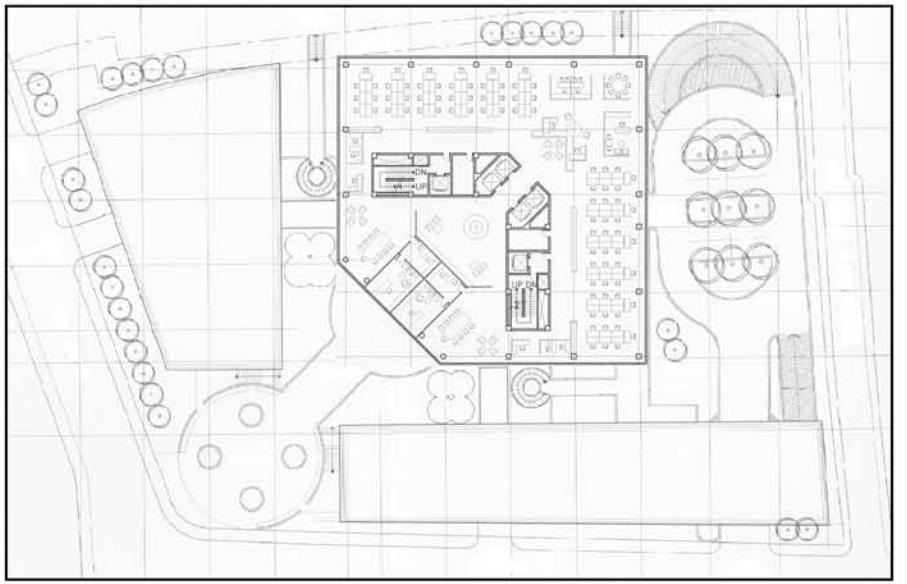


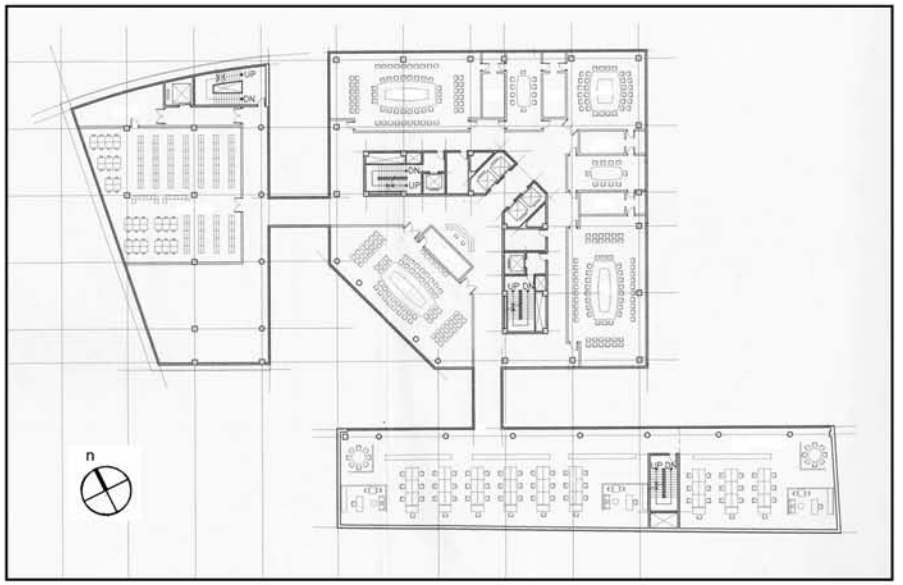




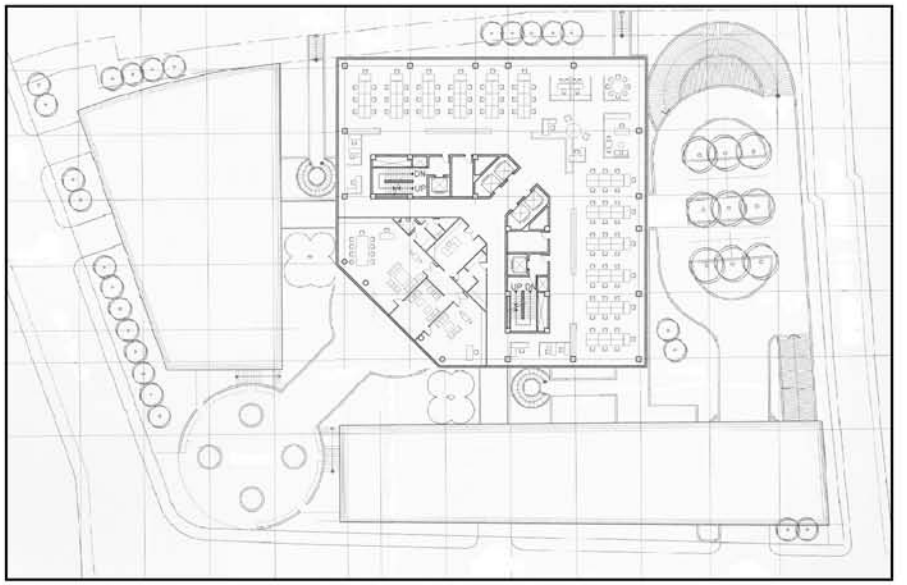
11. Lower Levels 3 & 4 : Parking
12. Lower Level 1 : Staff Services & Auditorium
13. Ground Level : Lobby & Public Information
14. Second Lavel : Archives



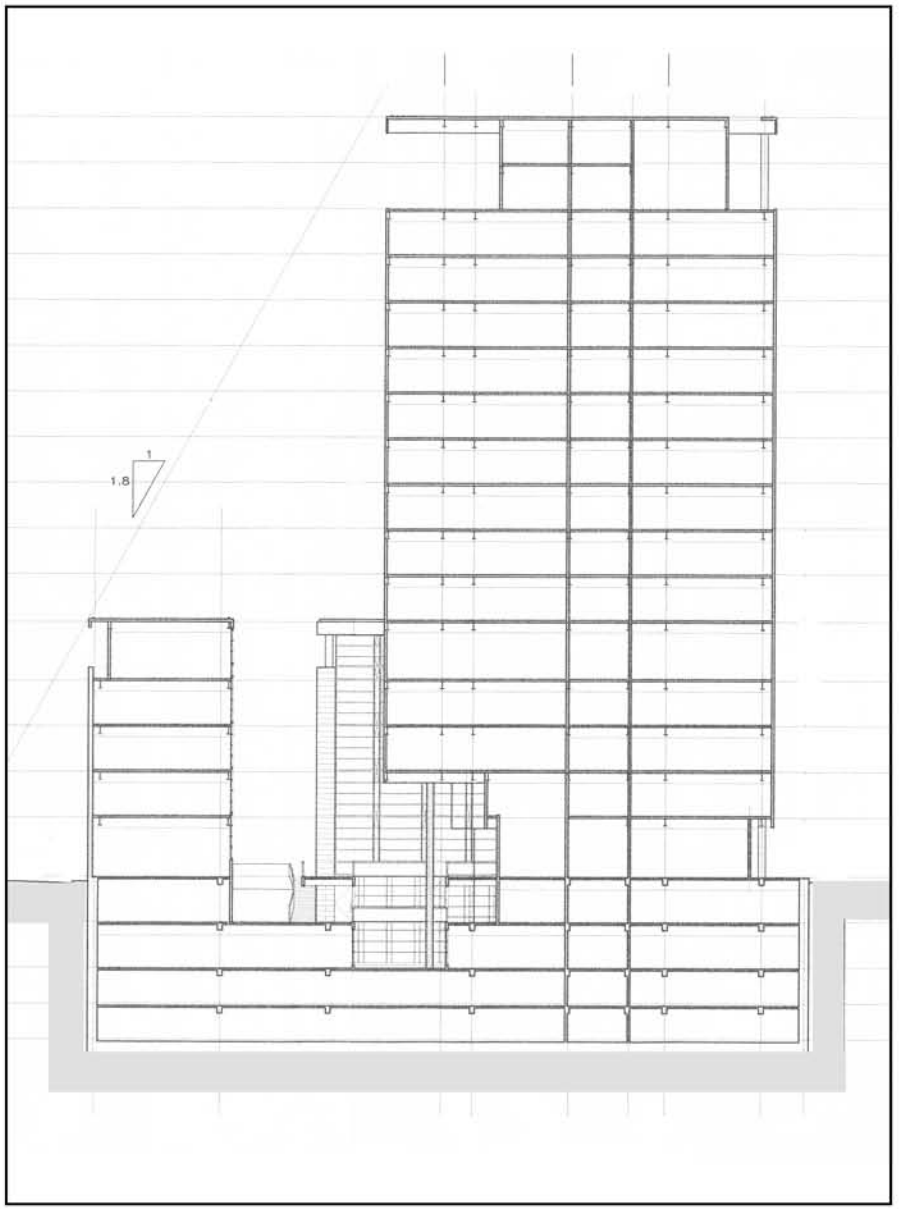




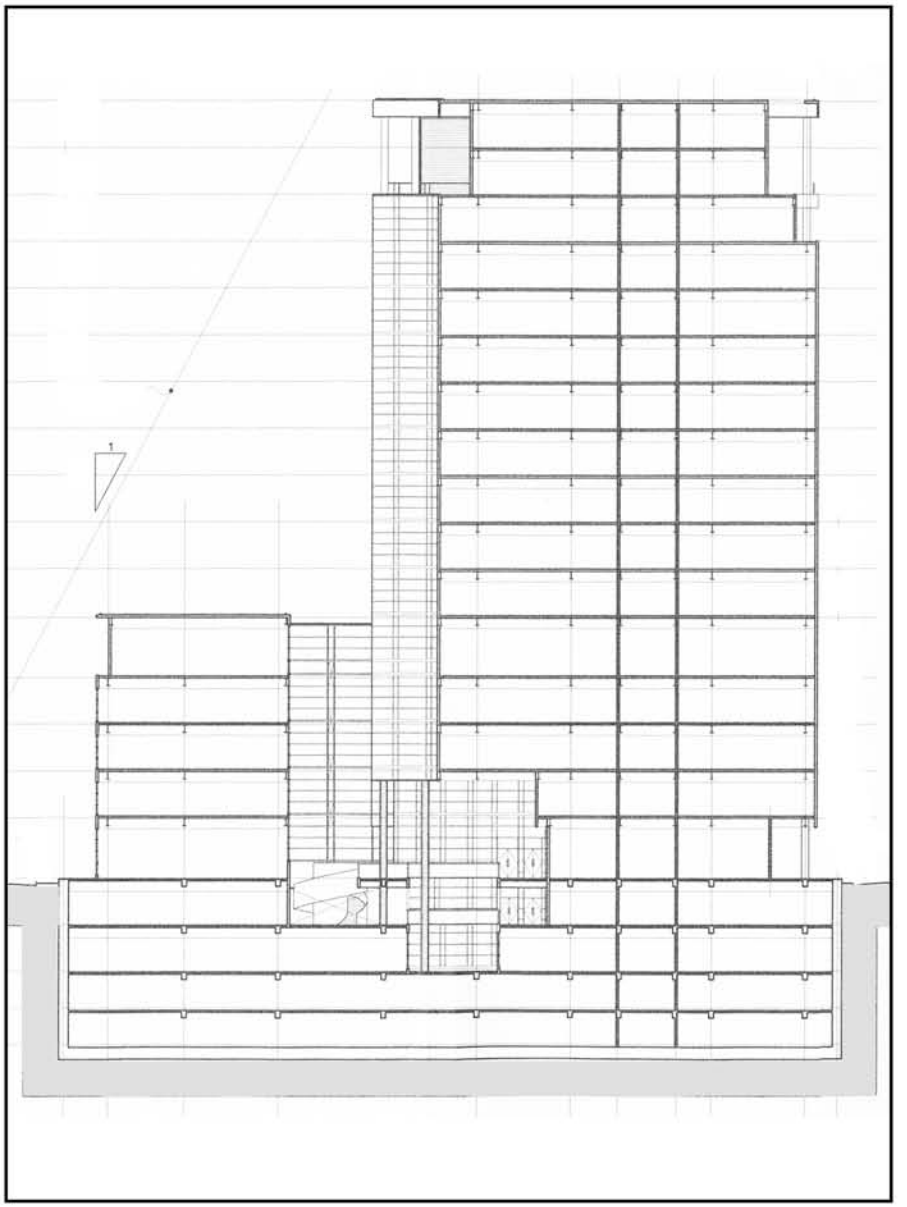
15. Levels 3 & 4 : Public Service Offices
16. Level 5 : Conference & Library



17. Typical Office Floor
18. Executive Office Floor

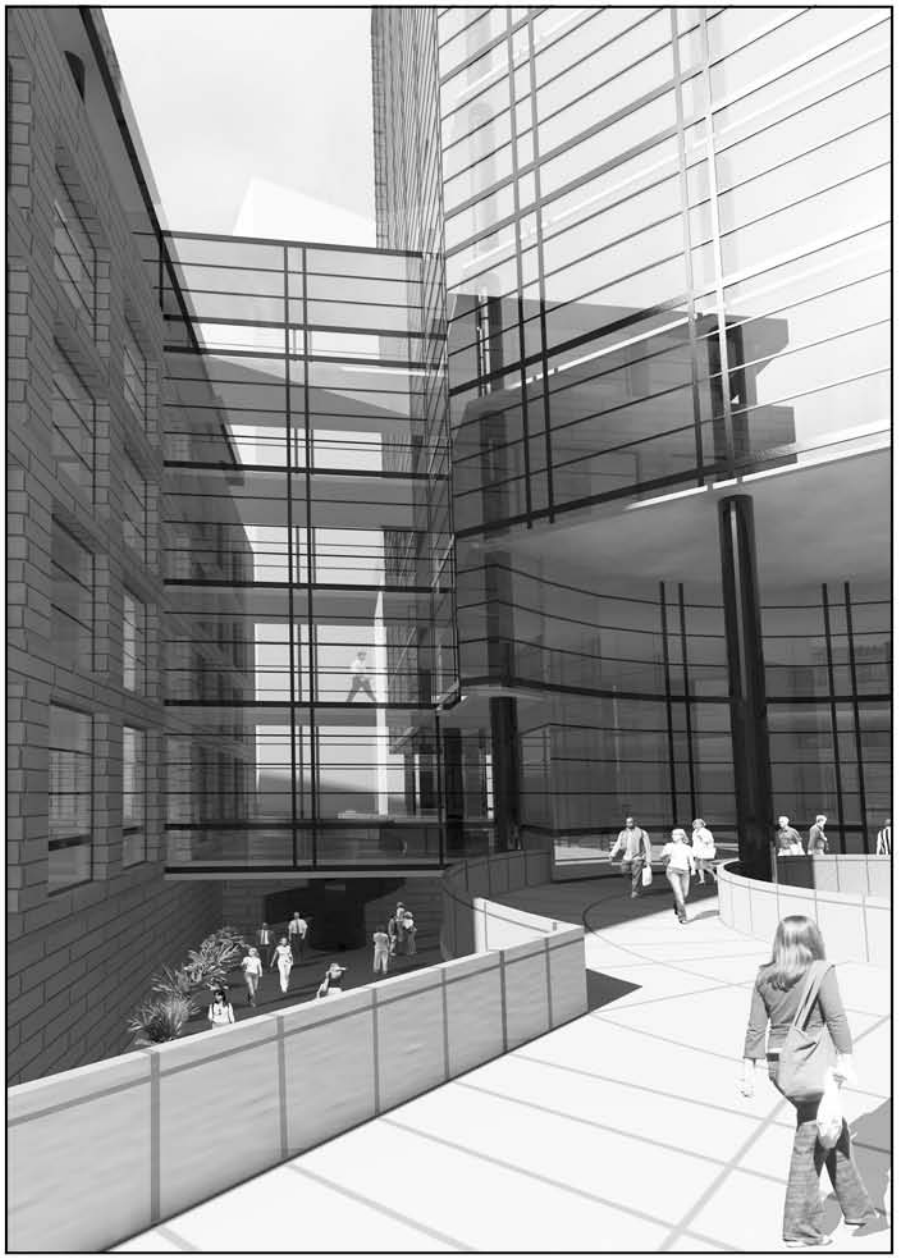


19. North - South Section Looking West



20. East - West Section Looking North

21. Street View from the West : Entrance Court



22. Street Level Entrance Bridge

23. Lower Level Court Under Entrance Bridge

16. CASE STUDY VII

SACHEON CITY HALL COMPLEX
DUHGOCK-LI YONGHYEON MYEON
SACHEON, SOUTH KOREA

DESIGN COMPETITION ARCHIITECT
FIRST AWARD 2003
IN ASSOCIATION WITH
IL SHIN ARCHITECTS & ASSOCIATES
ARCHITECT OF RECORD 2004-2008
DONG-GU - PUSAN, S. KOREA &
LG ENGINEERING & CONSTRUCTION
CONSTRUCTION MANAGER
YOUIDO-DONG - SEOUL, S.KOREA

CONTEXT

On the South coast of the Korean peninsula, two counties - Sacheon and Samcheonpo - united to create a new administrative entity incorporated in 1995 as the City of Sacheon.

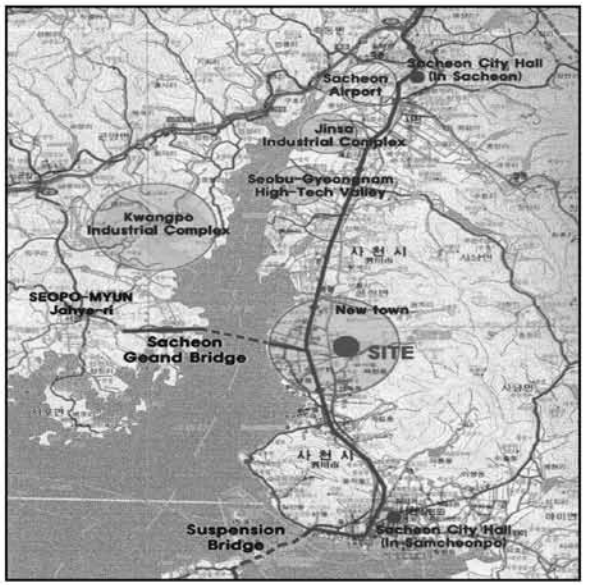
After selecting a 70,000 square meter site nestled against a nature preserve and reservoir, in agricultural land about half way between the two original settlements, they issued a program for a turnkey competition to design and construct a new city hall complex. The space program consisted of 16,000 square meters of public service, assembly and administrative functions, 2,200 square meters dedicated to a City Council wing , 500 parking spaces of which 150 were under cover and landscape extensions to the adjacent nature preserve. (See Drawing No. 1)

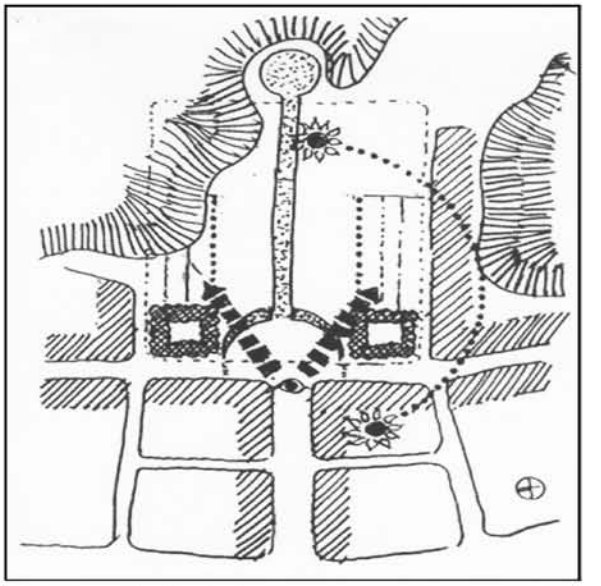
The selection of the site had considered its exposure and view of Sacheon Bay to the West , which deeply penetrates the South shore of the peninsula. The site also faced a new bridge spanning the bay, which at the time was under construction.

URBAN STRATEGY &
SITE DEVELOPMENT

Given a site devoid of any man-made physical elements other than a proposed development plan, a view of the sea and a natural backdrop of forested hills, the most obvious design response was to avoid the appearance of an object sitting or surrounded by open land and/ parking.

The development had to maximize its exposure to both the sea on the West and the nature preserve and reservoir on the East, while creating a symbolic civic presence and an inviting public image. (See Drawing No. 2)





1. Sacheon Bay Context
2. Site Development Strategy

This was accomplished by enfronting the proposed / planned urban fabric and axial approach road, and buffering the building complex with a public plaza that would be flanked on each corner by gardens (See Drawing No. 3) . The volumetric site composition relied on a traditional Korean spatial sequence borrowed from temple and palace complexes overlaid by a constructivist assembly of elemental building volumes.

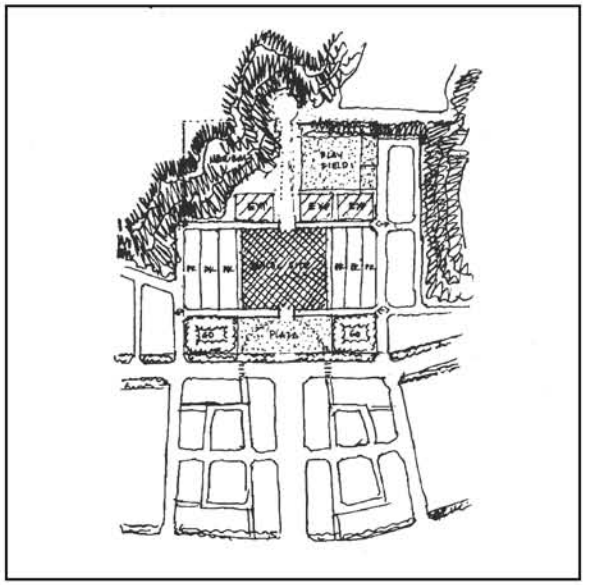
In temple and palaces one rises to a plinth before entering through a gate building into a courtyard surrounded by a roofed colonnade. This initial symmetrical assembly, often containing a free-standing pavilion imparts an air of solemnity and dignity. There is however a level of cultural antipathy toward excessive symmetry, so that in subsequent spaces symmetry is not abandoned, but transformed into a what is considered a "harmony between structure and nature".

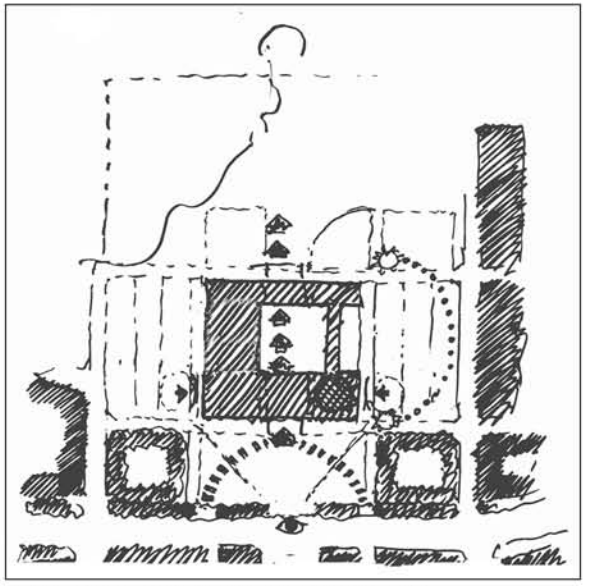
This spatial strategy engendered a raised South facing, sunlit courtyard, contained by an entrance portico or loggia spanning between the Public Service Wing along its northern edge and a cylindrical City Council Building. The courtyard is then allowed to escape into the Nature Preserve by raising its East boundary - the Administrative Office slab on pilotis. (See Drawing No. 4)

This volumetric scheme was selected from among four alternates, as the most appropriate integration of the open space extending through the site, creating a transition between the future urban fabric and the natural landscape as a sequence leading to a serene retreat. As a development armature, it also limited vehicular access and parking to the lower level under the courtyard and to the sides of the site and anticipated expansion in the extension of the Public Service Wing to the East. (See Drawings No. 5 & 6)

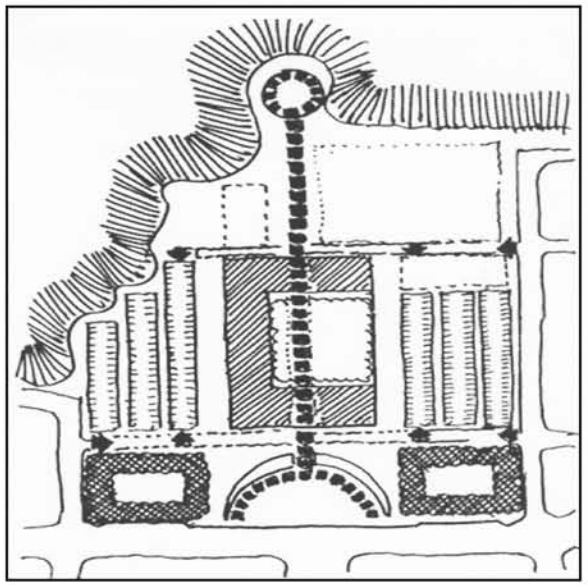
BUILDING ORDER

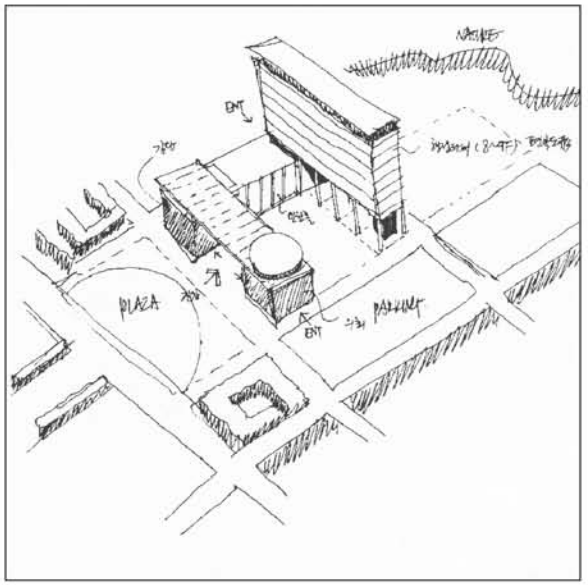
The raised single loaded corridor office slab with an attached cylindrical core, contains the City Hall administration and benefits from views both toward the sea and the forested hills. Its volume overlaps at its northern end a low rise perpendicular bar that houses the Public Services and Assembly Hall. The composition is completed by the City Council Building which punctuates and claims the Southwest corner of the site as a figural cylinder which creates a





3. Site Development within the Urban Fabric
4. Site Development Building Footprint





5. Site Plan Framework
6. Site Plan : Volumetric Concept

distinct iconography for the elected governing body while serving as an abutment to an entrance passage that is bridged by a canopy. (See Drawings No. 7 & 8)

The office slab offers flexible column free floors that accommodate an infinite variety of work station layouts on four levels plus a managerial level surrounded by an exterior balcony on the top floor. In the public service wing the ground level is devoted to functions requiring direct contact with the public, while the second and third levels serve municipal staff services such as conference rooms, libraries, record filing and a cafeteria. This building segment is anchored at its western end by the Assembly Hall occupying all three levels. Views to the sea are therefore also afforded from its lobby. In the City Council cylinder, three levels are assigned to offices and conference rooms and the top two levels to the Council chamber.

BUILDING ENCLOSURE

Each building segment seeks to maximize the use of natural day light and ventilation and the control of solar radiation. In the office slab, a tinted glass, ventilated cavity window wall on the West and South exposures is complemented by metal panel cladded cores and columns that accentuate the impression of a light weight building fabric intentionally raised above the ground plane.

