Urban Design Guidelines
As Design Control Instrument

with a case study of the Silver Triangle Superblock, Jakarta

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Summary

Urban Design Guidelines have been used in Jakarta for controlling the form of the built environment. This planning instrument has been implemented in several central city redevelopment projects – particularly in superblock areas. The instrument has gained popularity and implemented in new development and conservation areas as well. Despite its popularity, there is no formal literature on the Indonesian Urban Design Guideline that systematically explain its contents, structure and the formulation process.

This dissertation attempts to explain the substantive of urban design guideline and the way to control its implementation. Various streams of urban design theories are presented and evaluated in term of their suitability for attaining a high urbanistic quality in major Indonesian cities. The explanation on the form and the practical application of this planning instrument is elaborated in a comparative investigation of similar instrument in other countries; namely the USA, Britain and Germany. A case study of a superblock development in Jakarta demonstrates the application of the urban design theories and guideline.

Currently, the role of computer in the process of formulating the urban design guideline in Indonesia is merely as a replacement of the manual method, particularly in areas of worksheet calculation and design presentation. Further support of computer for urban planning and design tasks has been researched in developed countries, which shows its potential in supporting decision-making process, enabling public participation, team collaboration, documentation and publication of urban design decisions and so on. It is hoped that the computer usage in Indonesian urban design process can catch up with the global trend of multimedia, networking (Internet/Intranet) and interactive functions that is presented with examples from developed countries.

Kurzfassung

Stadtgestaltungsrichtlinien werden in Jakarta zur Steuerung der bebauten Umwelt eingesetzt. Dieses Planungsinstrument ist in einigen zentral gelegenen Stadterneuerungsprojekten – besonders in den Superblockbereichen eingeführt worden. Das Instrument hat Popularität gewonnen, und deshalb auch in den neuen Entwicklungs- und Erhaltungsbereichen eingeführt wird. Trotz seiner Beliebtheit gibt es keine formale Literatur über die indonesischen Stadtgestaltungsrichtlinien, die systematisch ihren Inhalt, Struktur und den Formulierungsprozeß schildert.

Diese Abhandlung versucht, den Substantive der Stadtgestaltungsrichtlinien und die Weise zum Steuern ihrer Implementierung zu erklären. Verschiedene Ströme der Stadtgestaltungstheorien werden im Bezug ihrer Eignung für die Zielerreichung hoher urbanistischen Qualität in den indonesischen Grosstädten dargestellt und ausgewertet. Die Erklärung über den Format und die praktische Anwendung dieses Planungsinstrumentes wird in einer vergleichenden Untersuchung des ähnlichen Instrumentes in anderen Ländern – nämlich in den USA, Großbritannien und Deutschland – ausgearbeitet. Eine Fallstudie einer Superblockentwicklung in Jakarta stellt die Anwendung der Stadtgestaltungstheorien und -richtlinien dar.

Heutzutage ist die Rolle des Computers bei der Formulierung indonesischer Stadtgestaltungsrichtlinie bloß als Ersatz der manuellen Methode, besonders in den Bereichen Tabellenkalkulation und Designdarstellung. Weiterer Computer-unterstützung für Städtebau- und Designaufgaben ist in entwickelten Ländern erforscht worden. Die Forschung zeigt ihr Potential in Entscheidungs-unterstützungsprozess, Bürgerbeteiligung, Teamzusammenarbeit, Dokumentation und Publikation von den Stadtgestaltungsentscheidungen und so weiter. Es wird gehofft, dass die Computernutzung beim indonesischen Stadtgestaltungsprozess mit der globalen Tendenz von Multimedialität, von Vernetzung (Internet/Intranet) und von interaktiven Funktionalitäten aufholen kann, die mit Beispielen aus den entwickelten Ländern dargestellt wird.

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Glossary of German words

BauGB (Baugesetzbuch):	The federal building code / statute book
Bauherr(en):	Client(s), housebuilder(s) or developer(s)
Bauordnungsrechtliche Gestaltungsvorschriften:	Design order in legal building regulation
Bauvorschriften:	Building ordinance
Bebauungsplan:	Building plan or Regulation plan
Erneurungsstaffelsatzung:	Renewal graduating regulation
Festsetzung(en):	Rule(s)
Flächennutzungsplan/FNP:	Preparatory land-use plan
Funktionsplan:	Functional plan that clarifies the building plan
Gemeinde:	Municipality
geschlossene Bauweise:	Continuous-building type of development
Gestaltungssatzung:	Design code
Handlungsanweisung:	Procedural instruction
Koordinierungskomission:	A board of experts to oversee the town planning and permit procedures
Landesbauordnung/LBO:	Building regulation at state level
Leitbild(er):	Basic objective(s), idealized leading concepts
Leitpläne:	Overall plans
Nutzungs- und Erschließungskonzept:	Land-use and development concept
Musterbausatzung :	Model building regulation
Objektplanung:	Object planning
offene Bauweise :	Single-building type of development
Ortsbausatzung(en):	Local building regulation(s)
Ortsbildplanung:	Planning of local image
Planungs- und Genehmigungsverfahren:	Planning and permitting procedure
Rahmenplan:	Strategic plan
Rahmenplan zur Stadtteilentwicklung:	Strategic plan for district development
Rechtsauffassung:	Conception of legality
Rechtsverordnung:	Statutory order
Städtebaurichtlinien:	Urban development guidelines
Stadtplanung :	Town planning
Verunstaltung:	Disfigurement
Vorzugslage :	Advantage point
Wohnbereich :	Residential area
Woonerf (Dutch term):	Residential precinct

Glossary of Indonesian words and abbreviations

BPN:	Badan Pertanahan Nasional = the National Land Agency
Desa:	Village
DKI:	Daerah Khusus Ibukota = capital city's special province status
DP2K:	Dinas Pengawasan Pembangunan Kota the municipal department for monitoring of construction
DTK:	Dinas Tata Kota the municipal planning department
Gedongan:	Refer to those who live in formal housing (as opposed to kampung).
GSB:	Garis Sempadan Bangunan = building line
IMB:	Ijin Mendirikan Bangunan = Building Construction Permit
Jl. or Jalan :	Road/street
Kawasan khusus:	Special area
Kecamatan:	District
Kelurahan:	Sub district
NJOP:	Nilai Jual Objek Pajak the land value as indicated in tax register
PAD:	Pendapatan Asli Daerah the original regional income
Perda:	Peraturan daerah = local ordinance
Perumnas:	Perum Pembangunan Perumahan Nasional the National Urban Development corporation
Pujasera:	Food court
PRK:	Panduan Rancang Kota = UDGL Urban Design Guideline
RS:	Rumah sederhana = simple housing unit
RSS:	Rumah sangat sederhana = basic housing unit
RBWK:	Rencana Bagian Wilayah Kota District Plan
RTLB:	Rencana Tata Letak Bangunan Building Layout Plan
RTRW:	Rencana Tata Ruang Wilayah Spatial plan
RRTRW:	Rencana Rinci Tata Ruang Wilayah Detailed Spatial plan
RUTR:	Rencana Umum Tata Ruang the General Spatial Plan
Rp.	Rupiah, Indonesian currency unit
Sundanese:	Ethnic group in West Java
TPAK:	Tim Penilai Arsitektur Kota the urban design review board

1. INTRODUCTION

1.1 Goal and Objective of the Dissertation

The highest rate of economic development in the world existed in Asia, during the early 1990s, especially in the East and the Southeast regions of this Continent. Indonesia, one of the ten countries in Southeast Asia, experienced this economic boom as well. Many new buildings were constructed in Jakarta, the capital city of Indonesia, as a proof of this high rate of growth.

Unfortunately, rapid building construction is commonly undertaken with outdated zoning and building codes and regulations that are incapable anymore of coping with the new socio-political life in Indonesia, as well as with the demand of the population for a higher quality urban environment. Conventional development control tools have failed to produce a good urban environment in Indonesian cities. Such tools are too rigid and uniform for shaping some areas in the city center. These parts of the city are very crucial in creating the public space. Applying the conventional tools, the buildings were erected as freestanding structures on its parcel of land; as a result, the built urban environment is not pedestrian friendly.

The conventional control tools are not intended to handle the intricate urban fabric of Indonesian cities, which are comprised not only of the formal buildings, but also the informal structures. The newly found democracy in Indonesia brought new values of social equity into the urban scene. Clashes between *becak*[1] drivers and street peddlers against the local government are still continuing until this day because the urban environment was not designed with them in mind. Small street vendors/hawkers, the handicapped and the old are not given facilities or support to live well in the harsh urban environment.

Such problems may be alleviated with the help from an integrated urban design of the city. There are some master plans of the city, but the master plans neither address the three-dimensional aspect of the built environment, nor any detail of the streetscape. Most of these master plans are merely two-dimensional plans that are difficult to be directly implemented in the building design because there is a wide

[1] Three-wheeled public transportation with pedal power.

gap between the two-dimensional plan and the three-dimensional reality. Furthermore, the plan has been implemented in a very long time span and by various actors such that the next generation designers might no longer understand the vision of the original master plan, and they design the new buildings totally differently from what the planner envisaged of the city.

The city government of Jakarta has tried to overcome this problem by setting up some measures: since the 1980s, all new large buildings must be approved by an Urban Design Review Committee, and since 1993, Urban Design Guideline (UDGL) formulation is mandated for developments over a large area of more than three hectares. The urban design guideline is a relatively new issue in urban development in Indonesia. Until the 1970s, only the two-dimensional plan is usually prepared for guiding the urban development. In the 1980s, some attempt to provide three-dimensional guidelines had been made, but they were either too complicated to be implemented or just too vague to provide clear guidance in building design in the urban environment.

The latest attempt to guide the urban development is based on this 1993 urban design guideline and all other subsequent urban design guidelines. These versions of guidelines have been proved and implemented in current development in the city. There is still a lack of instruction manuals or directives for preparing the urban design guideline. In an attempt to fill this void, this dissertation will investigate the appropriate substance/content and format of the guideline by doing a cross-comparative study of urban design guidelines in the English- and German-speaking worlds.

The implementation of urban design guidelines in Indonesia takes place mostly in integrated urban developments over a large parcel, which is frequently called a Superblock. According to the definition provided by the local government of Jakarta, a Superblock encompasses a site area of no less than 3 hectares developed in an integrated manner. This trend of implementing urban design guidelines only for urban development or redevelopment on large parcels is also true for the USA, as depicted in the New York Special Zoning Districts [Shirvani, 1985: 124].

The process of formulating an urban design guideline in Indonesia involves many stakeholders. Three of the main stakeholders are the municipal government, the urban designer and the developer. In this process, the urban designer must always consult the developer so that the design can accommodate the needs and aspirations of the developer but at the same time does not conflict with the city regulations, development plans of the municipal government and the interests of the public in general. The three parties must work together, because a high quality urban design “can take place only if the actors work together in a truly collaborative process” [Fleissig, 1982: 12]. The formulation of urban design guidelines is an iterative process that may take a long time to complete, particularly because the urban design guidelines – as well as other zoning regulations – might be subject to discussion and negotiation [Barnett, 1982: 79].

Design simulation, for instance, an illustrative site plan, in the process of the urban design formulation is very crucial for communicating the visions of the urban designer to the other stakeholders, whether he has interpreted the others’ view correctly or not. Hence, the design simulation plays an important role during the negotiations on urban design guidelines between the stakeholders. This simulation is mainly done with the help of computers to enable the urban designer to check his design/model and make necessary revisions easier and faster.

In spite of the thorough discussion and detailed design simulations that have been performed during the formulation of the urban design guidelines, revisions are sometime still necessary because of the rapid change in the economic, social or political situations. The urban design guideline in Indonesia is reviewed and updated every five years. This is true for many parts of the world; for instance, Trieb has also stated that *Ortsbildplanungen* (a type of urban design plans in Germany) are never fixed; instead, we must rewrite them regularly [Trieb, 1988: 17]. The requirement for the design guideline revision gives a chance to conduct this study, which will provide some contribution in operationalizing the new regulation.

The goal of this dissertation is to answer the following three sets of questions. The **first** set of questions centers on urban design, namely what is the commonly understood definition of urban design in Indonesia? What activities typically constitute the urban design? And particularly important is what substantive (including its values and norms) must be covered in the Indonesian urban design, in order to attain the good urban environment demanded by the more democratic residents? What are the major theories of urban design appropriate for this subject? The selected urban design theory may be indigenous to Indonesia, but can also be borrowed from abroad and adapted to the Indonesian context.

The **second** set of questions focuses on the tools for controlling the urban design. How can it be ascertained that the urban design will be implemented in the major Indonesian cities? How can we make sure that the buildings or the built-environment in the city designed and constructed as the urban designer envisioned them? This is a problem of the gap between the idea and its actual execution. What instrument is available for controlling the urban design, and how is its role or position in the city planning process? Who are the involved actors or stakeholders and what is their role in this process? How far, possibly, practically, ethically, can the city's interventions intrude on the "design freedom" of individual buildings? The main question here is on the most effective and the most appropriate instrument for ensuring a humane and fair/just urban built-environment in Indonesia. How is the form of this instrument, and how is it applied in the praxis? In answering this question, the contents of urban design guidelines will be described and will be compared to other tools for controlling the urban design that are available in other countries.

The **third** and last set of questions concentrates on the implementation of computer technology in the preparation and the dissemination of an urban design guideline. The research will investigate the role of the computer in each phase of urban design activities in Indonesia. Is the computer usage in urban design merely an ersatz for the older manual method, or is it a new and improved method that is faster, more accurate, more convenient and more powerful? The new capabilities of computers enable interactive public participation in urban design and allow geographically separated teamwork, documentation and tracing of design decisions, enlighten plan query, and provide information on legislative background. What are the trends of computer support for urban design in the world? Which type is suitable for supporting the urban design activity in Indonesia, in relation to the main questions described above?

1.2 Previous Works on the Theme

1.2.1 Urban Design

Urban design has been studied systematically only since the end of 19th Century. City planners around the turn of the century have fixed the body of knowledge of the hitherto “traditional” or “intuitive” urban design practice into urban design theory. This theory is later developed under the influence of other disciplines. Camillo Sitte (1889, *Der Städtebau nach seinen Künstlerischen Grundsätzen*) is seen as the intellectual father of generations of city planners [Trieb, 1974: 32]. The single work that evokes much of the modern urban design theory is Kevin Lynch’s seminal book *Image of the City* that appeared in 1960.

The field of Urban Design encompasses a variety of disciplines, including architecture, landscape architecture, urban planning, geography, history, sociology and psychology. This is the logical consequence of the influence from other disciplines, which have contributed to the development of the urban design body of knowledge. Not surprisingly, the studies of urban design can be classified into several concentrations of inquiry. Moudon has delineated an epistemological map of urban design based on the focus of inquiry as follows: urban history studies, picturesque studies, image studies, environment-behavior studies, place studies, material culture studies, typology-morphology studies, space-morphology studies, and nature-ecology studies [Moudon, 1992].

- The study of urban history focuses on places inhabited by ordinary people, how and why they inhabit these places. The study performs a critical assessment of past designs and forces that shaped the built environment. Examples of writers in this study are Spiro Kostof (1986, 1991), Leonardo Benevolo (1980) and Lewis Mumford (1961).
- Picturesque study emphasizes the visual attributes of the city/the visual aspect of the urban environment, which is seen as a stage set or a prop of human action.

Gordon Cullen's *Concise Townscape* (1961) is one of the most remembered contributions on picturesque study. Other writings are Camillo Sitte (1889) and Edmund Bacon (1976).

- Image Studies mainly concentrates on how people visualize, conceptualize, and eventually understand the city. Important writers in this study are Kevin Lynch (1960), Edward T. Hall (1969, 1980) and Donald Appleyard (1964, 1976).

- Environment-Behavior Studies is concerned with the study of relations between people and their surroundings within an interdisciplinary field. The studies examine how people perceive, use, and interact with the built environment. This study stems from environmental psychology and sociology. Important contributors to this study are Irwin Altman (1986), David Canter (1977), Donald Appleyard (1976, 1981), Amos Rapoport (1977, 1982, 1990). Karl-Jürgen Krause did some environment-behavior studies in Germany.

- Place Studies creates theories of place that are based on the importance of people's reaction to their environment and yet do not fit properly within the environment-behavior category. These studies show how people perceive, feel, use, and interact with their surroundings. Some noted contributors to this study are Kevin Lynch (1972, 1981), Charles Moore (1988), Yi Fu Tuan (1974, 1977) and Tony Hiss (1990).

- Material Culture Studies is a branch of anthropology that focuses on the study of objects as reflection and tools of culture and societies. The object of this study is wide-ranging, from stamps, kitchen utensils, clothes, and only recently includes the quality of the cultural landscape. This newly emerging study is still in its developing stage.

- Typology-Morphology studies encompass a long tradition of studying cities, their form, and especially the socioeconomic processes that govern their production. This study is often associated with the Krier brothers (1976) and Aldo Rossi (1964, 1973).

- Space-Morphology Study strives to uncover the fundamental characteristics of urban geometries. The researches in this study try to understand the attributes of urban space and its geometry. The underlying assumption behind these studies include the existence of spatial elements that generate urban form – such as rooms, transportation channels, and so on – and the need for quantifying both elements and their relationship. The work of Christopher Alexander (1964), Lynch and Lloyd Rodwin (1958), Martin (1972) and March (1977) are examples of this category.

- Nature-Ecology Studies sees urban ecology as a necessary and essential component of urban design. It prescribes the relationship between natural forces and the built environment. Ian Mc Harg's *Design with Nature* (1971) spurs some other works in this category.

1.2.2 Urban Design Control Instruments

The urban design control instrument is only a part of the broad spectrum of urban design theory that deals mainly with the process of managing and controlling the implementation of the urban design in actual practice. Attempts to control the urban space have been done for a long time; the oldest written regulation is from year 1262 on buildings around Piazza del Campo in Siena [Gosling/Maitland, 1984: 109]. In spite of that, some governments just recently acknowledge urban design control. For example, the DoE (Department of Environment) in the United Kingdom mentioned it in its publication only since 1994 and in current planning guidance only in 1995.

Most literature on urban design control encompasses how policy and guidance have been formulated, structured and presented in the various documents that make up the policy framework as well as how the process of control operates. This depends largely on the planning and legal systems of the country. However, an evaluation of the effectiveness of urban design policy, guidance and its review process seldom takes place, and an evaluation of their outcomes is a much more challenging task that has hardly been attempted by any researcher.

The body of literature highlights the documents that underpin urban design review as well as their content, orientation, intention, structure and presentation and use within the urban design process, including the extent to which they are based upon careful analysis of the character of the locality and full consultation of the community. Variation between countries or localities in this matter occurs because of the difference in their objectives and socio-political and cultural conditions.

Some notable contributors to this body of knowledge are Jonathan Barnett (1982, *An Introduction to Urban Design*), Hamid Shirvani (1985, *The Urban Design Process*; 1990, *Beyond Public Architecture*), John Punter (1999, *Design Guidelines in American Cities*) and A.C. Hall (1996, *Design Control*). Michael Trieb in Germany has written a series of publications on controlling the urban shape for the sake of its image. There is no literature on Indonesian urban design guidelines. The practice of Indonesian urban design guidelines concerning fact-finding on Indonesia, together with the policies of urban development in Indonesia that influence its formulation and the views of Indonesian experts on this matter is described in Chapter 5.

1.2.3 Computer in urban design

The use of the computer in urban design is a specific topic, and there is only very limited scholarship concerning its use in this field. To overcome this shortage of publication sources for this specific topic, other relevant sources are used. This is possible because the process of formulating the urban design guidelines can be broken down into several steps that involve different software such as geographic information systems and process management software for decision-making during the planning stage, three-dimensional building modeling software in the preliminary-design and design stages, table calculation, word processing and graphic works needed in writing the report, and rendering program for presentation of the finished urban design.

In general, computer support in urban design activity falls into two main categories: computer support in planning activity and computer support in design activity. The former pertains mainly to organizing data and processing information for decision-making as well as presenting its results (the plans). This includes decision a support system with workflow management, geo-information systems, and plan modeling. The bulk of the literature comes from computer-supported planning process. Computer support in design activity mainly concerns the representation of the actual and designed urban environment into graphical form in 2-dimension or 3-dimension. There is an abundant literature on CAAD, 3-D modeling and rendering, animation and so forth.

The latest issues that are relevant to computer usage in urban design will be presented as well, such as collaboration via computer, public participation, computer as creative design tool with more intelligent CAD systems that are mostly based on object-oriented model. A review of managing the computer usage in the office and its affordability is intended to enlighten its application for the urban design process in Indonesia.

1.3 Methodology

Because of the novelty of urban design practice in Indonesia and the absence of any written theory of Indonesian urban design,[2] the doctoral research begins with a literature study on the definitions and rationale of urban design. The dissertation provides some guidance to its audience on what constitutes a good urban design guideline. To this purpose, a somewhat exhaustive description of the contents and the format of the urban design guideline is presented.

The compilation of urban design theories from abroad is presented with particular emphasis on its aspects that has potential to be implemented in the Indonesian urban context. To facilitate the readers comprehension and the creation of a conceptual framework of "good urban design" for its implementation in the Indonesian planning practice, a short assessment summary is presented after the

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[2] Traditional approach of urban design in Indonesia was based mostly on the cosmology of the people of that era, or other beliefs. This is hardly suitable for the context of contemporary major Indonesian cities.

description of each urban design theory. The assessment is based mainly on its suitability for the problems in major Indonesian cities.[3] The Indonesian context is rendered by the actual problematic in its urban development. This problematic will be illustrated among others, with additional views of Indonesian experts, interest groups and policies of government agencies for addressing the problem.

The newly found democracy in the socio-political life in Indonesia since the end of 1990s – which was partly caused by the economic crisis – has spurred the development of a new scene in Indonesian urban life. Demand for socially fair use of urban space and good accountable governance with more transparency and community participation in the decision-making have been raised. These demands are viewed as the reason/cause for the need of new paradigm in Indonesian urban design. The economic crisis has also made many of the workers in Indonesian major cities unemployed. At the height of the crisis, more than half of the working age population was unemployed. Most of them went into the informal sector of the economy as the last resort for survival. Up until this moment, the struggle of the informal sector for using more public urban space still continues. These immediate needs must be addressed by the urban managers.

Maybe urban design is not the best measure to address social problems such as *kampung* in Indonesia. Nevertheless an attempt to ameliorate the situation will be proposed, along with a more realistic alternative of relocating the kampung. The attempt is not based on the environmental deterministic approach where the two social groups[4] are forced to mingle and become friends. It is more of an environmental possibilistic approach where the juxtaposition of the two groups may foster good linkages economically and later socially, e.g. low-cost services and products from street peddlers to support the workers in the CBD.

After the government formulated the urban development policies and created some city plan based on these policies, then it is the urban designers' turn to prepare an urban design plan for that part of the city. In such a linear process of urban

[3] By major cities I mean the cities with a population over 1 million. Jakarta, Surabaya, Bandung and Medan come into mind.
[4] The kampung dwellers and the rest of the urban population who lives in formal sector housing.

planning, the Indonesian urban designers consider the city plan as a given product or as a constraint that delimits their activity of designing the urban space. They believe that urban planners have redistributed the resources (in terms of floor area allowance, land use, transportation network etc.) in the area to the best use. In this study, the RTRW and RRTRW of the case study area represent urban planning decisions.

The urban designers only strive to prepare the realization of the urban plan, before the architects actually design the buildings. Of particular interest to the urban designers is defining of the urban space three-dimensionally. Urban design guidelines in Indonesia are applied to limited areas within the city. The urban designers may redistribute the FAR (Floor Area Ratio) and land uses vertically and horizontally within this planned area. Thus the new urban design plan will not affect in any major way the pattern of urban plan in the city as a whole. In some cases, urban designers may need to reinterpret the building regulations for that area. For instance, a relaxation of the required distance between neighbouring building may result in a common "podium structure" of some tower buildings. This continuous podium structure bears a resemblance to the continuous building form (*geschlossene Bauweise)* that otherwise would not be possible there. The freedom to design the public open spaces in greater detail also provides the opportunity to arrange the space for the informal sector activity. An integrated design of a limited area within the city may also preserve the community life.

The urban design ideas are then formulated, structured and presented in an urban design guideline. Indonesia has only very little experience using such guidelines; hence there is a need to resort to other countries' experience. Experience from the USA cannot be overlooked because some major American cities have 25 years' experience with various forms of design policy and review, and have developed innovative approaches to a wide range of issues. The current Indonesian urban design guideline was developed based on the American model. The practice in the US has attracted much attention from both academics and practitioners. This has spawned significant debate about the key issues in control. Great Britain provides a comparison of controlling the urban design in a context where urban development policy is not elaborated any further into detailed plan and zoning plan. The control relies heavily on the judgement and discretion of the officers responsible in the city, a convention also practiced in Indonesia. Germany is another case where the planning hierarchy is more complete than the British system. A very refined system of legal and planning control is used in Germany.

Admittedly, it is not possible to directly adopt any urban design control tools from another country and graft it to the Indonesian planning system. Each solution developed to each problem in different cities in other countries is context-specific. Each is a product of different government systems, administrative and legal frameworks, divisions of powers and responsibilities, different systems of zoning and planning control, different qualities of built and natural environments, different development pressures and design problems, different levels of public awareness, different access to design expertise and review procedures. These differences must be acknowledged and appropriate adjustments must be made in the application of these ideas.

In comparing and assessing urban design control in the three countries, the criteria are the following: the new urban design control instrument should be adaptable to the constraints of Indonesian planning system in producing a built-environment that is friendly (humane) and socially equitable. The planning instrument should be user-friendly, in the sense that it is easy enough to be understood by the layperson involved in the urban design process.

The nature of Indonesian urban design process is its formation determined by the negotiation between the city administration and the investors of the development projects. The role of the urban designer here is as consultant to the city administration in explaining the objective aspects of good urban design and as the mediator in the negotiation. The decisions stipulated in the urban design guidelines are the result of the compromise between the subjective views of the designers, investors and urban managers as well as objective aspects of the good urban design.

The present form of Indonesian urban design guidelines is a result of an evolution in the attempt to accommodate the negotiation process. This is noticeable in the relatively "soft" control utilized. Only the most essential measurable design control is classified as "mandatory" in the guidelines; the rest are either "major recommendatory" or just plain "recommendatory" clauses. This is presented in a format that is fairly easy to understand, with plenty of illustrations and diagrams to accompany the short text. The ease of usage of the urban design guideline is desirable because it will facilitate easy checking by the public officials whether the development abides the control as well as for the developers and their architects. For this reason, methods of presenting the guideline in a simple, effective, and communicative way are assessed.

To ensure that the built environment does not deviate too far from the intended urban design due to the control by "recommendatory" clauses, review procedure is enacted within the urban development process. The urban design review is not especially organized because of the advent of urban design guidelines, as it has been in place earlier to evaluate the design proposal of major buildings in the city. In the case of areas that have an urban design plan, the urban design review committee needs only compare the proposed design and the urban design plan. In this way, the "recommendatory" clauses regain some strength.

The dynamic of urban design preparation process with negotiation etc. opens a great opportunity for computer support. Changes in the distribution of floor area allowance can be made and recalculated quickly and easily with suitable software. The outcome in three-dimensional design can also be changed. This is simulated in computer models, so as to make it clearer to the negotiating parties. The capability to change the three-dimensional model as it is discussed, or to generate alternatives of the model will enhance the understanding between the stakeholders and promote a quicker resolution.

Literature research on computer support for urban design activity will disclose other potentials of its use. Leading research projects in the developed countries demonstrate a more advanced role of the computer, such as for planning decision support system (with workflow management), intelligent *Bebauungsplanung*, digital dissemination of the urban plans, online public participation and teamwork, etc. Before recommending the new technology for Indonesian urban design process, an observation of the current usage of computer in the urban design practice in some Indonesian research institution and design consultants has been performed. The assessment of feasibility of implementation of the new computer methods is based on the actual capability of the urban design consultants in Indonesia.

In order to illustrate more clearly the implementation of the proposed urban design control, a case study is described using the method partly adapted from the cross-comparative study and the theoretical framework of good urban design. The case study also serves the purpose of confirming the computer support in performing urban design activities.

The rationale of the case study area selection is twofold. First, it is a mixture of kampung area and formal development in the city center. Such mixture is common in major Indonesian cities, as kampung occupies around half of the total urban area. Even in the center of the cities, one can easily find kampungs behind the row of modern high-rise buildings. A way to handle redevelopment in such situations is explored in this case study. The second rationale is the case study area as a superblock development, which is a new trend in Jakarta. Between 1993 and 1998, no less than 10 superblock projects sprung up in the metropolitan city. An alternative design of developing the entire case study area as an integrated superblock serves as an example for the application of the urban design guidelines for controlling such type of urban development. It is hoped that this simulation of urban design guidelines can clarify the application of urban design theory and serve as an example for implementing the guidelines in other major Indonesian cities.

In the end, the resulting built urban environment that would accrue as controlled by the proposed urban design guidelines is evaluated. The criteria of good urban environment that has been put forward as the conceptual framework is used in this evaluation. The criteria may include social equity for the hitherto neglected informal sector entrepreneurs. If this urban environment can satisfy the criteria better than the resulting urban environment that would have been produced by the conventional method, then it can be concluded that the urban design guidelines is an improvement from the conventional method of control.

The three main questions raised this doctoral dissertation work are formulated intentionally such that the answer to these questions are structured to establish the entire dissertation. The methodology – that answers these questions – flows more or less in the same order as the organization of this dissertation, which is described as following:

Chapter two discusses urban design, particularly the understanding of urban design and the considerations that must be taken when people make an urban design. From the various points of view of urban design studies, some major points (suitable for Indonesia) will be adopted to build the conceptual framework and to determine the principal issues that should be addressed in designing the urban environment. The results of this chapter are applied in finding the most appropriate contents of the Indonesian urban design guidelines.

Chapter three discusses planning instruments for controlling urban design. The main interest is to investigate the way people ensure that the urban design will be implemented correctly in the actual projects as the urban designers have envisioned them. From the four possible levels of urban design product, i.e., Policies, Plans, Guidelines and Program, this chapter deals primarily with the Guideline level. The Contents of the urban design guideline are discussed thoroughly, as well as some procedural aspects of their formulation. The analysis is carried out in the form of a cross-comparative study of some existing ways to control the urban design. From the analysis, it is intended to learn from other countries' methods and techniques appropriate to the Indonesian context. The conclusion of this chapter is utilized as a framework, within which the support from computer is expected.

Chapter four describes the utilization of computers in assisting the urban designer in preparing the urban design guidelines. From a managerial perspective, the feasibility of implementing the new techniques of computer supported urban design in Indonesia is assessed. Chapters two to four make up the conceptual framework of the dissertation.

Chapter five presents the dynamics of urban development in Jakarta, together with the analysis of the case study area. The urban design concepts of the case study are presented in chapter six, together with the description of the urban design guideline. This practical example is also intended as a further clarification of the theory of urban design that has been described in Chapter two, and particularly to confirm the possibility of formulating the urban design guidelines in Indonesia with computer assistance.

1.4 The Scope of the Study

Urban design is such a broad field of work because of the many aspects of urban life that must be handled. There are numerous disciplines involved in urban design, and there are various points of views within urban design. Therefore it is impossible to cover the entire topic satisfactorily in one writing. The topic of discussion on urban design in this dissertation is limited to some disciplines only, namely architecture, urban planning and spatial perception (in relation to environmental psychology). Other aspects such as sociology, environment, landscape architecture, law and community participation aspects are touched upon, but only very lightly or indirectly. These aspects only have an indirect or less influence on the formulation of the urban design guidelines in Indonesia. The aspect of community participation in urban design has been elaborated in my master's study [Poerbo, 1992].

In terms of area (typically 10-50 Ha), the Indonesian urban design guidelines encompass some city blocks. This puts the guideline in the lowest level of the Local Plan in the hierarchy of the urban spatial planning system of Jakarta. The guideline is subordinate to the RTRW Kecamatan and RRTRW Kelurahan. Superblock development, which is commonly controlled by the guideline, is treated as a special district similar to other functional district, preservation areas etc.

In the urban planning process, the urban design guideline is prepared when the superordinated plans have been completed. The urban design guideline is prepared as part of the development permitting procedure in the city. In preparing the guideline, the urban planning decisions stipulated in the local plans are used as the basis. Accordingly, macro level planning analysis of land use, circulation, transportation and so on are out of the scope of this study. The analysis focuses on the micro level, where the urbanistic quality of the environment is defined.[5]

The preparation of the guideline always involves negotiations among the stakeholders of the urban design. Subjective views of the designers, the investors and the urban managers are acknowledged in the guideline. This study points out some measures that have and can be done in accommodating this problem in the urban design guideline. However, the discussion in this study puts more weight on the objective aspects of good and culturally sensitive urban design, because it is hoped that the dissertation can also serve as a kind of manual for preparing an urban design guideline in Indonesia, which is now lacking any written manual.

To this end, the utilization of computer technology in assisting the work of urban designers in preparing urban design discussed too. The discussion encompasses computer applications that are suitable for supporting the Indonesian urban design activities.

The implementation of urban design guidelines in an actual project is directed by a series of investment programs and estate management policy. These encompass the financial aspects of investment, such as utility network, road and other infrastructure. The programs are written in documents separate from the urban design guideline and are not included in the scope of this study.

[5] See p. 20 for explanation on the urbanistic criteria.

2. URBAN DESIGN

2.1 Definitions of Urban Design

Urban design is a field of expertise that appeared as city planners were abandoning the physical appearance of the city. Since 1930s, city planners were inclined to handle more social aspects, while planning was becoming less physical in nature. The gap that resulted between the professions of urban planning and architecture was then covered by urban design. The expertise of urban design derives from various disciplines [Trieb/Markelin, 1976: 15], including city planning, architecture, environmental psychology, geography, landscape architecture, ecology, economy, law and many more. Not surprisingly, there are numerous definitions of urban design that came out of so many points of view.

The most frequently used approach to define urban design is by listing the type of project in which urban designers are typically involved. The list encompasses streetscape plans, neighborhood revitalization, and suburban development and so forth - with the notion that the definition of urban designs implicit in this list [Poerbo, 1999: 41]. [6]

The exact domain of urban design has not been settled as yet. Some people consider urban design mainly as beautification; with activities such as placing trees, street furniture, paving, lighting, signs and the like. In the meantime, others think of it as the center and focus of planning. Not surprisingly, there are various groups in between [Shirvani, 1985: 5]. Urban design can be defined as follows:

> … the process of giving physical design direction to urban growth, conservation, and change. It is understood to include landscape as well as buildings, both preservation and new construction. [Barnett, 1982: 12]

Through various design controls and guidelines, it is possible to design cities without designing buildings.

The definitions of urban design that have been explained above are focused more on the activity of designing the urban space and the physical environment that is generated. Another approach in defining urban design is proposed by Streich, who postulates that urban design is an interrelation process between the perception and the action fields („*Stadtgestalt ... ist ein prozessualer Zusammenhang zwischen Wahrnehmungs- und Handlungsfeld*”) [Streich, 1983: 20]. This definition is based on human perception of his urban environment, a field that has been researched by environmental psychologists and promoted by Kevin Lynch in his seminal book *The Image of the City*.

A formal definition and scope of urban design according to the Royal Institute of British Architects [RIBA, 1970: 3] suggests that

> Urban design is an integral part of the process of city and regional planning. It is primarily and essentially three-dimensional design but must also deal with the non-visual aspects of environment such as noise, smell or feelings of danger and safety, which contribute significantly to the character of an area. Its major characteristic is the arrangement of the physical objects and human activities which make up the environment; this space and the relationship of elements in it is essentially external, as distinct from internal space. Urban design includes a concern for the relationship of new development to existing city form as much as to the social, political and economic demands and resources available. It is equally concerned with the relationship of different forms of movement to urban development.

This broad definition encompasses mainly the process of designing the urban built-environment, particularly the focus/concerns in the activity of urban design. This is similar to Shirvani's argument and also shared by noted Indonesian urban designer Prof. M. Danisworo, who views the urban design as an accumulation of the outcome of decisions made on the urban built environment by various people along the entire life-span of the city.

The Department of the Environment (DoE) in the United Kingdom endorses this kind of definition of urban design that sees the importance of the relationship between buildings and the people. The DoE asserts urban design as

> … the relationship between different buildings; the relationship between buildings and streets, squares, parks and other open spaces which make up the public domain; the relationship of one part of a village town or city with other parts; and the interplay between our evolving environment of buildings and the values, expectations and resources of people: in short the complex inter-relationship between all …[Carmona, 1997: 47 ff.].

[6] See also Shirvani, 1985: 1.

Clearly urban design is more than merely an aggregation of buildings and the open spaces that are created between them. From the DoE's definition of urban design, it can be inferred that urban design is more concerned about the urbanistic quality, rather than the architectural quality of the urban environment.[7]

Several approaches can be taken in defining urban design, from viewing it as a process, listing the product of urban design, listing the aspects that must be taken into consideration during the urban design process, and lastly explaining its characteristic (particularly the interactive nature of its elements). This table summarizes the various definitions of urban design.

Process	▪ Integral part of the process of city and regional planning ▪ Process of giving physical design direction ▪ Accumulation of a long process
Product	▪ Landscape, buildings and street furniture ▪ Arrangement of the physical objects and human activities which make up the environment
Aspects in urban design	▪ Primarily the three dimensional design aspect of city planning ▪ Also non-visual aspects of social, politic, economy etc.
Characteristics of urban design	▪ Relationship of new development to old, existing structures ▪ Space and relationship in urban design is essentially external ▪ Relationship of different forms of movement to urban development

Table 2-1 Definitions of urban design.

From the designer's point of view, urban design can be seen as one stage in the continuum of the development process, beginning with policy as the basic guiding principle that is spelled out at many levels of plans, from general plan or master plan, district plan, development plan, to detailed project plan of a neighborhood. Supporting and parallel with the lower/detailed levels of plans is the urban design. Urban design has many levels, according to its design area: in the entire city, districts or several blocks within a city, detailed design of a city block, and the lowest level of urban design which is in the form of designing street furniture or

[7] Urbanistic criteria pertain to the relationship of buildings to other buildings (vis-à-vis height relative to street width and other buildings), to set back lines, to parks etc. In essence all of those characteristics that determine the walls of the urban room. Architectural criteria are those that relate to the buildings themselves, or objects within the urban milieu. In an ideal world buildings would be successful urbanistically and architecturally. However, if only were possible, the greatest effort

sidewalk. The most detailed levels of urban design overlap with the field of architecture. In terms of their scale of design, urban design lies between the architecture and town and regional planning disciplines [Gosling/Maitland, 1984: 9]. The same concept applies where architecture overlaps with interior design and so forth down to the most detailed job [Poerbo, 1992: 8]. This concept can be presented diagrammatically in a time line or chronological order in the diagram below.

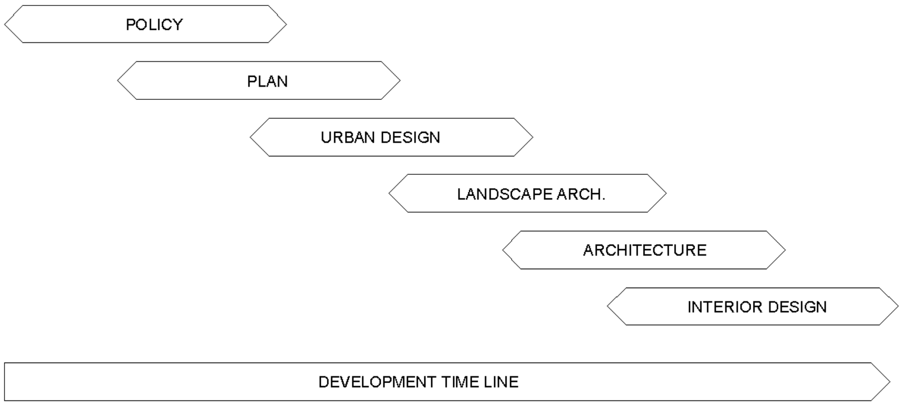

Figure 2-1 The overlapping stages of work in the urban development process.

As depicted in the diagram, it is apparent that urban design is the bridge between urban planning and architecture professions [Beckley, 1986: 83]. City planners are concerned with the allocation of resources according to projection of future needs. On the other hand, architects design buildings, prepare a set of documents so that the building can be constructed. Between these two professions, there is a substantial middle ground that neither fills very well [Barnett, 1982: pp. 237-238]. Land use planners usually allocate resources for zoning purposes, without much consideration on the three-dimensional characteristic of the buildings that are going to be built there. Architects might try to relate their design with the surrounding buildings, but the neighboring environment is outside of their control. It is clear that a person who understands three-dimensional design should be involved in order to improve land use planning. Urban design is the part of the planning process that

should be applied to the former, consistently throughout the entire locale. [Payton in Lightner/Preiser, 1992: 238 in Punter, 1999: 202].

deals with the physical quality of the environment, i.e., the physical and spatial design of the built environment [Shirvani, 1985: 6].

Illustrating the task of urban designers, a German planner Thomas Sieverts stated that the task of urban designer is to establish the “rule of the game” for individual architect or developer etc. who wants to “play” (to build) in the city (*Stadtplanung und Städtebau liefern die ‘Vorlagen’ – um in Fußballjargon zu sprechen – die von Architekt und Bauherr in Architektur ‘verwandelt’ werden müssen*) [Trieb, 1974: 11]. The rule of the game is in the form of visions, guidance, standards etc. that give clear boundary to architects in designing the buildings.

Inspecting the relationship between the designer and the designed object more closely, urban design can be described as a **second-order design** undertaking [George, 1997: 149 ff.]. All designers, except urban designer, have a direct relationship with the object that they design. In an intellectual sense, they have ownership over the object. In contrast, urban designers have only an indirect relationship with the designed object. They shaped the designed object by influencing decisions made by other designers who then directly shape the object; they design the decision environment within which other designers create the designed object.

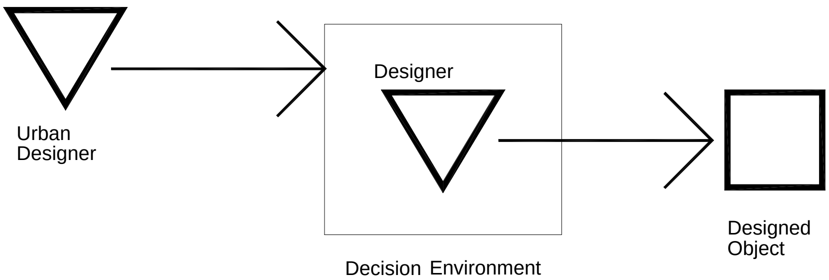

Figure 2-2 Urban Design as a second-order design undertaking. Source: George, V. 1997

Urban design appears to be a higher-order design activity in the sense that it is indirectly related to the designed object. This is called **second-order design**, with a ground that second-order relationships are indirect relationships, in the sense that the related objects are one step removed from each other. Urban design is design that is one step removed from designed object; hence, it is second-order design.