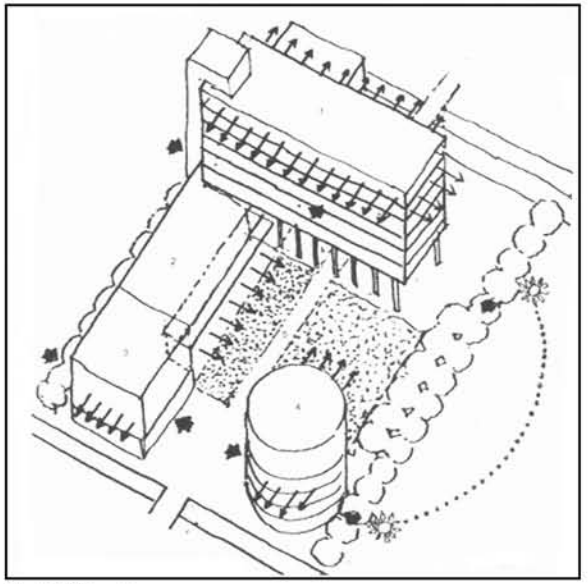
The stone veneer cladding on the pilasters of the Public Service building provide a sense of a stable and timeless fabric that accommodates deep horizontal metal window mullions to shade the south courtyard exposure. And in the City Council building the metal and glass skin relies on deep vertical fins and recessed glazed openings plus the extensive overhangs of the canopy to protect its surfaces from radiation. The specific enclosure systems for each building segment, thus reinforce their identity, while sharing the common grammar of horizontal layers and vertical rhythms that run through the fabric and provide a coherent presence. (See Drawing No.9)

EPILOGUE

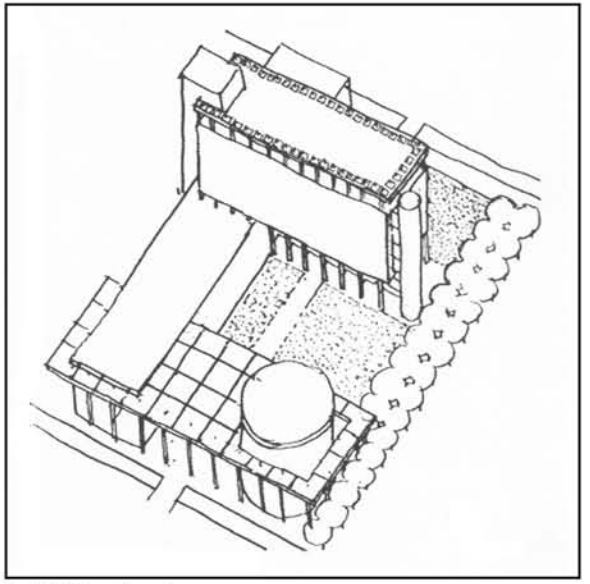
The design proposal's volumetric intention and spatial conception were implemented as designed and are providing the civic presence and image that were sought during and expected

by the municipal client and its constituents. The ceremonial sequence through the gate and into the courtyard, which eventually escapes under the administration office slab, into the nature preserve, emulates the traditional procession that is experienced in traditional Korean temple armatures and thus is rooted in the culture as well as to the site. Although the surrounding context is still in the early stages of development, the complex will be able to merge into the urban fabric and accommodate parking and vehicular access without intruding into an essential civic character. (See Drawing No. 10)

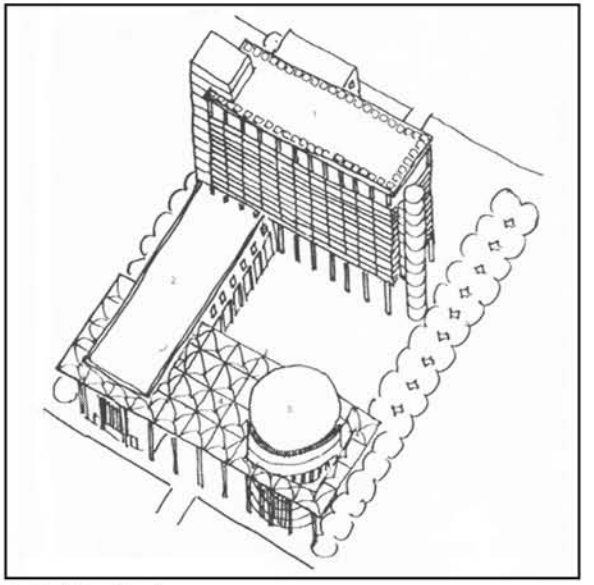
Given that it was a design/build turnkey project, some of the detailing that was implemented took liberties that could have been avoided. Nevertheless the completed building complex has enriched the cultural presence of the region by providing an iconic place and symbolic setting with which to identity the newly formed governmental entity.



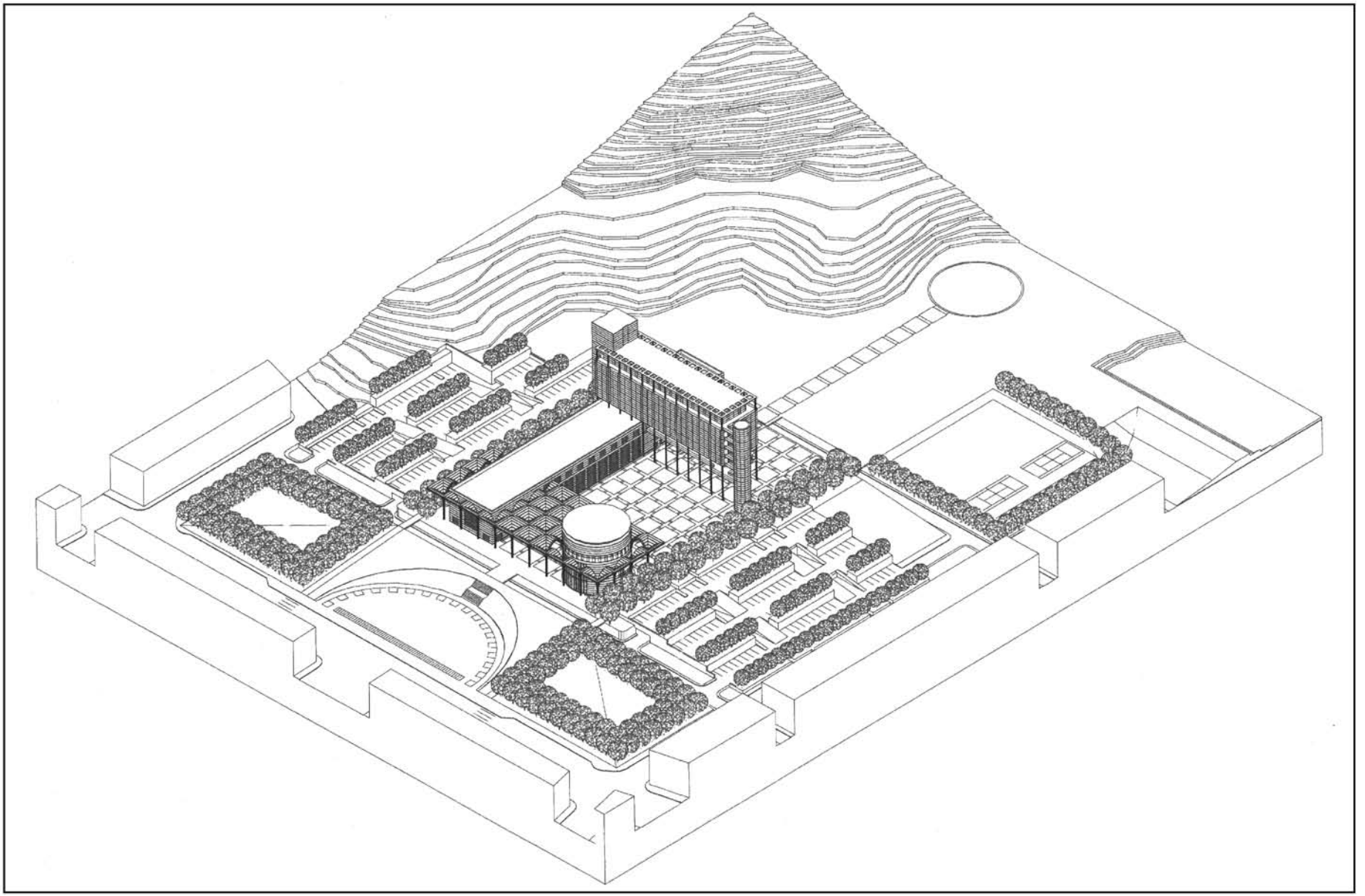
7. Building Program



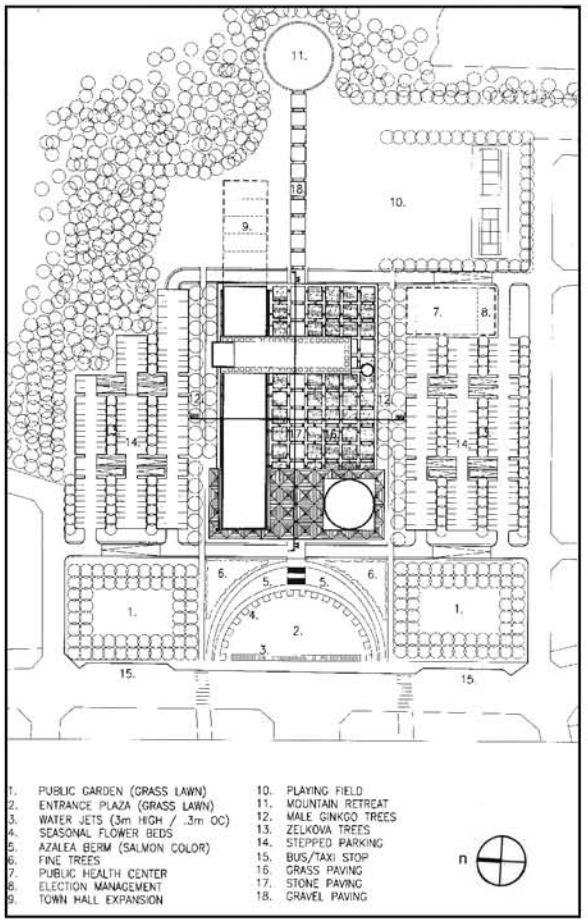
8. Building Massing



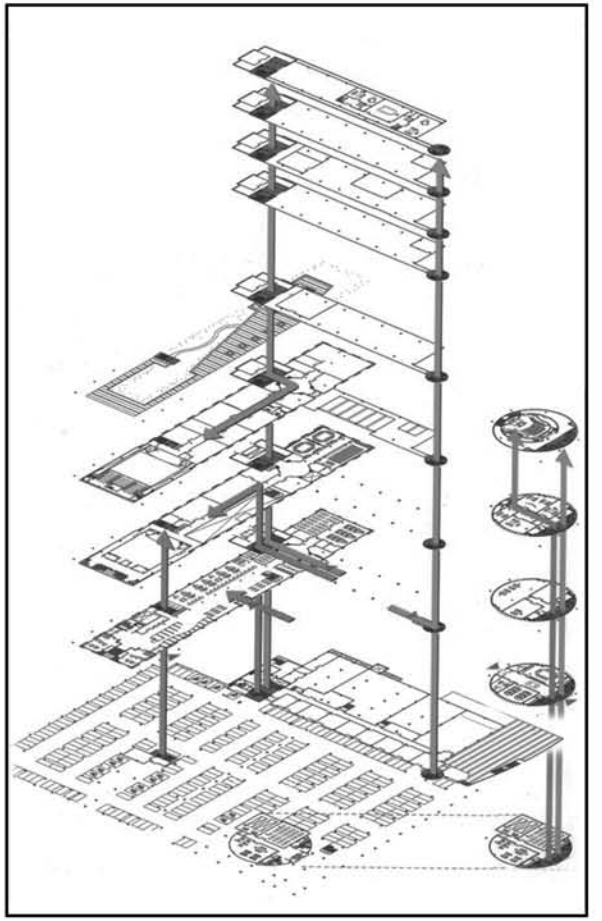
9. Building Enclosure



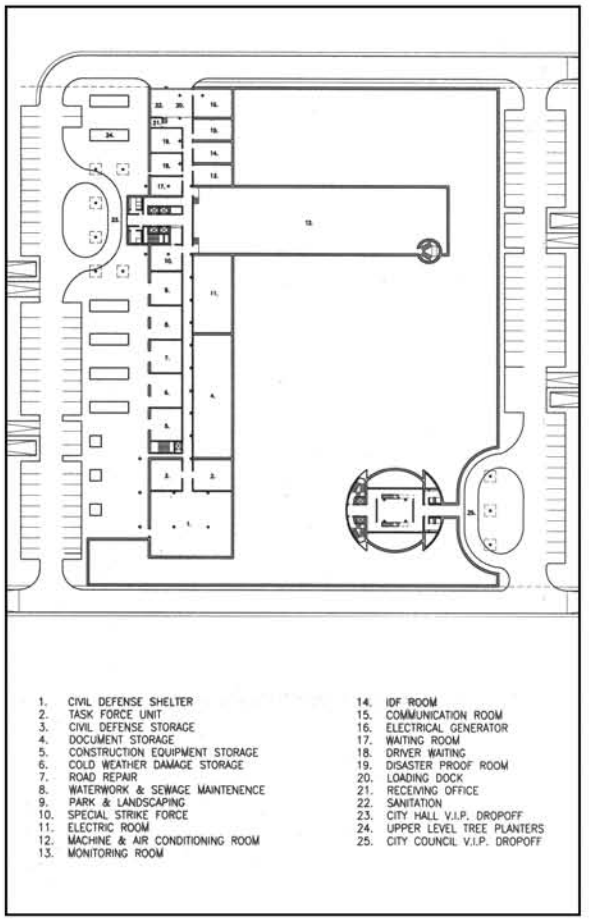
10. Axonometric View : Design Competition Submittal



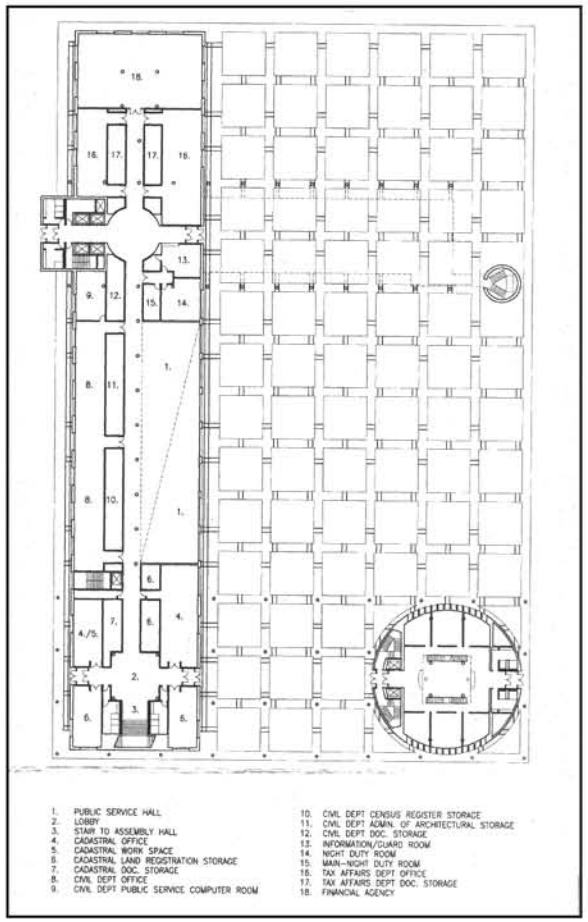
11. Site Plan



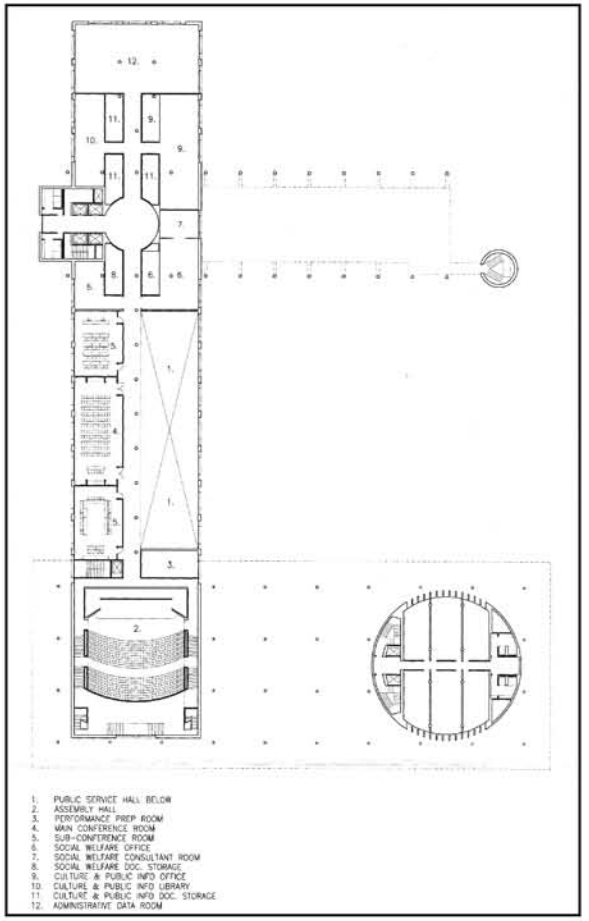
12. Program Stacking Diagram



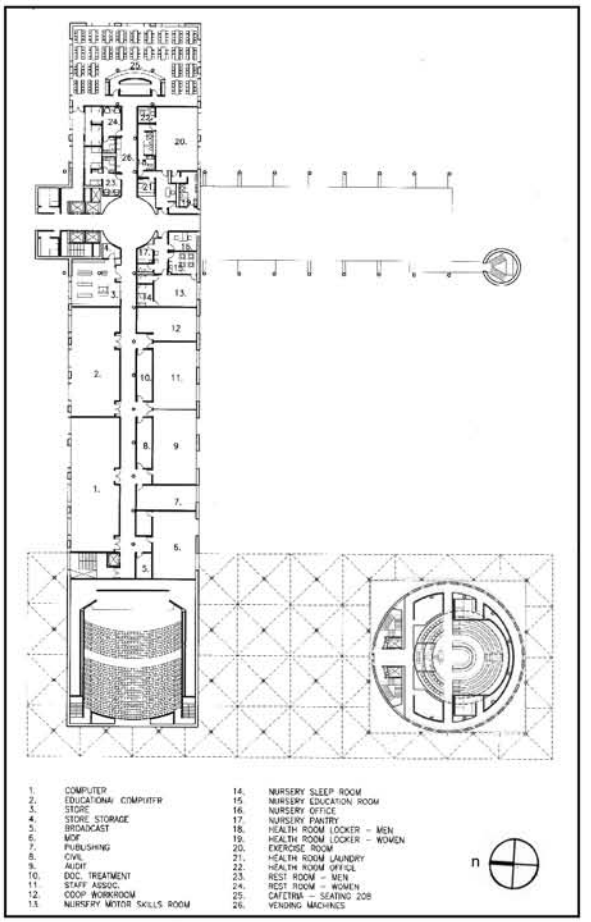
13. Lower Level Plan



14. Entrance Court Plan



15. Second Level Plan



16. Third Level Plan

17. City Hall Complex: Competition Rendering

18. Front View from Arrival Plaza

19. Northwest View from Arrival Plaza
20. Assembly Hall Along North Pathway
21. Southwest View from Arrival Plaza
22. South View of Entrance Court

23. VIew of Entrance Court from the Gate Canopy

24. Loggia Under Adminstration Wing - Passage to Nature Preserve

25. Adminstration Wing from the South

26. Public Service Wing Looking West
27. Public Service Wing Looking East

28. Typica; Adminstration Office Level Looking South
29. City Council Chamber

17. CASE STUDY VIII

SANCTUARY & CHAPEL ADDITIONS TO ST. THOMAS UNITED METHODIST CHURCH

GLEN ELLYN, ILLINOIS - USA

ARCHITECT OF RECORD 2003 - 2008
PHASE 1 HOSPITALITY WING - 2008

CONTEXT

In 1967 a Methodist congregation established a church on the South side of Glen Ellyn, IL. a suburb of Chicago. On what was initially an unincorporated rural area, they built a modest 10,000 sq.ft. two level building on a 5 acre parcel that enfronted a state road. It consisted of a multi-use fellowship and worship hall, plus offices over class-rooms and service spaces. The building was set back 100 feet from the road and was served by a 70 stall parking lot.((See Drawing No.1).

Over the years, the church site was surrounded by single family residential development, while the congregation outgrew the facilities of the building. Most evident was the sense that a windowless fellowship hall that accommodated 150 worshipers, did not meet the expectations that likely new members would want for a worship space-a proper sanctuary. (See Drawing No.2)

The congregation formed a design committee with the intention of selecting and working with an architect to perform a design feasibility study that would be evaluated by the entire congregation prior to pursuing the addition of a new facility that would incorporate the existing building.

The selection of this writer as the architect was to a large extent decided by having described during the interview, the design of a building as a process of discovery that would take place as an ongoing dialogue in regularly held meetings. The design activity would in turn engender alternate physical choices on how best to meet the aspirations and priorities of the congregation.

This commission thus presented an opportunity to engage laymen in the search for building forms, their arrangements and relationships through the grammar of morphology. De-mystifying the design process and conveying and making accessible and tangible the arrays of choices thereby became integral to the project agenda.

PROGRAM

During the early meetings, the design committee was asked to convey what desirable attributes were present in the existing facility. They were also urged to describe any improvements that should be expected in a new building.

The predominant response addressed the existing seating arrangement which they wanted to replicate because it enabled the congregation to see and be aware of each other during services. It is worth noting that that some time earlier the seating had been revised. The use of the rectangular space, originally intended as an axial arrangement with a central aisle along the long dimension of the room, was modified into a thrust stage plan extending as an elevated chancel off one side of the room and surrounded by the congregation and choir. They considered pews un-acceptable, too inflexible and preferred individual fixed seating.

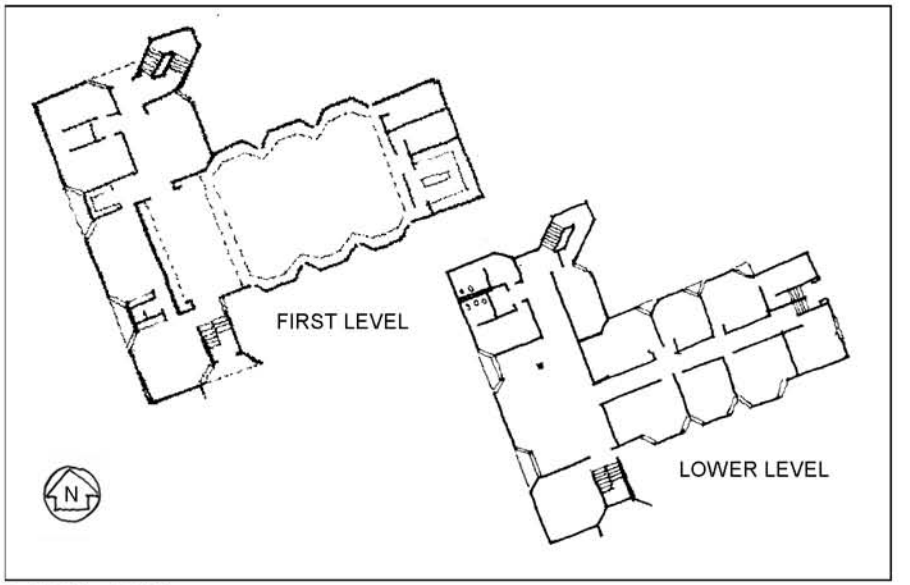
They also wanted a "bright and glowing" day lighted worship space, with exposure to nature , that would be

preceded by a narthex with a water feature; the narthex would provide a transition to the sanctuary and serve as a social space after worship services. The committee also insisted that the choir not be isolated behind the chancel and be included as an integral segment of the congregation. The sanctuary also required a central axis, essential for weddings funeral and liturgical processions. Given a tradition of larger performances during services, the chancel furnishings - altar, pulpit, communion table and baptismal font were all to be flexible and light enough to move. And although not essential to begin with, space to house a future pipe organ needed to be planned.

Last and not least, they wanted to double the sanctuary's seating capacity to 300, especially during holiday services. To the committee, however, the seating should be so configured to avoid a sense of emptiness , when smaller gatherings used the space. This response also revealed the desire to have a small gathering space, an intimate area containing a "prayer wall", a chapel. Additional support spaces included: a sacristy for the minister; a children's nursery and "cry room" adjacent to the sanctuary; a "bride room" parlor; a choir practice room and storage for robes, music and instruments; and of course offices for the ministers, administrative staff, archives, additional classrooms, and most important new rest rooms on the ground level and a limited use, limited access elevator linking the existing and expanded lower level and serve the elderly congregation.

To the building program, were added recommendations for development on the site which included breaking up the parking into smaller areas to avoid the

1. Existing Site



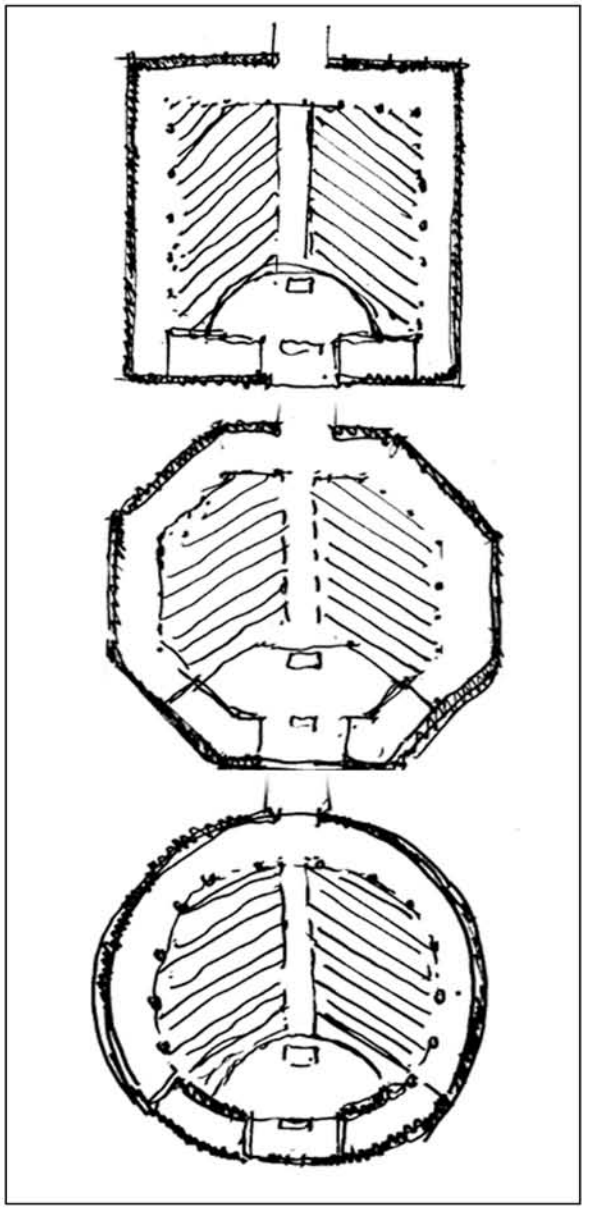
2. Existing Building

"shopping center look" and the desire to have a formal drop-off or *porte-cochere* by the entry to serve elderly members as well as weddings and funerals.

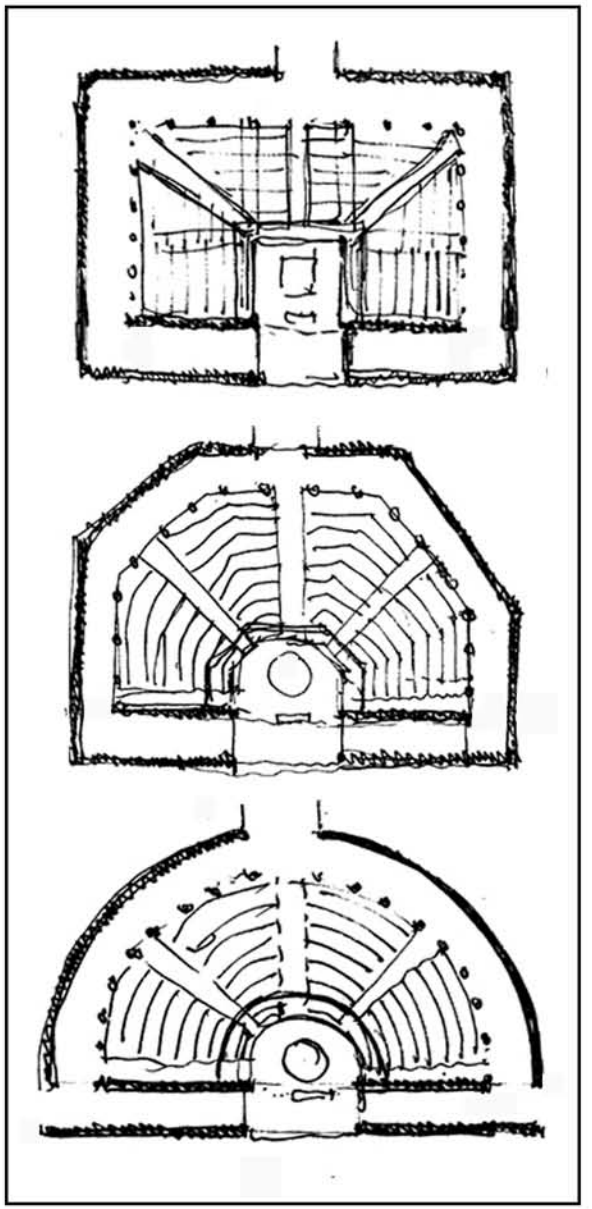
SANCTUARY PLAN ORDER

In response to the design committee's requirement of a "thrust chancel", three (3) alternate seating organizations were presented and considered. The free-hand sketches for each option also illustrated three (3) alternate sanctuary enclosures: square and/or rectangular spaces, and containers based on either octagonal or circular geometries..