The difference in values, expectations and resources of everyone who is affected by the urban design can be problematic. One role of urban designer is to integrate responsibilities of the government and interests of the private sector that are often competing. Efforts that have been done to combine public and private interests will guide public and private development toward a direction that is acceptable by the residents. Community involvement is very important in this matter. The caveat of public participation in urban design is the taste or preferences of one generation might be different from the taste of the next generation [Broadbent, 1990: 255]. As urban design projects span a very long timeframe from their conception to the realization, this problem should be keep in mind by the public participation organizer.

2.2 The need for Urban Design

Man has designed his cities since the ancient times, initially for spiritual or supernatural reasons. Buildings in Grecian cities were placed such that their placement evokes a procession. When a person walks towards a Grecian temple, he would be led to see part of it from a distance, and sometimes the view is obscured, until finally he stands at the exact location where he can appreciate the form of the temple at its best. This kind of “serial vision” is utilized to enhance the sacredness of the place.

Traditionally, people of the eastern-world also designed their cities based on the relationship between man and the holy force. God and goddess were given much consideration in the layout of the city. The form of the city or the settlement should be a magical model of the universe and the gods [Lynch, 1981: 73]. The aspects of physical environment were often integrated in this consideration because the God and goddess were manifested in the form of mountain, forest, river and lakes, ocean, weather situation etc. In Bali, Indonesia, the layout of cities and regions is oriented in regard to their cosmological beliefs. North, the location of Mount Agung is considered as sacred, while the Indian Ocean in the South is un-sacred. The other axis is East-West, where east as the place of sunrise is more preferred. In this cosmological concept, temple, palace, etc. are situated in the more desirable locations the northeast, while cemeteries, trash dumps and the like in the southwest corner [Nas, 1993: 287].

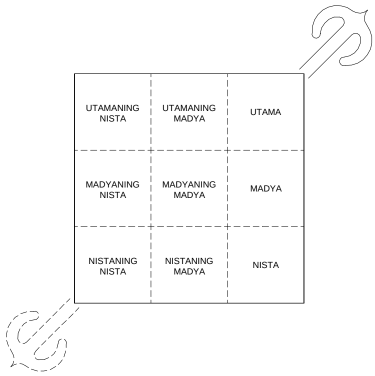

Figure 2-3 Tri hita kirana/Tri angga as principle of organization of space. [Budihardjo, 1986].

The next motivation of designing the city is for the safety and security of its inhabitants, particularly that of its ruler. Since the Middle Ages in Europe, people have designed their cities mainly for defensive purposes. Initially, the medieval cities were enclosed by thick city-walls, and in some cases they were also reinforced by a moat around the wall. Later when the growth of the city population demanded more land for housing, the walls were then torn down [Hangarter, 1999: 2-3]. Anyhow, new weapon technology could overcome the wall, so that people at that time were compelled to seek another strategy for defense. The street pattern of Paris – which was reproduced in Washington, DC – were meant to enable the movement of troops and guns to defend the city from some strategic points, and to confuse the invader with its non-grid street layout. The width of the Parisian boulevards was meant to avoid them being blockaded, which had happened during the French revolution [Broadbent , 1990: 117].

The rise of urban areas after the industrial revolution had produced cities that were extremely crowded, lacking garden and other public spaces, unhygienic and generally ugly. Many urban-sociologists believe that the poor urban environment cause mental problems among its inhabitants. They postulate that the city should be designed to give the inhabitants more opportunity to relax and enjoy their environment, and the parks in the city are designed as a resort, so that people have a place to escape from the stressful working in industrial society. The city should provide a variety of activities for the population. Sociologists encourage the variety that enlarges the interest or choices a place can offer. Mental health is one of the rationales of designing urban environments [Creese, 1994: xiii], although it is still disputed if there is any relation between the physical environment and the social order. The problems of social order in the form of housing deficiency and slum area in cities of the developing world cannot be solved either technically or by spatial/building measures [Frauenfeld, 1982: 167].

The proponents of the view that social order is related to the built environment believe that the built environment provides cues for behavior, and it can be seen as a form of nonverbal communication [Altman, 1980:20]. The variety of environment and the importance of meanings, and their use to establish group identity suggest that designed environments are much more than physical objects or prosthetic or economic devices.

The result of the modern movement in architecture since 1920s are cities with an almost identical look everywhere in the world. The modern cities have lost their identity, a quality that was possessed by the cities of the past. People can lose their attachment to a place, when they cannot see and feel the identity of their space. The feel of belonging to a home (*die Heimat*) depends on this identity of the space. Therefore, the identity of the region must be re-created. Urban design can accomplish this task by designing and creating the urban environment that embodies local values, culture, tradition, way of life, climate and its natural surrounding.

A city or a region with a clear and strong identity can be “sold” more easily as a destination for tourists, for investment, etc. Even industry and commerce have admitted that design or image of a city is a rather important attraction for the city [Mohr, 1993: 6]. In this case, urban design is not a series of statutory proposals, but rather a prospectus to engage the interest of the existing community, local authorities and potential investors in promoting a rational and imaginative development [Rowland, 1995]. It also shows the important development goals of the city [Lee, 1995: 204]. City officials, especially at the department of tourism, can employ the identity of the city as a selling point. For example the city of Heidelberg, in Germany, and Leuven, in Belgium, with their old charming character and famous universities, the city of Bandung ,in Indonesia, as the flower city and university city. Indeed, it is the duty of the urban designer to maintain the character of a place/city, such that the original character will not be lost as a result of the new development. Urban change must be related to the best of what already exists. New buildings and renovation activities in the city must be adapted to fit to the context within the city [Zeuchner, 1989: 153]. By building the sense of identity of the people who live and work in a place, their involvement in caring for its fabric and character will be increased, as well as their capacity to influence the forces that shape the environment. In designing the urban space, the designer must understand and define the essential character and spirit of a place, its history and development, its physical, social, cultural and economic structure, its routes and landmarks, its strengths and weaknesses. Prinz has expressed this scope of urban design work as following [Prinz, 1993: 22]:

> The nature of designing the city concerns above all to integrate the new into the existing, or to change the existing in a way that it suits for new functions, without removing it from its evolving context.
> (*Das Wesen städtebaulichen Gestaltens liegt vor allem darin, Neues einzugliedern in Bestehendes, oder Bestehendes in einer Weise zu verändern, dass es neuen Aufgaben gerecht wird, ohne aus seinem 'gewachsenen' Zusammenhang herausgelöst zu werden*.)

The urban designer must fit the new building or renovation project with its existing surrounding, particularly if there are any important and historical structures. Even if no historical building exists around the new building, the urban designer must still taken into consideration the architectural character of the area, as well as the cultural values and community needs in terms of community meeting hall, children play area an so on. This is expressed by Dieter Prinz as following:

> Urban design always means to "pass on" to historically and spatially marked order and design patterns, simultaneously with consideration and spirit to give shape into conformity with the place, the social needs and cultural value conceptions.
> (*Stadtgestaltung bedeutet daher immer, an dem historisch und räumlich geprägten Ordnungs- und Gestaltungsmuster "weitergeben", mit Rücksicht und Mut zugleich Gestalt zu geben im Einklang mit dem Ort, den gesellschaftlichen Bedürfnissen und kulturellen Wertvorstellungen*) [Prinz, 1993: 27].

Taken to the extreme, the identity of the city exists in the symbolic realm of urban imagery related to cities as complete entities or to parts of cities [Nas, 1993b: 2-3]. Symbolism helps people to know their cities better, and makes the city more legible as well. This leads to another objective of designing the urban environment, which is to attain an adequate level of legibility of the city. If the city is clearly structured, people can find their way around more easily. Buildings and other structures within the city must give some clues to the people to orient themselves [Lynch, 1960]. Even newcomers without any help from the map of the city should be able to find their way to the most important places there, such as the main railway station, the city center, etc. People have in their mind an "image" of the city. The image is an internal representation of the city, and can be used as a "mental map" during our circulation in the city [Canter, 1977: 23]. Some cities are easier to represent in our heads than others are; in other words, the cities were more legible [Bentley, 1985].

Catanese and Snyder showed that there is an interrelationship between Urban Design and activities in the city [Catanese/Snyder, 1984: 120-122]. The city is on the one hand a form of expression of the respective society, but on the other hand it retroacts on the society, because it becomes the outer form of the social habitat and thus the townscape itself into a social function [Lee, 1995: 160]. A simple example of urban design’s effect on activity is the pedestrian zone: a well-designed pedestrian street can attract many shoppers and strollers to this area and, as a response to this, there will be more pedestrian-oriented undertakings such as shops, restaurants/café etc. In contrast to the “slow” pedestrian zone, facilities that are designed for convenience, speed and high accessibility tend to attract vehicle-traveling passengers; for example, drive through services in some fast-food chains and banks. At the same moment, the opposite also happens, when the pattern of activity and social life shapes the design of the city. In the modern city where the level of mobility of the population is high, functions such as market and workplace are more dispersed than before.

This kind of reciprocal relationship between the urban design and architecture and the urban activities is consistent with Altman's view that the design of an environment not only influences the transactions that occur within it, but is also itself a product of the culture from which it originates [Lee, 1995: 167]. In other words, cities should enable a fit between its design (form) and the activities that take place in them.

The functionality of a city extends beyond accommodating activities, but also for ensuring the physical comfort of its inhabitants. Cities must also be designed in order to achieve physical comfort of its inhabitants. People need protection against the elements. In hot tropical countries like Indonesia, shade from trees or building overhangs are most welcomed by the pedestrians who are strolling along the street. In hot and dry regions around the Mediterranean Sea, the streets and alleys are so narrow that shade is available most of the time to cover the pedestrian. In temperate countries, urban designers must take into account that the success of a public plaza depends on sunshine and wind protection, among other factors. A public open space that is protected from the wind and sunny will be used longer than a cold, windswept open space.

The people need not only physical comfort, but they have an aesthetical need for beauty as well. The need for beauty is not a luxury, but it is a need of every psychologically healthy human being. People love to be in a beautiful environment – both natural and man-made environment – such as the side of a lake or in a flower garden. In the built up urban environment, beauty can be manifested in the composition of color, material, form of the buildings, etc. It is the task of the urban designer to produce a beautiful urban environment for its public.

Leaving out the earlier rationale for urban design (for representing the people's cosmological concept and for protecting against invasion from outside), then the need for designing our cities can be summarized in the following list [compare also Schröder-Lanz, 1986: 538; Lee, 1995: 69].

- Psychological need for safety and demand for stimulation.
- Emotional need for identity, creation of a feeling at home, maintenance of architectural continuity.
- Design for perceptual need: environmental legibility for way finding/orientation.
- Physical comfort.
- Promotion of interaction and communication among the residents.

- Increase the attractiveness of the built-environment, and possibility for aesthetical experiences in the sense of “beauty”.

2.3 Theories of Urban Design

The field of urban design was born out of a search for quality in urban form. Although man has designed his urban environment since a long time ago, the formal theory of urban design is only around one century old, as marked by the writings of Sitte and Baumeister. After a long silence in the field of urban design theory, the modern theory of urban design emerged in the 1960s with the focus on the relation of humans' perception and behavior in the city. Since then, scientifically designed urban design theories have come forth. The theories try to address the contemporary urban development practice, which has a tendency of being too formal, by considering merely the aspects of regional planning, economy, social, and transportation. The outcome is cities that are incoherent, hostile and ugly. The reason for this is the difficulty to debate the visual quality. A city should be designed by combining the formal and visual concepts [Cowan/Billingham, 1996: 153].

Some urban design theorists have tried to classify the theories and concepts of designing the urban space. Gossling and Maitland classified the theory of urban design into three model groups [Gosling/Maitland, 1984: 25-51]:

- The Natural models investigate the glory of the cities in history. Lessons from the cities of the past, which often integrate the natural condition of the site into city's design, have been taken as models. An example is the work of Camillo Sitte.
- The Utopian models try to prescribe an ideal design of the city. Their approach tends to be comprehensive and may encompass the ideal social structure that can support their ideal city. Some utopian models adopt the models of nature, hence their organic approach. The utopian model has a futuristic time frame, as man has yet to realize the entirely new ideal systems of social, economy and city structure. Examples are the work of Bacon, Campanella, Le Corbusier, Wright, Howard; and in modern times Krier and Isozaki.

- The third model is the model from the arts and sciences. This model makes an analogy of the human body to the city. The heart of the human is expressed as the city center, the lungs are the city parks, and the blood vessels are the streets and so on. The fields of anthropology and psychology contribute to this model. The notable authors of this model are J.Jacobs and O.Newman.

There are three basic ways of thinking that determine the philosophy of designing the urban space since Greek era [Broadbent , 1990: 79]:

a) Starting and finishing with pure geometric layout. This is the rationalist approach.
b) Starting with concern for what the human senses would experience, or the empiricist approach.
c) Finding out by trial and error what could be made to stand up in the city, which is the pragmatic way.

A review of urban design theories relevant for designing in developing countries, particularly those in tropical zone, like Indonesia, needs to be compiled. Some urban development concepts that are directly adopted from the west or developed countries have proven to be problematic in their application to the less developed countries. Techniques from industrial countries are intended for the conditions there. However, they may be unsuitable for developing countries like Indonesia. Some of those techniques are not even yet proven, or even have already failed in the country of origin [Frauenfeld, 1982: 27-33].

Moudon has classified the theory of urban design more intricately into many groups, as explained in section 1.2.1 of this dissertation. The following is a more detailed explanation on some stream of studies from Moudon’s classification that are considered relevant for urban design in Indonesia. This classification is based on its research strategy, the mode of inquiry, the focus of the research whether on the object or the subject, and the research ethos either etic or emic. Etic is a research in which the informant is the researcher, while emic is when the informant is the person being observed [Moudon, 1992: 332-336].

2.3.1 Picturesque Studies

Until the late 1960s, picturesque studies of the urban landscape were the foundations and the base of urban design. These studies still play an important role in both academic and practice of urban design. The majority of introductory texts in urban design are based on picturesque studies. These studies are actually an accumulation of commentary of the attributes of the physical environment: Authors identify and describe both verbally and graphically what they think are "good" environments. Such good environments are analyzed for their relevance to contemporary urban design problems.

The works in picturesque studies are object-oriented and underscore the visual aspect of the environment, which is seen as a stage set or a prop of human action. One of the most remembered writings on urban design in the picturesque style is Gordon Cullen's *Concise Townscape* (1961). Cullen attracted the attention of architects and planners disturbed by the technical, barren aspects of modernism. He assisted them in formulating the scope of urban design as an interdisciplinary activity requiring both architectural and planning skills.

Precursors of the picturesque type include Camillo Sitte (1889) and Raymond Unwin (1909). They have recently regained popularity in urban design. Paul Spreiregen's book *Urban Design: The Architecture of Town and Cities* (1965) is still used as a standard introductory urban design text. Also widely known is the work of Edmund Bacon (1974).

Moudon believed that the picturesque studies are not practiced as fully as they should have been, despite their popularity. Moreover, there has been no new publication for several years following this research and thinking mode. The forcefulness of the original picturesque argument is reduced by development in the intellectual context of urban. The reason is, if these studies are etic and phenomenological in nature – still widely regarded in contemporary planning and design – they do not advocate these philosophical beliefs in a conscious manner. Rather, the studies take on the attitude of a naïve "good-professional-knows-all" that has been criticized since the early 1970s [Moudon, 1992: 338].

2.3.1.1 Gordon Cullen

Cullen coined a term Townscape as an art of the environment [Cullen, 1976: 193]. Cullen believed that every place and city of the past, particularly during the Middle Ages, has its own character – a personality that provides a feeling of warmth and liveliness of the inhabitants toward their city. The cities of his era (1960s) were monotonous and lacked personality. This happened because the cities were planned only to address the traffic problems and the social and physical needs of the population. The emotional aspect was unattended.

In his view, the city is a combination of two worlds: a world that supports the material needs of the people (health, comfort, private life), and subjective values that experience the material world. The latter is the emotional level that determines the personality of the city, which has the following features:

- warm contact between city and person
- very impressive, dramatic
- stimulating, exciting activities in the urban space

Cullen does not put forward his explanation as theory; instead, he just explains it with many sketches and photos of examples of space compositions that has character. People only need to observe and understand, based on the spatial experience, the daily life in the city. The urban design principles are related to the visual experience and the emotional reaction of the observers.

We apprehend the environment almost entirely through vision, but he proposed three ways to apprehend the environment, through optic, place and content of the townscape:

- Optics: **Serial Vision** is attained because the image of the previous environment is still in our memory as we move into the next environment. The significance of this is that although the pedestrian walks through the city at a constant speed, the scenery of cities is often revealed in a series of jerks and revelation. This is called the **Serial Vision** [Cullen, 1976: 9].

- Place: This point is about the human reaction to the position of his body in the environment. Cullen put emphasis on the difference of being **Here** and being **There**. This difference emerges when a perceiving person is inside or outside a place, entering or leaving it. At this level of consciousness, there is a range of experience stemming from the major impacts of exposure and enclosure. When people are placed on the edge of a high cliff, then they will have a very lively sense of position. But when they are at the end of a deep cave, they will react to the fact of enclosure. The human body has an instinct to continuously relate itself to the environment. This sense of position becomes a factor in the environment that should be exploited [Cullen, 1976: 10].

- Content: this point pertains to the fabric of cities, i.e., color, texture, scale, style, character, personality, and uniqueness. The fabric of city shows evidence of differing periods in its architectural styles and also in the various accidents of layout, because most cities are of old foundations. Many cities display this mixture of styles, materials and scales. Yet people tend to design a city that has symmetry, balance, perfection and conformity. Nevertheless, conformity is boring and is difficult to avoid from the point of view of planners. But to avoid it deliberately, by creating artificial diversions, is surely worse than the original boredom [Cullen, 1976: 11]. Within a commonly accepted framework - one that produces lucidity and not anarchy - we can manipulate the nuances of scale and style, of texture and color and of character and individuality, juxtaposing them in order to create collective benefits. In fact the environment thus resolves itself into not conformity, but the interplay of **This** and **That** [Cullen, 1976: 12].

Cullen has an enormous vocabulary of design that addresses the above-mentioned three points of townscape design. The vocabulary will help designers to join the points together into a new pattern created by warmth and power and vitality of human imagination.

2.3.1.2 Camillo Sitte

Different from other writers of his era (e.g. Baumeister), Sitte put forward the aesthetic quality of the public spaces as the objective of urban planning. The purpose of urban planning is to make the people safe and happy.[8] In his time, the rise of industrialization threatened the cities with urban problems that eventually would eliminate the urban realm. He proposed to build beautiful urban spaces and buildings that will "educate the public".

Sitte turned to unplanned and incrementally developed towns derived from the Middle Ages, as well as Greek, Roman and Italian sources, in search of everlasting basic urban design principles: the continuity of space, in which buildings were mere instances or provided a transitory framework, and the continuity of time, which caused a perpetual evolution of the urban fabric [Collins/Collins, 1986: 14]. With this, he hoped that the urban life would be renewed and would contribute to the well being of the people.

Artistic improvement of the city is necessary. Art has a social and economic value, as artistic town structure transforms into the feeling of home and possibly also evolve into a point of interest for tourism [Sitte, 1983: 149]. Sitte stated further his urban design principles in the following manner:

- A natural growth process of the city structure contributes to its liveliness.
- The aesthetic of the ancient city structure was not purely a matter of form, but also related to function and sensuousness.
- The beautiful structure of the old cities should not be directly copied as it is. Instead, only elements that contribute to the beauty of the city that is applied in the modern context.
- Streets and squares should be treated as a closed artistic whole: the effect, which stems out of their form, should be used as the basis of planning. Instead of dividing the building parcels as the basic element, streets and squares should be used as the entry point of the urban design.
- Some main streets and open spaces shall be designed with high level of artistry, while the rest is sacrificed for satisfying the material needs.

Sitte did not study the elements of the city individually; instead, together in the perspective effect to their surroundings, in their total context. From this study he recommended some urban design rules:

- Open place as the center point of the city in terms of design as well as function.
- Public life in public space is a crucial point in designing open space.
- The center of the open space is kept free. Monuments, fountain etc. are placed at the side of the open space. The wall of the open space is potential as an ideal

[8] Städtebau soll dazu dienen, die Menschen sicher und glücklich zu machen. [Sitte 1983: 2].

background for monuments and figures (highlighting the dominance of the monument/figure by contrasting it with the backdrop).

- Importance of the enclosure of open space.
  - Open space should have the "closed" impression in perspective view.
  - Only one of the street mouths should be visible from any point in the open space.
  - To improve the enclosure we can use archway or columns.
- The format and size of the open space determine the location of the main building and the format of its façade.
  - Deep open space with high main building on narrow street.
  - Wide open space with wide main building with low facade on a wide street.
- Irregularity as design principle of the open space.
  - Irregularity should arise from a gradual historical development.
  - In spite of the irregularity, such place appears in a certain rhythm and calmness due to the balance of masses and its compliance to the basic conditions.
- Richness in design motifs: frequent changes of building alignments, broken street lineament, different street widths, loggia, gable, etc.

2.3.1.3 Edmund Bacon

Edmund Bacon, just like Cullen, sees the importance of the awareness of space for urban designers and architects. According to his view, architecture consists of mass and space, but many architects tend to neglect the space and are more preoccupied to articulate the mass. Bacon defines architecture as "the articulation of space so as to produce in the participator a definite space experience in relation to previous and anticipated space experience" [Bacon, 1974: 21]. Designers should take a stance as participator, to feel and see themselves as the users of the designed object. Designing begins with apprehending man's role in the environment. Architects and Urban Designers create plans and design, communicate them to other parties using the presentation technique that can best convey the idea. Finally, the others will transform the idea into reality by constructing the designed building.

Beholding (seeing with understanding) is just not a mirror that always remains the same, but a living power of **apprehension** which has its own inward history and has passed through many stages [Wöllflin, 1915 in Bacon, 1974: 11]. **Representation** is the means by which spatial concepts are reduced to tangible images/drawings, and **realization** is the establishment of definite three-dimensional forms, i.e., the actual city [Bacon, 1974: 30]. Great design is produced only when these three elements – apprehension, representation, realization – are synchronous. A summary of the interaction of apprehension, representation, and realization over four periods of history is represented below. Bacon put question marks in the last two sections of the modern period because the questions raised in these areas are still unresolved. By now, computers aid urban designers in representing their ideas, by using multimedia, hyperlink and virtual reality (VR) models.

	Apprehension	**Representation**	**Realization**
Medieval Intuitive Design	Awareness of total environment	Simultaneously several objects from various viewpoints	Construction closely integrated to its environment
Renaissance Individual-Centered Design	The precise observation of one individual at one specific moment	Rational, rigid, one-point perspective of a single object in space	Single, self-sufficient, detached from surroundings
Baroque Single Movement System	Experience as simple continuity in time	Simultaneously multiple planes receding in space to single vanishing point	Structures related to movement along a single axis
Modern Simultaneous Movement System	Space-time relativity	? Hyperlink and VR	?

Table 2-2 Summary of the interaction of apprehension, representation, and realization over four periods of history. Source: Bacon.

The urban designer should understand the concept of the underlying design structure in city building, in order to influence the growth of cities. There are two reasons why the design methods for single buildings are ineffectual on a city scale. First, the geographic extent of the city is so vast that no person has the capability to concurrently develop explicit three-dimensional plans for the entire area. Second, the scale of the city is so large that various sections of it are built and rebuilt over a long span of time. A concept that can meet these two requirements is the "simultaneous movement systems" or path along which the inhabitants of the city move or are transported.

This approach is organic and undertaken sequentially and not simultaneously. Initially, the basic movement patterns in the city should be studied to establish a movement system. The movement system must be related to natural as well as manmade topography. In the end, simultaneous movement systems can organize the designs of many architects into a coherent whole and provide the ingredient of continuity that is so essential when building on the vast scale of the city. The concept provides a basic design structure to which each architect can relate his individual work. For example, it will influence the positioning of an architect's most significant buildings and intensify the importance of the landmark there.

According to this concept, a building should not be designed as an entity that is detached from its surrounding environment; instead, it should be regarded as a part of building masses that shape the flow lines. Participation of the building masses should be maximized and their involvement should be simultaneous.

2.3.1.4 Summary and assessment

The visual appearance of the physically built environment is important in creating cities with personality, which in turn may increase the happiness or well being of the residents. Urbanity will be fostered through public life in public space and must have fine spatial quality (high degree of enclosure, and other aesthetical criteria). Each theoretician tried to attain this goal in different ways.

Sitte's design rules are not directly applicable for Indonesian cities, because the public activity is intended to take place in the open space/square, whereas in Indonesia, it happens mostly on street pavements. In this respect, Cullen's suggestion for serial vision and the detail design of the urban open space and its street furniture that dramatizes the experiencing of the environment is more applicable. Bacon also proposes to articulate the urban space along the movement system, where each building is seen as part of the building masses that shape the flow lines.

The theoreticians agree that for a natural growth, all building should be designed in conformity with its surrounding environment. Sitte and Cullen advocate some irregularities/variation in detail design, without jeopardizing its conformity to the whole environment. The variation in Sitte's term can only be achieved after a long gradual evolution of the city that takes the natural and man made features into consideration. This reinforces Bacon's proposal of organic development along movement system that is related to natural and man made topography.

2.3.2 Image Studies

Image studies include a significant amount of work on how people visualize, conceptualize, and eventually understand the city. The most influential work in this category is Kevin Lynch's *The Image of the City* (1960), which prompted the spring of succeeding research. Even many planners and designers consider the image studies as the main contribution of urban design to the design fields. Sometimes Lynch's approach is regarded as continuing the picturesque studies, but it is the people's image of the environment that is sought out, not the professional observer's. Thus image studies are intrinsically emic and subject-oriented. Moudon saw that Lynch had been influenced by the works of E.T. Hall ([1959] 1980, 1966), Rudolph Arnheim (1954, 1966), and Gyorgy Kepes (1944, 1965, 1966) [Moudon, 1992: 339].

During this era of the 1960s, the influence of the social sciences on design grew. Image studies focus on the physiological, psychological, and social dimensions of environments as they are used and experienced by the people, and on how those aspects do or should shape design and design solutions. The importance given in these studies to the lay person's view of the surrounding environment has transformed urban design activity: nowadays, most of the complex urban processes use Lynch's five elements, as well as questionnaires, surveys and group meetings.

Much of material in the image studies is based on the research of perception in the field of psychology. For example, James J. Gibson (1966) in his book *The Senses Considered as Perceptual Systems* investigates the sensory organs: how do they physically function and receive the stimulus. This knowledge is applied to investigate the process of perception.

2.3.2.1 Kevin Lynch

Lynch strives to create and understand environmental art, which can be described as art in space and art as space. The urban design's main role is to meet the psychological needs of the residents. Everyone has the need to know well his or her environment and build his own conception of it. The image has great practical and emotional value for the residents: a clear image of the city not only helps people orient themselves, but it is also the basis of individual development that supports a social life in the society [Lynch, 1960: 4].

The qualities that determine the image of the environment are imageability, legibility and visibility. He saw two conditions in this respect: first, the imageability of the city must not come from its entire area, but some dominating objects (such as landmarks) are enough. The second condition is that the structure of a large city is arranged, such that it can illustrate a certain order. Lynch identified five elements that structure the image of the city: Path, Edge, District, Landmark, Node.

Each of the elements serves as the building block for a clearly differentiated structure of the city. Lynch explained the design rule for each element.[9] Urban designer should try to design each element (Path, Edge, Landmark, Node) so that it is clear and distinct from its surrounding, except for the District that should be homogenous.

Lynch suggested two stages planning for the image of the city. The first is an analysis of the existing image through "mental mapping" of the residents. The second is designing a visual plan of the 5 elements based on the result of the analysis. Nevertheless, this concept remains abstract; there is no explanation about the relationship and the frequency of the image elements.

2.3.2.2 Michael Trieb

Michael Trieb of the University of Stuttgart leads a research group that was active in researching this picturesque stream of study in Germany. The group based its

[9] see Lynch, 1965: 114-125 for more detailed explanation of the design rules.

research on the premise that the architectural impression hangs primarily on the scope and the accuracy of the vision of the human eye *(Der architektonische Eindruck hängt in erster Linie vom Sehvermögen des menschlichen Auges ab und zwar vom Umfang und der Genauigkeit)* [Maertens, 1884 in Hörmann & Trieb, 1977: 12]. The objectively and scientifically researched physical viewing is coupled with the subjective interpretation, spatial perception and its effect on people. From here, Trieb defines the urban design at three levels: the level of urban design, the level of the appearance of the city, and the level of the image of the city *(das Stadtbild)*.[10]

The city does not materialize accidentally; instead, it is a product of conscious and unconscious decisions in the areas of economy, social and culture. The three-dimensional form of the city appears as an interplay between the visible urban elements of landscape, ground plan, open space and buildings [Trieb, 1988: 14]. Hence he tries to propose a holistic planning method for urban design that encompass the urban design substance in planning as well as the planning instruments to implement them in all levels of city planning.

The attractiveness of the city comes from its buildings and spatial diversity that subordinate to a common framework. This was possible because of a gradual growth and a long period of development of the city. Such an evolutionary process is not realistic in modern cities, so that design principles to recreate the design richness in the modern city are proposed. Each proposed principle is an interplay (diametrical opposition) between two polarities, summarized in the following:

- Unity and diversity: the different forms vary within a certain integrative frame.
- General and special: some objects (but not too many of them), that are different from the common others, have a special form and place that give more intensive meaning to the whole.
- Continuity and change: this is a gradual change of form, where the changing form still has certain continuity from the previous phase.

[10] The German word *das Stadtbild* can have three meanings. The most tangible is *das Bild der Stadt* or the photograph of the city. The second meaning is the landscape of the city. This refers to the appearance of the city, which is commonly known in the UK thanks to Cullen's book on townscape. The most abstract meaning of *das Stadtbild* is as the image of the city, which was

- Type and metamorphose: a kind of change in form, where the archetype is still recognizable in the new form.

Trieb saw the possibility of designing the urban space in all levels of planning from the level of urban development program, land use plan, *Rahmenplan*, *Bebauungsplan*, to the level of *Gestaltsatzung* (design by-law). The level of the plan corresponds with the level of urban design: at the highest level (the urban development program) we plan for the image, while the lowest level (the design by-laws) controls the physical design of the city. The design by-law is formulated more precisely related to each specific urban area. The objectives in designing the urban space are also set for each level of urban design as following [Trieb, 1974: 128]:

- The level of city-image: the higher objective of the process- and system-planning, for instance individual character, attractiveness, etc.
- The level of city-appearance pertains to the part of the physical urban environment that is perceived by the observers. The objectives at this level are for orientation, home-feeling (*Heimat),* stimulation, beauty. This objective is covered in the area/district planning.
- The level of urban design, i.e., the creation of the physical urban environment. This objective is iterated in the city object planning for implementation.

Sequence planning is the core for designing the appearance of the city. The appearance of the city can be measured in terms of the following qualities [Trieb, 1974: 140]:

- The qualities of appearance: intensity, dominance, clarity, contrast, uniqueness, imageability.
- Relationship qualities: the continuity of perception and the continuity of use/function, which can happen in four alternatives.

Continuous perception and Continuous function	Continuous perception but Discontinuous function
Discontinuous perception but Continuous function	Both discontinuous perception and Discontinuous function

popularized by Lynch. (Koerte, Arnold. "Historic Preservation and Inner City Revitalization". Panel Discussion in Institut Teknologi Bandung, 31.4.2000)

- Sequence qualities: repetitive elements that give "order" instead of monotony, and surprise elements that organize, give structure and differentiation. Too many surprise elements can end in chaos.
- Effect qualities: that can be attained using the elements of preferable location, suspense, accentuation/emphasis, stricture and continuation (*Vorzugslage, Hemmung, Hervorhebung, Verengung* und *Weiterführung*).

Trieb proposed a planning process for urban design that consists of four phases, beginning with a research of the history of the image of the city. The second phase is defining the goals of urban design for the city in the form of *Leitbilder* (similar to urban design scenario). The third phase is an analysis of the existing image of the city. The last phase is planning in the form of planing guidelines for the entire city and the parts of the city. Design suggestions and construction measures can be derived from here. Such guideline should not be treated as anything fixed, instead as a long term, flexible urban design concept [Trieb, 1988: 65].

The design suggestion is the red thread that influences the shape of the urban design: the design suggestion links the individual construction project to the townscape. Therefore the architects should follow it as design guideline.

The major design elements in image studies are divided into two major categories, namely the open space or city square and the street. The open space has been discussed in many publications, such as Hitt (1990) and Moughtin (1992). Therefore, the open space will be discussed only briefly here. A more interesting topic concerns the street, its function and its form as analyzed from the viewpoint of urban design by the image studies.

2.3.2.3 The street

Rapoport defines the street as: "the more or less narrow, linear spaces lined by building found in settlements and used for circulation and sometimes other activities." Different from the street, road is not lined by building [Moudon, 1987:13]. The role of the street as circulation channel cannot be disregarded in all major cities. Nevertheless, its use has been dominated and its design has been dictated by automobiles. The cars – which are normally powered with internal combustion engine – bring many problems such as noise, air pollution, accident, etc. [Buchanan, 1963: 14-21] Traffic planning must be undertaken with a holistic view in mind, designed by a multi-disciplinary teamwork of experts. All aspects must be considered as the base for a coherent plan [Buchanan, 1963: 198-201]. The following explanation only discusses the image aspect of street.

Expressways and other fast-traffic roads have a major role in destroying the unity and homogeneity of a city, because they cut the city into several disjointed blocks. Therefore extreme care should be taken if expressways are routed through the city [Buchanan, 1963: 196]. The expressway has also its benefit for urban design purposes. When the urban designer utilizes the layout of these wide roads to define the form of the city, it could enhance the imageability of the city by allowing a clearer look at the city's silhouette. This practice is similar to the role of rivers in medieval cities [Lässig, 1968].

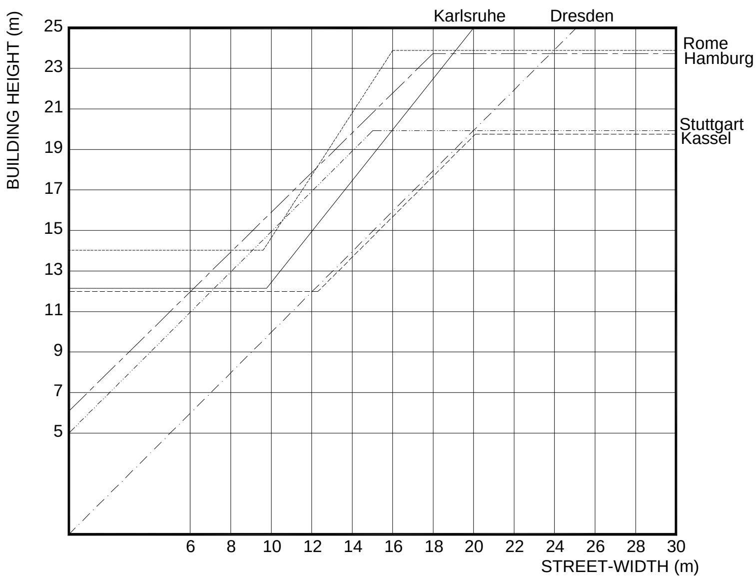

Figure 2-4 Examples of street cross-section measurements. Source: Stübben, J (1924). *Der Städtebau*. In Hörmann, E and M. Trieb (1977) p.51.

The formal aspect of the street is defined by the cross-section of the street, i.e., the ratio of the street-width to the building height; by the street alignment; by the length of the parts of the street; by the street-walls and their ending; on the design of the street surface. The diagram above shows examples of street cross-sections from some cities in Germany and Italy. The effect of the streetscape diminishes when the street-width is wider.

Maertens postulated that the "artistic normal width" of the street is equal to the height of the buildings on its sides. The following table explains the effect of the ratio between the street-width to the building height:

Ratio	Spatial quality of the street
1:1	enclosed and very narrow
2:1	the place is spatially enclosed, but not felt as narrow
3:1	the best ratio, not too wide but still has a spatial appearance
6:1	maximum ratio to keep the spatial enclosure, and the buildings do not block the view from the street.

Table 2-3 The ratio of street-width to the building height. Source: Maertens.

However, a quadratic proportion of 1:1 could become monotonous if applied throughout the city. From an aesthetic viewpoint, a horizontal- or vertical-rectangle proportion is better. To differentiate the various streets in the city, a distinguishing stepping is necessary [Hörmann/Trieb, 1977: 51]. The diagram above gives some possibility of variation of these proportions.

The width of the street should correlate to the function of the buildings on its sides. A street with monumental buildings such as museums, theaters, ministry buildings should have a width of W = 2 x (H-1.60) meter, H is the building height. This will produce a view angle of 27° that allows people to enjoy the view of the building. Streets with retail use on the ground floor and private residences on the upper floors are best designed with a width of W = 1 x (H-1.60) m, or a view angle of 45°. In this case, billboards and signage can be read from the sidewalk at the other side of the street, but the viewing angle to the residential part in upper floors will be uncomfortable. This width is also applicable to local streets in residential areas that have row houses [Hörmann/Trieb, 1977: 52]. We have to keep in mind that this view angle is meant for pedestrians only. Motorists see the road with a different angle [Buchanan, 1963: 196].

Aside from the proportion of the width to the height of the surrounding buildings and vegetation, the spatial effect of the street depends on the proportion between the length of the street and its width. The minimum proportion (length:width) for a street to have a spatial character is 5:1. The maximum proportion is 30:1. The spatial character cannot be attained at ratio greater than this. Up to 80 meter street length can be normally perceived [Hörmann, 1977: 54]. Some examples are the Unter den Linden in Berlin with a proportion of approximately 1000:50 or 700:36, and the boulevards of Paris with a proportion of around 30:1. In average, the proportion of **25:1** can be used as a norm.

Appleyard studies the impact of traffic upon the people who live on the sides of the street. There are three categories of street environment [Appleyard, 1981: 17]: streets with Light Traffic (2000 vehicle/day, equals 200 vehicle during peak hour) are very comfortable to live near, while Moderate Traffic (8000 vehicle per day, 550 vehicle during peak hour) begins to be noisy, and Heavy Traffic (16.000 vehicle per day, 1900 during peak hour) poses a danger to the pedestrians. Using this category, the street is analyzed in terms of its traffic hazard, the noise and stress, how well do neighbors know each other and how many friends one has in the neighborhood, and the territory of the home along the street [Appleyard, 1981: 18-23]. Appleyard advocates the management of the street to be undertaken with a participatory process, in order to attain a desirable category of street environment with a low level of quietness [Appleyard, 1981: 263].

2.3.2.4 Pedestrianization of the City

There are various activities that take place on the street. Rapoport classifies these activities into [Rapoport, 1977:83]: non-pedestrian movement, i.e., vehicular movement of car, motorcycle, bicycle, tram, bus etc. and pedestrian activity. The pedestrian activity that can be classified further into dynamic pedestrian activity of people moving from one place to another, strolling along a shopping arcade, and static pedestrian activity, where people are sitting in an outdoor café or on a sidewalk bench, standing waiting for public transport, playing, etc. The degree of freedom with which people can go by foot and look into the area offers a good benchmark for the evaluation of the civilizational characteristics of a city [Buchanan, 1963: 40].

The cultural difference between the people in European and South East Asian countries (including Indonesia) can make two different pedestrian environments out of the same building setting. The arcade along the streets in Paris is quieter than those along the streets of Singapore or Jakarta [Rapoport, 1977: 85]. This is caused by the culture of Asian people that use the public open space, especially the street sidewalks, for their daily activity. It is more common to see street hawker/vendors, artists (musicians) in Asian arcades, compared to the Parisian arcade.

Moudon hopes that the street is used for the public in a democratic manner [Moudon, 1987]. Pedestrian, bicycle, rickshaw and other means of transportation should be granted the same right to use the street as the cars possess. Children should be able to play safely on the sidewalk around their home. The most common and highly visible way to do this is by pedestrianization of the city center [Moudon, 1987: 24]. Pedestrianization was a popular program during the decades of the 1970's and 1980's. Many major shopping streets were turned into pedestrian malls or transit malls that are serviced by public bus.

This kind of "pedestrianization movement" is later brought into the residential area as well. One of the most successful efforts to pedestrianize the residential streets is the *Woonerf* areas in The Netherlands. The pedestrianization in Dutch cities does not completely exclude cars from the street; instead, it reduces the traffic speed, creates more space for planting, pedestrian paths and play areas. This is done by zigzagging the street, changing the material of the street surface with rough paving material to warn the driver that in this area pedestrians have a higher rank, building speed bumps and bottle necks at the mouths of the street and so forth. Children can play more safely in the *Woonerf*, compared to the regular residential street [Moudon, 1987: 34, 63].

A concept similar to the *Woonerf* is called the *Wohnbereich* in Germany [Moudon, 1987: 42]. The *Wohnbereich* is not so intricately designed as the Woonerf, but there are special street signs that will tell drivers if they enter a *Wohnbereich*. The maximum speed in *Wohnbereich* is limited to 30 Km/h. Prinz (1995, 1999) gives plenty of examples for designing a more pedestrian-friendly *Wohnbereich*.

All these efforts to pedestrianize the street will enable the use of the street as playground. Children in European cities, just like in Indonesia, often play on the street or sidewalk around their home. A pedestrianized street can provide a safer playground for the children and thus more reassuring for their parents if their children can play in an area safe from the heavy traffic [Moudon, 1987: 45].

2.3.2.5 The open space

What is important in the design of square[11] is its degree of enclosure, aside from its proportion and detail (material, furniture/ornaments). Enclosure pertains to the alignment of streets that open to the square, the height of the buildings that make up its walls, and the characteristic of the walls. Sitte postulates that city squares should appear enclosed in perspective view. Streets that end at the square's corners should be laid out in such way that the observer in the square cannot see more than one street at a time. Trieb elaborated this concept by suggesting a layout of streets around a square that looks like a turbine [Hörmann/Trieb, 1977].

Studying the relationships between the height of an open space to the width of the space, Trieb's group found the following result [Hörmann/Trieb, 1977: 30]. The most often used ratio is between 1:3 and 1:6.

Ratio	The spatial quality of the open space.
1:1	the wall will be seen only half of its height, the space can only be used as a front yard of a building.
1:2	the entire height of wall can be seen, the space is enclosed and as an open space it was felt as narrow.
1:3	the entire wall is only a part of the view, the rest is a part of the sky. The space is not fully enclosed anymore. This is the optimal condition for an open space.
1:6	the relationship of the wall and the sky is reversed. The open space is felt very wide.

Table 2-4 The ratio of height to the width of open space. Source: Trieb.

[11] The German term *Platz* is actually a more accurate expression for the open space. English word "square" has a connotation of a four-sided right angle, whereas the word "place" (which is used in France) is already seldom to be used in English for this. An alternative for the square is the word plaza, which stems from Spanish. The original word Piazza is Italian and not used in English. The dissertation uses the word open space, square, or plaza interchangeably as appropriate. In fact, the term open space includes streets and squares.

Nevertheless, these proportions are not independent of the conditions of the location. Climate, traditions and the behavior of the people determine the most optimum ratio for open places in each region. In southern countries around the Mediterranean, the streets are narrower than those in Germany. The narrow-tall proportion is necessary, in order to create shadows on the street, to protect the pedestrian from the intense sunlight. The reverse is true for countries in the north, where sunlight and air require a wider street [Hörmann/Trieb, 1977: 53].