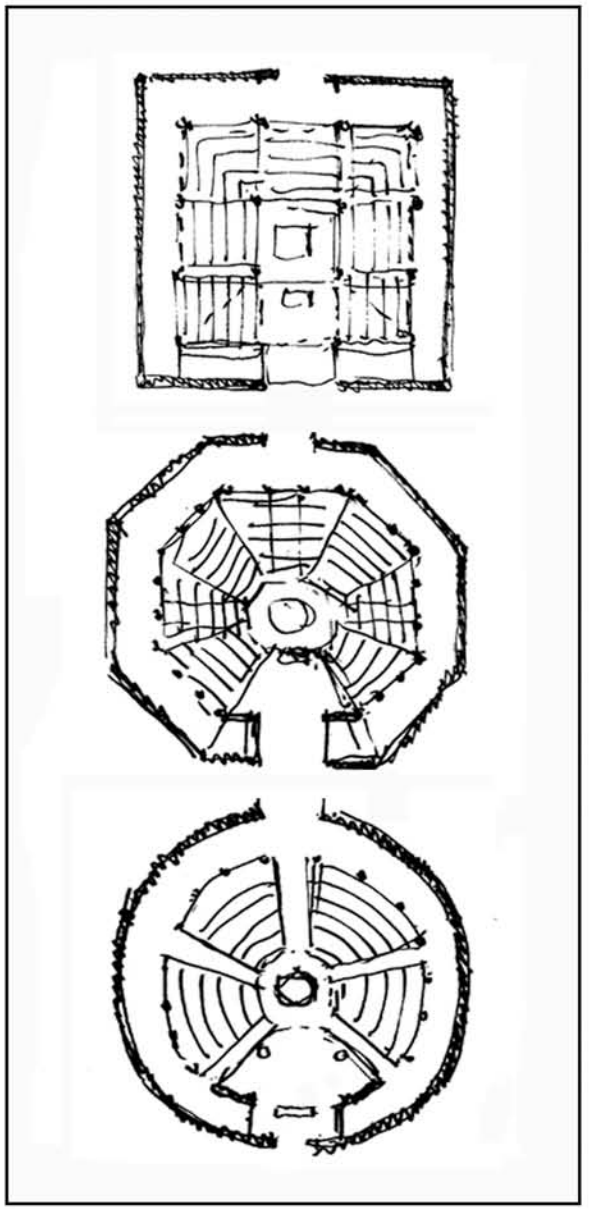
Scheme A, whether it was within a square, octagon or circle, maintained an axial aisle framework within the figural envelopes and rotated the seating to focus on the chancel (See Drawing No. 3). In Scheme B , the seating was wrapped around a chancel projecting from a flat wall that delimited the spaces to a rectangle, half of an octagon or a semi circle. (See Drawing No. 4) Last in Scheme C the figural enclosures of a square , an octagon and a circle were occupied by "in the round" seating circumscribing a central space that was connected to an extended and projecting chancel. (See Drawing No. 5)



3. Sanctuary Plans Scheme A



4. Sanctuary Plans Scheme B



5. Sanctuary Plans Scheme C

The design committee gravitated to the options represented in Schemes B and C, noting that Scheme A did not meet the desire "to see each other" which B and C did. They also commented that in the B Schemes , two seating segments were always against the front wall, something that was avoided in the octagonal and circular "in the round" options without placing seats behind the chancel, which the square plan did. The decisiveness of the responses on the configuration of the sanctuary enabled the design dialogue to proceed to an inquiry addressing site development.

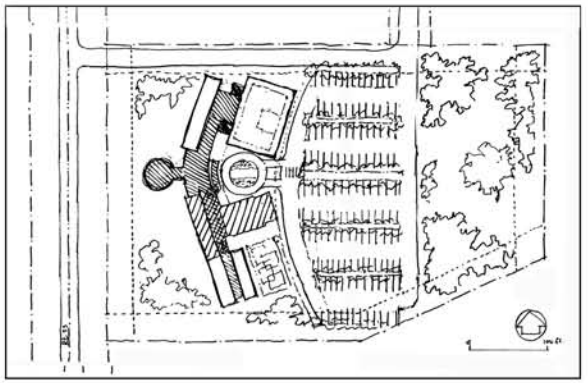
SITE DEVELOPMENT ORDER

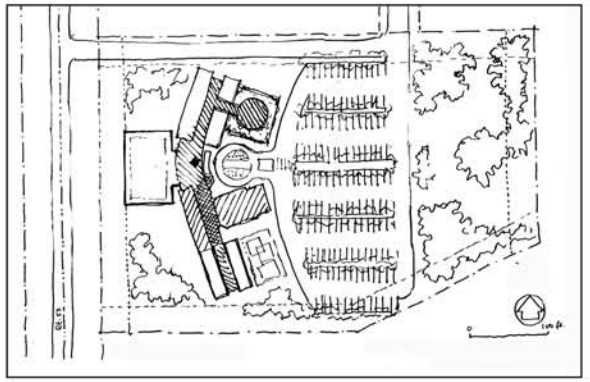
Three schemes were engendered by the arbitrary parameter on how the congregation intended to engage the "outside world" with the placement of the new sanctuary on the site and its relation or connection to the existing building. Each scheme maintained the existing building elemental linear assembly that was threaded by a spine of circulation. They all respected the required front and side yard required zoning setbacks and reserved the rear of the site for storm water detention that more than likely would be imposed by the current building regulations.

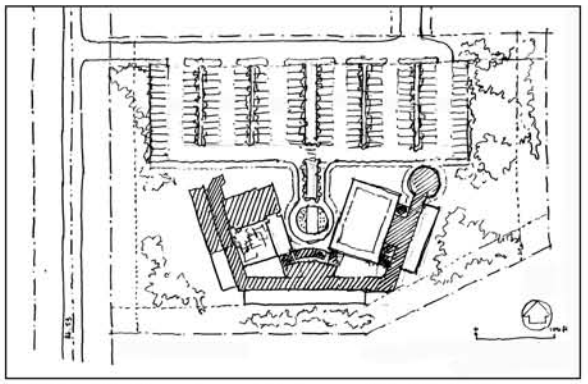
Free hand sketches illustrated alternate extensions of the circulation armature to which the new building components were added. In Scheme AA, a curved segment extending North linked the existing building to the new sanctuary projecting into the site, thereby forming a "drop-off" courtyard with the Fellowship Hall. In this site organization, a pedestrian and vehicular forecourt welcomed parishioners from an enlarged, landscaped parking area. It also offered a subtle symbolic icon to the street , centered on the site to the West: a transparent chapel as a glowing lantern against a masonry wall with limited openings, entered directly off the new forecourt entrance. (See Drawings No.6)

Scheme BB revised the priorities by locating the sanctuary off the circulation spine facing the street boundary and the chapel as a complement to the Fellowship Hall within the site, defining the arrival courtyard. This development option emphasized the prominence of a new sanctuary "to the world" while again minimizing the presence of the parking lot. (See Drawing No. 7)

In Scheme CC the focus was on creating an internal world with the new development, less visible from the







6, 7 & 8. Site Development Schemes AA, BB, & CC

frontage road, with the parking abutting the North side boundary. (See Drawing No. 8)

The committee rejected Scheme CC given its extensive parking lot exposure to the front street and to the northern residential neighbors and gravitated to alternates AA and BB . They favored the circular drop-off driveway and entrance forecourt, which would feature both the existing Fellowship Hall and a new assembly space.

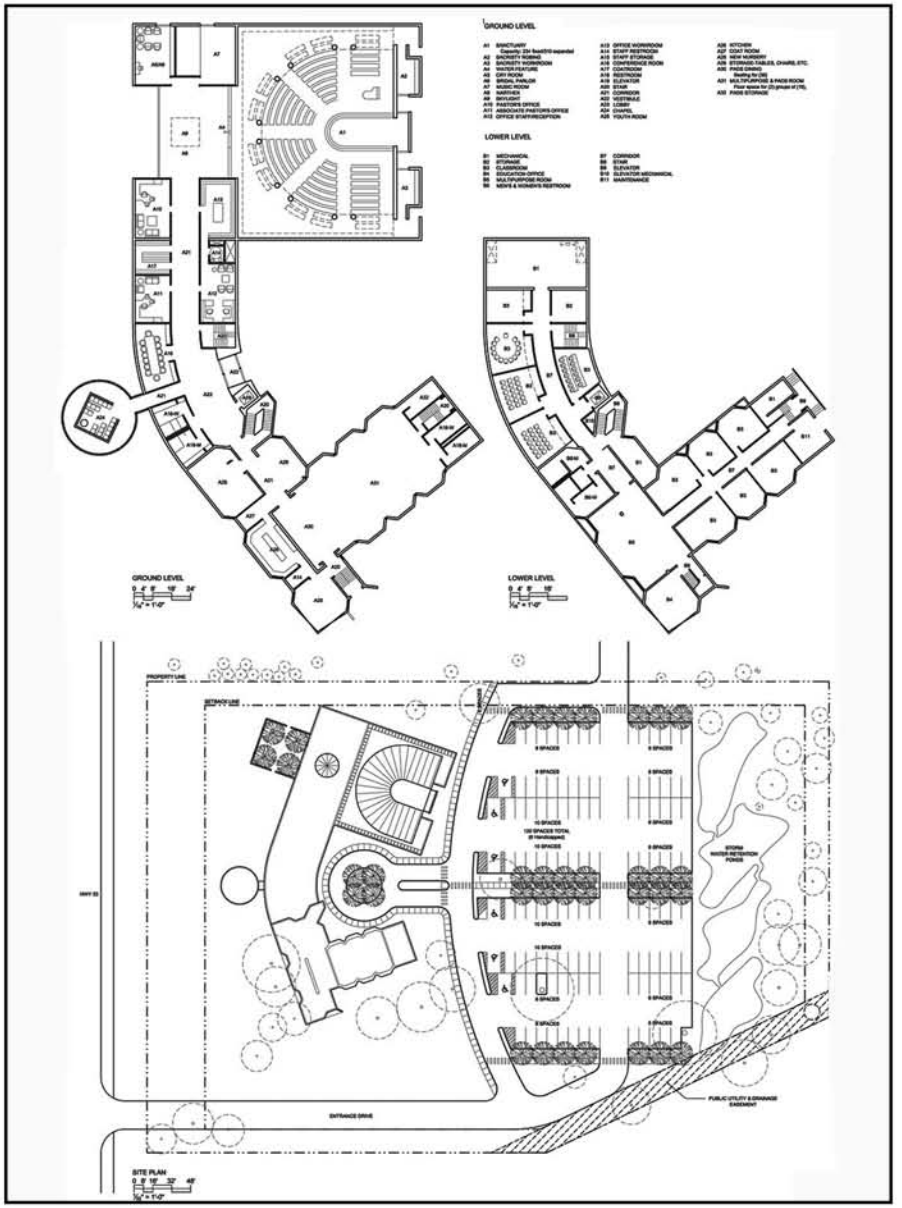
Further discussion resulted in the selection of Scheme AA , attributed to the more neutral presence toward the street frontage, as well as the location of the chapel, immediately off a new entrance vestibule, the first experience by a parishioner - "a personal worship space".

VOLUMETRIC STRATEGY

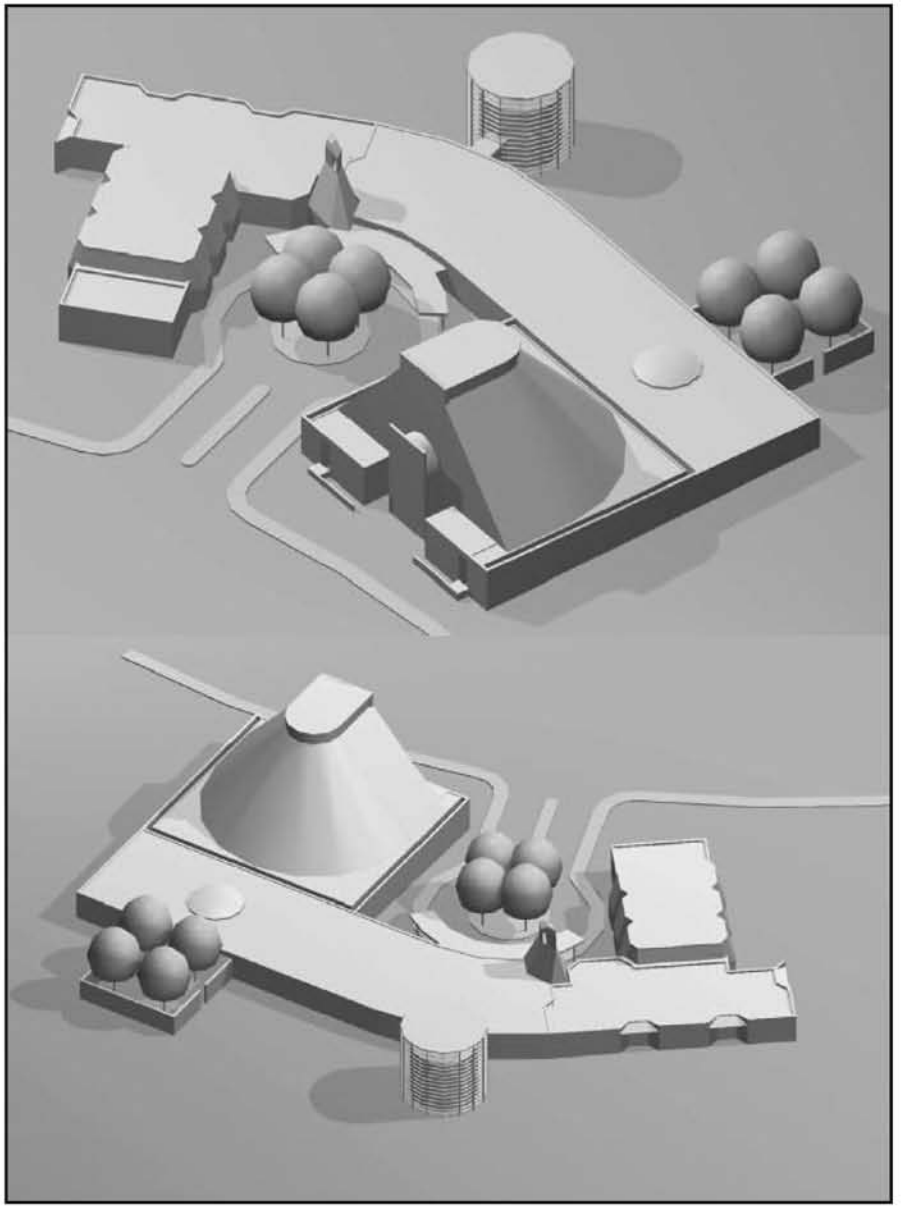
In the subsequent development of the linear elemental composition , three (3) alternatives were explored further. Although the basic framework of the schemes was identical, variance was introduced in the plan and volume of the sanctuary.

Following the previously expressed preferences for the configuration of the worship space, the developed volumetric alternates examined: a semi-circular plan with a dome section within a cylindrical volume; a rectangular plan within a pyramidal volume, and a truncated octagonal plan and volume. In both the cylindrical and pyramidal schemes, the chancel surrounded by seating segments, abutted a flat outer wall that shielded the building form. In the octagonal scheme, the chancel was placed against the narthex, requiring access to go around it, but this configuration, allowed the truncated volume to be visible from the outside. All three site plans illustrated the relocation of the entrance drive to the South site boundary in response to the zoning side yard setbacks, as well as two parking options which varied the number of stalls and occupied the center of the site. (See Drawings 9 to 15).

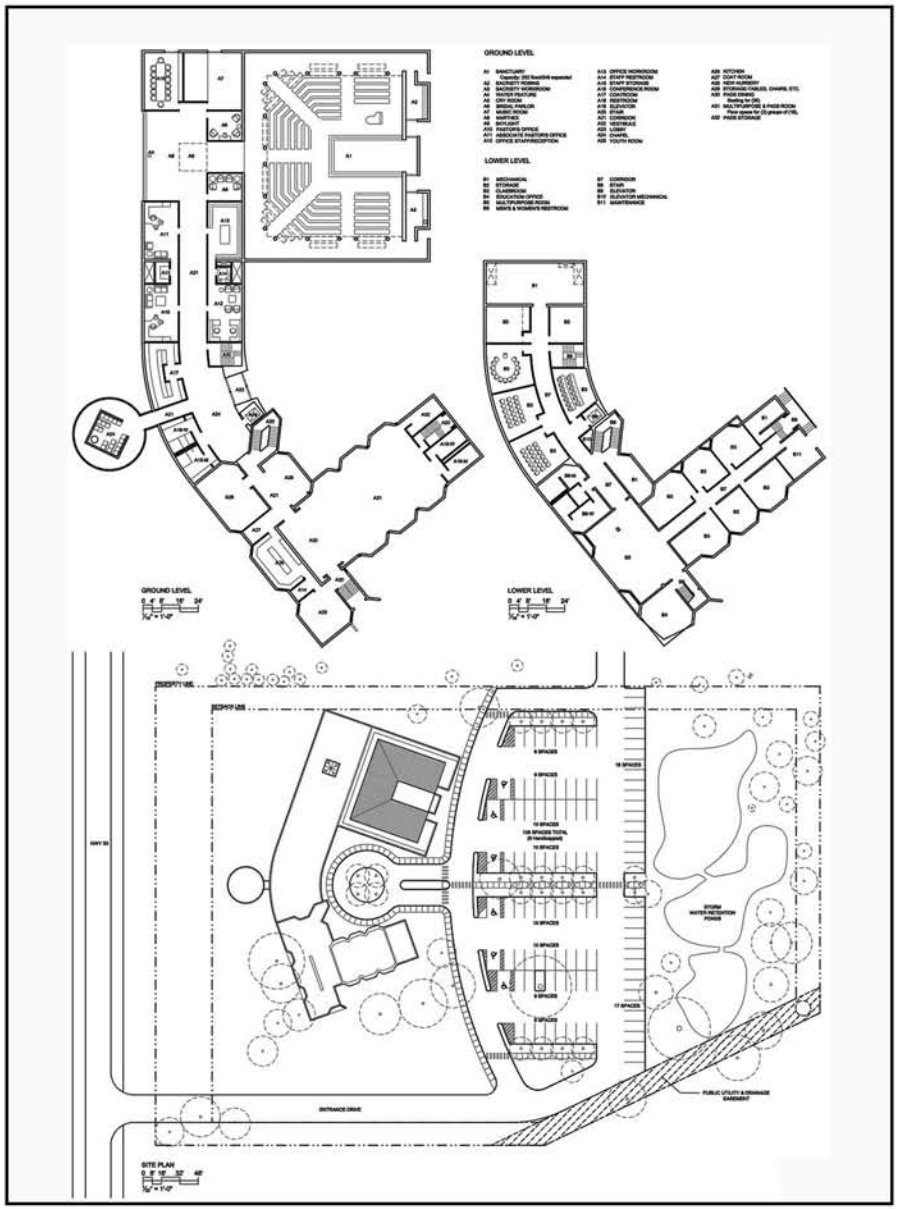
The design committee quickly identified the assets and limitations in each of the schemes. In the cylindrical option, they agreed with the relationship of the sanctuary to the narthex and domed section, but reiterated their previous concern over a blank wall against the seating segments on each side of the chancel. They also objected to the



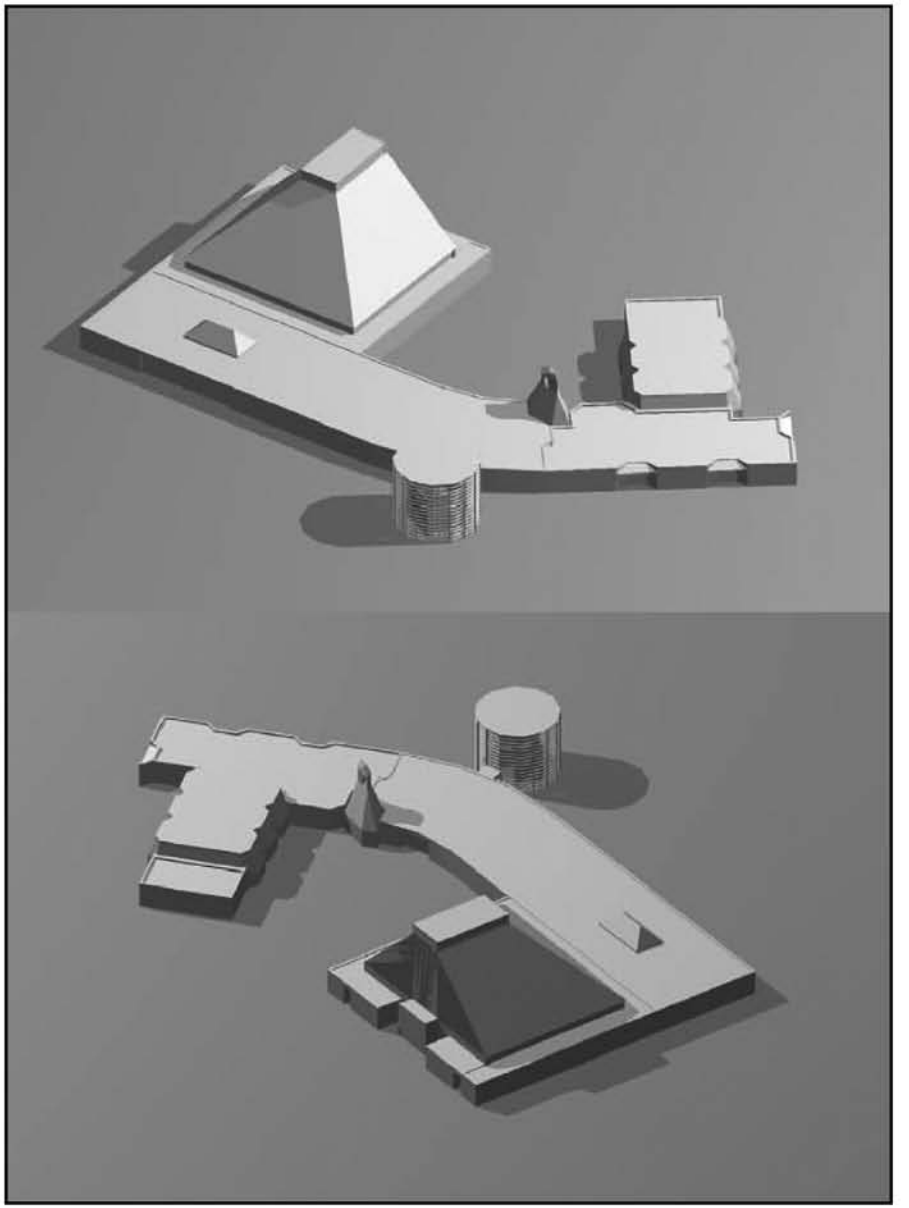
9. Truncated Cylinder Sanctuary: Floor Plans & Site Plan



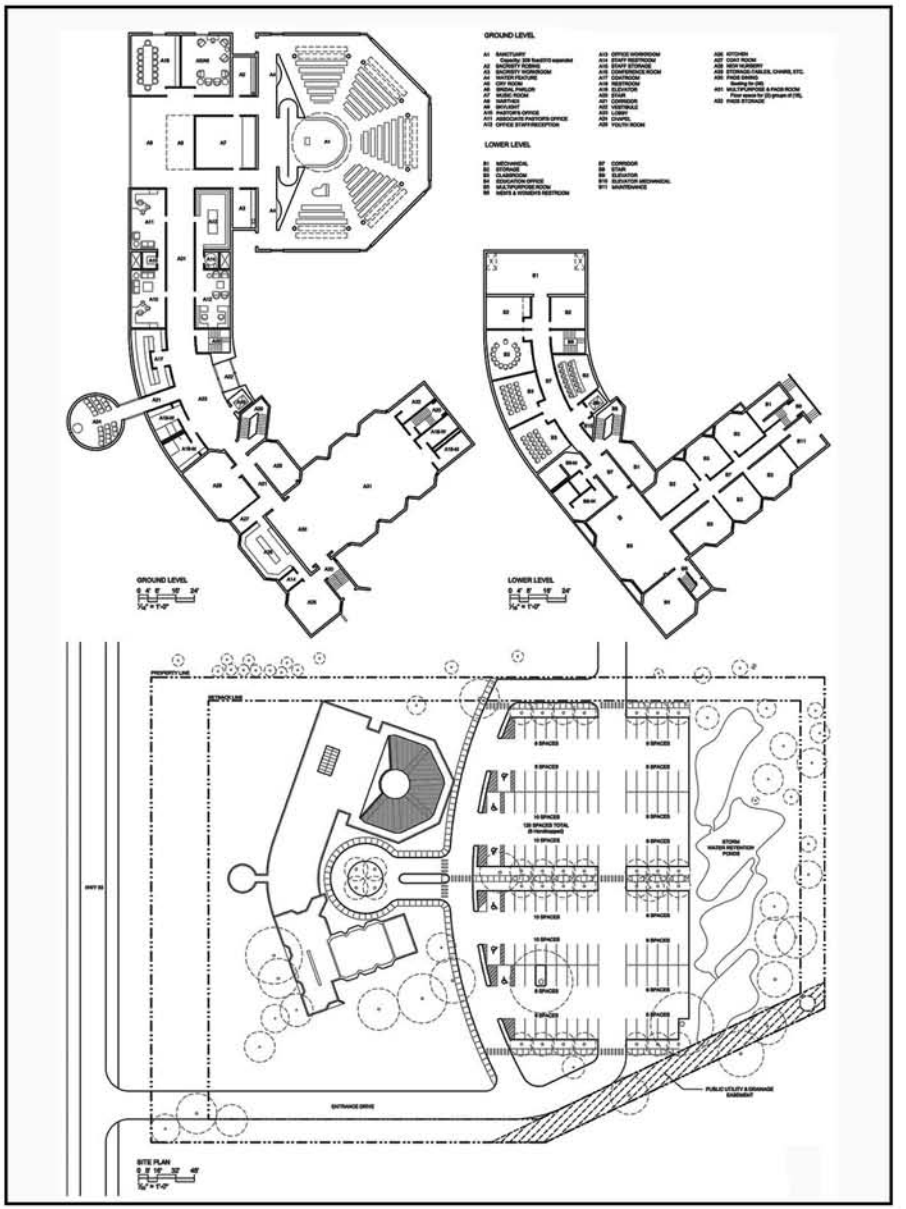
10. Trucated Cylinder Scheme: Volumetric Development



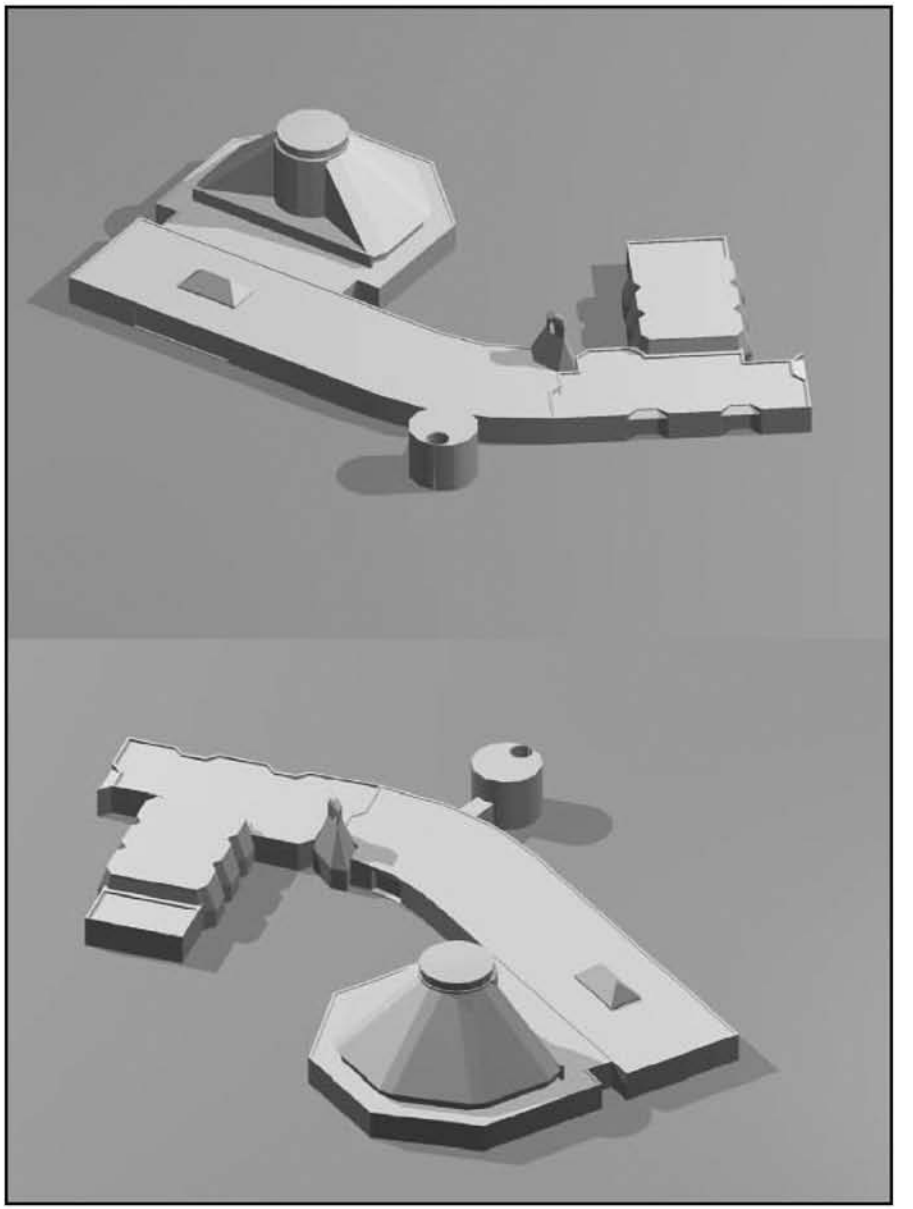
11. Pyramidal Sanctuary: Floor Plans & Site Plan



12. Pyramidal Scheme: Volumetric Development



13. Octagonal Sanctuary Floor Plans & Site Plan



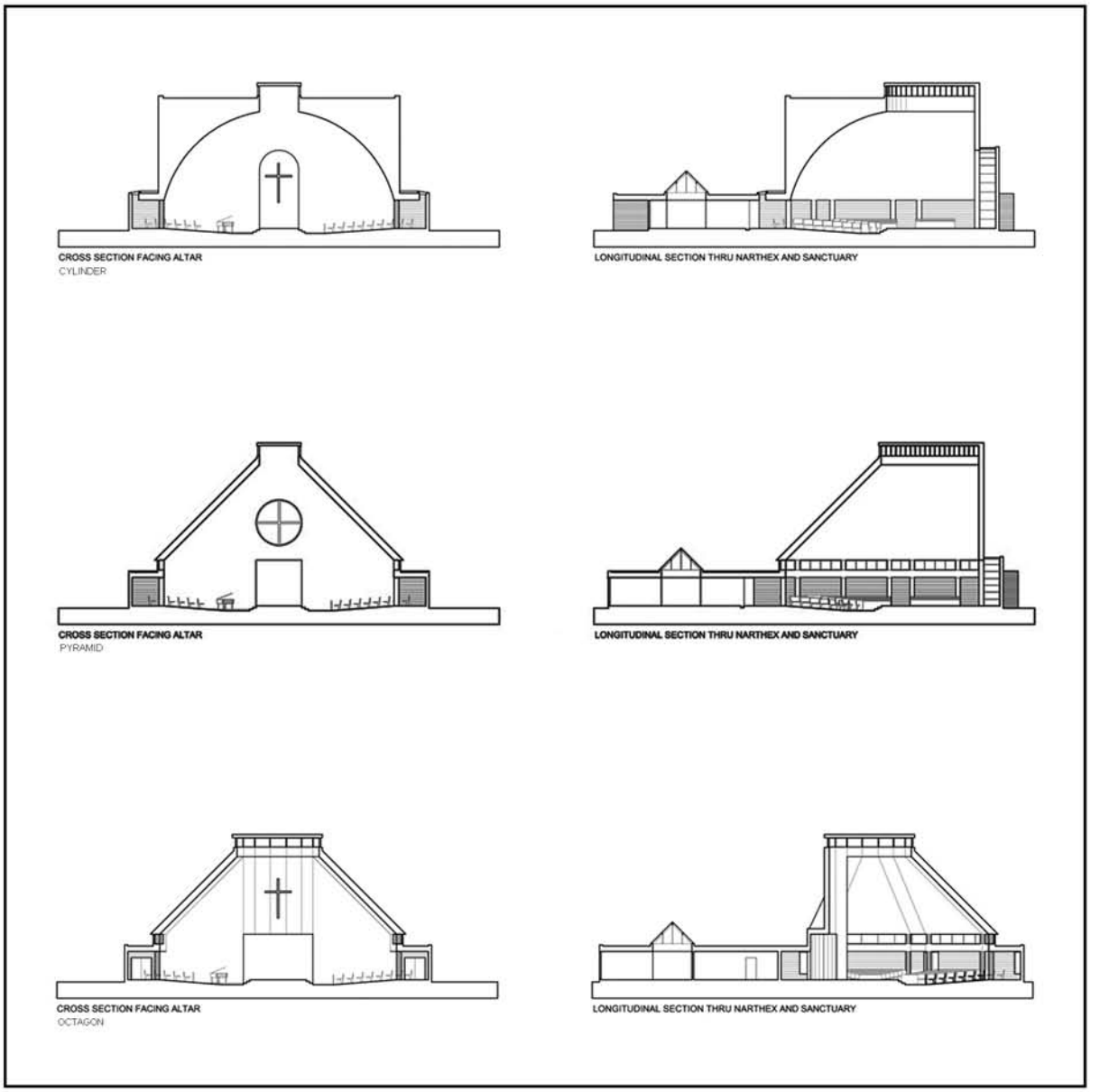
14. Octagonal Scheme Volumetric Development

cylindrical exterior volume, which was considered "too severe".(Drawings No.9 & 10).