Aside from the squares, major cities have another kind of large open spaces in the form of city parks and other natural landscapes, such as lakes, riverbanks, etc. City parks have the role as "lungs" of the city, but in Indonesian cities, those parks are disappearing because of the intrusion of other competing uses and the meager budget for their maintenance and rehabilitation. Parks do not need to follow the ratio of squares as described in the table above, owing to the very large ratio (over 1:6) of the space. Moreover, the natural features of large trees and undulating terrain diminish the spatial effect of the surrounding walls.

The riverbanks as natural environment should be protected with plantings or pavement. River has a potential to be used as a green corridor in the city that contributes to the overall quality of the city's open space.

2.3.2.6 Summary and assessment

Image studies in urban design are better than the picturesque studies in the sense that image studies try to find the residents' image of their city, instead of imposing the urban designer's image/ideals as in the picturesque studies. The identification of the people's image, which is proposed by Lynch using the "mental mapping" technique in the first phase of the planning process, is a prohibitively difficult task. Nonetheless, Lynch's basic idea of using the image quality of the built environment for designing urban areas is a valid and strong argument as proved by the number of other researches based on this idea.

In applying the image theory for urban design, Trieb proposes a more feasible (for application in Indonesian urban design guidelines) method that consists of four stages. Instead of the difficult "mental mapping" technique, he incorporates the public image and people's aspirations or dream of their city into a *Leitbild*, that serves as the goal of the image planning.

Trieb has also clearly illustrated how to implement the image of the city in the upper level plan (urban development program), which is then translated into city-appearance in the middle level plans, and finally in real terms of physical environment in detail plan such as urban design guidelines.

Both Lynch and Trieb continue the picturesque theory of urban design that calls for a sensory-rich, attractive, stimulating environment (similar to the pre-industrial cities) that has some irregularities, but still in harmony with the whole. The urban design rules or suggestions in image study have a more systematic and structured approach than the picturesque study. The design rules and proportions for street and square give some rough guide for Indonesian cities, but functional plan for traffic must precede the dimensioning of street and squares with image rules.

2.3.3 Environment-Behavior Studies

The study of relations between people and their surroundings is an interdisciplinary field. The history of environment-behavior studies has not been fully documented, but it stemmed from work done since the turn of the 20th century in environmental psychology and sociology. In the 1960s, sociology and environmental psychology were used as the source of precious information by the design and planning professions in the new emic realm of research on the environment. Since then, the relation of person-environment has become a genuine part of the architectural profession, covering research on how people use, like, or simply behave in given environments. The field was quickly accepted in urban design as Amos Rapoport, Kevin Lynch, and Donald Appleyard began to investigate the human dimension of neighborhoods, urban districts, and cities broadly [Moudon, 1992: 339].

Environment-behavior studies actually are well-entrenched in design thinking, despite the fact that these studies have recently suffered some setback, at least in architecture, where their development is perceived to have taken away from design. Moudon found that Amos Rapoport, Oscar Newman and others remained important figures in the education and practice of architecture. She indicates the influential figures who contributed to the field are I. Altman (1986; Altman and Wohlwill 1976-85), D. Canter (1977) and others.[12] Principal authors directly related to issues of urban design include C. Alexander (1975, 1977, 1979, 1987) on pattern language, A. Rapoport (1977, 1982, 1990) on residential environments, city, and settlement and Donald Appleyard (1976, 1981) on city and streets.

The primarily positivistic stand of environment-behavior studies has become an area of contention and is cause for criticism less from designers and planners, than from the field's own ranks. Questions are raised as to whether people's attitudes, feelings, behaviors, and so on, should be pigeonholed in such categories as perception and cognition. What about the whole of people and environment relationships? What about the intangible, the spiritual?

2.3.3.1 Personal space

Personal space is the mechanism for achieving a desirable spacing between one person and another, which is appropriate as established by cultural norms and intimacy [Trieb, 1974: 180]. The study of personal space is used to determine the proper distances in open space. Personal space is different in "contact" culture (such as Arab and Mediterranean countries) and the "non-contact" culture in West- and North-European countries [Trieb, 1974: 109].

Edward T. Hall, who has researched personal space among different cultures, is a prominent researcher in environmental psychology. The following is a classification of distances for human interaction among people of the middle class in the USA [Hall, 1969: 116-125]:

[12] Note: of these secondary references, only Canter was reviewed in this dissertation.

Zone	feet	meter	Function
Public distance far phase	over 25	7.6	This distance exists around important public figure.
Public distance close phase	12-25	3.7-7.6	At this distance a person can take an evasive or defensive action if he is threatened. People must speak a bit loud and select the words and grammar that are easy to hear in conversation.
Social distance far phase	7-12	2-3.7	Business and social discourse at his distance is more formal than at the close phase. This distance can be used for insulating or screening unwanted people.
Social distance close phase	4-7	1.2-2.1	Distance for impersonal business.
Personal dist. far phase	2.5-4	0.7-1.2	As the expression "keeping someone at arm's length". Physical dominance.
Personal dist. close phase	1.5-2.5	0.5-0.7	Distance used by wife-husband in public.
Intimate dist. far phase	0.5-1.5	0.15-0.5	Uneasy for stranger. In public is not proper.
Intimate dist. close phase	0-0.5	0-0.15	Love making, wrestling, comforting

Table 2-5 Distances in personal space. Source: Hall.

Rapoport investigates further the personal space that is proposed by Hall [Rapoport , 1977: 181]. He found that the spatial distance according to the viewing ability of the human eyes are as following:

feet	meter	Perception
4000	1219	know that there is a person
400-500	122-152	distinguish the gender, between man and woman
75	23	recognize who the person is
45	14	the face of the person is clearly seen
3	0,9	the distance for social contact

Table 2-6 Distances related to perception ability. Source: Rapoport.

In outdoor space, a distance of 3 feet between strangers is intolerable, 40 feet (12 m) is the intimate sphere and 80 feet (24 m) is the human scale. In Indonesia these distances are smaller, but not yet formally researched. The old urban squares are smaller than the 450 feet (137 m) dimension that was proposed by Lynch.

Another example of cultural difference is between the Anglo-Americans and the Latinos. The Anglo-Americans do their activities indoors, and they consider the streets and other open spaces as a "waste space". In contrast, people in Latin and

Mediterranean lands use the indoor space only for private activities, as the main setting of their live is outdoors [Hall, 1969: 92]. The walls of the homes in Mediterranean cities – just like the walls of the house compounds in Japan – line both sides of the street, creating an outdoor space on the street [Ashihara, 1970: 10].

Exploring further the territoriality of people in urban space, Oscar Newman launched a theory called *Defensible Space* (1972). This theory answers the problem stated by Jane Jacobs in 1961 (*the Life and Death of Great American Cities*). Nevertheless, the provision of defensible space has only increased the possibility of appropriation (in the model of territorial behavior, below), if there is also suitable condition for occupancy and an attachment of the place [Altman, 1980: 191].

Altman, Rapoport and Wohlwill proposed a model with three components, where **Territorial behavior** together with **Nonspatial rules and customs** resists the **Threat of unregulated interaction**. Territorial behavior in the form of the act to control a space is called the appropriation of space, which is done with 3 components: occupancy, defense, and attachment to place [Altman, 1980: 183-184]. The phenomena of street hawkers, slum and kampung in Jakarta (Chapter 5) are consistent with these components of territorial behavior.

Humans perceive the world through many "channels" on their body; through vision, olfaction, sound, tactile (the feeling underfoot as one is walking), kinesthetic (the sensation that is felt when one is turning or going up or down), the movement and the temperature of the air around the body [Rapoport, 1977: 184]. Of all these sensors, vision is the major source of information of the outside world [Rapoport, 1977: 193]. A fine example of the perception with skin and muscle is in Japanese gardens, which leads the visitors to make many sudden turns, halt, and change of elevation [Hall, 1969: 51].

2.3.3.2 Spatial perception and conception

Actually, people do not directly perceive the real world. There are at least two sets of filters that stand between the real world and the perceived world. The first filter is the cultural image, which comes from the surrounding culture. The second filter is the personal image that comes from within oneself. Thus the same real world A can be perceived differently as A' and A" by two person who came from different cultures and have different personalities [Rapoport, 1977: 38-40].

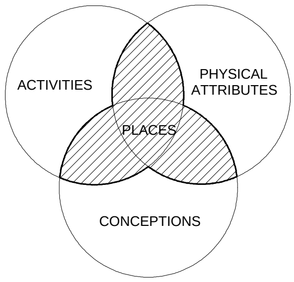

Figure 2-5 The visual metaphor for the nature of places. Source: Canter, 1977.

David Canter found that the place is a result of an interrelationship between Action - Conceptions - Physical Attributes [Canter, 1977: 158]. The difference in the concept of place for various individuals derives from the difference in their interaction with the environment. The difference in interaction with the environment not only makes a difference in their concept of place, but it is the cause of this difference [Canter, 1977: 155].

Our cognitive system contains information just like a map does, including the scale. However, there can be a difference of cognition between individuals. For instance, a mile for farmer is felt as if 3 miles by urban dweller, and Europeans are astounded by how far Americans are willing to go out for dinner, and the size of neighborhood in the United States is generally larger than those in European cities [Canter, 1977: 79]. The difference in distance estimation is caused by the difference of background of the observer, and whether the people use relative judgement or an absolute estimate in kilometer; whether the link is through a barrier (such as mountain) or a smooth straight and level street. The orthodox theory of psychology cites the place of origin and destination of the estimation might cause the difference in the distance estimation [Canter, 1977: 86].

Out of this study on distance-estimation was found that the people who often travel by bus tend to over estimate the distance than those who seldom use busses. Those who regularly travel by the tube/subway tend to underestimate the distance than those who only rarely travel by the tube. A person who lives far from the city center tends to underestimate the distance than those who live in the city center [Canter, 1977: 99].

An environmental design team should elaborate the nature of the place that is about to be created by initially identifying the major places. Then the team should elaborate on the qualities and the attributes of the place. Lastly, the places should be related to each other, so that their qualities can be combined in a hierarchy [Canter, 1977: 163]. Trieb has demonstrated the application of this concept in the design of public open spaces in the city.

To evaluate the design of a place, we can refer to the following relationship [Canter, 1977: 163]: Organizational objectives of the city planners or local authority, such as the objective to create a city with a strong image, are expressed in the brief for the designers, who then create a design of the urban space according to their design concept. People finally use the designed buildings as they see fit in the user concept, which can be different from the design concept. The reality of building usage is observed and evaluated by the local authority for the feedback into the new organizational objectives.

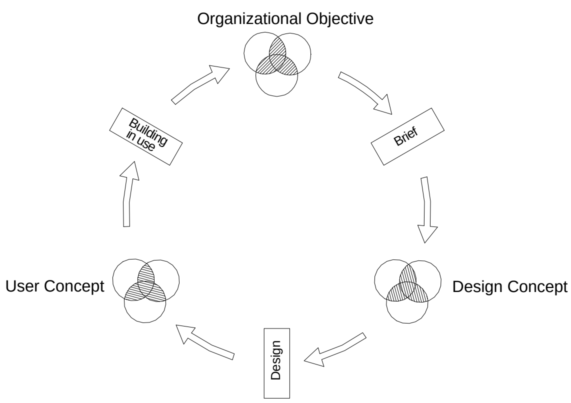

Figure 2-6 The conceptual system for evaluation. Source: Canter, 1977.

The density that determines the feeling of crowdedness is the number of square meters per person per (dwelling) unit. This is particularly worse when the people do not have their own room [Hall, 1969: 172]. Moreover, a person feels more crowded in a warmer place, compared to a cool place. For example, in hot climate people prefer to stand farther apart in a queue line, than they do in cool climate [Hall, 1969: 57].

Many neighborhoods are designed to have a perceived homogeneity, in order to increase its predictability and reduce the unpredictability, and thus reduce stress, due to information overload [Altman, 1980: 37]. The need for environmental complexity should be kept at an appropriate level. People need stimulus at a specific amount: too little stimuli will be boring, but too many stimuli lead to chaos [Altman, 1980: 208]. This need of environmental complexity is different between pedestrians and car passengers, because of the difference in the rate of information to which they are exposed. Pedestrians who move at a slow speed need a rich environment with many details, and these details have a higher level of environmental complexity. This kind of complex environment poses a stress to fast-moving car passenger! The passenger in a car with high speed needs simple environment, which is monotonous for pedestrian [Altman, 1980: 240].

2.3.3.3 Christopher Alexander

Alexander attempted to find a timeless way of building human-friendly architecture and cities. The main task of urban design is to build places where people feel at home: alive and vibrant, peaceful and relaxed and beautiful [Alexander, 1979: 8]. Long ago, people were able to build beautiful houses and cities because of the unconscious way of building organically. Now we have to consciously learn this organic way of building. This organic way of building is developed into a planning model for humane architecture and urban design, which is then documented in a series of his publication.

In his view, the city or building is a natural organism. The task of creating the wholeness in the city is possible, if it is treated as a process that is constantly changing. Trying to apply the growth process of organism into the urban design, Alexander proposes seven detailed rules of growth [Alexander et al., 1987]:

- Piecemeal growth

- The growth of larger whole: 'Every building increment must help to form at least one larger whole.'
- Visions: 'Every project must first be experienced, and then expressed, as a vision which can be seen in the inner eye.'
- Positive urban space: 'Every project must create coherent and well-shaped public space next to it.'
- Layout of large buildings: 'The entrances … main circulation, main division … into parts … interior spaces … daylight, and … movement within the building, are all coherent and consistent with the position of the building in the street and in the neighborhood.'
- Construction: 'The structure of every building must generate smaller wholes in the physical fabric … in its structural bays, columns, walls, windows, building base etc… in its entire physical construction and appearance.'
- Formation of centers: 'Every whole must be a center in itself, and must also produce a system of centers around it.'

From this observation he proposed the planning model that has three main features:

- Recognize the timeless building blocks – the Patterns – and their extension.
- Building with a generative planning process that applies the regularity of the organism.
- Public participation.

Every town, every building is made of certain elements – which he calls patterns – as the ultimate constituents of the environment. We can understand the generative process that gives rise to these patterns. These patterns are then combined into languages: they can be different in detail, but become similar in general outline [Alexander, 1979: 11-12]. Alexander identified 253 patterns from regional level to the city, street, individual building and its detail [Alexander, 1977].

We should find out the elements that constitute the substantial structure of the built environment and make it understandable, if we want to apply them as basic modules for the further buildings. Such elements, which are the basis of all variations of the form, remain unchanged [Alexander, 1977: 84-85]. Alexander draws an analogy of language and the Pattern Language as following [Alexander, 1977: 187]:

Language	Pattern language
• Words	• Patterns
• Rules of grammar and meaning which give connections	• Pattern which specify connections between patterns
• Sentences	• Buildings and places

In practice, each development or each individual building project is to be conceived in such a way that the wholeness of a city on all levels – from building of public spaces to constructing of individual building until the detail design – is preserved and grows as a whole. This is developed into a generative planning process with organic design principles that must be taken into consideration during the planning of the structure of the city [Alexander et al., 1987: 29]. The generative planning process has following characteristics:

1. **Visions** that explain the content and character of the growth. This is similar to the urban design concept. They are not expressed in theoretical or abstract concepts, but in realistic manner such as one's dream "What will be built there?" or "Which form should it have?"
2. **Formation of centers**. This is the geometric form of the whole [Alexander et al., 1987: 92].
3. Design of the **positive urban space**. The urban space may not result as left over of the exteriors of surrounding buildings, instead as a "positive space" that is formed and designed with buildings as the open space enclosure [Alexander et al., 1987: 63].
4. The **internal organization** of the buildings (e.g. location of the entrance, room organization, inner courts and so on) should be arranged coherently and in consideration of the position of the building regarding road and the surrounding environment [Alexander et al., 1987: 77].
5. **Construction**. The details of the buildings also influence the wholeness of the city. Construction and design of building elements such as facade, windows, columns, etc. should be organized three dimensionally, so that they are consistent (in unison) with the mass and the spatiality of the building.

2.3.3.4 Summary and assessment

The study of environmental behavior that has its root in psychology and sociology has contributed much to the field of urban design. The process of perception – cognition – until the conception of the built environment, and its consequence in terms of personal space distances, have helped urban designers in understanding the relation of people and their surrounding environment. Nevertheless, the distances have been measured in the western world and are not directly applicable to Indonesia. There is no study on the exact measurements of personal space in Indonesia. Therefore, the previously mentioned personal space can only be used as a rough guide in Indonesian contexts. The concept of place from Canter is more universal, but it is not an applied theory that can be readily utilized in preparing the urban design guideline.

Alexander's pattern language and the generative planning process are attempts to replicate the natural growth of the city in a synthetic way. The pattern language may be applicable, but an identification of the Indonesian pattern should precede its application, as not all of them can be directly used or relevant to Indonesian context (e.g. the pattern "South Facing Outdoors"). Alexander acknowledges this fact and indicates that each town or neighborhood has its particular set of these patterns, according to its prevailing culture, because the standard pattern varies from person to person, from culture to culture [Alexander, 1979: 68]. The generative planning process can be implemented only if all offices in the planning agency and all concerned people would try together to change the one-sided, egoistic way of thinking of today's society and find a way with which the cities are treated and designed as a whole [Alexander et al., 1987: 242].

2.3.4 Place Studies

Place studies have their root from the study of territoriality by psychologists. The theories of place are based on the importance of people's relations to their environment and yet do not fit properly within the environment-behavior category for several reasons. First, they exercise not only positivistic research strategies. Second, they emphasize the object as an important preoccupation in design, although the concern for both object and subject is central. Third, these studies investigate the emotional as well as the perceptual aspects of people-environment relations. Last, and perhaps the main difference, is their tendency toward derived etic and outright etic interpretations [Moudon, 1992: 340-341].

Place studies encompass a wide variety of researches. Moudon refers to Norberg-Schulz (1980,1985), Thiel (1986), Lynch (1972, 1981) and Charles Moore (1988) as representatives of the place studies scholars.[13] Ashihara (1983) belongs to this group, but differ somewhat because of his close ties with picturesque and image studies.

Moudon has selected the name "place studies" to cover the range of these eclectic studies and to reflect the emphasis on the physical environment and on their sensual and emotional contents. However, it should be noted that the environment-behavior studies also claim the concept of place as central to their endeavors (as in Canter 1977; Rapoport 1982, 1990; Appleyard 1981), thus sometimes making it difficult to draw the line between the two areas.

2.3.4.1 Kevin Lynch

One of the most prominent contributors to place studies, Kevin Lynch, has attempted to understand and address the ultimate question of what makes a good city. He tried to establish a hypothesis for the design profession by taking an analytical approach. In his book, *A Theory of Good City Form*, he offered a general statement of a good settlement, which is one that is relevant and responsive to any human context, and connects general values to specific actions.

He put forward this theory because the normative theory is in miserable condition. Researchers focused their attention on socioeconomic aspects of human settlements, or to an analysis of how the physical form works. Many value assumptions are concealed within their exquisite scientific structures. Meanwhile, Practitioners use only the obvious values (of a good city) in the design activity, and they need to know how to achieve it. A good city form can be attained by fulfilling some performance dimensions. There are five basic dimensions and two meta-criteria that Lynch used to measure settlement quality:
Vitality: the degree to which the form of the settlement supports the vital functions, the biological requirements and capabilities of human beings – particularly, how the settlement can protect the species.

[13] Note: not all of these secondary references were reviewed in this dissertation.

Sense: the degree to which the settlement can be clearly perceived and mentally differentiated and structured in time and space by its residents, and the degree to which that mental structure connects with their values and concepts – the match between environment, our sensory and mental capabilities, and our cultural constructs.

Fit: the degree to which the form and capacity of spaces, channels, and equipment in a settlement match the pattern and quality of actions that people customarily engage in, or want to engage in – i.e., the adequacy of the behavior settings, including their adaptability to future action.

Access: the ability to reach other persons, activities, resources, services, information, or places, including the quantity and diversity of the elements that can be reached.

Control: the degree to which the use and access to spaces and activities, and their creation, repair, modification, and management are controlled by those who use, work, or reside in them.

The two meta-criteria are always valid to any list of good things:

Efficiency: the cost, in terms of other valued things, of creating and maintaining the settlement, for any given level of attainment of the environmental dimensions listed above.

Justice: the way in which environmental benefits and cost are distributed among persons, according to some particular principle such as equity, need, intrinsic worth, ability to pay, effort expended, potential contribution, or power. Justice is the criterion that balances the gains among persons, while efficiency balances the gains among different values.

These performance dimensions can be used in evaluating existing cities or cities in history. They can also be applied in programming, which is the first step of designing the city or part of the city that will be modified. Lynch applies this theory in issues of city and neighborhood size, relationship between growth and conservation, and urban network.

2.3.4.2 Yoshinobu Ashihara

Another contributor to place studies, Yoshinobu Ashihara, compares the Japanese architecture to the European architecture. The Japanese architecture is called floor architecture because the houses there are governed by an architecture of the inside that is oriented to the floor. The Japanese consider floor as pure, "sanctified" space demarcated from the surrounding environment. The "inside" part of the environment is only the house, whereas the open spaces outdoors are considered as the "outside" and hence unimportant. In this architecture, the view from inside the house is more important than the view from outside the house (looking at the façade of the house). Consistent with this conception, the buildings in Japan cannot define the streetscape very well.

The European architecture is called the wall architecture, as the wall protects the occupants of the house against the harsh weather. In this concept, the wall is more important. The entire urban space, i.e., the space within the wall of a medieval-city, is regarded as "inside" and has an "internal order" not unlike that of which characterizes the Japanese home. Therefore, the urban outdoor space in European cities is better designed than the Japanese city. In this architecture, the view from outside is dominant. The façade of European building is designed to be enjoyed by the onlookers.