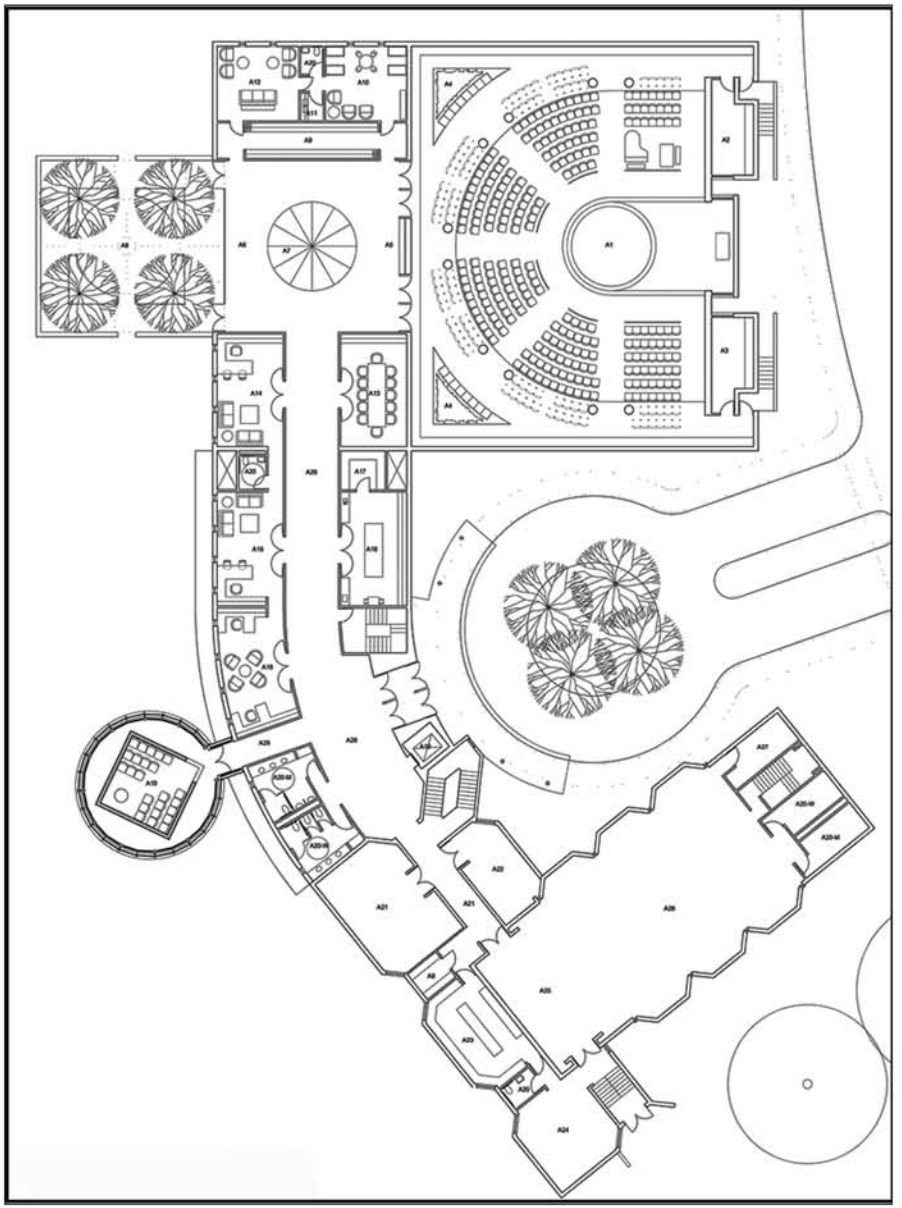
In the pyramidal scheme the design committee appreciated the external expression of the volume, but again objected to the blank walls against the seating and straddling the chancel. They also questioned the insertion of rooms into the corners of the narthex , which in their opinion impeded an appropriate connection with the sanctuary. (See Drawing No. 11 & 12)

The committee's preferred scheme, with reservations, was the octagonal volume, primarily because it conveyed the configuration of the sanctuary on the exterior. They objected to entering the space from behind the chancel and to the intrusion of the choir/music room into the narthex. (See Drawing No. 13 & 14)).

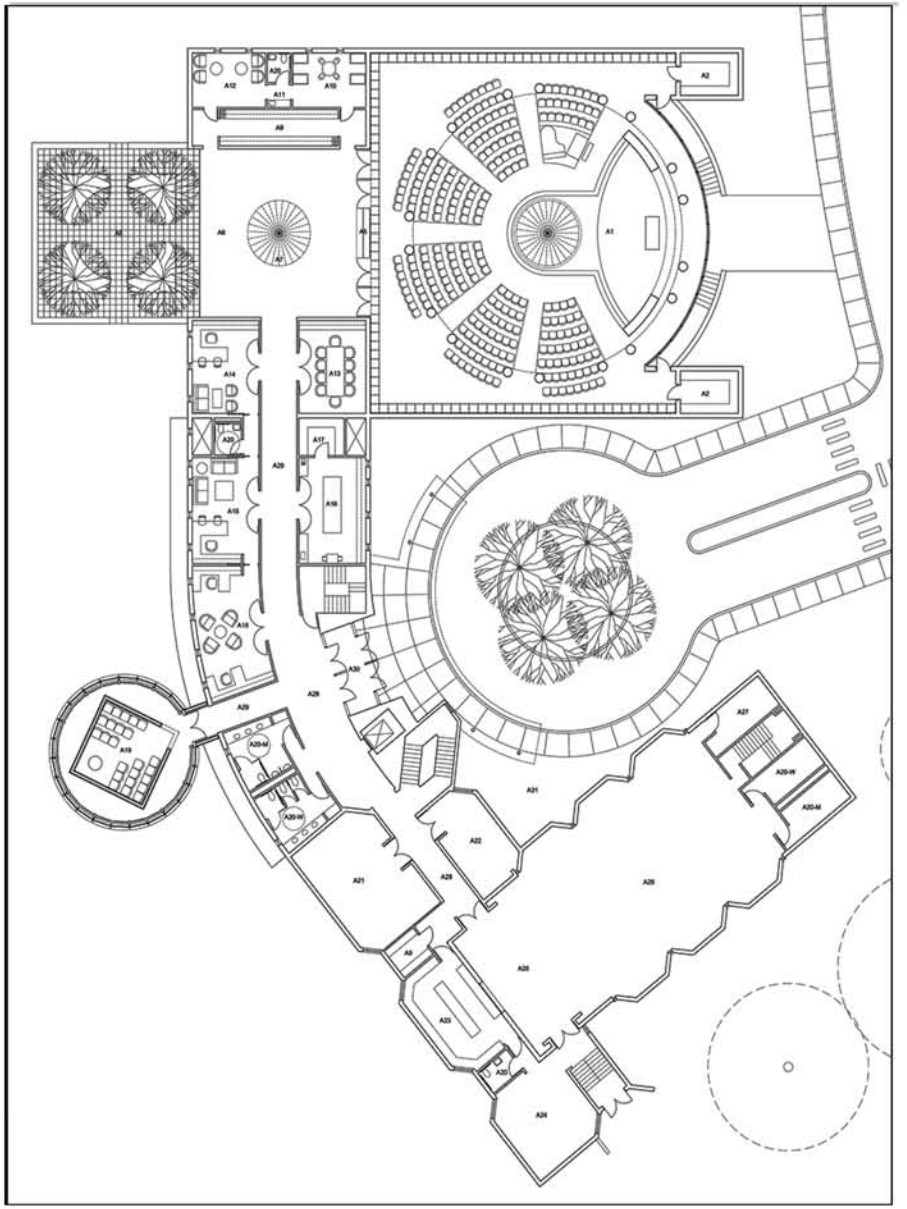
A logical alternative surfaced during further discussion: to merge portions of the cylindrical scheme plan and section, with the exterior presence of the octagon, which led to developing two more variants. The first alternate emulated the initial semi-circular plan, but conveyed the worship space in the building's exterior volume. It did not address the objections to the blank wall straddling the chancel.(Drawings No. 16 & 17).



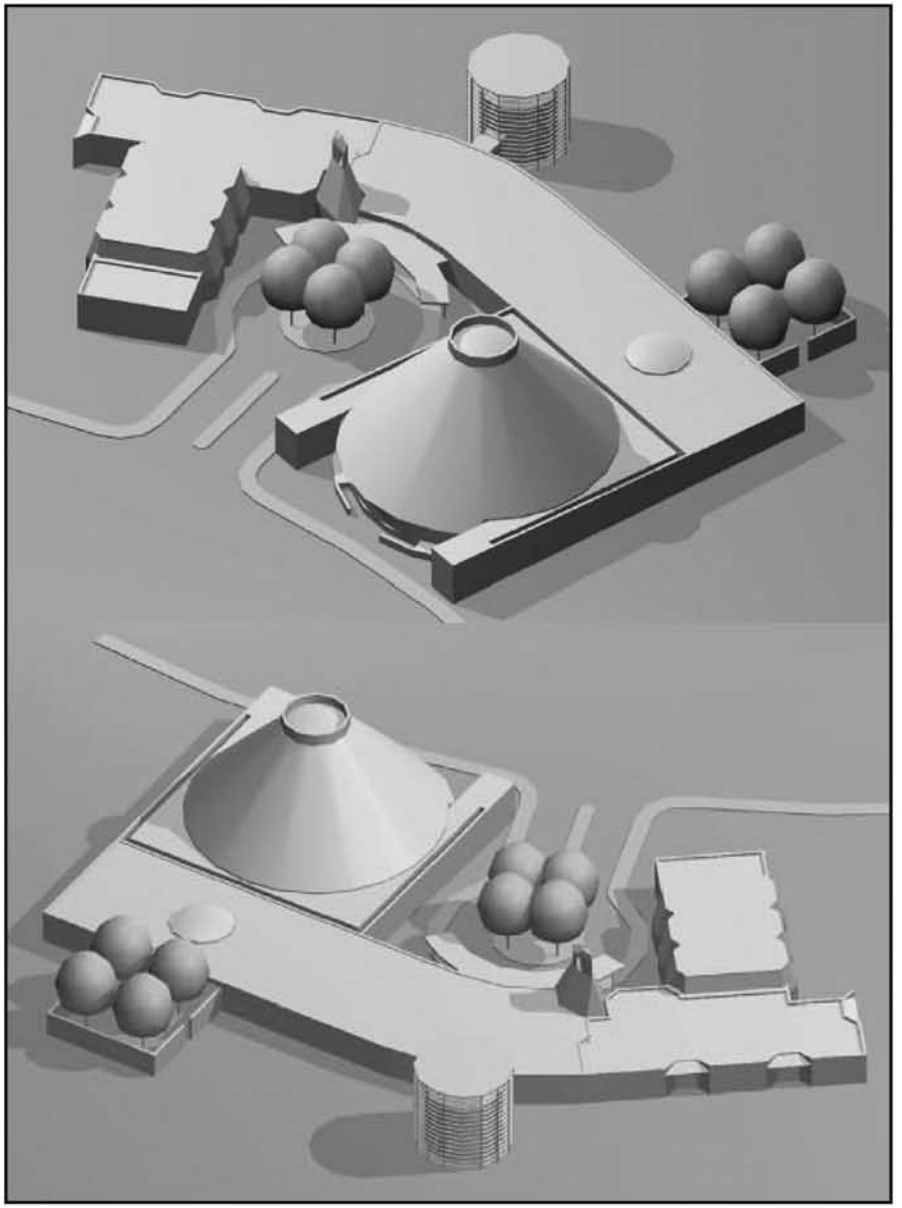
15. Alternate Sanctuary Sections



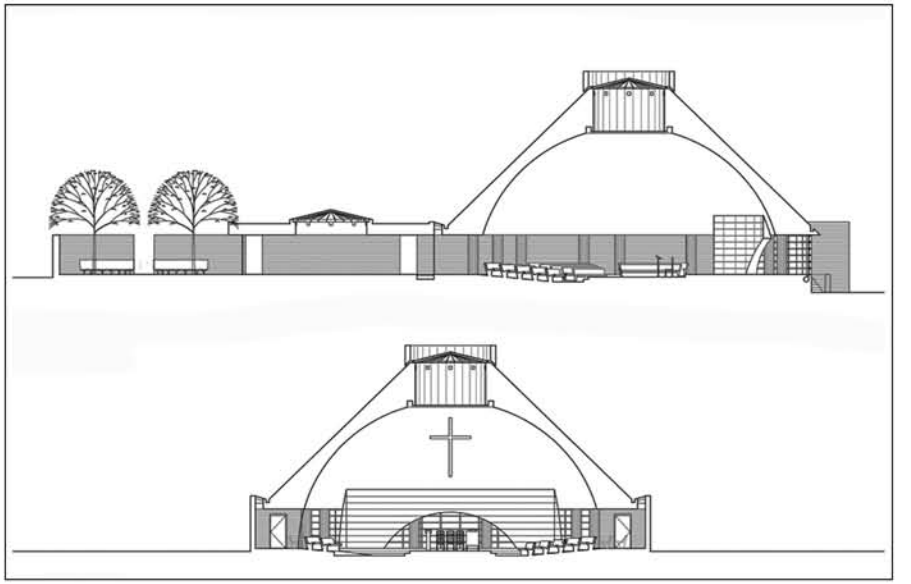
16. Truncated Cylider Sanctuary - Developed Floor Plan

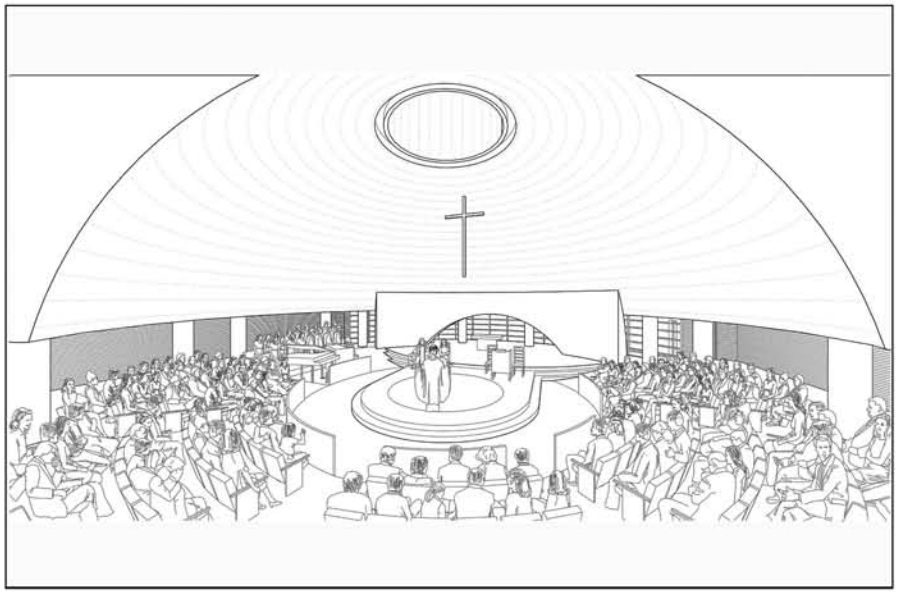


17. Faceted Cone Sanctuary - Developed Final Plan



18. Faceted Cone Scheme: Volumetric Development





19. & 20. Faceted Cone Scheme: Interior Dome Sections and Sanctuary View

The second option, embedded a full circle plan and dome within a 27 side faceted cone, rising out of a one story plinth which extended the existing building. This scheme provided a larger chancel for performances, as well as a central space under the dome's oculus - a focal point for baptisms, communions, weddings and funerals. A curved rear wall provided both acoustical reflection and an East facing central opening as an additional source of daylight. And most importantly, it did not abut seating sections against a wall.(Drawings No.17 to 20).

With little commentary, the design committee adopted the circular/faceted cone alternate and requested design considerations on the character and appearance of the sanctuary , narthex, and chapel, a review of building materials and the documentation of a program , listing both the new and existing spaces and their area.

BUILDING ENCLOSURE AND FABRIC

To address the visual qualities desired in the new sanctuary, the design committee was presented and asked to evaluate fifteen (15) images of gathering spaces which included church sanctuaries as well as secular chambers. The images ranged from very traditional classical rooms to contemporary compositions from around the world. The intent was only to uncover a general direction of preferences.

The survey requested opinions on the admission and level of daylight, the treatment of wall and ceiling surfaces and the general quality and appearance of the spaces, The anonymous evaluations were to characterize these three issues on each image either as very appropriate, appropriate, acceptable or not appropriate. The responses identified similar preferences by all the respondents which included bright, daylighted spaces, relatively plain surface finishes with the presence of wood and a general sense of simplicity and visual comfort that avoided disparity and inconsonance.

In a weighed rating the preferred space was Eliel Saarinen's 1942 First Unitarian Church in Columbus , Indiana. (See Drawing No. 21) The second choice was this author's 1991 Council Chamber in Leesburg, Virginia (See Drawing No. 22) and also considered better than appropriate was the Jorn Utzon's 1975 Church in Bagsvaerd, Denmark. (See Drawing No. 23).

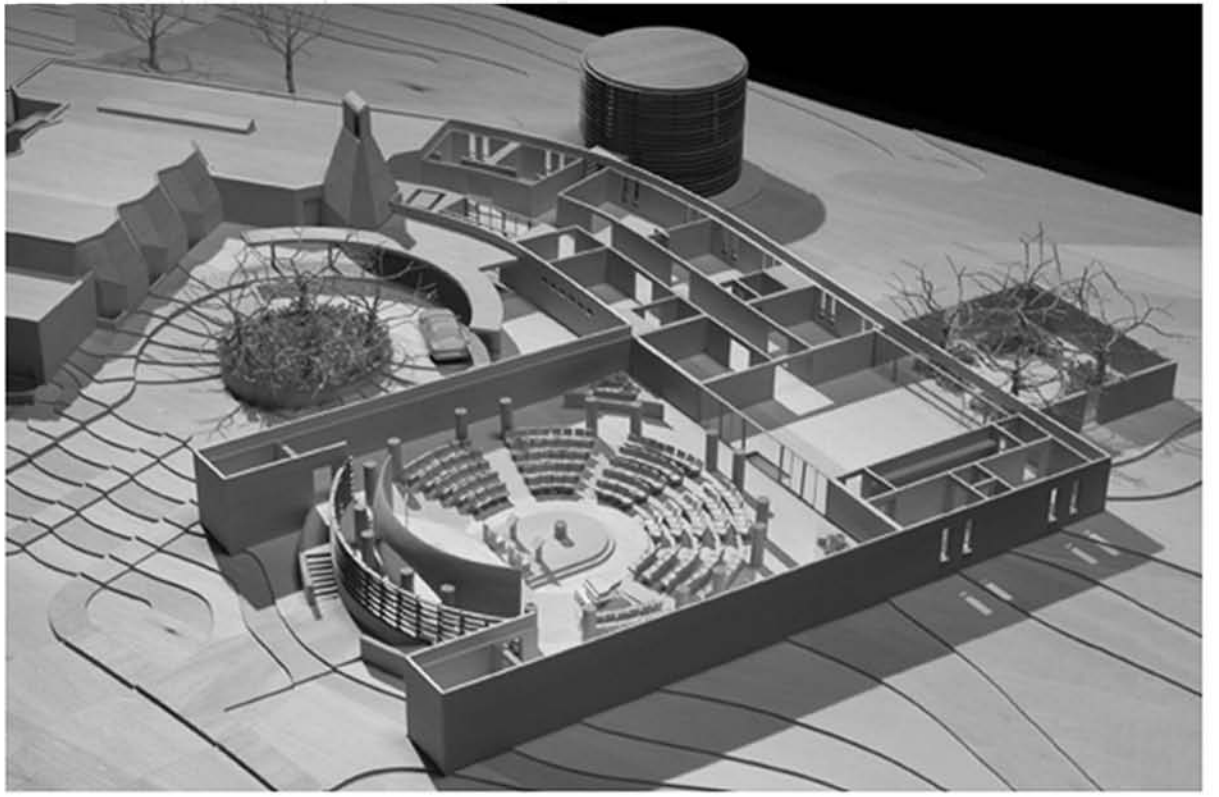
21, 22 & 23. Selected Visual Quality Survey Images

The results of the survey were presented with the final building plans and line renderings of the sanctuary and the chapel together with alternate samples of materials. In the sanctuary an acoustical plaster dome supported by white round columns enveloped the fabric upholstered seating on a carpeted floor and was surrouded by a cove lighted perimeter wall clad in wood. Complementary color assemblies that combined blue fabrics with douglas fir on the wood wall, or green fabrics with an American cherry wood wall were compared with more mono-chromatic schemes using white oak and red oak wood walls with beige and light brown fabrics.

The chapel image was complemented with samples of the stone proposed for the prayer wall enclosure and the floor. Again, a blue-gray slate stone floor palette was coupled to a yellow Jerusalem stone wall with a second option of a gray-green floor with a more orange stone prayer wall.

The blue-gray options were selected, as "less commonplace" and the inclusion of Jerusalem stone in the chapel for its

24. Sanctuary, Entry Court & Chapel Model



25. Sanctuary, Narthex, Chapel and Office Interiors Model

symbolic association.

A discussion on exterior materials did not go beyond the use of brick veneer and narrow vertical windows on the plinth to match the existing building and standing seam metal roofing over the sanctuary to emulate the existing bell tower.

EPILOGUE

If this case study has illustrated anything, it is the value of typology as a vehicle for architects to communicate with clients. Explicit plan types and volumetric options played a central role in exposing the St. Thomas Building Design Committee to a transparent process of decision making based on an enriched literacy "on what could be". True they were conditioned by their previous experiences, in particular the early requirement for the sanctuary seating to enable the congregation to see and be aware of each other, or the fact that forty years of worshiping in a space without daylight had to be avoided. The resulting formal design product offers evidence that predilections can be drawn out from clients by confronting them with explicit physical attributes in clearly described design choices - a typological grammar as an essential design tool.

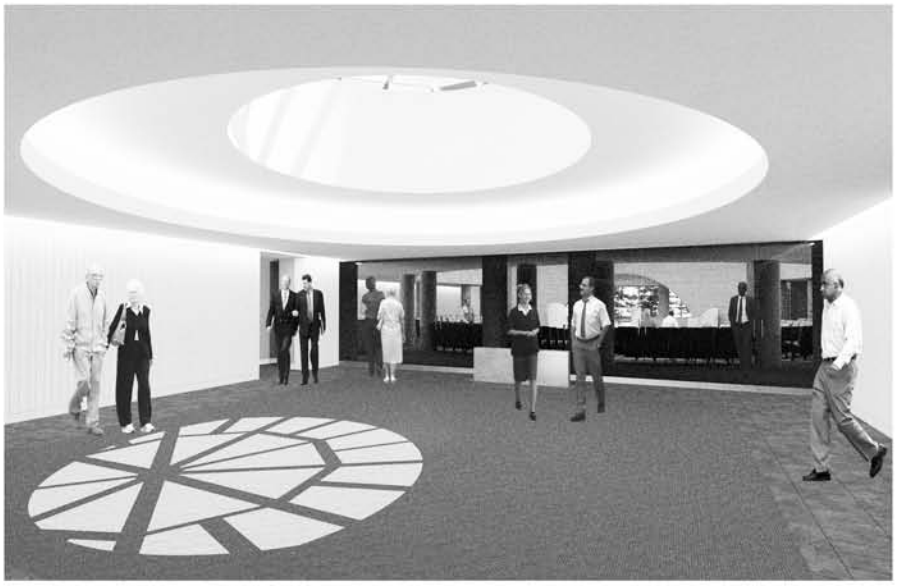
During the design development phase, the local building code imposition of a costly new storm water detention system, associated with the enlarged building footprint and parking, required the implementation of the sanctuary and chapel to be phased. The construction documents for the entire project were developed, and a first phase containing the curved link between the existing building and sanctuary was built and occupied in 2008. The "Hospitality Wing"

26. Completed Phase I Entrance Court & "Hospitality" Wing

27. Completed Phase I Entrance Court Canopy

28. Phase II Sanctuary Addition Rendering

extension contained a new entrance and vestibule, offices, conference rooms, classrooms, restrooms, an elevator and the "drop-off" driveway. A likely second phase will be the chapel to serve as a beacon of the congregation to the outer world, followed by the sanctuary and the reconfiguration of the parking and implementation of the storm detention system



29. Phase II Narthex Interior Rendering

30. Phase II Sanctuary Interior Rendering

31. Sanctuary View from the Chancel Rendering

18. CASE STUDY IX

BASIC HOUSES FOR URBAN INFILL SITES

DESIGN COMPETITION ARCHITECT
COURTYARD HOUSING
PORTLAND, OREGON 2007

.

CONTEXT

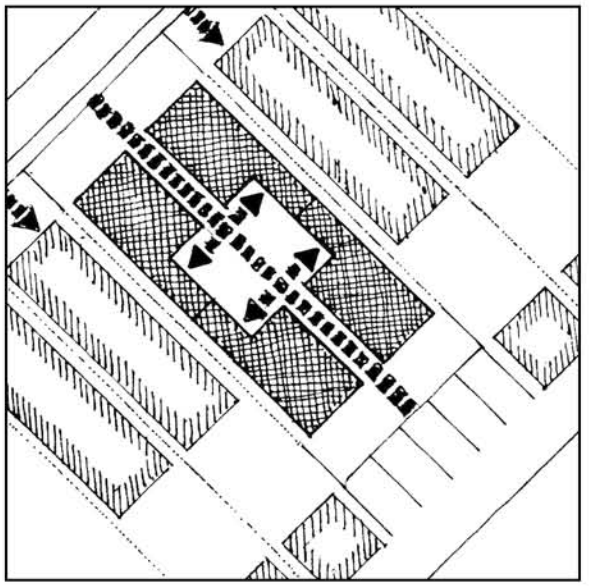
Participation in this design competition was motivated by a formal exploration on how to achieve a "true house" on the ground, suitable for urban infill sites and be affordable to own and operate by moderate income households.

This design inquiry had started several years earlier in 2001, when Chicago's Department of the Environment sponsored a similar design competition for a sustainable house on typical 25'-0" wide by 125'-0" deep single family house, urban parcels.