The difference of the floor architecture and the wall architecture is also reflected in the townscape, particularly in the relationship of street and buildings in urban space. In many western cities, houses are separated from the street by carefully manicured lawns and colorful flowerbeds. This front lawn contributes to the attractiveness of the entire neighborhood. In the residential areas of Japan's major cities, by contrast, the houses are surrounded by high wall for privacy and safety. Thus, the garden is seldom visible from the street and plays a negligible role in the townscape. The front yard of the western-style homes is included in the external, public order rather than internal, private one [Ashihara, 1970: 39-41]. Aside of the wall architecture or the floor architecture, more important for designers is to define the boundary between interior and exterior space.

Another type of townscape that is fundamentally different from either of the above can be found in Greece and Italy. The houses there are built directly on street and have no front yard. But, different from the Japanese townscape, the wall that is facing the street here has doors and windows. These openings promote continuity between, inside and outside, permitting the scene of human activity to overflow into the street.

An important aspect of townscape composition depends on the ratio of street width (D) to building height (H). D/H=1 is regarded as a kind of median from which spatial qualities vary depending on whether D/H is greater or less than 1. When D/H increases above 1, the space opens up, and as it passes 2, gradually becomes expansive or vast. But as D/H decreases below 1, space grows increasingly intimate, until eventually it is just cramped. Balance is achieved at a D/H ratio of 1. For actual building purposes, D/H ratios of about 1, 2, or 3 are the most feasible, although Le Corbusier often employed a D/H of 5 and sometimes close to 10 [Ashihara, 1970: 46]. The D/H ratio of open space described here is similar to Maerten's finding for street section that was cited by Trieb's group (see section 2.3.2.3).

Other aspect that determines the townscape is the relationship between the width (W) of the shop fronts to the breadth (D) of the street. Motomachi, a bustling retail street in Japan, has a favorable ratio of W/D = 0.6. A row of stores whose W proportion is shorter than the width of the street will give the townscape an Asian character. The ratio of W/D = 1 has a modern look or character [Ashihara, 1970: 49].

Ashihara based his theory on the Gestalt phenomenon of exterior space and positive and negative space.[14] External space without corners is qualitatively inferior to that enclosed by well-defined inside corners. In the example below, the four round pillars in (A) create a space that has almost no enclosure, due to the non-directional character of the round pillars. When four walls are erected (as in Figure 2-7 B), their mutual interposition creates a kind of enclosed space, but it lacks definition and clarity because the corners are open. But if angled wall is put

[14] According to Wolfgang Metzger (1953) *Gesetze des Sehens*. [Ashihara, 1983: 61]

up at four corners, as in drawing (C), a mutually reinforcing sense of enclosure is created. The law of enclosure or the law of the inside applies here: Areas that are clearly outlined so that they are partially or completely encircled emerge more easily as integrated figures. A square becomes a clearly defined enclosed territory by virtue of its inside corners [Ashihara, 1983: 61].

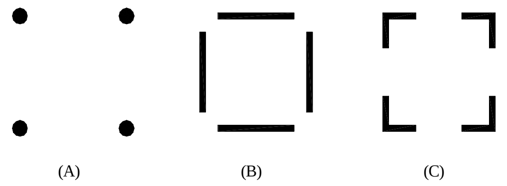

Figure 2-7 Degree of Enclosure [Ashihara, 1983: 63 after Metzger, 1953].

The law of enclosure is related to the positive or negative qualities of an urban space. Positive (P) space is "something" that is clearly demarcated, and negative (N) space is the undefined emptiness outside. For example, the space inside a vase is a P-space whereas the space around the vase is an N-space. On the other hand, if there are two vases, there is P-space within each of the vases, in the space between the two a quality emerges, which is also akin to "something"; this can be called positive-negative (PN) space. If a number of vases are gathered into a circle, then a situation equivalent to the inside and outside of an individual vessel emerges. The space encircled by the vessels becomes defined - it is "something", or positive space - and the space outside them is "nothing", or negative space [Ashihara, 1983: 55; Ashihara, 1970: 20]. When the vases are replaced by individual buildings, then a group of buildings encircles a plaza that becomes a P-space.

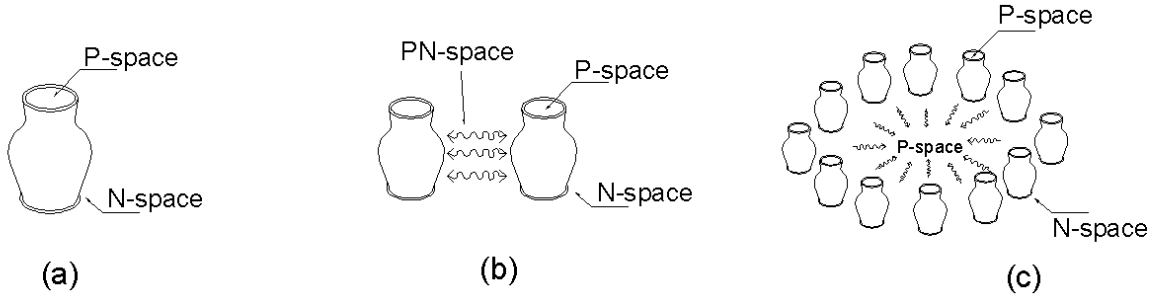

Figure 2-8 Positive space formed by several surrounding entities. After Ashihara (1983).

Based on the research on human perception, the easiest and most comfortable area to see is within 10° angle of depression. This phenomenon explains why the sites over a hill have a high value for luxury housing, because it has this bird's eye view to the valley below. Trieb calls this location as *Vorzugslage* [Trieb, 1974: 140 ff.]. This kind of place is always preferred than the low situated place, and mostly reserved for dignitaries' residences, tourist scenic spots, etc.

2.3.4.3 Summary and assessment

Lynch's theory differs from other normative theories because his theory tries to be general. He uses value dimensions in place of universal standards and functional dimensions. Defining the form of the city by specifying performance is more general and abstract than doing it with prescriptive model. Performance specification is best for writing regulation and guidelines, since they hold fast to the underlying effect that is wanted, while leaving the means flexible and open to innovation. This makes his theory more suitable to be used in the very early phase of urban design, where urban design programs can be evaluated in a more explicit manner with the basic dimensions of a good city form.

An example of more prescriptive theory is presented with Ashihara's finding on the aesthetic townscape. His examples of townscape in Western and Japanese cities highlight the difference in townscape design philosophies and the resulting built environments. Unfortunately his examples are different from the urban reality in Indonesia. However, the degree of enclosure of open space and the positive and negative types of space are universal and directly applicable for Indonesian urban design. So is the case with the ratio of shop front width to the width of the street (0.6 for bustling Asian character).

2.3.5 Typology-Morphology Studies

Typology-Morphology research – coined typomorphological study – encompasses a long tradition of studying cities, their form, and particularly the socioeconomic processes that influence their production. The Krier brothers and Aldo Rossi have relied on such studies. They have popularized the notion that the study of architecture leads to an understanding of society that is as valid as the understanding gained from such established disciplines as economics or sociology. Nevertheless, none of them have explicitly introduces to the design fields the substantial data on urban form and urban form-making that have been generated by research in typology and morphology [Moudon, 1992: 342].

In his study, Leon Krier found that functional zoning (separation of activities between sleeping, working, and consumption) in the city has destroyed the social - economic - cultural life of the city. To alleviate this problem, he proposed a system of "quarters", which are areas of up to 33 hectares that accommodates all urban functions [Broadbent, 1990: 196].

Typomorphological studies use building types to describe and explain urban form and the process of shaping the fabric of cities. Geographers who are working on this subject have preferred to talk about urban morphology only to stress their interest in documenting the form of the city. Others, including architects, convinced that buildings and their related open spaces are the essential elements of city form, have focused on classifying them by type to explain the physical characteristics of cities.

Every typomorphologist approaches the study of building types in a particular way: they are more interested in the relationship between buildings and the open spaces surrounding them, rather than in the form of the buildings or their architectural style. Thus they see buildings and the complementary open space as interconnecting units of space that are usually defined by the boundaries of land ownership. The owners or users of these units of space may create or manipulate them. Together, they make up the urban fabric. Buildings and open spaces are classified by type: types represent different generations pertaining to successive building traditions, or with each generation, types reflect the different socioeconomic strata of the people for whom they were intended [Moudon, 1992: 342].

Typomorphologists' analyses include all building types, both monumental and ordinary, because they claim to explain the structure and evolution of the city. But they intentionally spend most of their time in the study of common residential buildings that constitute the greater part of urban fabric. Hence typomorphological study differs from works emerging from art history, rejecting not only its focus on special building types (usually highly designed and non-utilitarian ones), especially its typical isolation of individual buildings from the city as a whole and its treatment of buildings as timeless, unchangeable memories of the past [Moudon, 1992: 342].

Despite their object orientation, typomophological studies treat the built environment not as a static object, but as one constantly changing in the hands of people living in and using it. Indeed it is more proper to define the nature of research in this area as "morphogenesis" - the study of processes leading to the formation and transformation of the built environment, rather than "morphology" - the study of form. The approach is thus rooted in history, as traces of the past are strongly and inescapably ingrained in the dynamics of all urban environments. This approach to history relates directly and specifically to the design and planning professions. Examples of typology-morphology studies are the works of Curdes (1993), Moudon (1986) and Rossi (1966).

2.3.5.1 Gerhard Curdes

Curdes sees the importance of reintroducing three-dimensional town-structure planning, because it has been neglected during the last 70 years (despite the fact that town-structure planning is a planning form that was always an instrument in classical urban planning). Because of the neglect of town-structure planning, the connection among individual buildings themselves and between them as well as the organizing open-space and roads have been lost in many cases of contemporary urban development [Curdes, 1997: viii].

First of all, in studying urban morphology, we have to understand the forces that shape the structure of the city that emanate out of following needs [Curdes, 1997: ix]:

1. Minimizing the traveling effort in terms of physical, psychological, as well as time cost. This is the most important force, which works everywhere.

2. The urban space requirement of important (main) production forces.
3. People's need for variety and distinction. This includes orientation aspect and symbolic expression for people's identity.
4. The need for order. Order has an important function in the individual and collective organization of the urban environment. It relieves the perception organs, facilitates search procedures, and gives a framework to diverging space requirements.
5. The social sense of belonging. This leads to certain spatial organization patterns such as district and quarter, but also to the meaning of the city's history: people do not live only in present; they need the past and the future for expressing their identity.
6. The inertia (sluggishness) of the physical urban structure and the spatial form of its organization. In a long-term comparison of urban structures, it is noticeable that the development principles that had been determined in the early phases of the development hardly change. Existing structures resist the physical and legal-economic modifications. The town planning and urban policy must therefore spend substantial political, financial, personnel and temporal resources, if they want to change the urban structure against its internal logic.

Aside from the six factors mentioned above, there can be other factors that shape the structure of the city, such as economic aspect, concurrence with other cities, the residents' need for self realization, rationality, the need for change, pride, exercise of power, individual freedom, need for security and harmony, etc.

Because the physical urban structure is so durable and sluggish, it forms a stable framework for the life of humans in the cities in countries with long urban culture. Therefore, the living generation must generally arrange itself, with what the preceding generations have left them. The adjustment to new needs in larger cities can only be done in small steps, and is only limited possible.

The urban morphology can be understood as a network that aggregates itself from elements interconnected by interdependent relationships. Four levels of elements work together: parcel/building, block/quarter, district/city, territory/region. Each ensemble on these levels has a relative autonomy, whereby the levels are dialectically in such a manner linked together that each section contains elements of the lower levels and itself is inserted as element in an higher level organism. Change within one level carries out itself in such a manner that the flexibility of the existing structures is used [Curdes, 1989: 143].

Curdes has researched the urban space and identified basic elements of the urban structure. The physical basic elements of the structure – the various forms of structural arrangement – are explained in a typological representation of their characteristics and variations. The basic elements are block, courtyard, row (parallel and perpendicular to street), solitary building and group of buildings, etc. However, he does not elaborate further on its application for the individual design problem of the town planning.

2.3.5.2 Urban structure with three components

Aldo Rossi suggested that the fabric of the city consists of two things, i.e., the general urban texture and the monuments [Rossi, 1973]. The general urban texture is composed of buildings lining streets and squares. This will certainly change over time, as people construct new buildings or renew them. The monuments are some large-scale buildings whose very presence gives each city its particular character. They embody the memory of the city, which is kept from generation to the next generation of the city's residents.

The monuments have a particular characteristic of beauty, i.e. their character as works of art. From this, such architectural monuments obtain a meaning more important than their memory value. This artistic meaning is the reason for the fact that they were never destroyed. Contrary to what many architectural theorists believe, this artistic meaning is also the most important feature of the city and represents the only case in which the design is an expression of the total town structure [Rossi, 1973: 78]. Such a theory assumes that an analysis of the city is possible only by the investigation of their individual parts, because the growth of a city in each case refers only to such sections. Hence the exact knowledge of the primary elements and their surrounding environment is crucial for the development of a city whereas the master plan of the city – which must be examined in other points of view – only receives a smaller meaning [Rossi, 1973: 79].

The permanence of architectural monuments puts them in a stressful relationship vis-à-vis the development of the city, whose growth appears thereby as dialectic process. Rossi sees the city as a continuous mass into which large-scale elements can be inserted. These insertions will conform to the types that have been derived from the study of historical precedents that exhibit simple geometry such as centralized blocks, courtyard forms, and linear blocks. These new elements are planted into the city as foreign bodies with an intentional exaggeration of the discontinuities occurring between the existing fabric of the city and these insertions [Broadbent, 1990: 170].

Broadbent believes that in addition to Rossi's "monuments" and "urban texture", each city needs a third component that might be called "out-of-town" housing. Most cities have this in the form of suburbia [Broadbent, 1990: 348]. There is another form of housing-outside-the-city that is far better known in the developing world. It consists of self-built housing, or rather self-built communities of houses, schools, shops and so forth. Such informal developments often have a far greater vitality than anything that has been formally planned.

After the 'owner-occupier' builds a basic dwelling in the "out-of-town" area, he usually begins to build around it concrete block walls, clay shingles or corrugated metal roofs and so on. This is a process of "hardening" the new slum area, as the dwellers build up their resources. Such processes occur everywhere in developing countries. The shanty-dwellers can be encouraged by schemes in which site and services are laid down onto which they can then build their dwelling. Such self-built housing is clearly very cheap to build. This is the cheapest possible kind of dwelling, since the labor costs are literally zero [Broadbent, 1990: 349].

From this morphological view of the city, we can expect building of three kinds emerging: Rossi-like 'monuments' which clearly will be the work of professional designers; development within the more general urban texture which generally will also be the work of professionals, and the 'free' zones in which self-builder are encouraged and even facilitated by 'sites and services' schemes [Broadbent, 1990: 350].

2.3.5.3 Summary and assessment

Typomorphological studies are useful in understanding the three dimensional structure of the city and its underlying formation process. The caveat of applying such theory in urban design practice is the "environmental deterministic" nature of such process. The theory is good for analysis of existing cities, but for planning new (or redevelopment) areas, it must be complemented by other normative planning theories.

Findings from typomorphological studies are particularly practicable for achieving a good urbanistic quality, as they focus on the external relationships of space and building form.[15] The linkages between the four levels of urban elements (parcel-block-district-territory) is a plausible way for ensuring multiple tiers of objective of urban development in an area, and a robust structure of the city.

The three-component urban structure fits with the actual situation in Jakarta and most other major Indonesian cities. Residential areas constitute the greater part of the cities, while kampung makes up around half of the total urban area. The monuments are also present in the form of large landmarks. However, the proposition for implementing a 'site and services' scheme in kampung area needs further contemplation, along with other alternatives of intervention.

2.3.6 Environmental Consideration in Urban Design

Urban ecology is a necessary and essential component of urban design. Urban design requires not only a solid *Fachwissen* (specialized knowledge of the subject), but a high moral position that man must respect his environment [Prinz, 1995: 5]. Despite the fact that urban design demands the consideration of light, air and open space, planners and architects have tended to limit the consideration of their impact to the health, comfort, and visual qualities of the environment. Since late 19th century, people have put a great concern on the greenery in the city — as a romantic drive to bring nature into the exploding metropolis and as a necessary outlet for the recreation of the growing population. During the late 20th century, the concern about excessive energy consumption in urban environments has risen dramatically, but most of the work done to address these concerns has dealt primarily with transportation functions, the automobile industry in particular. The structure of compact settlements are analyzed in search of the lowest mobility demand (and CO_2 emission) without sacrificing the quality of life [Curdes, 1989: 104]. Most energy-conscious buildings were designed by some architects as a response to this concern. In sub-tropical countries, the buildings are designed to conserve heat, while building- and site planning in hot, humid countries like Indonesia are intended to dissipate heat.

Since then, however, the larger field of ecology has grown considerably, affecting many disciplines [Odum, 1971]. Urban ecology emerged across disciplinarian boundaries, introducing systematic methods of analyzing and planning the city. These methods consider geology, topography, climate, air pollution, water, soils, noise, vegetation, and wildlife. Inclusive approaches to understanding the city and its environs as a naturally balanced environment are now being developed [Moudon, 1992: 344]. Moudon cited the works of Gordon (1990), Todd and Todd (1984); Van der Ryn and Calthorpe (1986) and Yaro et al. (1988) for ecological urban design method.[16]

The contribution from landscape architect to this field is remarkable. The seminal *Design with Nature* (1971) by Ian McHarg has been followed by Anne Whitson Spirn's *The Granite Garden.* They explain how the movement of water and air affects pollution and health, how proper design can reduce air pollution generated by cars, how vegetation affects air flow, etc. These publications also include elements of flora and fauna as integral inhabitants and hence determinants of cities.

[15] see section 2.1 for explanation on urbanistic quality.
[16] Note: not all of these secondary references were reviewed in this dissertation.

Despite the fact that these ideas are not in the mainstream of urban design, they begin to show the relationships that exist between the more commonly considered social and psychological components of the environment and their biological dimension. In the new philosophy of urban design, symbolic gesture and slick, modern style is replaced by functional forms that place more value on ecology and history. Short-term market consideration is replaced by stability, and the uniqueness of the local character is enriched and reinforced, instead of standardized. The philosophy is consistent with compact and mixed-use community, multifunction building, a variety of transit system, ecological agriculture, water conservation, and much feeling regarding the uniqueness and integrity of the region [V.d. Ryn/Calthorpe, 1986: viii-ix in Wibawa, 1997: 71]. Urban development should not be regarded as opposed to the natural environment, but as a part of it. Urban design and nature are actualized as an integrated artistic work among others, by determining the site plan according to natural considerations of topography, body of water, climate, view points, vegetation and sun angle [Lee, 1995: 216].

2.4 Urban Design Conclusions

The definition of Indonesian urban design is presented in the following table:

Process	▪ Integral part of the process of city and regional planning ▪ Process of giving physical design direction ▪ Accumulation of a long process in building the city
Product	▪ Landscape including open space and streetscape, buildings ▪ Arrangement of the physical objects and human activities which make up the environment
Aspects in urban design	▪ Primarily the three dimensional design aspect of city planning ▪ Also non-visual aspects of social, politic, economy etc.
Characteristics of urban design	▪ Relationship of new development to old, existing structures ▪ Space and relationship in urban design is essentially external

The function of contemporary urban design in Indonesia is to satisfy the following needs of the population:

- Psychological needs for safety and stimulation.
- Emotional needs for identity and interaction among residents.
- Perceptual need for orientation.
- Physical need for comfort.

In an attempt to fulfill these needs, urban design theories have been put forward. All urban design theories are partial, i.e., they address only some and not all issues faced by the urban designers. The theories often emphasize the philosophy of the urban design theorist. Thus the search does not try to find a single correct approach, but a compilation of theories that will help urban designers in facing the issues in urban design in Indonesia.

The urban design consideration as an integral part of the process of city planning enters at different levels: the highest level is the urban development program or master plan for image planning, the middle level is the district plan for planning of city-appearance or perception planning, and the most detailed urban design is for physical plan that is controlled by urban design by-laws. The following is an explanation on selected urban design theories for Indonesian application. It is explained in more or less chronological order following the urban design formulation process.

In this process, findings from environment-behavior studies (in terms of spatial perception and conception, territoriality and defensible space) help urban designers in understanding a good urban space: the fit between the perceived image and the functions of the open spaces and buildings. However, this serves only as background information in the urban design process. Moreover, personal space distance has not been measured in Indonesia, so that the values in Table 2-4 serve only as a rough guide. These studies are complemented by the place studies that help us in understanding and recreating the urban realm.

In the early stage of planning, urban design vision (as proposed by Trieb and Alexander's generative planning process) serves as guidance for developing urban development plans. The bulk of urban design activities takes place after the urban planning process of that part of the city is completed. The outcome of this planning process – in terms of general land use pattern, floor space area distribution, traffic capacity, etc. – is used as a decision environment or constraint in urban design.

Morphogenesis is valuable in analyzing the structure of the existing urban environment, particularly in understanding the reasons or forces of its conception.

Because of the fixed nature of the built environment, analysis of existing structure (three-dimensional and also its development pattern) is necessary. This is continued with some improvement of the open space quality. The model of "urban structure with three components" will be used in the analysis of the fabric of Indonesian cities, as it matches the conditions there.

Preliminary urban design plans can be evaluated with the seven performance criteria of good city form.

The recurring themes – that are suggested by various theoreticians – in designing the urban space are also valid for Indonesia cities:

- Organic development of the district/city as a whole. The urban built form, resulting from organic development as proposed by various theoretician to attain such organic quality, has a homogeneous and contrasting character. Such environment has variations of the built form under a common framework.
- **Homogeneity** is proposed as a mean to avoid too much information from the built environment that will lead to chaos, improve unity of city or part of a city, and give a feeling of safety. This is done by planning homogeneous Districts[17], the polarities of unity-general-continuity in the design principle from Trieb, and in the general urban texture including the kampung in the structure of the city. **Contrast** has the role of organizing and structuring the city, lending its identity, and giving accent. Contrast is attained by designing elements (Path, Edge, Node, Landmark) clearly distinct from their surrounding, the polarities of diversity-special-change, and the monuments (in Rossi's term).
- Public realm emanates from public activity in public open space. Hence the quality of open space receives much attention from urban designers. Positive space with an adequate degree of enclosure is demanded by Sitte, Alexander, Cullen, Trieb and Ashihara. To create such open space, the values in Table 2-5 indicate a rough guide of the dimension of the space[18], which is also the case with the ratios of open space (Table 2-3) and street

[17] District as an image element.
[18] These values are more universally valid than those in Table 2-4.

section (Table 2-2). This only determines the proportion of street and squares, but their size/dimension come from the traffic planning and standards of open space area per person.

- Design of streetscape as part of the public open space system that contains flow and bulk of human activity. This is conducted through sequence planning (Trieb), serial vision (Cullen), and simultaneous movement system with buildings that take part in defining it (Bacon).
- The wholeness of the city structure can be secured by linking urban design objectives of each level to the higher level and the lower level in the city-district-block-parcel hierarchy.

The detailed design of public open spaces is conducted after the general urban design for urbanistic quality has been structured. Sitte, Cullen, Alexander and Ashihara provide many concrete suggestions for the design of public open space, which in many cases are universally valid.

The promotion of mixed-use development and pedestrianization of city centers are some of the measures to enhance their vitality and the public realm [Procos, 1976: 20]. In the Indonesian context, the public realm is the dualistic urban life of formal and informal sectors that take place in the public open spaces. Urban designers in Jakarta have to think beyond the aesthetic proportion and composition of buildings and open space, but must also address the issues of equal chance of use of the urban space, security and safety of all users of the urban space.

Application of the above described theories and methods is adapted further to fit the Indonesian context that is explained in Chapter 5.

3. URBAN DESIGN GUIDELINES

3.1 Controlling the Urban Design

Before the industrial age, European cities had a fairly homogeneous appearance.[19] The majority of buildings in modern times have been constructed in all conceivable styles. No harmony or consistency can be counted on by the town planner, except where some form of guidance or regulation can be introduced. With some guidance, it is hoped that the variety of each building will be in accord with the harmony of the whole. Unwin proposed to control the design of the city through guidance, critique, and rewarding good design with honourable mention for the designers or with material prizes [Unwin, 1994: 360-374].

The reality shows that local officials must make decisions on daily basis that are related to the design of the urban environment, even when no guidance is written for that municipality. In such cases, the officials must rely on their common design values, which are not explicitly stated. In the meantime, the success of a city plan is often measured on the appearance of the built environment that it has produced. This is *nota bene,* a design-related issue. Therefore it is recommended that the values be explicitly stated so that the development permit applicants can understand the design preference of the local government.

Now we understand that there is a need to design the city and even have created some design for the city. Of course, the urban designer wishes that the design were complied with in the realization process. But there still lies a big problem of ascertaining that the urban design is implemented in the city. How can we make sure that the buildings or the built-environment in the city are constructed as the urban designer envisioned them? This is a problem of the gap between the idea and its actual execution.

[19] The buildings were built with material and technology that were locally available This is a reflection of the image of social order in that era. Major cities in Indonesia show the legacy of the colonialist's conception of order, which was not the same with their European contemporaries'. See Chapter 5 and Appendix-A for more explanation on Indonesian cities.

The integration of urban design controlling measures into the formal planning process has reached different levels in various countries. In some countries, urban design is merely visions of the local authority and not a part of the legally binding planning system, while in other countries, it is deeply entrenched in the hierarchy of urban plans. In all cases, the implementation of urban design is often determined in the negotiations between the applicant of urban development permit and the local authority.[20] In fact, urban design in its broadest sense is a politically contested area where the design needs public support for its long-term implementation.

Urban design policy and guidance can be included/integrated into all levels of planning from the national level down to the most detailed design of street furniture or planting standards. The following table reveals the full range of guidance that is available to planners and urban designers. Each country may organize and document their urban design policy differently as indicated in the table – with UK for United Kingdom and FRG for the Federal Republic of Germany – but the terms are interchangeable between systems.

NATIONAL	National planning guidance Circulars, Guidance Notes, National Codes (UK, FRG)
REGIONAL	Regional Planning Guidance Regional plans (FRG), Regional strategies, land-use allocations, landscape plans (FRG), regional vernacular guidance (UK) Sub-regional guidance City-region plans, General plans, Structure plans (UK; FRG), local vernacular guidance (UK)
MUNICIPALITY/ DISTRICT	Local guidance Local plans, district plans (UK, FRG), Comprehensive plans, Green plans (FRG) Design goals, objectives, principles, policies Zoning controls, Design codes – general, Development standards, Street classifications, Highway standards
NEIGHBORHOOD	Sub-area guidance Community plans, neighborhood guidelines, zoning ordinances
Large sites:	Area Strategies, Development frameworks, Master Plans (subdivision plans)
Small sites:	Design briefs (UK), Building plans (FRG)
Design detail:	Design codes (detailed), signage / street furniture, Planting standards

Table 3-1 The policy hierarchy for design. Source: Punter, 1999.

[20] Prof. Barrie Needham and Prof. Hans D. Kammeier, personal communication.

The nature of policy and guidance is developed in a sequence from goals, objectives, design principles, prescriptive and performance design guidelines, advice procedures and implementation devices. These terms are often used very loosely in the literature and in practice, and lead to confusion (even among many professionals) between development briefs, design briefs, design guidelines, and other similar terms [Loew, 1997]. John Lang (1996) and A.C. Hall (1996) have tried to clarify the relationship between design objectives, design principles and design guidelines, which are then summarized into the following diagram that identifies the key components of design policy [Punter/Carmona, 1997].

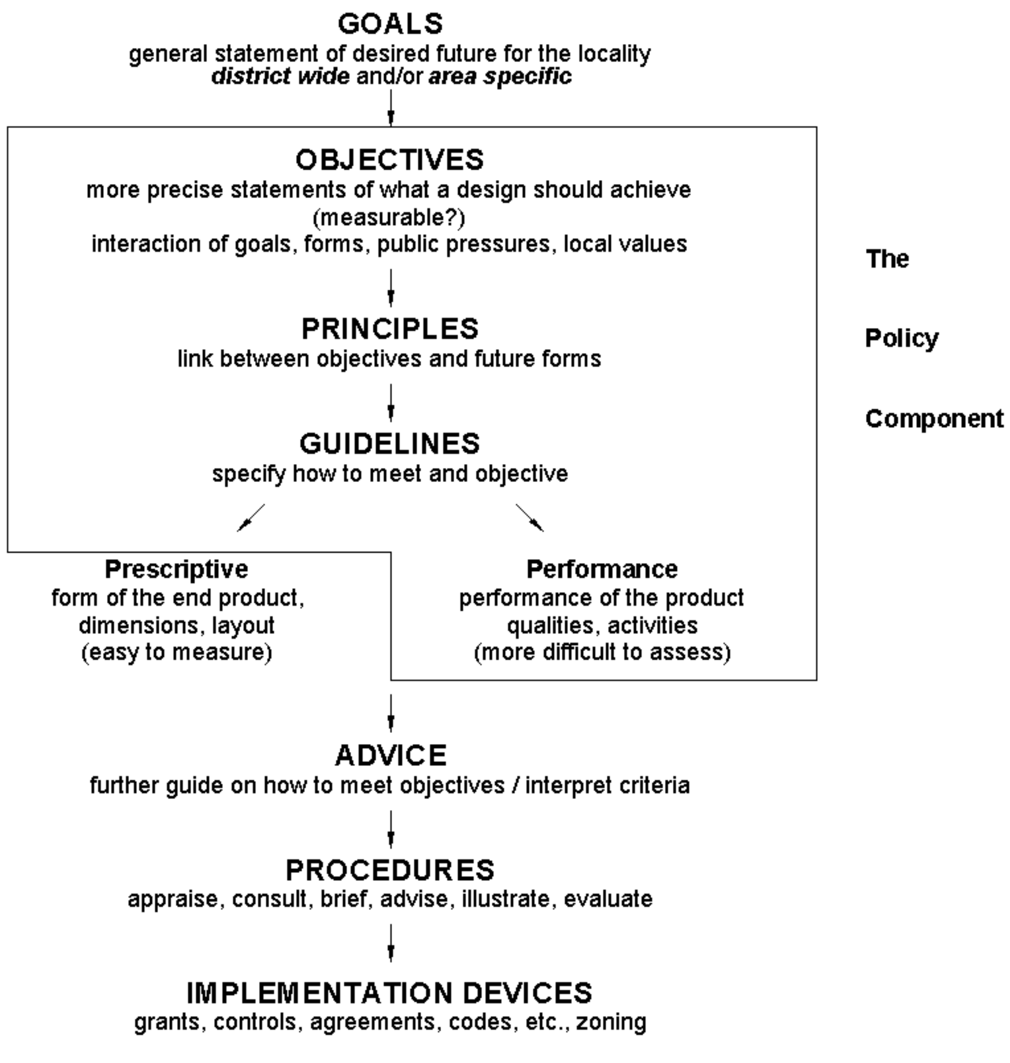

Figure 3-1 Key components of design policy. Source: Punter and Carmona, 1997.

As recognized from the definition of urban design in section 2.1, urban design is primarily a process. The process may begin with an appraisal of the site and its surrounding, then develop design briefs and key principles, provide public consultation and advice, illustrate and explains the proposals, and finally the criteria for evaluation and monitoring of the end product. Such a process has been taking place in the USA as well as in England [Punter, 1999:28-29]. Figure 3-2 shows the urban design policy development process and the permit processing process that implements the policy.

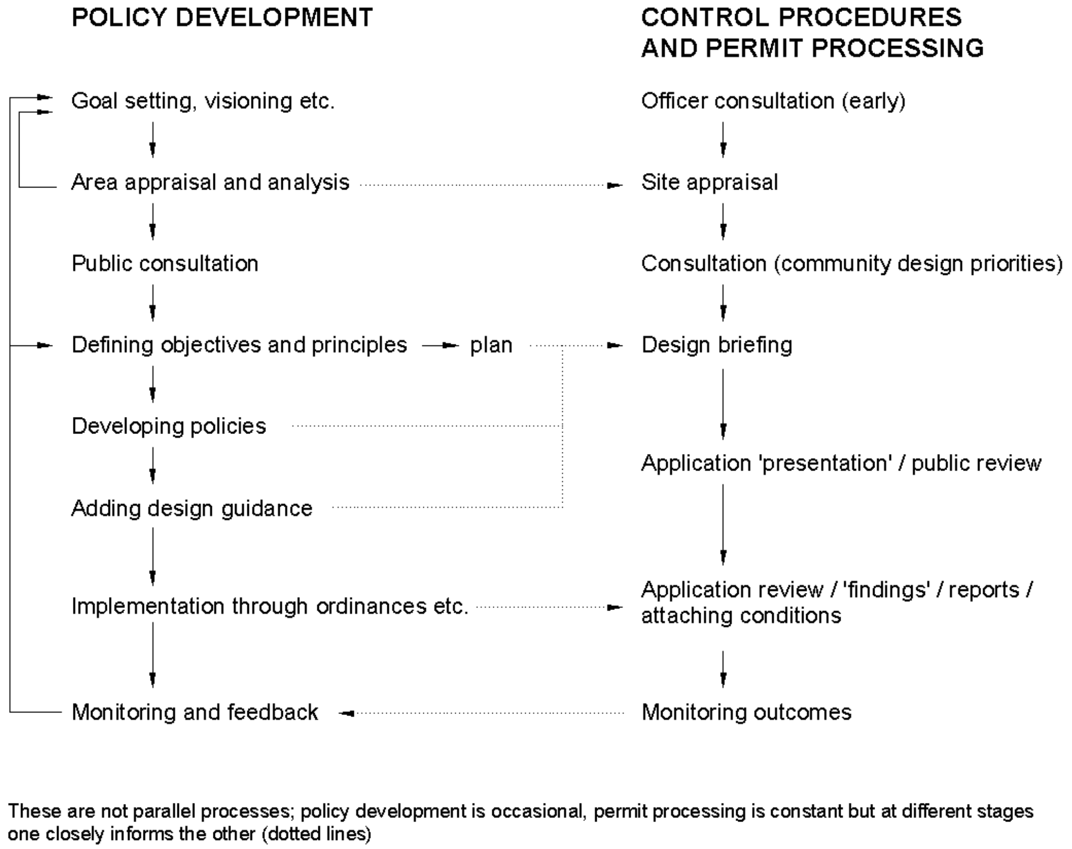

Figure 3-2 The policy development process. Source: Punter, 1999.

In the review process during permit processing, the local authority needs to measure the proposed development and compare it to the intended urban design. The government officials may have difficulty in clearly comprehending the urban design, when expressed in performance guidelines.

Some users of the urban design complain about the vagueness and lack of precision of the vocabulary in the design. There are some 'motherhood' expressions, such as "creating a nice and lively urban environment". It is the nature of such visionary design to be abstract, even philosophic since such high level (*übergeordnet*) guides should have the properties generally applicable and fit for future, even utopian, conditions. To be doable, such a design vision (*Leitlinien*) must be translated into a set of strategies to achieve it [Streich, 1988]. Furthermore, the strategy can be expressed in a set of design principles, against which application can be measured. These design principles are then incorporated into the design guidelines, as Blaesser argued that “guidelines should be detailed, not visionary, and employ precise language but not be too design-prescriptive” [Blaesser, 1984 in Punter, 1996: 33].

The problem of urban design guidance lies in answering the questions of 'How should the substance of urban design ideas be formulated?' 'How should the intentions of these ideas be conveyed?' and 'Through which procedures can they be best realized?' In this case, it is sensible to investigate on which planning level, using which planning and legal instruments, and in what form can the design-related concern be made and conveyed to reach the urban design goals.

3.2 Lessons from Other Countries

This section will describe the practice of controlling the urban design in the USA, the United Kingdom and Germany. The rationale of the countries selected is explained in section 1.3. The review of urban design control practices in other more developed countries serves the purpose of providing first-hand empirical knowledge/experience on this matter for Indonesia.

3.2.1 Urban Design Control in the USA

Municipalities in the USA have for long attempted to control the design or their city. Since 1967, New York has experimented with bulk control regulations [Barnett, 1982]. The contemporary US urban design control is embedded in a hierarchy of guidance that functions in two ways. First, they are expressed in terms of goals, objectives, principles, guidelines, as well as quantitative standards. Second, they encompass an area from sub-regional to citywide, district and neighborhood levels to the individual site [Punter, 1999: 209]. These design control instruments exist in the form of Comprehensive or General Plan, Zoning Code, Design Guidelines, Downtown Central City Plan (for certain area in the city center), and also for other parts of the city with the Neighborhood Community Plan and the Area Design Guidance. Not all municipalities have the complete set of these instruments, as they have full autonomy to decide which documents are suitable for implementing their development policies.

In its implementation, the planning instruments are supplemented by administrative measures that might give incentives for development.[21] A **bonus system** rewards the developer with higher FAR (Floor Area Ratio) in compensation for the provision of facilities, public housing, and amenities in the form of plazas, pocket parks, accessible atria, retail and catering facilities or more mixed uses. **Linkage requirement** may include contributions to affordable housing, child-care, education, parks and transportation. **Transfer of Development Rights** is the possibility to shift the unused potential FAR into other locations, which is done on historic sites to ensure the landmark preservation. **Covenants, Conditions and Restrictions** are imposed upon building developers in exclusive neighborhoods to protect the property value and to maintain the environmental quality [Punter, 1999: 206-207]. The caveat of bonus system is its tendency toward overbuilding of the urban land, and also the provision of amenities at unnecessary places as experienced by the cities of San Francisco, Seattle and New York [Punter, 1999: 14, 38, 206].

In the USA – where zoning is the main planning instrument for land-use regulation – the control of urban design is performed largely with Urban Design Guidelines. Zoning has potential for regulating the three-dimensional form of the city; as it regulates not only the land-use, but also the physical form of development such as height, setback, lot dimension and coverage, car park and so on. The courts have a large influence in the interpretation of zoning in each state. Hence everything must be judged carefully beforehand, to avoid the costly legal suit in the future. Likewise, this consideration applies to the Urban Design Guideline as reflected in several ways [Punter, 1996: 33]:

- Clarity in its design objectives, design principles, and design guidelines.

[21] Please refer to section 3.3 for further explanation on these measures.

- Design review board of the municipality evaluates proposals of new development. This evaluation is part of the local development permit issuing process. Clear objectives, design principles and guidelines will lead to a process of design review that is efficient, fair and effective.
- The urban design is based on careful appraisal of the locality. Public participation in the urban design process can enhance the quality of the appraisal in terms of its closeness to the reality.
- The design emphasizes the public realm, as well as (parallel to) the townscape and visual context concerns. Both the social needs of the people to have a social contact in the public open space, and the beauty of the physical setting are fulfilled by the design.
- Empirical base for design decision. Without any empirical base, the design review board's decision rejection or request for alteration of the development proposal might come under fire from the developers and architects who have submitted the proposal.

A judicially-acceptable urban design guideline is necessary, because if the design review board decision is based on personal taste or some political interests, this decision would be protested strongly by the public, the developers and the architects who are affected by this decision.

To ease the evaluation process and to advertise the urban design guidelines to the public more rapidly, it should be clear and simple enough to understand. A user-friendly document with plenty of tables and graphics can support this objective. Hugh Ferris in 1980 has illustrated the impact of the 1922 zoning law in New York upon the "envelope" that shows allowable building mass. He showed the building envelope as formed / constrained by the need of daylight penetration, the realities of steel frame construction, the realities of renting, and the architectural needs [Broadbent, 1990: 68].[22] Such user-friendly graphic depiction of "building envelope" is used in many urban design guidelines.

[22] See Appendix C for the drawing

In the USA, there is a clear division between mandatory controls – that are limited to judicially accepted parameters such as height, bulk, density, building line, and setback – and design guidelines [Punter, 1996: 33]. Mandatory controls are easier to measure and control because the parameters are expressed in quantitative form, such as "the maximum height of 100 m or 30 floors, a floor area ratio of 4.0" and so on, while the design guidelines require more interpretation as they are often formulated in a qualitative manner.

A fine example of clearly-expressed objectives and guidelines is the San Francisco urban design, comprised of a set of four objectives each elaborated with around 20 design principles further developed as a set of policies, each with a one- or two-paragraph justification. The comprehensive set of San Francisco urban design guidelines has been followed by many other US cities.[23]

There are some “visual districts” declared in the city of San Francisco. These visual district are controlled by the Urban Design Guidelines, which comprise of:

- Urban Design Guidelines for Open Space and Landscaping
- Urban Design Guidelines for Street
- Urban Design Policy for Protecting Street Views and Street Space
- Urban Design Guidelines for the Height of Buildings
- Urban Design Guidelines for the Bulk of Buildings

The cities of New York, Seattle and Portland take a similar approach just like San Francisco, with the Urban Design Guidelines focused on some special districts in the city. These districts are delineated by virtue of their size, activity generated in the district, or its importance (historic, visual character etc.). Other parts of the city – outside the special districts – follow the regular city plans and building codes, and must not reviewed by the board.

Actually, urban design as a form of development control has existed for a long time. The earliest recorded building law is a statute of 1262 regulating the form of houses fronting the Piazza del Campo in Siena, Italy [Gosling/Maitland, 1984: 109;

[23] See Appendix C for an example from the San Francisco design guidelines.

Broadbent, 1990: 32]. Europe clearly has a longer tradition of designing its urban space, in contrast to America. In fact, the much-relied upon zoning system originated in Germany and was introduced to the US in early 20th century. In the modern era, the control of the urban design practice in some European countries lies in the hands of a board of experts in urban design. This board of experts consists of government officials or appointed members of the community. The board of experts control the urban design practice in some European countries. This board evaluates all proposed development in the city and decides whether the application is accepted or must be revised. The application should be revised when it is judged incompatible to the surrounding environment or may damage the existing character of the place. The decision to reject or to accept the application can be problematic, if the decision-making process is internalized in the mind of the local government officials. Without any written or explicit guidance on urban design matters, the applicants can not know in advance what is the design preferences of the officers, or what will be acceptable to them.

3.2.2 Urban Design Control in the United Kingdom

The urban design discipline is just recently acknowledged by the British government. It was mentioned for the first time in an official Department of the Environment publication as late as 1994, and in current planning guidance only in 1995. Before this period, the guidance in the United Kingdom focused mainly on the control of basic environmental “amenity”, while discouraging the control of detail design [Carmona, 1997: 49]. The authorities in the UK determine planning application based on a guide, that “… appearance of proposed development and its relationship to its surrounding are material consideration[s]…” They view that good design is primarily the responsibility of designers and their clients. The subjective nature of aesthetic judgements makes them weary of trying to impose their taste on applicants simply because they believe it to be superior.