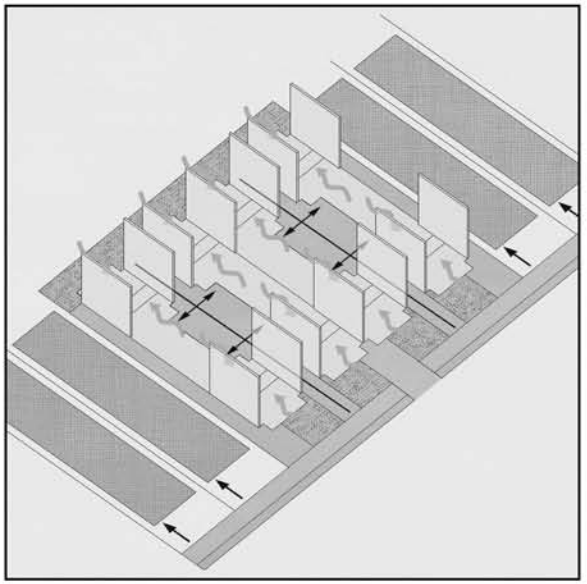
That initial exploration concluded that the traditional land use occupation patterns of front, rear and side yard setbacks, developed during the 19th. Century to facilitate the subdivision, sale and development by individuals was ineffectual and wasteful. This is particularly obvious along the side yards, resulting in 6'-0" wide useless strips which compromise both privacy and daylight to the adjacent interior spaces.

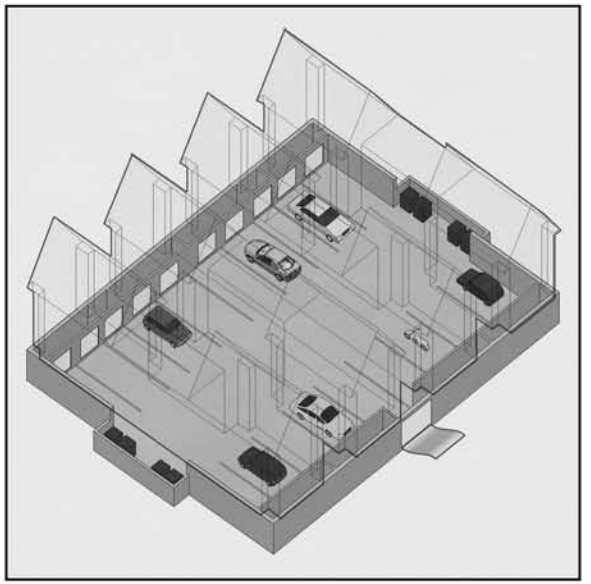
A second insight which contributed to the design order in the Chicago design submittal, was the recognition that unless alternate means were found to lower the cost of "money" – the mortgage debt service that consumes at least half of a household's shelter costs, the only way to reduce the latter, was in the land and infrastructure, given that building and operating costs were essentially fixed. The coupling of an increase in the density of dwellings per acre to the recycling of existing developed urban land, resulted in a two (2) dwellings per parcel concept, configured as four (4) houses around a courtyard on two (2) adjacent sites. The new footprint maintained the conventional front and back yards as private 250 sq.ft. open spaces for each house, and added the sharing of a 600 sq.ft. courtyard from which the four houses gained access. (See Figure No. 1)

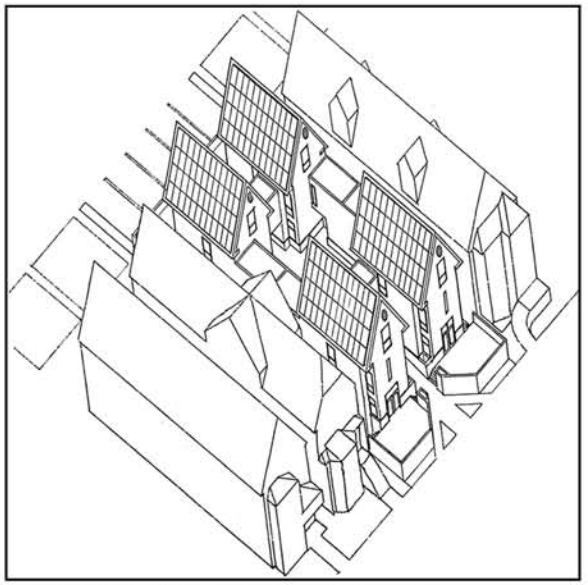
This revised land use became the point of departure for the Portland design submittal on a mid-block , single frontage 100'-0" x 100'-0" site. The compe-



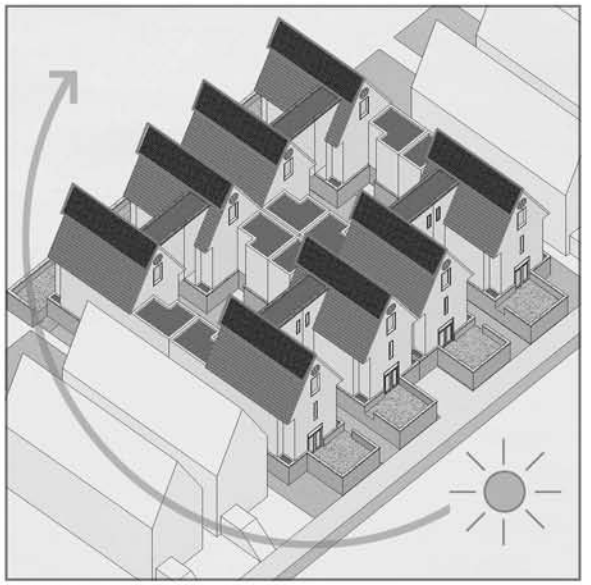
1. Four House Courtyard on Two 25' Wide City Parcels
2. Portland Courtyard Dwelling Precents.







3. Natural Ventilation & Daylight with Privacy
4. Energy Efficient Volumes



5. Parking Below the Houses
6. Assembly with the Oresence of "Houses"

tition focused on designing dwellings around a common open space – courtyards that would:

a.) Accommodate access to both pedestrians and vehicles;

b.) Emulate precedents built in "street-car neighborhoods" during the first half of the 20th. Century

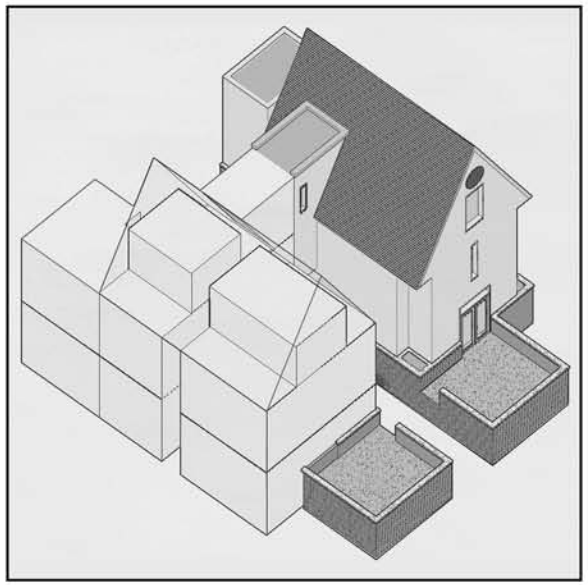
c.) Serve as settings to engender community interaction. (See Figure No. 2)

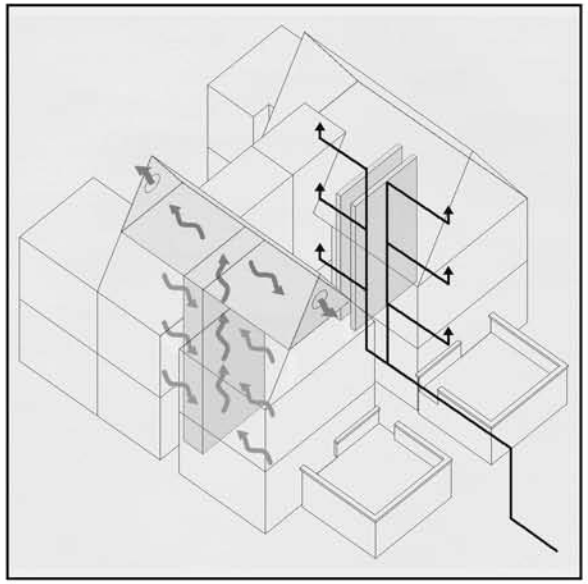
PROGRAM

a.) A basic single household dwelling, 1,200 – 1,400 sq.ft. gross area with the entry at the ground level off a shared courtyard, intended to serve as a common open space for the residents. (See Figure No. 3)

b.) A house as a compact, energy efficient volume configured to benefit from daylight, as well as natural convection and ventilation, without compromising privacy from any required side yards.(see Figure No. 4)

c.) Parking on the site of at least one car per dwelling. In Chicago the deeper sites enabled surface parking off the rear alleys. In Portland, two cars per dwelling could be located in an open air garage under the houses that were raised a half level from the street.(See Figure No. 5).





7. Raised Plinth Terraces
8. Natural Convection & Solar Exposure

d.) An ensemble that can merge into existing residential contexts as a "good neighbor" while maintaining the iconographic presence of "house". (See Figure No. 6)

BUILDING ORDER

On raised plinths that avoid having to excavate the foundations of existing basements or in the case of lower level garages, minimize their exposure to the street – four (4) gable roof houses convey the image of single household dwellings raised on "stoops" – the private terraces that separate the living spaces from the street sidewalk or the alley. (See Figure No. 7).

The conventional side yard setbacks are transformed in each cluster of four dwellings into a gated access to the courtyards from both front and rear of each site. And the resulting tall volumes provide the flexibility to respond to sun exposure, allowing roof slopes to face South, un-shaded by adjacent houses. (See Figure No. 8).

The basic house volume consists of three levels with two rooms per level separated by a straight run stair to which are added narrow extensions projecting into the courtyard in the tradition of 19th. Century rear yard plumbing additions. These projections surround the courtyards and accept an entry foyer to each house as well as bathrooms on the upper levels, thereby avoiding the disruption of plumbing within the main volume. The resulting six rooms can be assigned a variety of functions, entirely decided by the occupants. (See Figures No. 9 & 10). In the most conventional mode, the kitchen and dining area remain on the ground floor, living space and master bedroom on the second level and children's sleeping rooms in the attic under the roof.

BUILDING ENCLOSURE

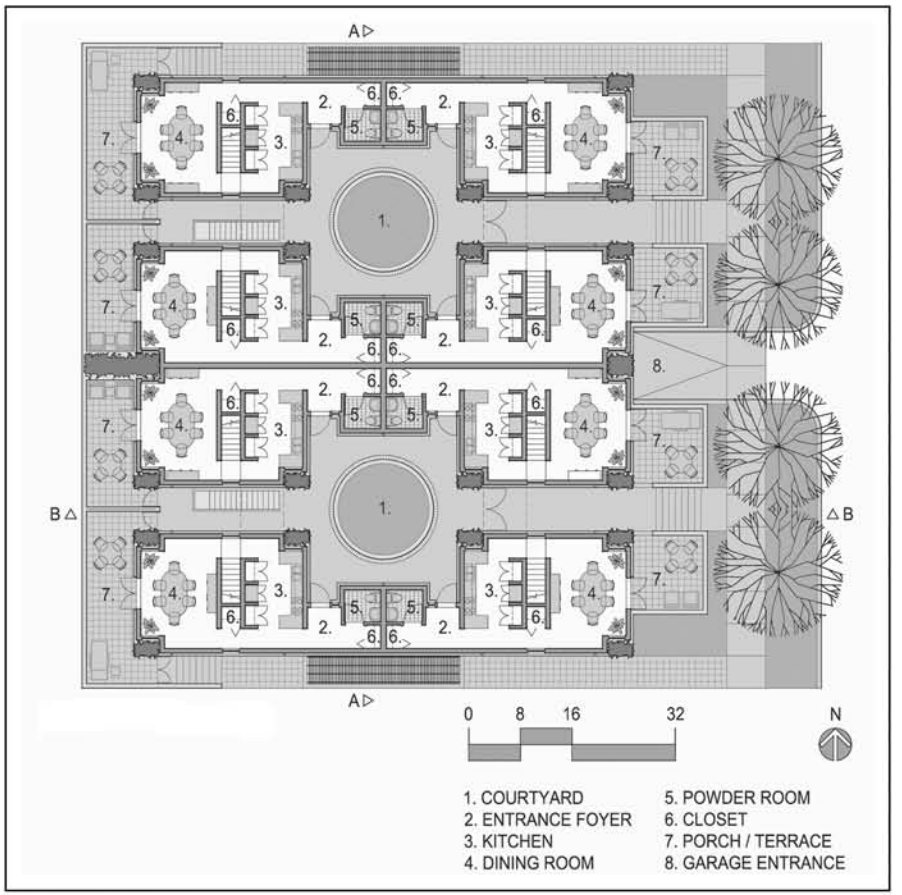
Each dwelling can be framed with standard lumber, sheathed in cement stucco and fiber cement roof shingles by well insulated (R-21) walls and (R-36) roofs. The convection provided by a central stair creates a naturally ventilated volume. that is supplemented by attic exhaust fans. (See Figure No. 11).

This armature of rooms and central stair also provides a utility core using the stair side walls to house duct and conduit risers, thereby avoiding their intrusion into the perimeter shell.

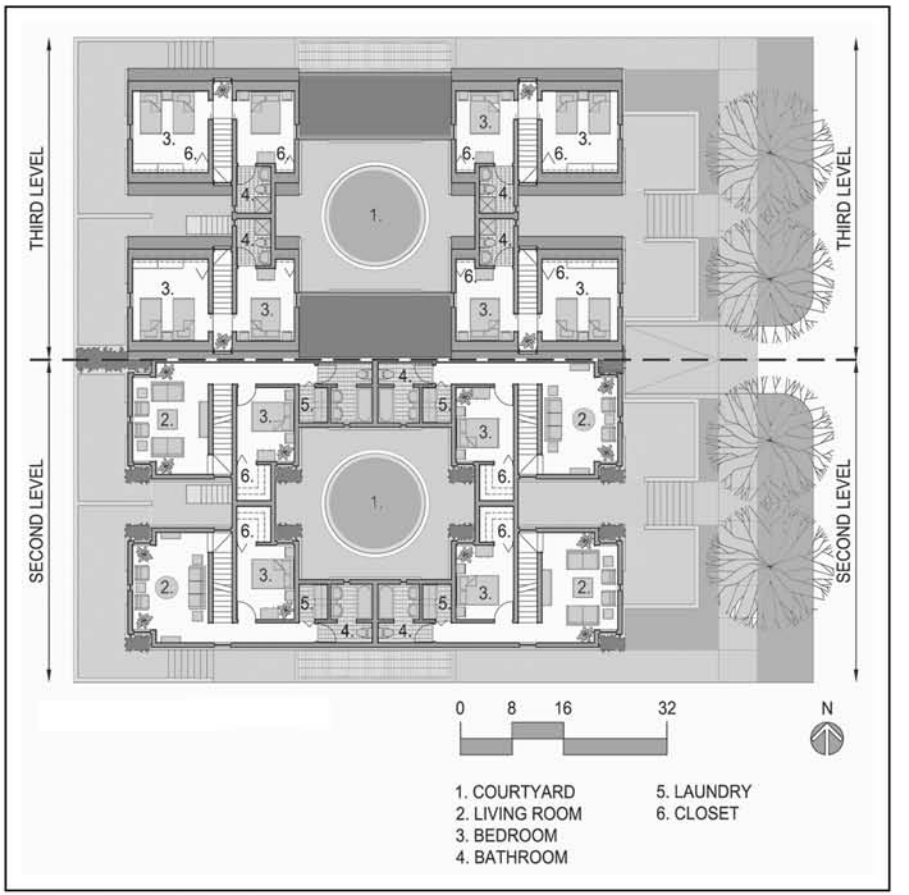
Although the houses rely on conventional heating and cooling systems, their environmental performance can be enhanced substantially by a photovoltaic panel array with the capacity to generate 6000 kW/year coupled to a geothermic heat pump supported by two 1500ft. deep drilled bore holes, which in the case of Chicago would also require the back-up of a small gas fire boiler (See Figure No. 12).

EPILOGUE

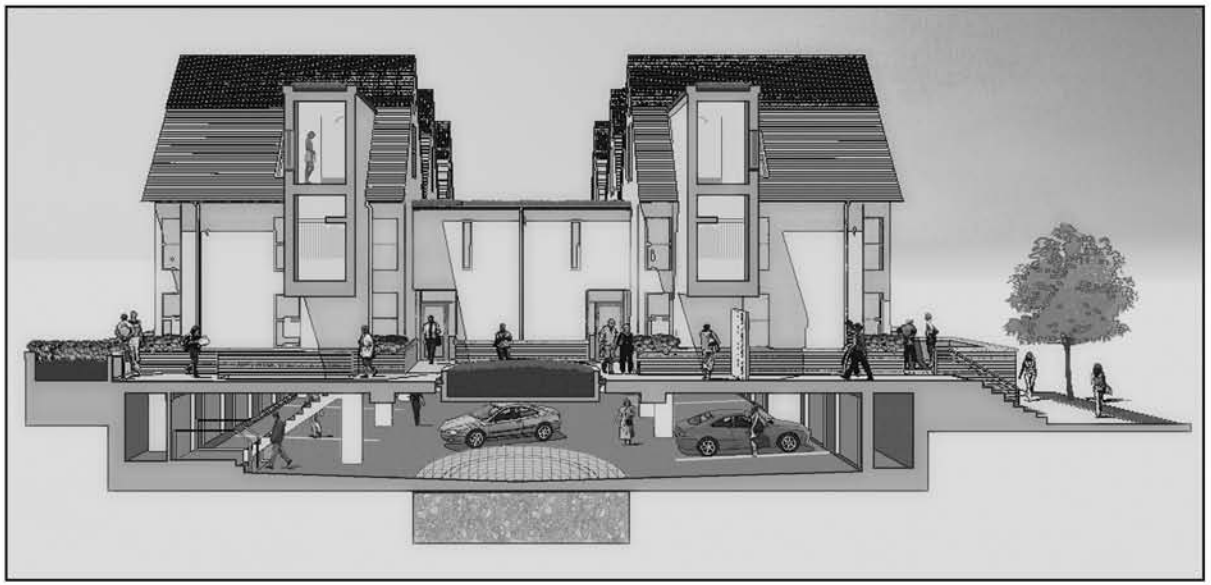
Although the Chicago submittal made it into the second phase of the design competition, it was not chosen as one of the five houses that were implemented to demonstrate the energy sustainable features. The proposal of four houses on two parcels, could not overcome the jury's predilections for a detached "bungalow" on a single parcel.



9. Ground Level Plan



10. Second & Third Level Plans

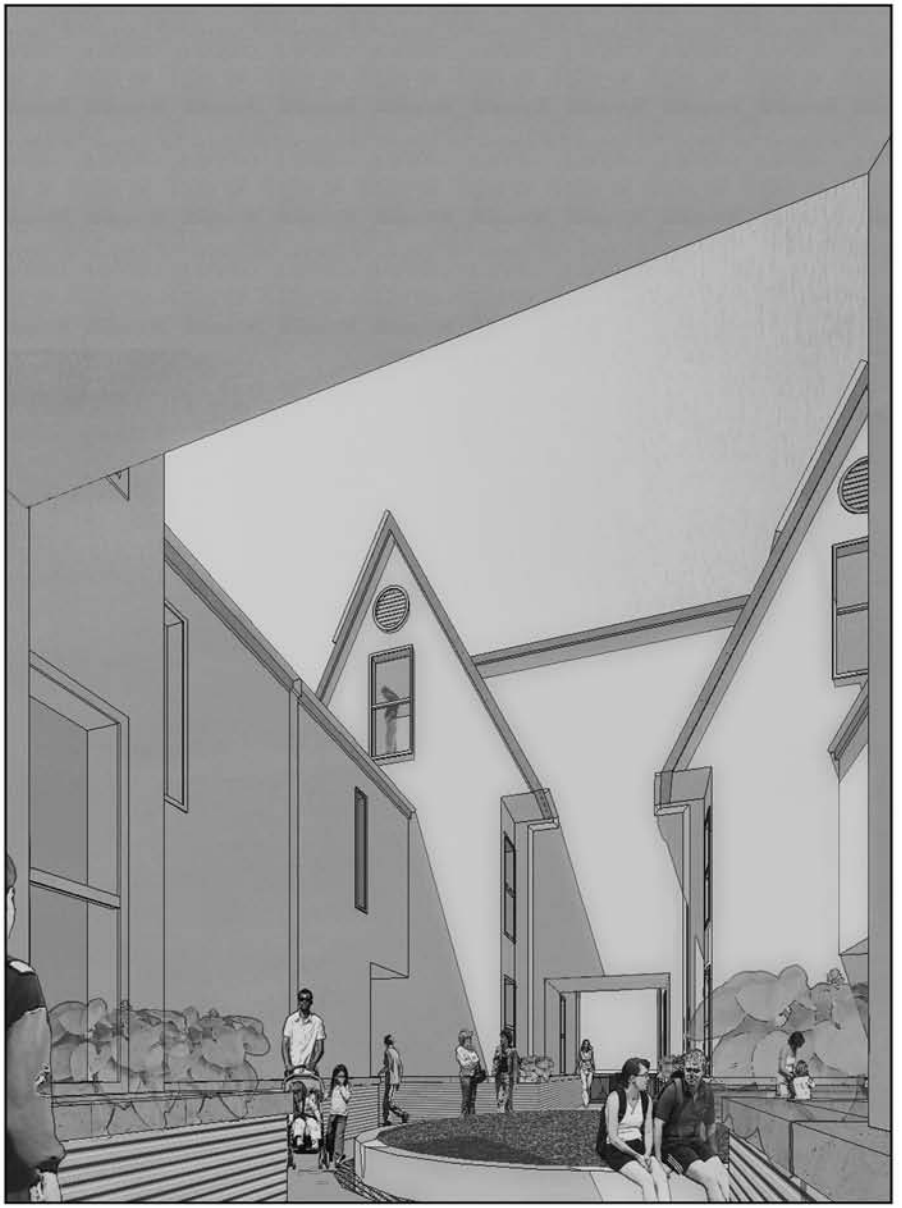


11. Site Longitudinal Section
12. Site Cross Section

The restructuring of the traditional land use pattern was also hindered by the need to create co-ownership of the shared land – the courtyard, entrance passages and alley parking for each cluster. This impediment also surfaced when the project was subsequently considered by potential non-profit community group sponsors, who were initially attracted by the presence and reality of "a house on the ground" and the "security" provided by the access through the courtyards. (See Figure No. 13 & 14)).

When the conception of four two-room deep houses around an entrance courtyard, on two urban parcels, resurfaced in Portland, the prototype demonstrated its adaptability by accommodating parking under the houses, the use of party walls in an eight house cluster resulting in the deletion of side yards and the addition of storm water management provisions relevant to the context. (See Figure No. 15).

This time, the design proposal fell subject to the idiosyncrasies of jury members who disregarded any sub-mittals that did not have "flat roofs" or excluded parking from the courtyards. Despite the experienced exclusion on



13. Shared Courtyard at Ground Level

14. Shared Courtyard from Dwelling Third Level

15. Street View of Two -Four Dwelling Courts

two occasions, the proposed restructured residential urban land use and accompanying basic house type, demonstrate that a reuse of existing and often abandoned parcels and infrastructure can address the affordability of shelter, achieved by a higher density and without a negative impact on the quality of living space.

The restructured land use also demonstrates that the traditional pattern of imposed zoning setbacks from all property lines, based entirely on subdividing land for individual sale and development, engenders extensive non-usable space, particularly along side yards. In due course, the desire of dwellers to retain the comforts, value and identity of “a house on the ground” within cities, will prevail.

19. CASE STUDY X
RECONSTRUCTION OF THE INTERMODAL STATION TRAIN SHED

WISCONSIN DEPARTMENT OF TRANSPORTATION
MILWAUKEE, WISCONSIN

ARCHITECT OF RECORD 2007-2013
IN ASSOCIATION WITH
B-G RAIL A JOINT VENTURE OF
ALFRED BENESCH & CO & GRAEF US
CIVIL, STRUCTURAL, MECHANICAL & ELECTRICAL ENGINEERING
KUGLER - NING LIGHTING DESIGN
HELIO ENVIRONMENTAL DESIGN.

CONTEXT

The existing train shed which abuts the recently renovated Milwaukee Intermodal Station was built in 1965-1966 by the Chicago, Milwaukee, St. Paul and Pacific Railroad and subsequently acquired by the Canadian Pacific Railroad (CP Rail). The train shed covers 5 tracks on the line from Chicago to Minneapolis. CP Rail currently operates 16 freight trains per day through the shed and stores dry emergency ballast cars over the winter on one of the tracks. Amtrak, the US national rail system operator, uses the shed with 14 passenger trains per day between Milwaukee and Chicago plus 2 trains between Chicago and Seattle.

The shed structure consists of welded steel trusses and joist purlins spanning 125 feet and supporting a corrugated aluminum roof that covers 3 platforms for 400 feet. The platforms are linked by a tunnel served by ramps which do not meet the American for Disabilities Act slope requirements. Also non-complying are the Life Safety Egress requirements governed by the National Fire Protection Association 130 Standards for Fixed Guideway Transit

1. Existing Train Shed West Elevation

and Passenger Rail Systems. These require the evacuation from the shed of fully loaded trains on all 5 tracks in less than 6 minutes. (See Drawing No. 1)

Long years of deferred maintenance have caused the physical conditions of the shed to deteriorate beyond repair. The crumbling tunnel roof and extensive segments of buckling platforms require replacement. The extent of corrosion on the steel structure may not withstand sand blasting without additional reinforcing. The fiberglass light panels on the roof have had to be removed and the entire gutter and downspout drainage system has expired and is not in working condition. (See Drawings Nos. 2 & 3)

The unsatisfactory state of the shed and the Code violations, accentuated the need to create an appropriate gateway into the city - a welcoming arrival place, and thus prompted the Wisconsin Department of Transportation to engage a consultant team to design the reconstruction of the shed in a two phase process, wherein this writer served as the Architect of Record . The design team met and reviewed alternatives at critical decision making points with stakeholders who served as clients representing:

2. & 3. Existing Shed Interior

Wisconsin Department of Transportation
Canadian Pacific Railroad
Amtrak
Federal Transit Administration
Federal Rail Administration
Southeast Wisconsin Regional Planning
Milwaukee City Council
Milwaukee Dep. of City Development
Independence First (ADA Advocacy)

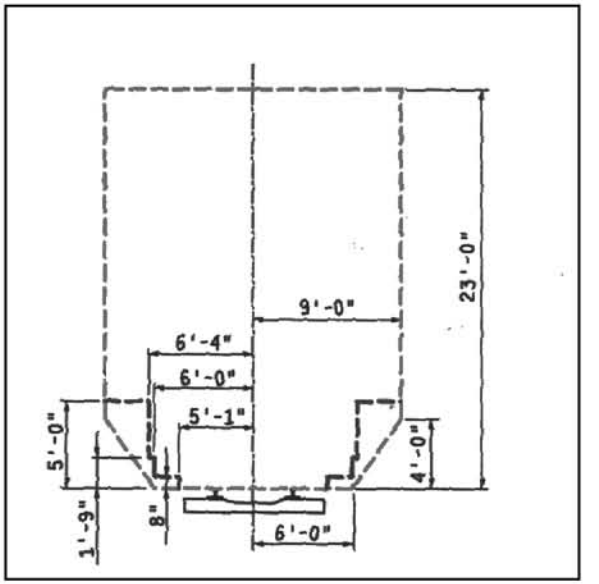
The initial design phases documented, reviewed, evaluated the existing conditions. Subsequently, the design task was divided into three project components for which multiple options were generated by the design team and presented to and reviewed by the stakeholders. The project components examined: track and platform alternate plans; track crossing alternate plans, and several shelter options. Based on the surrogate clients responses, the design team then compiled 3 viable reconstruction alternatives, which eventually led to the selection of one design scheme that was developed into Construction Documents during the second phase of the design task.

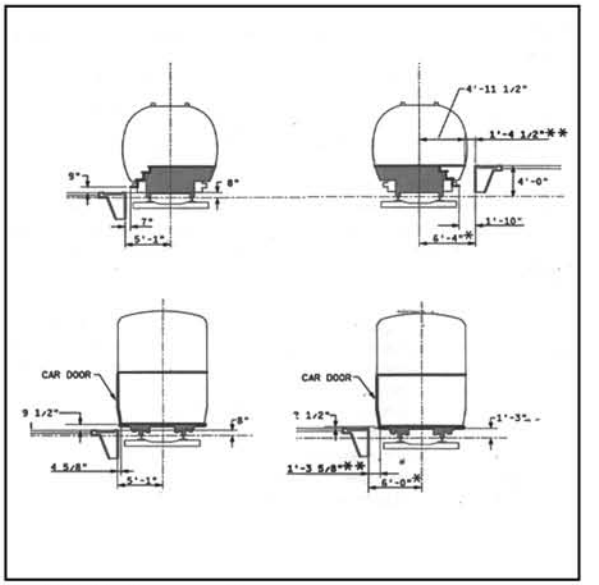
PLAN ORDER

Given the reality that required maintaining the existing CP Rail freight traffic through the shed and the likely future growth of passenger traffic with the addition of regional rail services, a platform occupancy analysis indicated that the existing 5 tracks and 3 platforms were essential. The widths, height and length of the platforms became the first design component subjected to inquiry and the manner by which safe passage and access to the platforms could be achieved, was postponed as a subsequent open question.

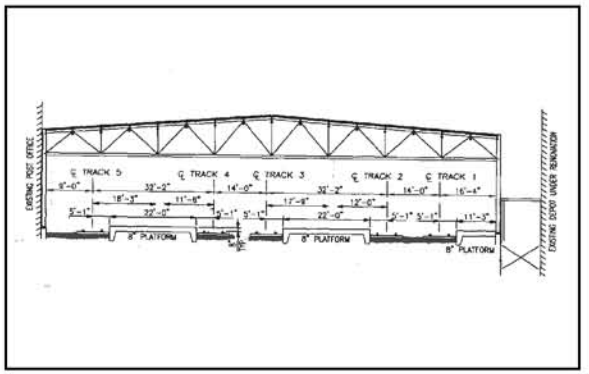
Within the given right-of-way of the shed, platform width became a function of platform height which dictates the clearance requirements from the track as well as clearances within the platform to conform with accessibility guidelines that allow two wheel chairs to pass on either side of stairs, ramps, escalators or elevators. As the platform height increases, the clearance from the track widens and impacts the separation between the platform edge and the passenger train doors.(See Drawings No.4 & 4A).

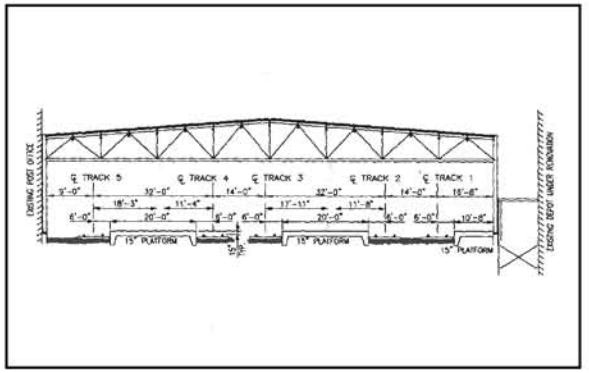
Platforms 8" above the top of rail require a 5'-1" clearance from the center of track, leaving a 7" gap between the platform edge and a train stair or floor These platforms will not provide level boarding on any existing equipment

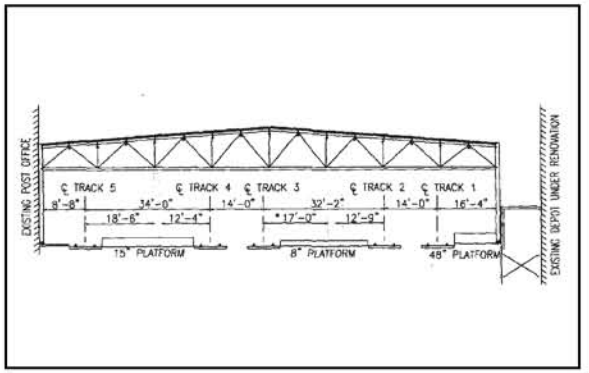




4. AREMA Clearance Diagram
4A. AMTRAK Equipment Floor Heights







5. 6. & 7. Existing Shed Sections with Platform Alternatives

where the floors are either 15" or 48" above the top of rail. Standard 8" platforms would enable the existing tracks to remain in their present location, meet the ADA platform widths and clearances but impose the use of the currently used lifts to comply with boarding accessibility. (See Drawing No. 5).

If the platforms are raised to 15" above the top of rail, they would increase the gap between platform edges and trains to 11" and require a bridge plate to level board existing intercity equipment or the first step on commuter train doors. The platforms would become narrower but still comply with ADA clearances; the tracks would require relocation within the shed. (See Drawing No. 6).

Lastly 48" high platforms would provide level boarding on the equipment currently used for the Amtrak service between Milwaukee and Chicago but increase the gap between the platform edge and train to 15", again requiring bridge plates. Given their restricted application only one 48" platform was combined in a scheme with an 8" and a 15" platform proving level boarding from two tracks. This specific assignment of platforms to equipment, however, would limit flexibility in the operation of train traffic and again require the relocation of tracks. (See Drawing No. 7).

To the stakeholders platforms 8" above the top of rail made the most sense. They did not incur the cost of relocating the tracks, avoided bridge plates and resulted in the widest platforms that achieved wheel chair clearances without having to encroach into the 2'-0" wide tactile platform edges They also offered the most flexible use by both commuter and intercity equipment, with the aid of a lift as it is currently practiced and accepted by ADA guidelines.

The second component to the plan order was a combination of the life safety egress requirements and the placement of track crossings. With the presence of freight trains, at grade crossings options were quickly dismissed as unpredictable and therefore unsafe, even when supplemented with signal coordinated gates that are accepted in suburban commuter stations. To the stakeholders at grade crossings would impede the operations of an urban terminal.

Egress then became the determinant variable. The NFPA 130 standard requires the evacuation of platforms

from fully loaded trains on all tracks in less than 4 minutes and egress to a safety zone outside the shed in less than 6 minutes. The potential presence of 2,414 passengers and train personnel from 5 trains on 3 platforms, required the addition of a second crossing to the existing tunnel , which would have to be refurbished. The options for a second crossing were an additional tunnel or an overhead crossing which could be accessed from the northern platform abutting the station or accessed directly from an existing queuing area within the station.

With an additional crossing, the non-complying ramps to the existing tunnel could be replaced by single stairs from each platform and thereby provide a second means of egress. Extending the ramps to provide a complying slope would have only aggravated the wheelchair clearance issues on the platforms.

Although aligning a new crossing with the queuing area within the station would improve passenger flow, a new tunnel would impact foundations and pile caps on the station building and the shed columns. And remodeling within the newly renovated station with track crossing schemes was considered disruptive and unnecessary. The schemes that gave access to a tunnel or a mezzanine from within the station were therefore given limited consideration. (See Drawings Nos. 8 & 9)

That left two crossing schemes, a new tunnel and a mezzanine accessed from the North platform adjacent to the station. building. In either case ADA compliance would be achieved using elevators linking the platforms at the intersection of stairs and/or escalators.

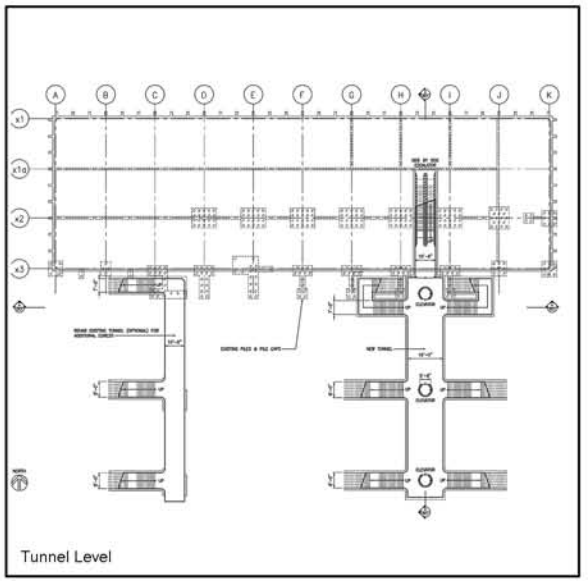
A new tunnel was perceived to contribute significant disruption to the train operations during construction and would have to contend with the high water table that affects the existing tunnel. In turn some stakeholders also objected to low ceiling heights. They were concerned over the inability to see one's destination - the platforms and trains - as well as the security issues of not being seen. (See Drawings No. 10).

An overhead crossing as a mezzanine would have to clear the track by 23'-0" and thus could not avoid the use of escalators , which in combination with stairs and elevators would minimize the passenger objections to the height. The presence of a mezzanine and its related movement components would provide a significant formal event within the shed, avoid any conflicts with the existing foundations, but would require raising the height of the space by replacing the existing roof structure. (See Drawings No. 11).

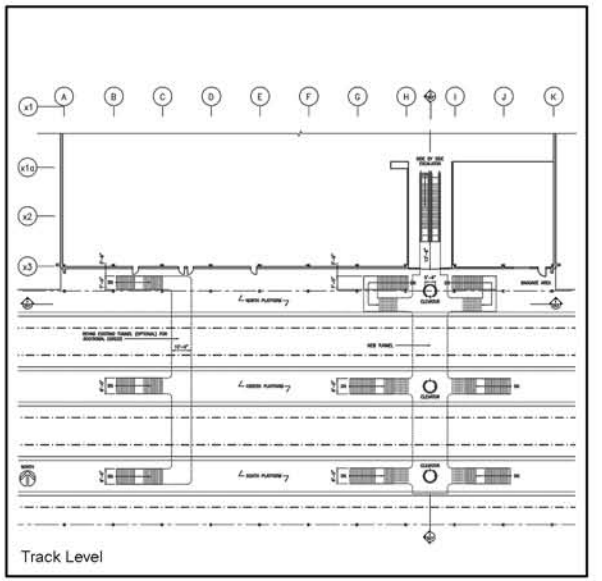
When considered with the third design component, the shed shelter or enclosure, a new mezzanine track crossing with a new raised roof would also address the required ventilation upgrades to exhaust the diesel fumes from both the freight and passenger locomotives. A new raised roof extended an opportunity to consider a 50,000 sq, ft surface with a southern exposure as the base for a photo voltaic array that could engender sufficient electric power to serve the shed as well as an income source from an expected surplus that would be welcomed by the local utility company.

BUILDING ENCLOSURE

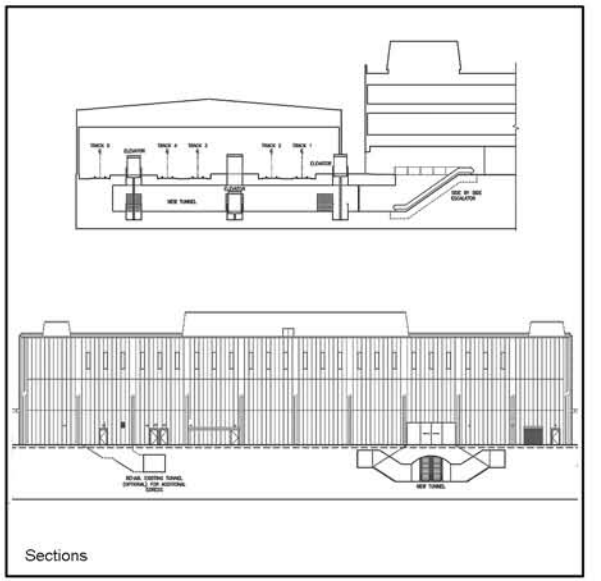
The structural assessment of the facility had made it clear that the adaptive reuse of the existing frame could be feasible if the steel were sandblasted, reinforced, repaired and fitted with new purlins and a roof deck incorporating



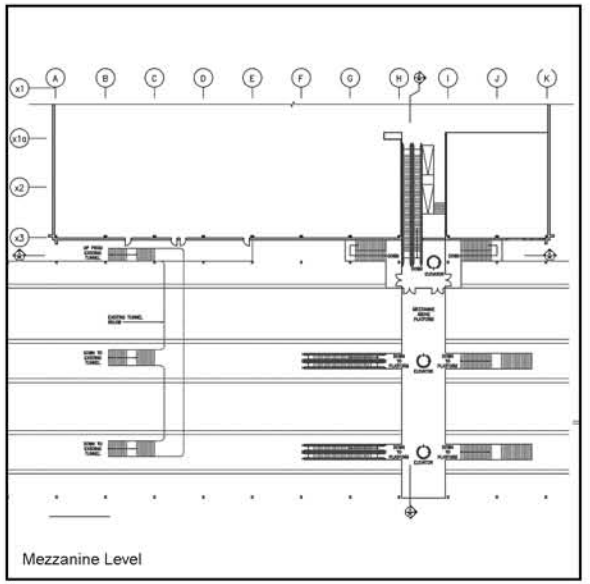
Tunnel Level



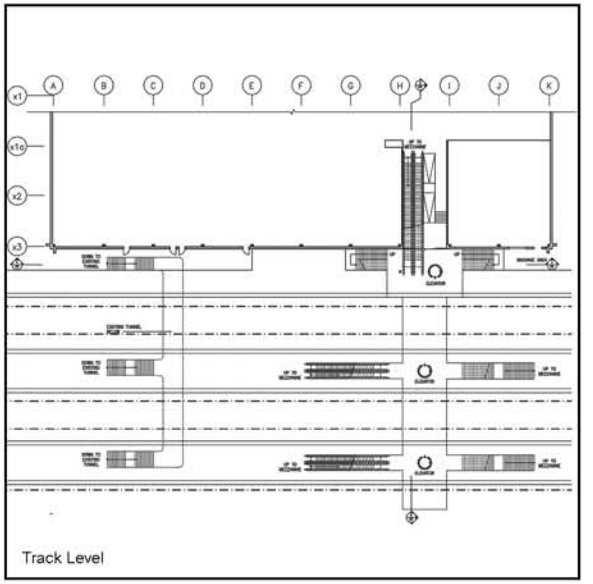
Track Level



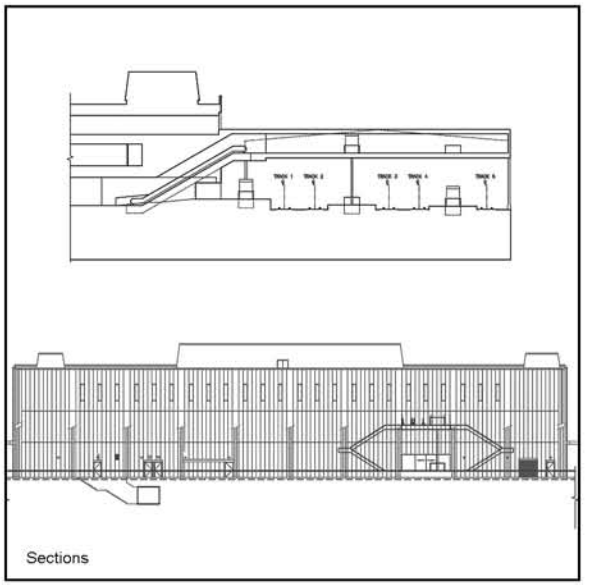
Sections



Mezzanine Level

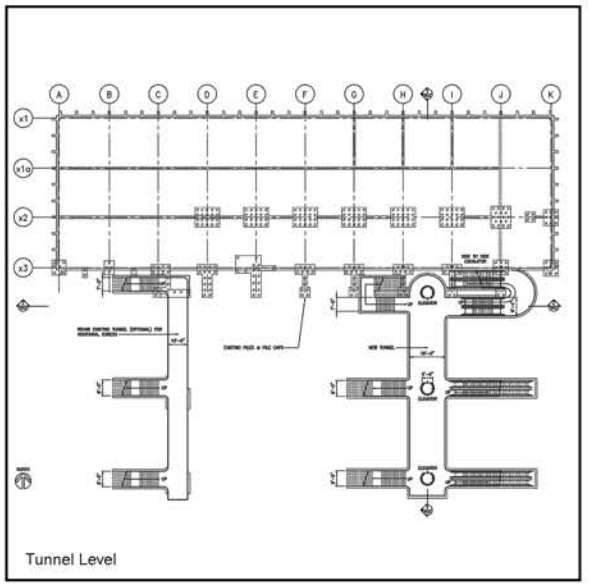


Track Level

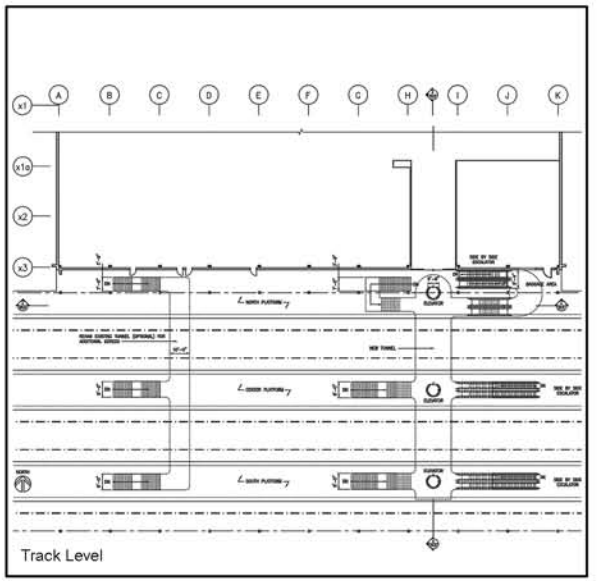


Sections

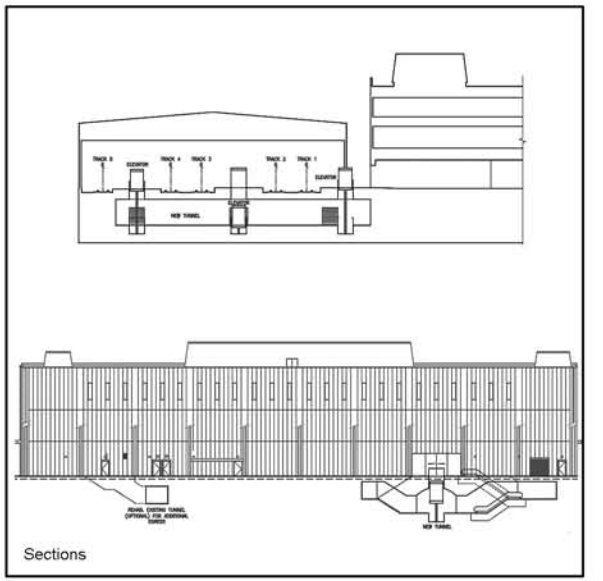
8. New Tunnel Track Crossing with Direct Access from the Station
9. New Mezzanine Track Crossing with Direct Access from the Station



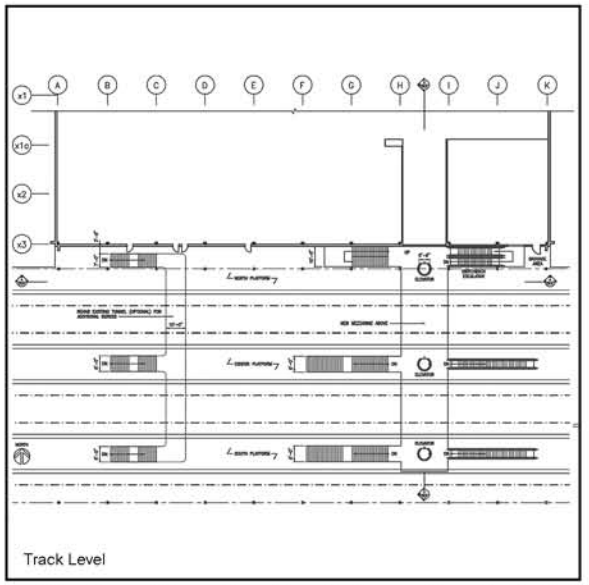
Tunnel Level



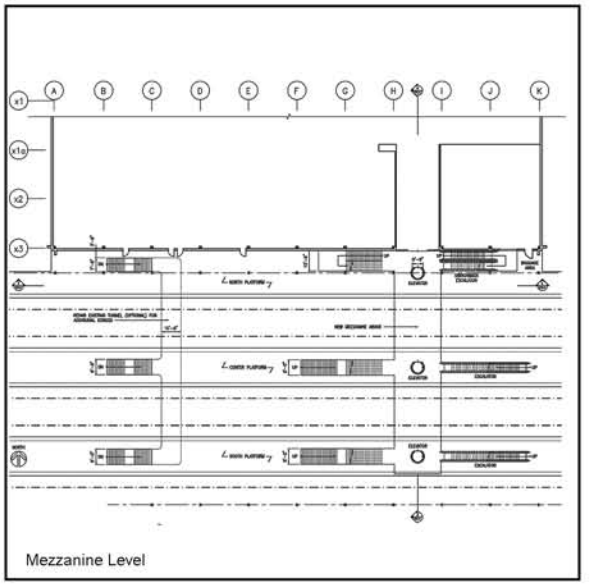
Track Level



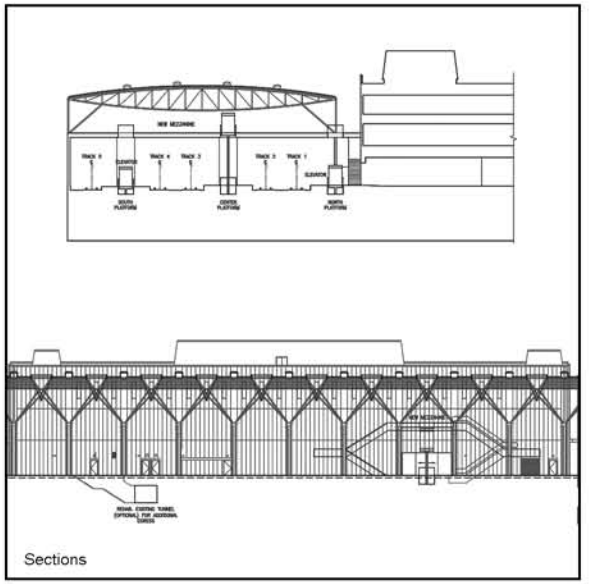
Sections



Track Level



Mezzanine Level



Sections

10. New Tunnel Track Crossing with Access from North Platform
11. New Mezzanine Track Crossing with Access from North Platform

new skylights and ventilation. This could transform both the appearance and performance of the shed and thereby offer a first viable option that given its existing height could be used with a new tunnel track crossing.(See Drawing No. 12 & 13).

A second option removed the shed entirely , selling the steel for scrap and replacing it with individual platform canopies. Glazed canopies would cover the platforms and louvers on both sides of the tracks plus ridge vents engendered a natural draft that would ventilate the diesel locomotive exhaust. When evaluated by the stakeholders, the large number of new columns on the platforms, the concomitant piles required by the poor subsoil conditions and the modest architectural presence, caused this scheme to receive very little support. (See Drawing No. 14 & 15))

A new roof provided the third alternative. Its conception was based first on utilizing the existing wood foundation piles which were assessed in sound condition and replacing the pile caps. Since the columns would be replaced, whether at the existing height with a new tunnel or raised 10'-0" to accept a mezzanine track crossing, a new structure had to integrate daylight, natural ventilation and a photo voltaic array, while spanning the 125'-0" shed supported by columns 25'-0" o.c.

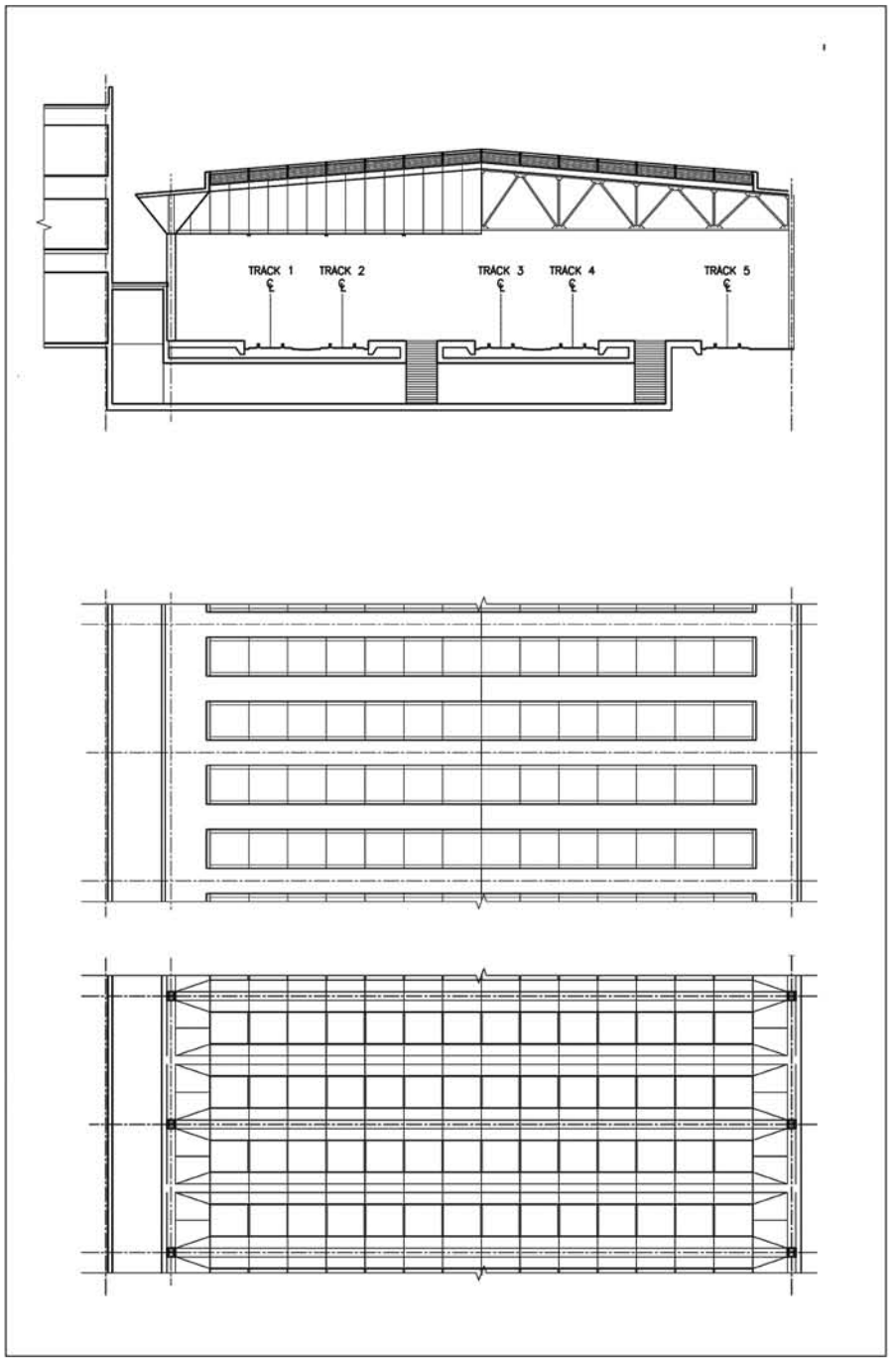
These programmatic constraints gave rise to a three dimensional V shaped lenticular truss at each column, fabricated entirely of HSS welded steel tube sections with clevis connected diagonal bracing bars in each truss panel section. The opening between the top truss chords was infilled by skylights and the roof between trusses was spanned by a deep cold-formed sheet steel box roof deck that accepted three wind driven turbines in each bay over each pair of train tracks. The efficient depth to span ratio of the curved truss chords, 15'-0" deep at the center of the span, provided an adequate South facing slope that could accept the installation of the photo voltaic arrays between the skylights. A new roof with a new tunnel crossing would replace the existing volume (See Drawings Nos. 16 & 17) A mezzanine track crossing, however, would require the raising of the new roof. (See Drawings Nos. 18 & 19).

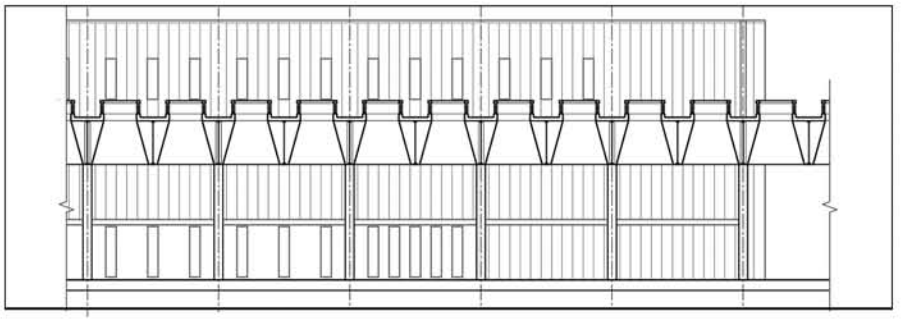
VOLUMETRIC ORDER

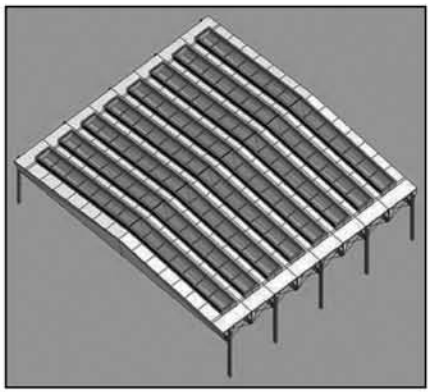
The assembly of a raised new roof structure, containing a mezzanine overhead crossing of three platforms 8" above the top of five existing rail tracks, proved to the project stakeholders the preferred design response for the reconstruction of the train shed. As a design *parti* , a point of departure, it also became the basis for the second phase of the design process - the production of construction documents.

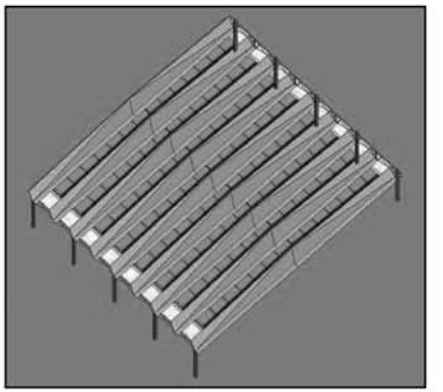
The volumetric conception which guided the detailing of building systems, is best characterized as a perimeter outer shell containing the track crossing implement that extends the queuing area within the station as an embedded autonomous object. The enclosure would consist of the structure - columns and trusses, wrapped by a by-passing skin: a glass North wall on each side of the station building and an opaque South closure against the existing post office building. Even the roof deck would be lifted by a reveal over the truss top chords to emphasize the distinction between frame and skin. The East and West ends would remain open to accept the train traffic, except for a glass curtain over the end trusses as protection from the elements; it also serves to convey the presence on the trusses on the enclosure. (See Drawings Nos. 20 & 21)

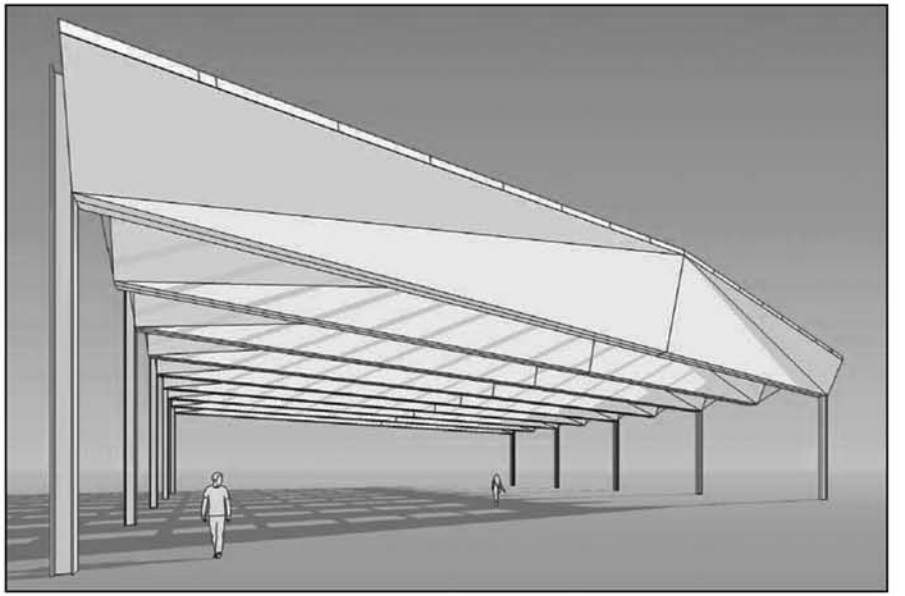
The track crossing mezzanine was developed as an elemental apparatus - a circulation device or appliance - con-



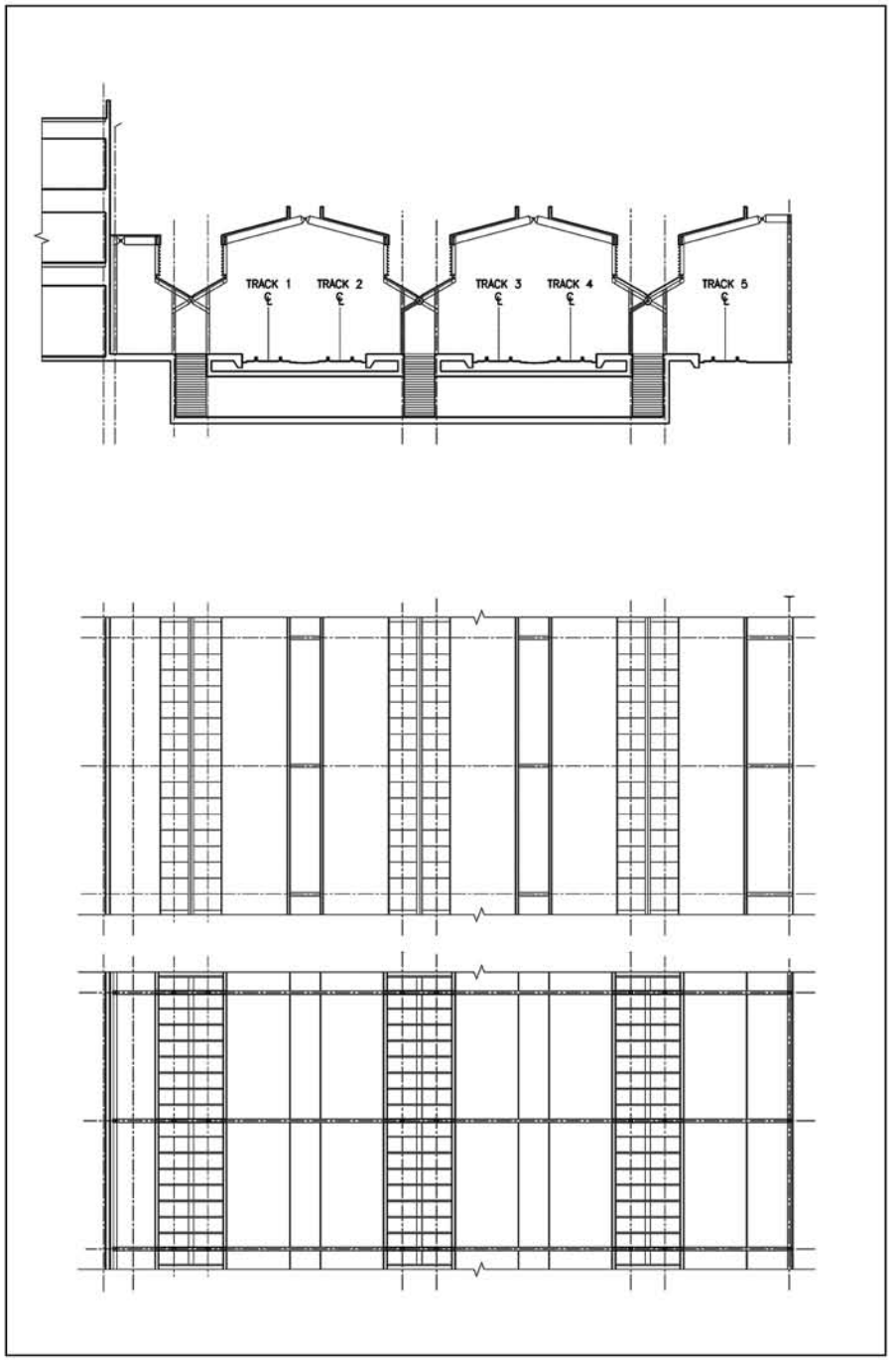


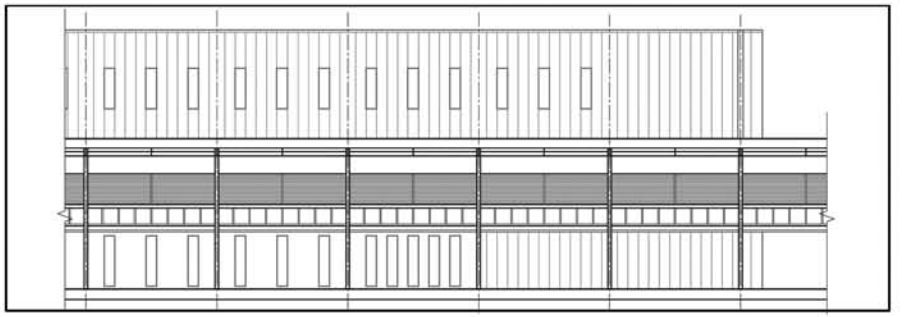


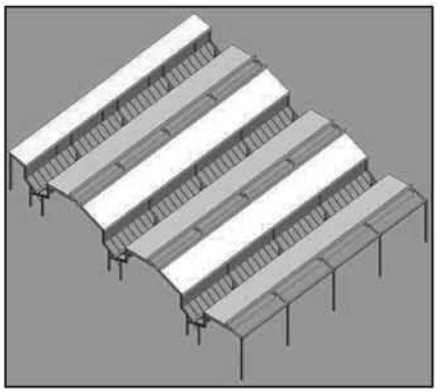


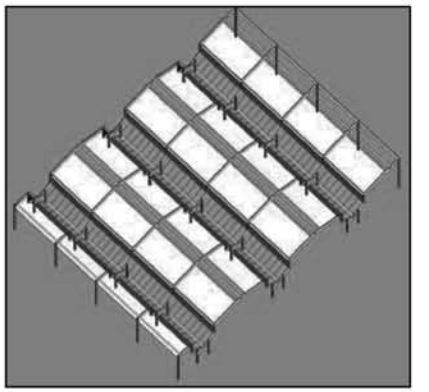


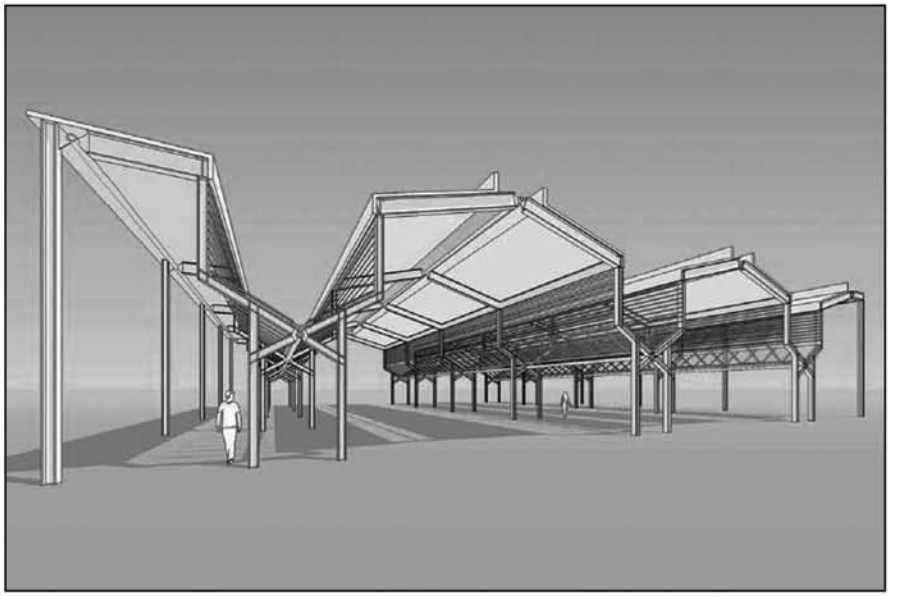
12. & 13. Refurbished Existing Roof & New Tunnel Track Crossing



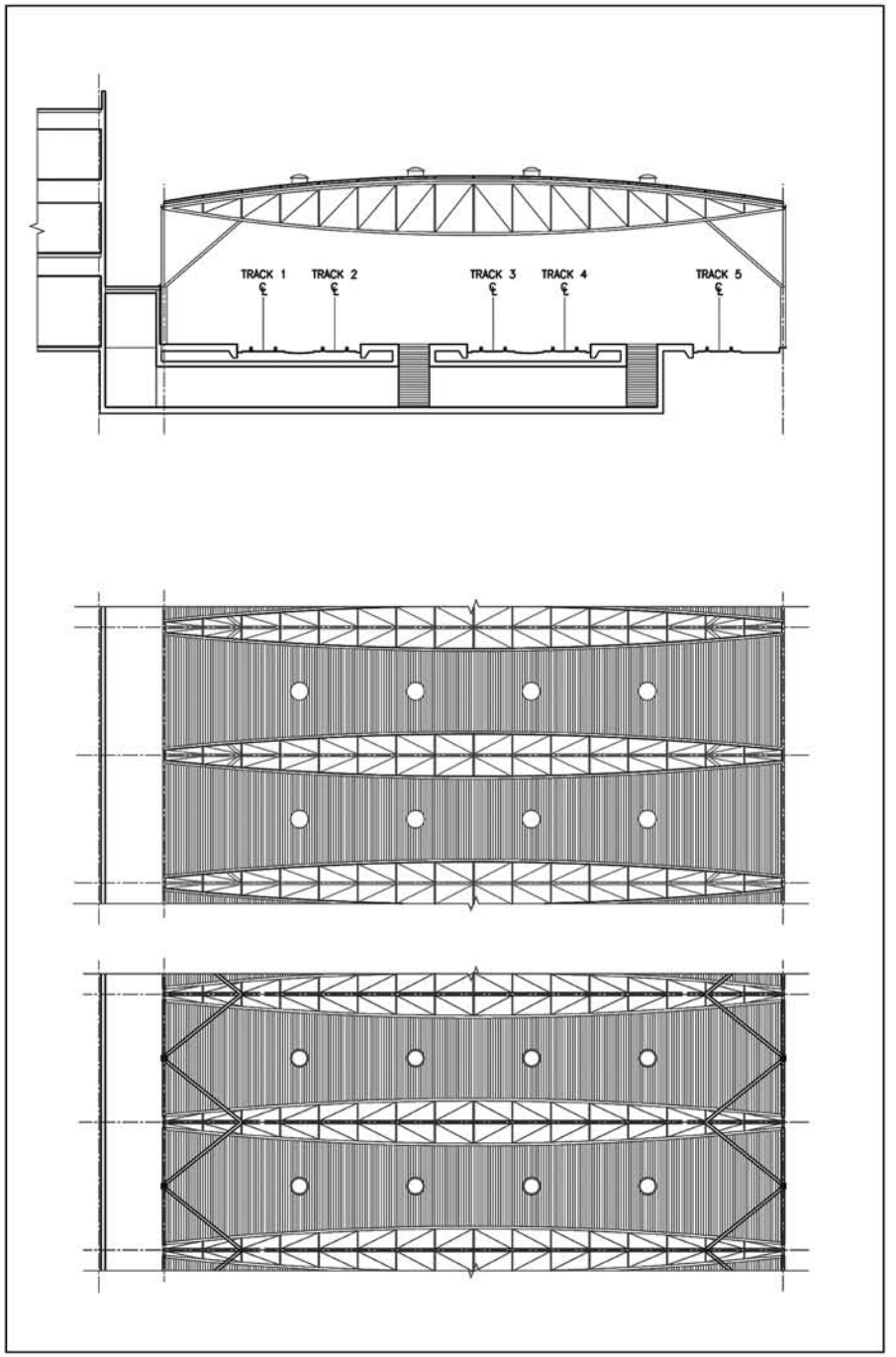


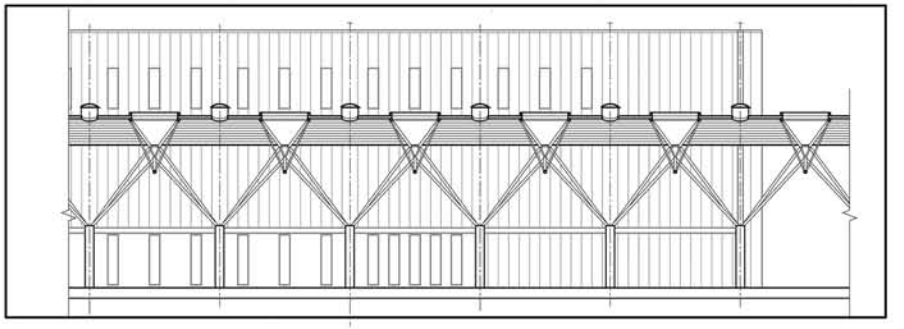


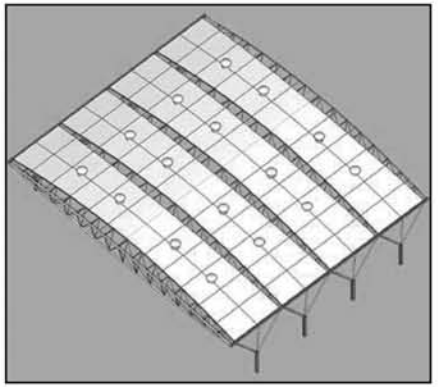


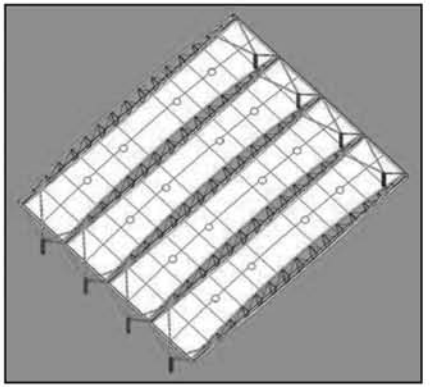


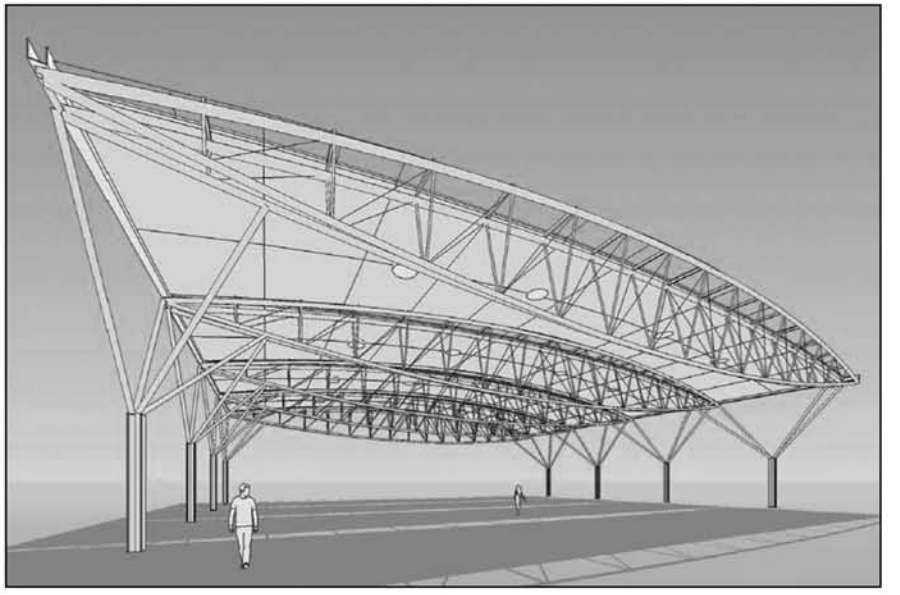
14. & 15. New Platform Canopies with New Tunnel Track Crossing



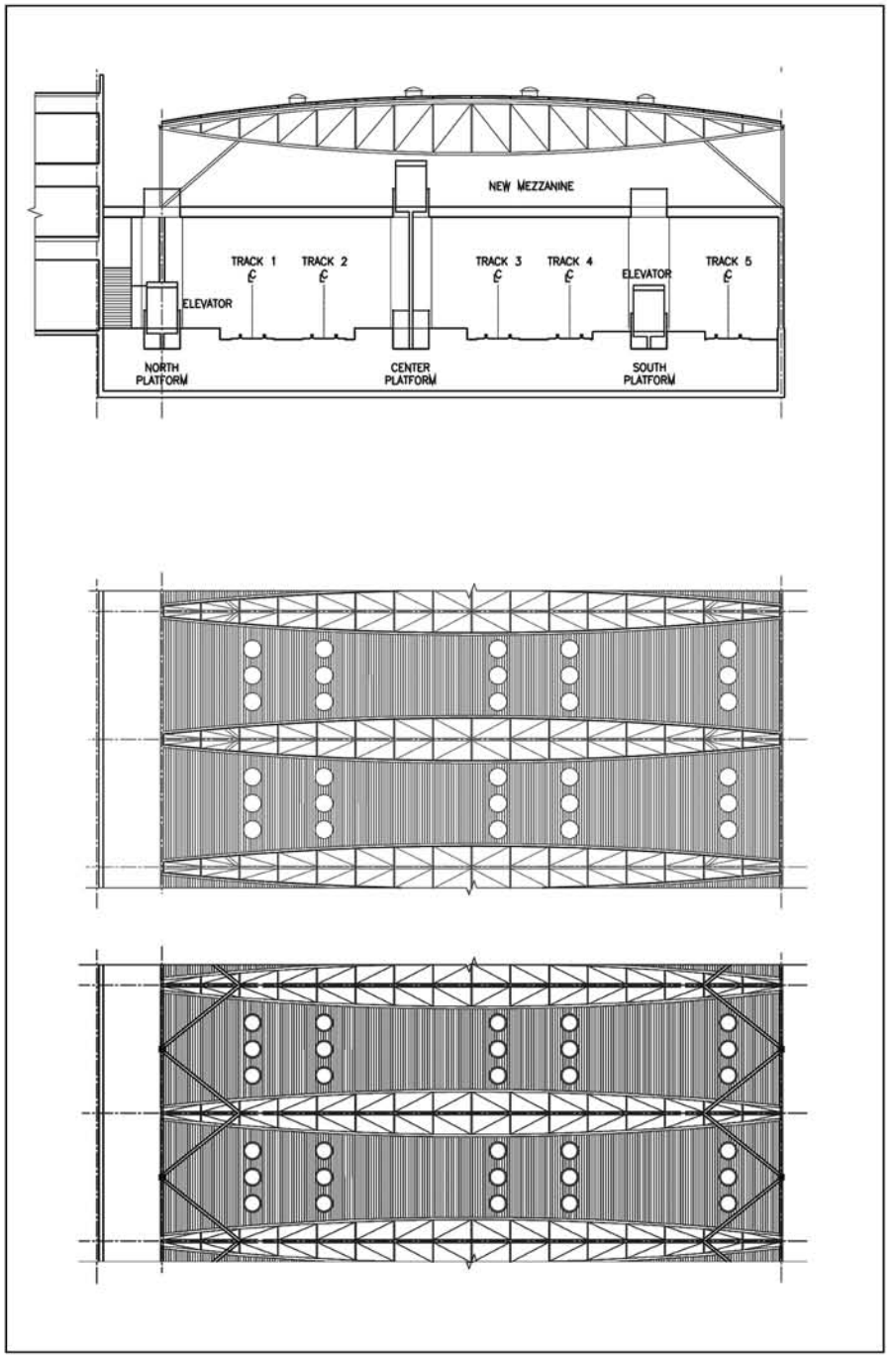


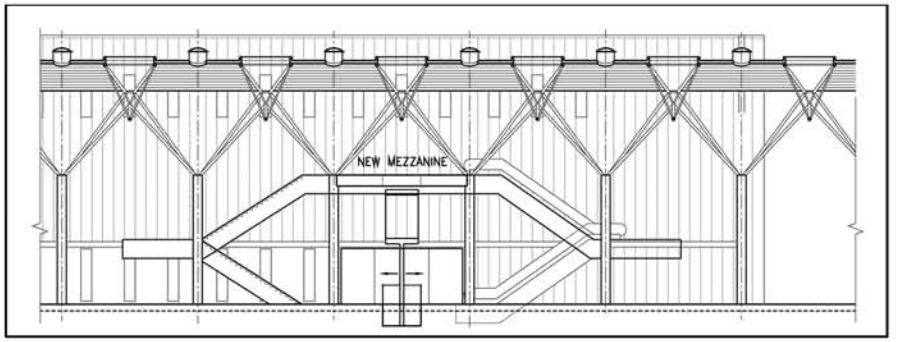


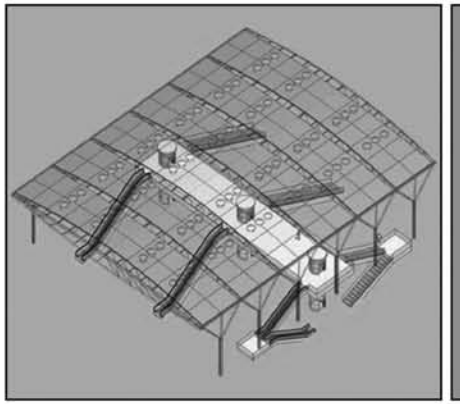


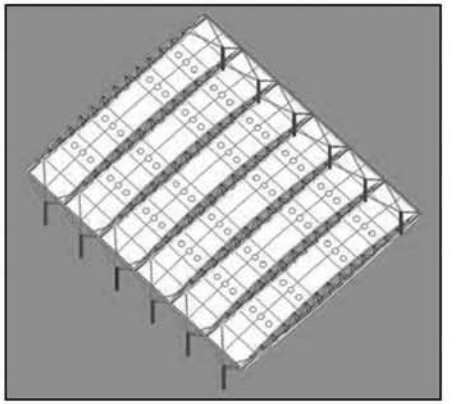


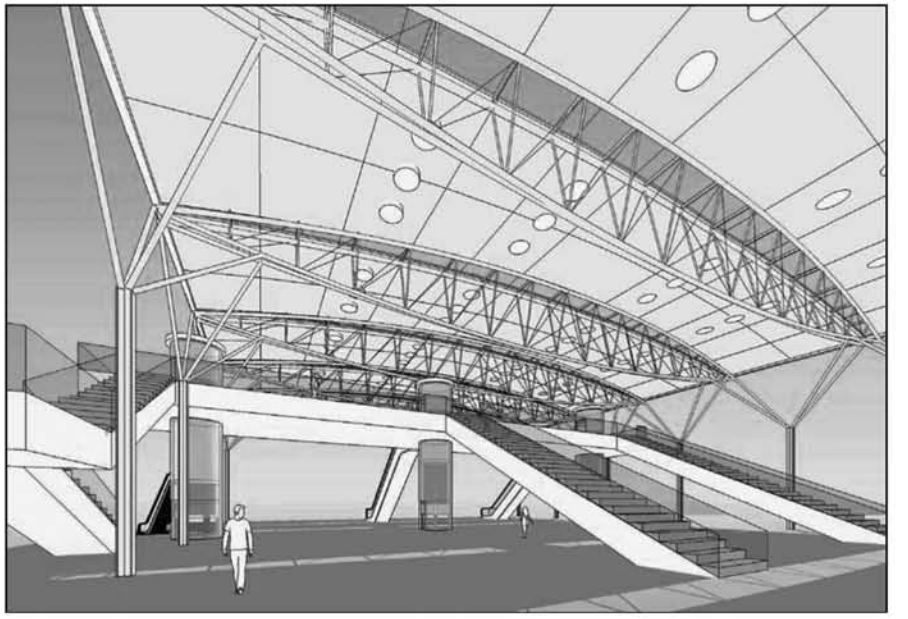
16. & 17. New Roof with New Tunnel Track Crossing











18. & 19. New Raised Roof with New Mezzanine Track Crossing

taining the stairs, escalators and elevators intentionally made blue, as an acknowledgement to Amtrak's identity, the prime user of the facility. In turn, the blue object sits within a white shell, wherein a tubular structure, intended to deter avian roosting, establishes its identity against the uninterrupted surfaces of the by-passing roof and walls. (See Drawings Nos. 22, 23, 24 & 25)

EPILOGUE

The interactive design process yielded construction documents for a structure that maintained the existing track configuration and spacing, reused the existing timber pile foundations and complied with all the life safety and accessibility requirements while creating and appropriate gateway and welcoming arrival and departure space for Milwaukee. The new structure enhances the existing rail passenger and freight operations and will accommodate long term future passenger growth. (See Drawings Nos. 26 & 27). It will also:

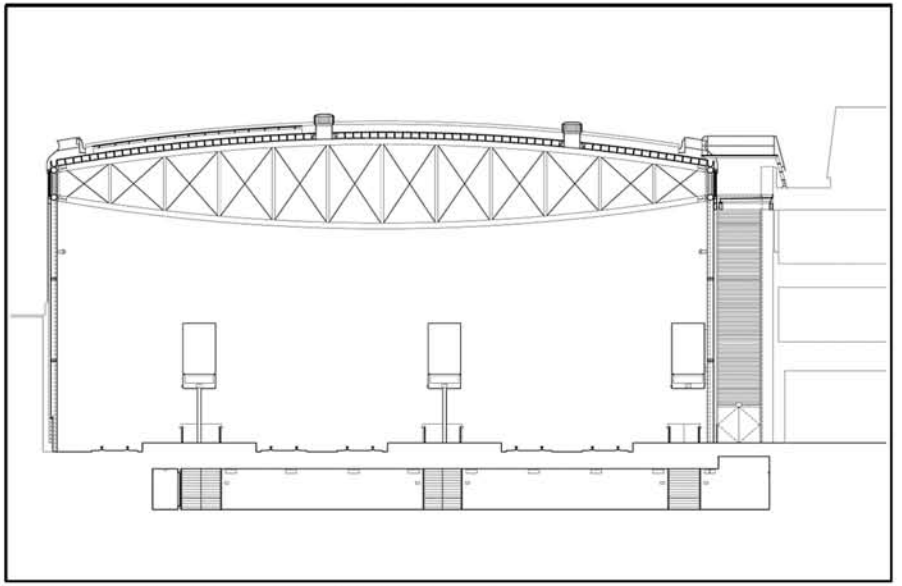
a. Maximize daylight from the skylights integrated into the roof structure.

b. Ventilate the shed from the diesel locomotive pollutants using wind driven turbines, and

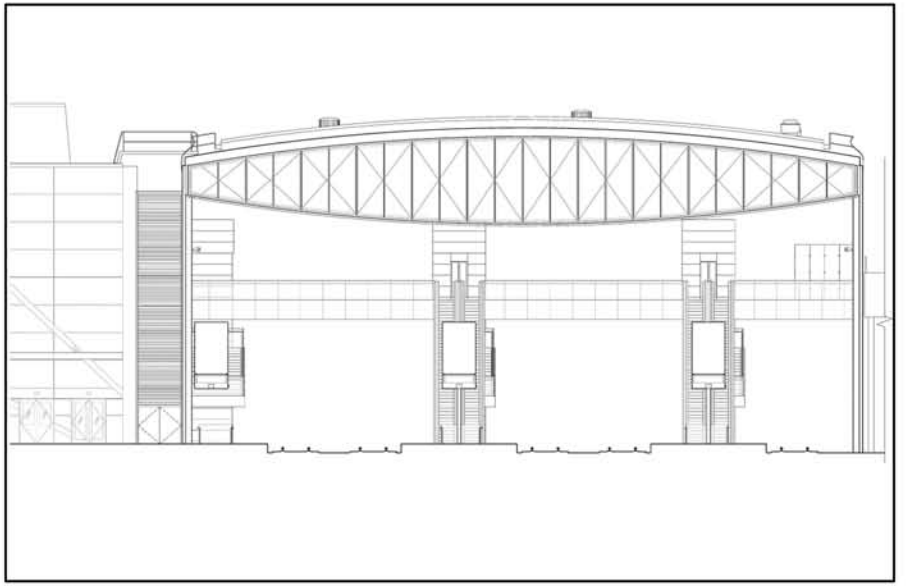
c. Generate with a photovoltaic array 75 KW - more power than required by the facility. (See Drawings Nos. 28 & 29).

But more important than its functional and technical accomplishments, the reconstructed train shed demonstrates that a pragmatic adaptive reuse, which integrates efficient systems, can also engender a new public presence that will complement and enhance train travel and will provide passengers a memorable impression of Milwaukee.

The contract documents for the project are scheduled to be issued for bidding during the Fall of 2013 with construction expected to begin in the Spring of 2014.



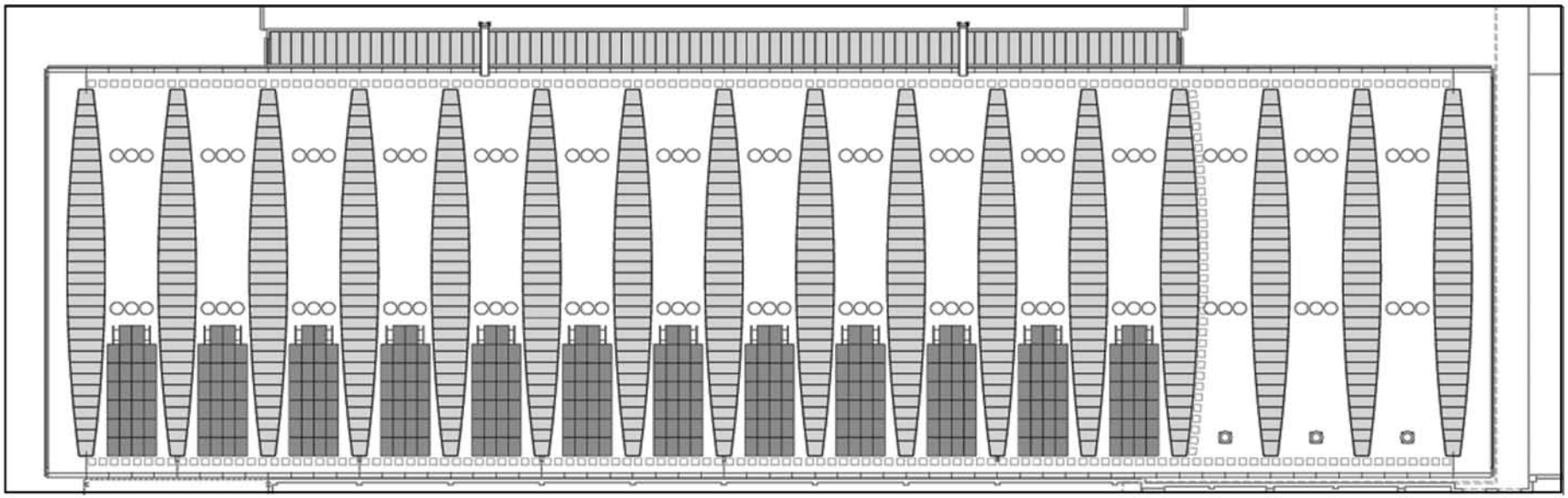
20. Cross Section at Reconditioned Existing Tunnel

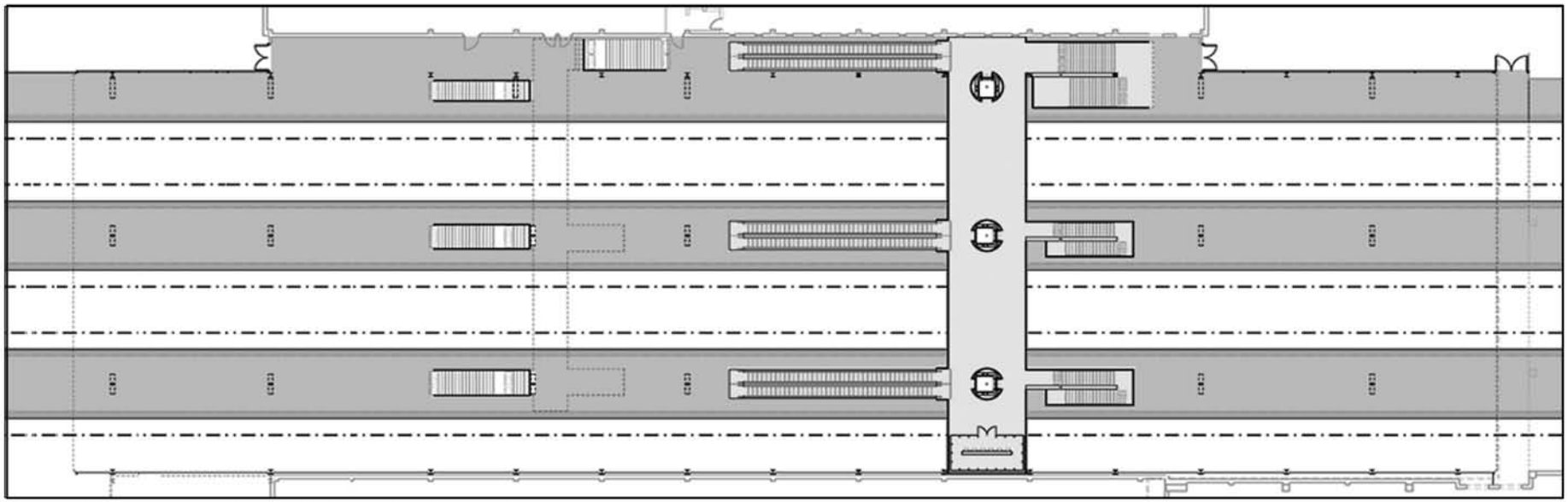


21. West Elevation

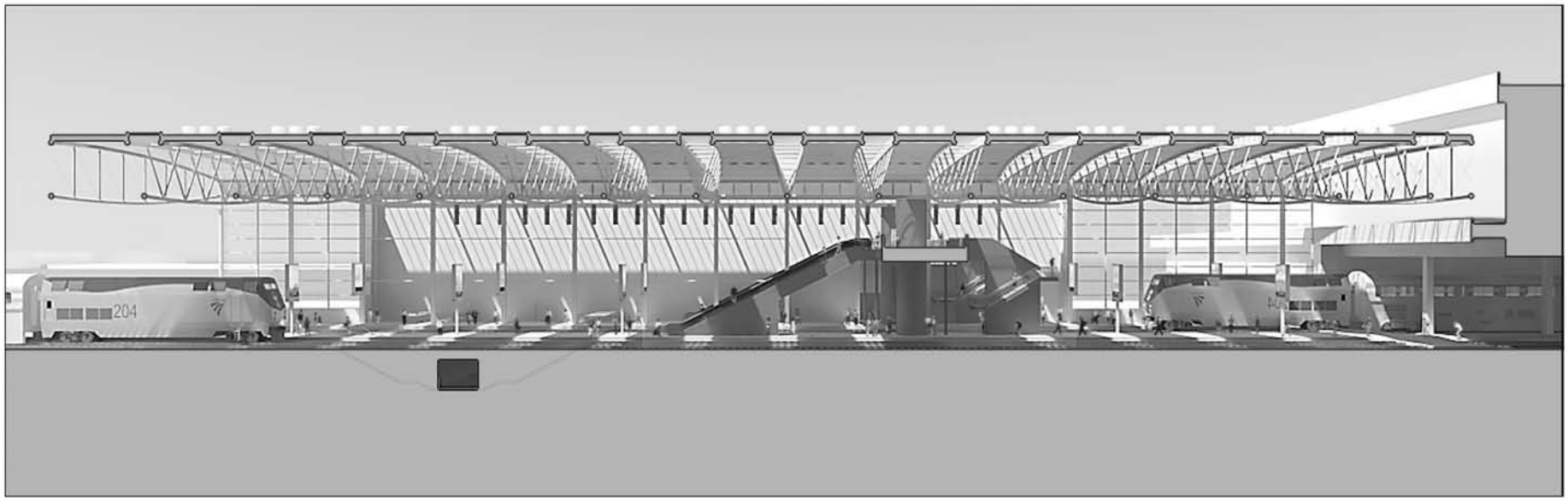
22. NEW SHED LOOKING EAST AT MEZZANINE ESCALATORS

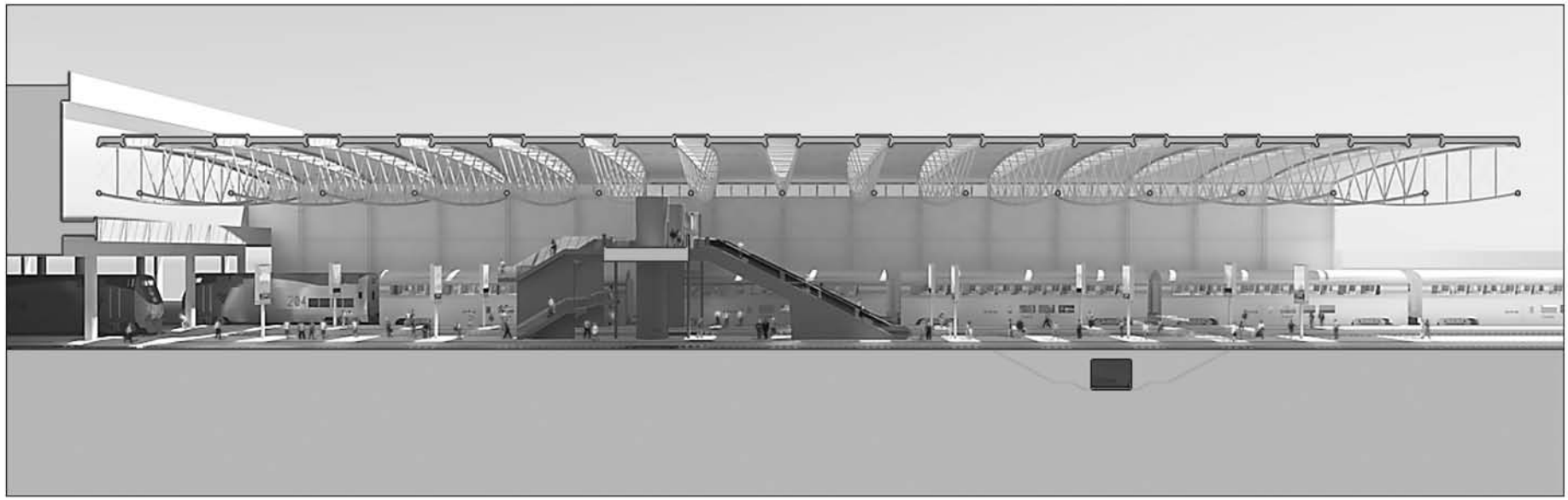
23. New Shed Looking West at Mezzanine Stairs



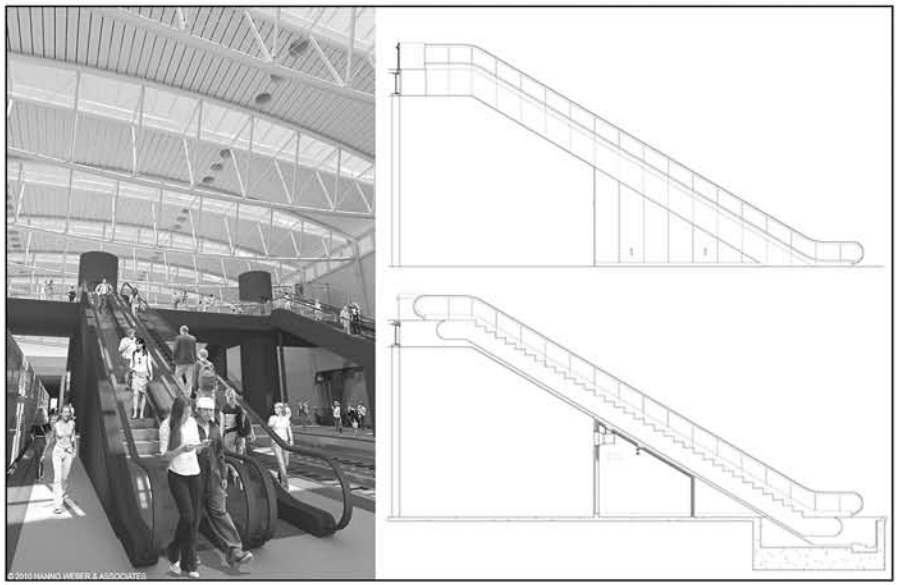


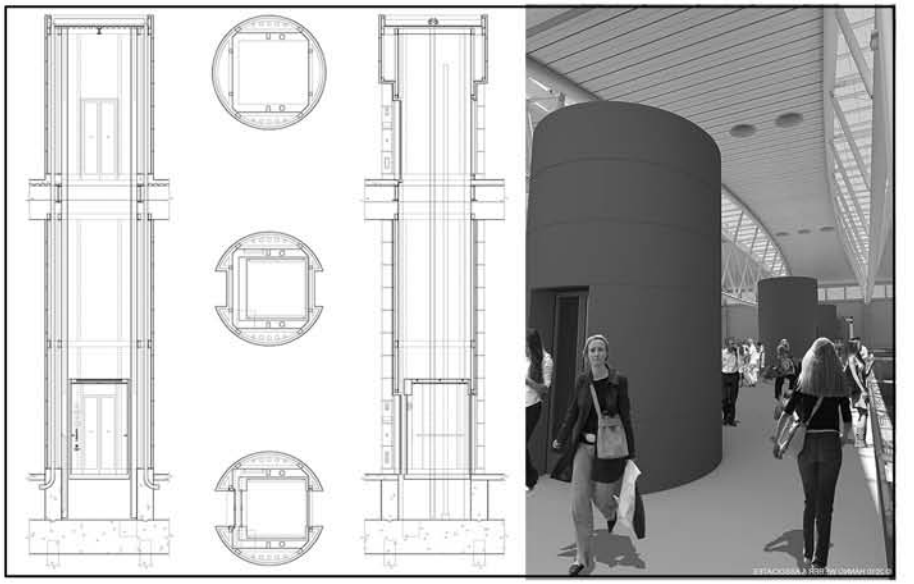
24. Roof Plan Showing Skylights, Photovoltaic Panels & Ventilators
25. Mezzanine & Platform Plan

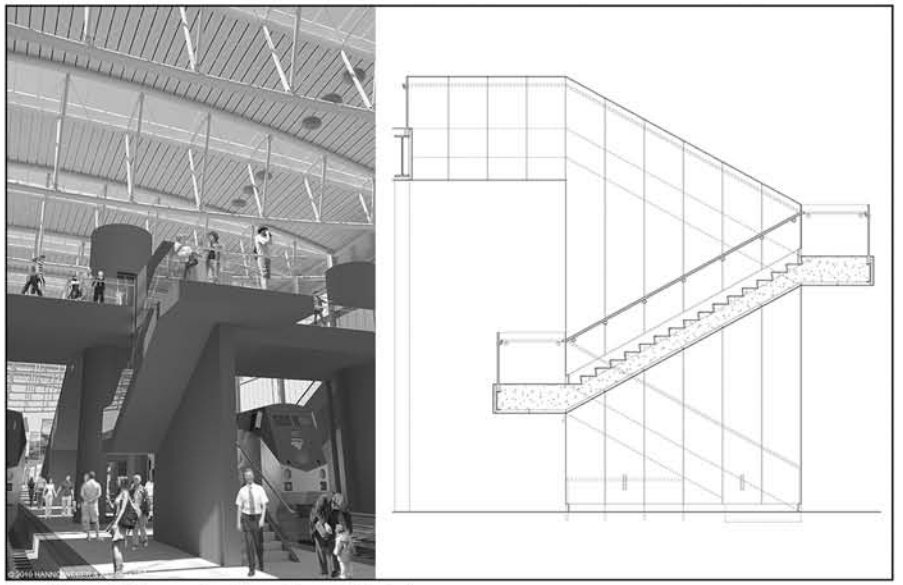


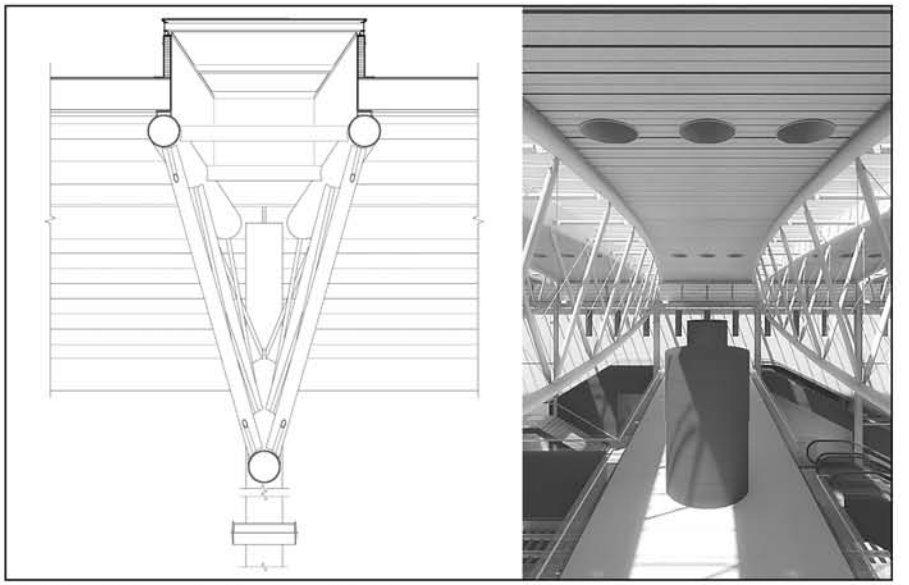


26. Longitudinal Section Looking North toward the Station
27. Longitudinal Section Looking South









28. View of Mezzanine Escalators & Detail
29. View of Mezzanine Srairs & Detail

30. View of Mezzanine Elevators & Detail
31. View of Roof Trusses, Skylights and Detail

20. POSTSCRIPT

The ten case studies illustrated in the previous segments were selected from a twenty year body of work to represent a variety of contexts, scopes and scales of development and types of programs. With the exception of the St. Thomas Church, they were designed in urban settings and thereby demanded design concerns that engaged their surrounding contexts. One could also argue that Sacheon City Hall in effect created the seed for the subsequent urban development order in a pristine rural setting.

Of the ten projects, eight were prompted by design competitions and two by direct commissions. Six competition projects were finalists of which four were awarded first place and three built. Five of the case study projects could therefore be sensed, experienced and judged as physical architectural settings created by a process of inquiry that had the benefit of "typology" as the intellectual basis of their design process and product.

The Leesburg Municipal Government Center accomplished all the urban restoration tasks it was intended to perform and more. It healed the fabric of a town block and created connections to its surroundings. It also contributed a new urban focus, the Town Green - and new town symbol, the Council Chamber.

The composition is an assembly of elements that relies on both the classical referents of "gaskets" linking segments and a constructivist strategy of "interpenetration". And even though the enclosure may give the impression of a traditional brick masonry building, with inferences to historic sources, it is the result of a typological dialogue with the surrounding context.

After twenty years, the Town Hall, Town Green and Parking Structure are wearing well and maintaining their spatial qualities that support the iconographic responsibilities that befit a public institution – a memorable architecture that is appreciated by both constituents and visitors. As characterized by the architectural media commentary when the project was first published " the design response reinforces the notion that an institution born of the people, can in turn serve them well and for once the platitude fits the place".

In Pusan, South Korea, the Metropolitan Art Museum has been a success story reflected in a continuous growing attendance during its thirteen year history that is exceeding five thousand visitors per week.

Although the open park that engendered the layered site composition facing the bridge approach from the South is gradually disappearing as a result of extensive new development, the arrival experience remains intact. The cross path access from the two side streets retain their exposure to the primary building content – the repetitive cellular fingers of the permanent galleries projecting over and engaging the plinth. This volumetric presence is entirely attributable to the *parti* derived from formal choices that were based on "tyopology".

Within the museum, daylight is providing the richness and variation in both the exhibit spaces and the multi-level atrium spine. And the galleries, both permanent and temporary offer the neutral environment that serves as a non-intrusive background to display art. But the museum is more than a container for objects and images. Given its form and public presence, it has become one of Pusan's cultural icons and destinations.

Visitors meander through the gardens, attend concerts and lectures in the atriums and visit exhibits in the context of a building that is rooted to its site as an architectural composition relying on a literacy of "types".

If there is a model on how to create a new settlement while respecting and even enhancing a natural setting, it is the Sacheon City Hall Complex. As noted previously, the relationship between the new building and the adjacent nature preserve, is founded on traditional Korean temple precedents. The building components form an ensemble of interpenetrated volumes which not only tell the story of their content – Council Chamber, Public Service Hall and Administration, but support the essential ceremonial spatial sequence of arrival, transition and destination at the loggia under the raised Administration wing which also allows and invites passage through to the nature preserve.

The constructivist elemental "typology" of a recognizable volume for each of the functions is in turn reinforced by a distinctive enclosure system - stone, glass and metal - on each of the three buildings forming the public open space with a civic presence that engenders gathering by the community.

The complex has all the attributes to become the new town center for the consolidated two existing municipalities. As a design intervention, it validates the human need for viable, political and social centers with a strong sense of place within which are developed community spirit, as well as the affinity, belonging and loyalty to a locality.

The St. Thomas Church Addition and Milwaukee Train Shed represent projects where the architect had the benefit of a dialogue with the stake-holders or representatives of interest groups. Whenever the involvement of laymen is suggested in the design process, the immediate criticism is couched the limited knowledge or experience in users who will generally select what they know as opposed to what could be. A design dialogue based on "types" however enables the architect to expand choices on what could or ought to be in explicit and tangible terms that lay clients are able to evaluate and make weighed choices.

The design of the new sanctuary at St. Thomas was based on comparing and assessing seating arrangement "types". It illustrates the transformation of the conditions resulting from living for forty years in the existing worship space into a space bathed in daylight and configured to enhance the collective presence of the congregation.

Similarly, the alternates for a new site plan, as "types", surfaced cultural values vis-à-vis the surrounding world, by the placement of a new chapel, the new sanctuary and the addition of a new forecourt, as a mediating outdoor space that would improve the accessibility of elderly parishioners as a driveway. But more importantly, it would provide a space as part of a ceremonial sequence to enter worship. Again, tangible options enabled participants to engage the design of spaces and places as an integral part of their identity as a congregation with a mission as a community entity.

The value of designing as an explicit deliberative dialogue between stake-holders and architect is again demon-strated in the Milwaukee Train Shed. In this case, one would have expected a client , represented primarily by prag-matic engineers to have gravitated to design options that minimized

expenditures and maximized practical if not prosaic design responses. Contrary to the stereotype, the enriched array of “type” choices with which to address the reconstruction, enabled the participants to expand their vision and scope..

True, the functional parameters of track access and emergency egress, the requirements for ventilation and daylight plus the reality of an existing structure that did not merit reuse, gave rise to a new mezzanine track crossing and a new roof option. In turn the new roof option surfaced the opportunity to include a photovoltaic array to generate electric power. But the technical demands also engendered a new spatial vision that was judged to be appropriate for arrival and departing train travel in Milwaukee.

It should by now be evident to the reader that the search for a logic to form making in architecture requires the designer to acquire a literacy of precedents – collections of generalized sets of formal and spatial configurations with which to accommodate life.

“Typology” has been an invaluable tool- a mode of thinking, of organizing knowledge and give form to buildings and places –all supported by the privilege of a cumulative exposure and critical observation to architecture and urbanism over many years.

Last and not least “typology” has provided the reassurance that affective designing which adopts standards, skills and patterns from the world around us and emulates proven models, mutable constructs that are worthy of attentive translation and transformation to appropriate contexts and situations should not be feared for a presumed absence of innovation, but welcomed as a means to demystify design and become an intellectual discipline - the logical and reasonable alternative to stylistic novelty.

Hanno Weber, January 2012

DRAWING AND PHOTOGRAPH SOURCES

3. MODERNITY & TYPOLOGY

3.1 Stewart Cohen & Steven Hurt Unpublished Master Thesis Cornell University
3.2 Le Corbusier – Volume 2 *Œuvre Complete* 1935
3.3 to 3.14 Hanno Weber 1981

4. THE MORPHOLOGY OF PLANS

4.1 to 4.10 Student Case Study Assignment Washington University 1979-80
4.11 & 4.12 Student Design Project Washington University 1979
4.13 & 4.15 Student Case Study Assignment Washington University 1979-80
4.14 & 4.20 Hanno Weber 2002
4.16 to 4.19 Student Case Study Assignment Washington University 1979-80

5. THE ORDER OF STRUCTURE

5.1 to 5.3 Hanno Weber 2002
5.4 to 5.6 Student Case Study Assignment Washington University 1979-80
5.7 to 5.9 Student Design Project Washington University 1979
5.10 to 5.12 Student Case Study Assignment Washington University 1979-80

6. VOLUMETRIC ASSEMBLIES AND THEIR MORPHOLOGY

6.1 Le Corbusier – Volume 2 *Œuvre Complete* 1935
6.2 to 6.4 Student Case Study Assignment Washington University 1979-80
6.5 & 6.6 Hanno Weber 2002
6.7 to 6.10 Student Case Study Assignment Washington University 1979-80
611 & 6.15 Hanno Weber 2002
6.12 & 6.13 Student Case Study Assignment Washington University 1979-80
6.14 Student Design Project Washington University 1979
6.15 Student Case Study Assignment Washington University 1979-80

7. THE ORDER OF ENCLOSURE

7.1 to 7.2 Hanno Weber 2011
7.3 & 7.6 Hanno Weber 1996
7.4 Nils Ole Lund 1980
7.5, 7 & 8 Student Case Study Assignment Washington University 1979-80
7.9 & 7.10 Student Case Study Assignment Washington University 1979-80
7.11 & 7.12 Hanno Weber & Associates 1987
7.13 Student Case Study Assignment Washington University 1979-80
7.14 & 7.16 Hanno Weber 2011
7.14 & 7.17 Kathleen Hess 2010
7.19 & 7.20 Hanno Weber 1980
7.21 Hanno Weber 2002
7.22 Le Corbusier –*Œuvre Complete* 1952-1957

8. RESPONDING TO A CONTEXT

8.1 to 8.3 Hanno Weber 1981
8.4 & 8.5 Hanno Weber 2002
8.6 to 8.10 Hanno Weber & Associates 1987
8.11 & 8.12 Hanno Weber 2002
8.13 to 8.15 Hanno Weber & Associates 1995
8.16 & 8.17 Hanno Weber & Associates 1991
8.18 & 8.19 Hanno Weber & Associates 1993
8.20 to 8.23 Hanno Weber & Associates 1996
8.24 & 8.25 Hanno Weber & Associates 1998
8.26 & 8.27 Hanno Weber 2002

10. CASE STUDY I

10.1 & 10.2 Town of Leesburg Design Competition Document 1987
10.3 to 10.16 Hanno Weber & Associates 1987
10.17 & 10.18 Paul Madsen 2005
10.19 & 10.20 Michael Dersin 1993
10.21 to 10.24 Steven Hall of Hedrich Blessing 1992
10.25 to 10.27 Hanno Weber & Associates 1988
10.28 to 10.38 Steven Hall of Hedrich Blessing 1992

11. CASE STUDY II

11.1 & 11.2 Hanno Weber & Associates 1993
11.3 Hanno Weber 2002
11.4 to 11.10 Hanno Weber & Associates 1993
11.11 Il Shin Architects 1993
11.12 Il Shin Architects 1998
11.13 to 11.15 Kathleen Hess 2010
11.16 to 11.18 Hanno Weber & Associates 1993
11.19 & 11.20 Kathleen Hess 2010
11.21 & 11.22 Hanno Weber & Associates 1993
11.23 Il Shin Architects 1998

12. CASE STUDY III

12.1A & 12.1B Hanno Weber 2002
12.2 to 12.22 Hanno Weber & Associates 1996
12.23 & 12.24 Il Shin Architects 1996

13. CASE STUDY IV

13.1 & 13.2 Korean High Speed Rail Contract Authority – Design Competition Document 1996
13.3 & 13.4 Hanno Weber 1996
13.5 to 13.21 Hanno Weber & Associates 1996
13.22 & 13.23 Kathleen Hess 2010
13.24 to 13.35 Hanno Weber & Associates1996
13.36 to 13.38 Hanno Weber

14. CASE STUDY V

14.1 Hanno Weber & Associates 1997
14.2 Oklahoma Memorial Design Competition Document 1997
14.3 to 14.7 Hanno Weber & Associates 1997
14.8 & 14.11 Gerald Ratto 1997
14.9 & 14.19 Hanno Weber & Associates 1997
14.20 Gerald Ratto 1997

15. CASE STUDY VI
15.1 to 15.6 Hanno Weber & Associates 1998
15.7 to 15.10 Hanno Weber & Associates 2010
15.11 to 15.20 Hanno Weber & Associates 1998
15.21 to 15.23 Hanno Weber & Associates 2010

16. CASE STUDY VII
16.1 Sacheon City Hall Design Competition Document 2003
16.2 to 19.9 Hanno Weber & Associates 2003
16.10 to 16.17 Il Shin Architects 2003
16.18 to 16.29 Kathleen Hess 2010

17. CASE STUDY VIII
17.1 Google Maps 2008
17.2 to 17.20 Hanno Weber & Associates 2003
17.21 Hanno Weber 1979
17.22 Steven Hall of Hedrich Blessing 1992
17.23 Hanno Weber 1979
17.25 & 17.25 Hanno Weber & Associates 2004
17.26 & 17.27 Hanno Weber 2010
17.28 to 17.3 Hanno Weber & Associates 2010

18. CASE STUDY IX
18.1 & 18.4 Hanno Weber & Associates 2001
18.2 Portland Courtyard Housing Design Competition Document 2007
18.3 to 18.15 Hanno Weber & Associates 2007

19. CASE STUDY X
19.1 to 19.7 Alfred Benesch & Co. 2007
19.8 to 19.19 Hanno Weber & Associates 2007
19.20 to 19.23 Hanno Weber & Associates 2010
19.24 to 19.31 Hanno Weber & Associates 2011