Urban planning and design control in the UK is not undertaken through zoning plans; instead, this is undertaken through a discretionary system of responsible officials. The discretionary system is applied at all levels, from the political decision-making during the plan inception phase to the technical advice during building permit application. In this system, the review board only depends on policies, as they have neither zoning maps nor dimensional controls that reinforce the design dimension.[24] Within this discretionary system, the planning officials must decide on all kinds of planning application, not only the major scheme, like the American design review board, but also house extensions, minor residential developments, and small alterations or extensions to commercial premises.[25]

The British Central Government maintains tight control over local initiative in planning, particularly in the area of design, where it tries hard to avoid "overprescriptive policies". The central government until recently has been discouraging local authorities from rejecting design proposals (except the very worst design), and told them to concentrate on basic issues of height, bulk, massing, scale, layout, access and landscape [Punter, 1999: 212]. Before the planning and permitting process begins, the people need to establish a base to make the decision. Urban design visions and strategies for cities or areas must be developed, and principles on which local design decisions can be taken must be established. Here, focus groups or local forums act as a means of bringing together the residential and business communities and the local authority to set the urban agenda, establish agreed goals and a common vision [Rowland, 1995].

In the UK, control of urban design is conducted mainly on project-by-project basis. There is a lack of strategic citywide urban design, except in the new towns where a public development corporation is responsible for the entire town development [Punter, 1996: 30]. A comprehensive hierarchy of design guidelines is more common on the European continent and the USA than in UK [Carmona, 1997: 65]. In the USA, the hierarchy of design guidance covers national and strategic principles that are backed up by statutory local plans, by design guidance, and by frameworks and briefs for individual sites for putting those principles into practice.

[24] Despite the legal status of development plans, they are not legally-binding on planning authorities when reviewing applications for planning permissions [Hall, 1996: 9].
[25] Design review in UK is imposed on all projects, as it is part of the planning process. In the USA and Indonesia, only large or important projects are subject to design review.

This hierarchical design guidance is considered to be more superior, with its ability to provide a framework to elaborate the designs of each neighborhood. The linkage between the higher-order plan and the detailed design can produce a better environmental quality in the town and cities. With this understanding, the Urban Design Group in the UK proposed that the planning regulation should have three levels of urban design guidance: Town-wide Strategies, Neighborhood Frameworks, and Site Briefs.

- Town-wide Strategies: to improve the overall quality of the towns, the Local (Urban Design) Plan needs to be augmented by a town-wide urban design strategy. This would establish the long-term three-dimensional form and character of the town and would be part of the Local Plan.
- Neighborhood Frameworks: would be prepared for critical areas, which the local authority identifies as being of special importance. The framework would develop the strategy in more detail and illustrate, *inter alia*, existing and proposed urban form and townscape, movement patterns densities, activities and public spaces.
- Site Briefs: the current development brief process is two-dimensional. Design and development Briefs would instead demonstrate how the framework principles could be implemented in physical terms. The use of Urban Design Statements should be compulsory for developments in critical areas, where the public realm is subject to private developments or where development is over a threshold size designated by the Local Authority.

The lack of strategic citywide urban design can be traced back to the incremental nature of urban and regional change in the United Kingdom. This is a logical consequence of the view, that such slow pace of development is desirable for the city. The evolution of a city provides enough time for all activities and its containing physical setting to adapt them to the change. An incremental growth of the city is believed to be conducive to “good urbanism" [Montgomery, 1998]. Hall has experimented with urban morphology to address this piecemeal type of development. He proposed a new approach based on the production of design objectives for small areas through the new device of “Design Area”. This would avoid the limitations of the land-use map, which is often too general to address the individual characteristic of each locality [Hall, 1997:221].

Britain has structured a plan and a local plan for general land-use and open space allocation, including the identification of the principal transportation network. These plans do contain some policies, but they are not specific enough for design purpose and are often expressed in 'motherhood statements' [Hall, 1996: 11]. The closest form to design policy are the design guides,[26] which are supplementary guidance published by planning authorities, but are not part of the statutory development plan. Design guides are meant to provide guidance for good design, without placing unnecessary restriction on developers.[27] Unfortunately, some authorities have adopted them beyond policy and enforced their contents as standards. The problem with standards as an expression of design policy is that they are inflexible, thus not suitable for negotiation (which always takes place in urban design process) [Hall, 1996: 10-12].

In 1990, a district-wide development plan was introduced. The plan gives more weight than before in the determination of planning permit applications. However, the plan is only one, albeit important, consideration in the development control decision in the British discretionary system. Comprehensive plans are under an ongoing process of conception by the local authorities [Punter, 1999: 213].

Building bylaws are effective measures to avoid the worst overcrowding and bad buildings, but they fail to create good architecture [Unwin, 1994: 386]. In English towns, bylaws apply to the entire city from its dense center to the quiet suburbs. This is inferior to the German system, where the cities are divided into zones and some bylaws only regulate the inner zone [Unwin, 1994: 402].

Of the various kinds of design control tools, the guideline is preferred by developers, builders and financial institutions because it ensures lasting value for their investment [Loew, 1997]. David Walton, managing director of Llewelyn Davies, returned to the question of terminology. He suggested that there are three types of guidelines: codes as they exist in the US, generic codes (for housing, town centers, etc) and individual sites; and that they vary, depending on whether they were for inner city regeneration, new development areas or sensitive areas [Loew, 1997].

[26] See Appendix-D for an example of Design Guide

3.2.3 Urban Design Control in Germany

In Germany, the control of urban design is mainly the responsibility of municipalities (*Gemeinde*) and not of the federal government [Mohr, 1993: 4]. The federal government only imposes the planning law through BauGB, whereas the building regulation is determined by each state in their *Landesbauordnung (LBO)*. In order to maintain compatibility among the states, a model of building ordinance (Musterbausatzung) has been setup by the ministers and codified in the LBO.

Control of urban design is provided mainly by the *Ortsbausatzungen* and the *Städtebaurichtlinien*. The local government can create a board of experts, called the *Koordinierungskomission*, to oversee the town planning and the implementation of these regulations. The board has authority over the planning and permit procedures [Trieb/Grammel/Schmidt, 1979: 92].

	Planning level Plan forms (newly established and revision)	Planing contents related to urban design	Effects					
			spatial			temporal		
			large area	area-related	object-related	long-term > 20 years	medium-term 10-20 years	short-term < 5 years
Regulation planning	(Development Plan)	global design guidance	X			X		
	Land-use plan (preparatory Regulation plan)	design guidelines, matching to local conditions	X	(X)		X	X	
	(Rahmenplan)	guidelines with concrete reference to local conditions, design objectives for building- and area-plans.		X			X	
	Building plan (legaly binding Regulation plan) town planning design - Building plan in legal conception	Ideas or regulations of designing the space, buildings and open space in accordance to local conditions		X	(X)		X	(X)
	Landscape plan, Green plan	Guidelines for designing and	X			X		
		maintaining of the landscape,		X			X	
		Design specifications for public open spaces			(X)			(X)
Specialized planning	Area- and Object-planning	Detailed elaboration of the design intensions for the purpose of the excution.						
	- Design, redesign of public spaces.			X	X			X
	- Design of technical infrastructure facilities.		(X)	X	X		X	X
	- Design of public open spaces, from landscape area.			X	X			X
	- Achitecture, design of buildings and their surrounding.				X			X
	- Conservation of the city's image and historical buildings.			X	X		X	X

Table 3-2 Plans and their design contents that have influence on urban design. Source: Prinz.

[27] compare also Burg (1995) p. 193.

The urban design concern can enter a multitude of planning levels in Germany [Trieb/Markelin, 1976: 17]. Various planning levels provide a possibility to give direction or policies on the urban design in a different spatial area/coverage and at a different time frame. The preceding table summarizes the possibility of influencing the design of the city through all planning levels and disciplines.

There are three kinds of urban design control for project planning in Germany: the Building plan *(Bebauungsplan),* the Local building statute (*Ortsbausatzung)*, and the *Objektplanung* [Trieb, 1977: 104-108]. These planning instruments guide the formation of urban design. The *Bebauungsplan* for the part of the city contains the ground plan, including building lines and setback, the allowable land use, and the maximum size of the buildings in terms of FAR and the number of floors. The *Bebauungsplan* puts the strategy from the preparatory land use plan (*Flächennutzungsplan*) into application, by defining very strictly where and what to build.

The *Bebauungsplan* provides legally binding designation for urban development. The graphic part of the *Bebauungsplan* is drawn to a large scale of 1:200 to 1:500. The text part of *Bebauungsplan* explains the graphic plans and can contain, among others, the *bauordnungsrechtliche Gestaltungsvorschriften*. This part can give detailed prescription similar to a building code. It includes explanation on roof, garage, building design, fence and parcel design, antenna and so on.

In historical city center, the *Bebauungsplan* can be employed to counter the strong redevelopment pressure that can change the existing structure of the city. To enable more specific measures and phasing on each section of the redeveloped city center, an *Erneuerungsstaffelsatzung* can be issued. This *Satzung* divides the planned area into smaller blocks, each with its own FAR, BC, number of floors, building usage, and its design (frontage width, roof angle, roof form and the direction of the roof ridge, façade design and material etc.).[28]

The *Bebauungsplan* is aimed at unbuilt areas or areas where massive renovation programs are expected [Trieb, 1977: 84]. Other areas are controlled by regular city

[28] For example the work of Breitling, P., H. D. Kammeier and G. Loch (1971) p. 79.

plans and building codes. The *Bebauungsplan* is a kind of **active** control of all kinds of development, including those that are not even proposed yet or vacant lots.[29] Sometimes it is necessary to put calculated inaccuracies (*Unschärfe*) in the *Bebauungsplan* for more space in decision making, in anticipation of changes in interests or land use that cannot be predicted beforehand [Daub, 1977: 42]. Still, the *Bebauungspläne* should be revised, if there are major changes in urban development or land parcels subdivisions.

There is another possibility for prescribing urban design, aside from the part of *Bebauungsplan's* text, i.e., with an independent *Gestaltungsatzung* or building design ordinance. *Gestaltungssatzung* is a more design-oriented instrument for controlling the urban design. The *Gestaltungssatzung* as a kind of *Ortsbausatzung* is a regulation at the level of municipality, at the same level as the *Bebauungsplan*. It complements the *Bebauungsplan* by regulating the details that are not covered in the *Bebauungsplan*, such as building height, height per floor, direction of the roof, shape of the roof, rhythmic dimension/module of the façade, building material and color, retaining wall, floor covering/pavement, street lighting, silhouette protection, view protection, view barriers, additional structures (garage, balcony, stairs, gate) and so on.[30] In the *Gestaltungssatzung* the details may also encompass trees, potentially disturbing support facilities (such as garbage dump, fuel station and the like), chimney, air shaft and elevator machine room, antenna, lightning protection, A/C and outlet grille etc. The *Gestaltungssatzung* must be revised periodically.

The *Gestaltungssatzung* is often opposed by the free architects who demand more freedom of expression. This freedom can be deceiving though, because a rule is needed if we want to keep the overall character of a city [Hangarter, 1999: 203-205]. The application of this legal possibility in planning practice also proved to be very complicated and limited. It depends on the political will of the local authority, whether the design needs to be expressed as a regulation, and if it does, to what extent. A very strict design rule is often objected: the opponents argue that the regulation makes the design quality decline to mediocre and truncates the creative

[29] Passive control is used for protection of existing building or particular location, for example historic place or architecturally conserved building [Trieb, 1977: 81-82].
[30] Please see Appendix E for an example of *Bebauungsplan* and *Gestaltungssatzung*.

freedom of the architects, interior designer and landscape architects. It also limits the rights of property owner to build on his land [Mohr, 1993: 39; Prinz, 1993: 173]. As a response to this, the local authority "watered down" the design regulation and expressed them in very general terms, such that the fit between the design intentions and their actualization is a matter of incidence.

The availability of the *Gestaltungssatzung* does not relieve the local authority from preparing the *Bebauungsplan*. How far will the *Gestaltungssatzung* details the *Bebauungsplan*, or if it will stand as an independent regulation besides the *Bebauungsplan*, is determined by the legal conception of the local government. Simultaneously with the preparation of the *Gestaltungssatzung*, the local authority should also prepare a *Rahmenplan zur Stadtteilentwicklung* – which develops a spatial construction concept as well as land-use and circulation concept [Burger/Gutschow/Kause, 1978: 143]. The *Rahmenplan* has a level of detail between the *Bebauungsplan* and the *Flächennutzungsplan* [Trieb/Markelin, 1976: 158].

Flexible planning instruments such as the combination of a *Rahmenplan zur Stadtentwicklung,* together with preservation of historic building and design bylaws, can accomplish the task of protecting a historic city center [Trieb/Markelin, 1976: 40-41]. When the *Bebauungsplan* is required, then there are two situations possible: the *Bebauungsplan* can be prepared with just a few ordinances in historic areas where the old buildings are relatively intact. This situation is relatively easier to manage than in unbuilt areas that are surrounded by historic buildings. Here the *Bebauungsplan* must create a strong relationship to its surrounding, in order to capture the structure and the scale of the historic neighbors. But it shall also provide some alternatives, as the land subdivision can be different after renovation and the part of public land (greens, parks etc.) are not known yet. So the problem is to make regulations that satisfy the legal norms, but also provide flexibility for design in historic areas and flexibility for various forms of privatization. State government has the power of regulating the external appearance of building installations through bylaws (*Rechtsverordnung*) [Daub, 1977: 37-38].

Another interesting way to control the appearance of the city has been implemented by the city of Hamburg, which utilizes a “Design Catalog” and “*Leitpläne*” to control the urban design. The city's planning office prepares the Design Catalog to make the *Bebauungsplan* and its clarifying *Funktionsplan* more readable, so that a communication tool among all parties in the planning process can be established. It also helps inform the public about urban design. The Design Catalog serves as a "direction of use" for those who will prepare the implementation of the plan [Daub, 1977: 100-102]. The design catalog is published to the community and becomes a fixed part of the planning procedure. The ability to implement the design catalog is supported by an investment bonus of 7% for the builders. Even in some districts, an expert (who is paid by the government) is put fulltime to work/help with the realization of the plan, according to the design catalog. Some districts develop the design catalog further to cover open space plans, street trees, guidance for free-time activities, material, construction and color. Before making a proposed color scheme, the city gathers detailed information on the existing colors of the buildings to be used as a base in deciding the new color scheme.

Nonetheless, there are problems associated with written design regulations [Burger//Gutschow/Kause, 1978: 33]. The greatest problem is the problem of interpretation of phrases such as “a good design for the shop façade is expected…" There should be legally clear definitions of what constitute 'good design'. According to the State Building Law of Rheinland Pfalz 1961, the scale for evaluating/judging aesthetic impressions should be those of an average educated-man or the "man in the middle" [Mohr, 1993: 33]. It must be reminded that the use of regulation is not only for implementing design ideas, but also to avoid disfigurement of the landscape.[31] Secondly is the problem of the discretion from city government. Some written regulations may contain phrases such as “by exception or in some cases is allowed….” This may run against the goals of design in the community, as those exceptions may be destructive to the overall design goal. Moreover, it is unjust to grant an exception to one party and deny it to the other builders in the community.

[31] Note: in the German building ordinance, there is a clear definition of what constitutes a disfigurement (*Verunstaltung)*.. Such definition helps in design review during permit process.

3.3 The Implementation Tools in Urban Design

There are numerous legal mechanisms that can be used in controlling the urban design. These mechanisms support the function of the urban design guidance, by providing an instrument to compel the developers to follow the design. The legal mechanism is optional, and should be selected to suit the design objective that will be supported and the possibility of employing such mechanisms in that particular municipality. The utilization of the legal measures is most relevant in the case when the local government implements its urban design through a series of negotiations with the private developers. With these measures, it is hoped that the bargaining position of the local government *vis-à-vis* the developer can be raised.

The implementation tools include incentive zoning, performance zoning, transfer of development rights, special district, interim ordinance, sign ordinance and so forth. They expand the possibility of control from a regular zoning system.

In **performance zoning**, the standard for measurable physical conditions - such as sunlight, noise, vibration, infrastructure capacity etc. - are set by the local government. The application of quantitative measurement in urban design is a progressive approach that eliminates the subjectivity of urban design. Nevertheless, this approach has only rarely been implemented because of its radical change in the land use plans and ordinances. Furthermore, the performance zoning requires plenty of time and human resources to maintain and monitor it in the long run.

Transfer of Development Rights is a mechanism to transfer the remaining carrying capacity of the land that is unused by the development. This mechanism was initially introduced as a means to protect historical building sites from development pressure. Owners of an old historic building will not be deprived of their rights to develop the site, because they can use the excess developing rights on another parcel nearby. The parcel that receives the transfer should not be located too far, to avoid tipping the balance of allowable amount of development in the new area.

Bonuses and **incentives** are awarded to the developer who complies with certain requirements that are wanted by the government. These requirements are usually “public goods” such as public open space or plaza and other facilities for pedestrian.

In **incentive zoning**, the local government gives permission to the developers to build a larger building – than that normally would be allowed by the FAR in the *Bebauungsplan* – in exchange for some public amenity such as a plaza or open space, wider sidewalks, or retail outlets at the ground level. The additional floor area is granted to the developer as a development bonus up to a maximum level specified in the ordinances [Shirvani, 1985: 168]. As explained in section 3.2.1, this kind of incentive zoning can yield negative results as well. There can be so many developers in one area who want to obtain this bonus that they build too many plazas along this street. Those plazas are underused, randomly located, cold and barren, and even interrupt the flow of pedestrians along the shopping street.

When the ratio between the additional floor area and the plaza is not calculated carefully, then often the developers receive greater benefits than the public. There is a trend that local governments reduce the level of bonus and focus its use for housing purpose [Punter, 1999: 207]. The positive spin off of the incentive zoning is its increasing usefulness in achieving expanded urban design goals such as residential development or neighborhood amenities and transitions between land uses within the central business district [Shirvani, 1985: 170].

Special districts are similar to the concept that regulates the superblock developments in Indonesia, with its urban design guidelines. Special districts are "overlay district, superimposed on one or more existing zoning districts for the purpose of protecting and enhancing the special qualities of the area." [Cook, 1981 in Shirvani, 1985: 173]. The special districts are based on a documented set of physical criteria. For example: building must be built on the property line and up to a height of 3 stories, retail activity should be provided on the ground floor, and so forth. Delineation of the district and parcel boundary is important here. The advantage of the special district is that it can be tailored to fit the needs of specific districts, providing flexibility to control special uses, while retaining the overall zoning classification system. Use of the special district is a viable alternative to the existing urban design control mechanisms, when these mechanisms are too flexible, outdated, and not focused on main development issues. According to the Indonesian regulation "*Penataan Ruang*, Art.23", areas with special needs can have its own planning conceptions. These special areas have the legal status, through a presidential decree [Bowo, 1999: 112].

Design review process is commonly incorporated in the urban planning procedure. The review is intended to maintain the high quality of design, ensuring the compatibility of design and use. During the design review process, further explanation of the urban design guidance can be provided for the applicants. Discussion can be undertaken during this review to settle the flexible or open issues in the design guidance [Shirvani, 1985: 182-183].

The difficulty with design review is its need for qualified staff and the amount of staff time. In the end, the high time requirement will increase the cost of the developer. This problem can be alleviated through clear criteria in the design review (that is established by the urban design guideline) and a transparent and lean administrative procedure.

3.4 Conclusion

In all three countries reviewed, there are already efforts to control the form of the city. This effort exists at various planning levels, using many kinds of forms, and following different procedures. This variation occurs because of the difference in the administrative structure of the municipalities within the country, their planning system, the specific problems that they are facing and the resources that they have. The urban design guidelines in the US accommodate the aspirations of the private sector that dominates the development in city centers. The British development policy and design guide reflect the view of the central government that favors incremental development and reluctant to limit the freedom of art expression. The German *Bebauungsplan* and *Gestaltungssatzung* are formed within the context of legal system.

Variation between localities or municipalities within the same country exists, particularly in municipalities with a high degree of autonomy. The following table presents a short synopsis of the different ways of controlling urban design in three countries.

Country	**United States**	**United Kingdom**	**Germany**
Administr. System	Autonomous municipality, each develops its own zoning model.	Strong central govt., but municipalities have freedom to plan.	Autonom. *Gemeinde*, within comprehensive legal system.
Influence of central government	Through federal subsidies	Tight control by central govt. on local initiatives	Through *BauGB.* The model of bldg. bylaw (*Musterbausatzung*) is not legally binding.
Urban design in level of planning	On all levels, but not complete in every municipalities.	On lower level only; mostly on project-by-project basis.	Mainly takes place at *Gemeinde* or lower.
Control instrument	Zoning plan and design guidelines. Do not rely much on comprehensive plans.	Development plans and policies without zoning. Design guide is not legally binding.	The *Bebauungsplan* and the *örtliche Gestaltungssatzung.* Control at bldg. permit.
Format	Clear design goals → objectives → principles → policy → guideline. Short, concise text with much graphic,check list,diagram	Policies in text from, with some graphic illustrations as example (not standard)	BBP plan and section drawings at large scale, with some text part. *Gestaltungs-satzung* has free form.
Design review	Only for large projects or landmark bldg./locations. Review easy: compare proposal w/ zoning only.	For all projects (part of planning procedure). Review difficult: needs local staff's discretion.	Review easy: compare w/ BBP and bldg.code. Clear standard of assessment.
Aesthetic intervention	Suggestions based on appraisal of existing cond. Community's own values can enter in self-created local design guidelines.	Govt. reluctant to inter-vene in aesthetics; focus on development policy and issues of height, bulk, massing, scale, etc.	Freedom of art, but avoid disfigurement. Has definition+assess-ment of disfigurement. Suggestions for main-taining of city's image.

Table 3-3 Synopsis of Urban Design Control in the USA, UK and Germany.

From this comparison, it can be summarized that urban design consideration can enter at all levels of planning. It is a set of interconnected recommendations that can provide a design framework within the planning system. The recommendations or guidance function in two ways. First, they are expressed in terms of goals, objectives, principles and on to quantitative standards. Second, they encompass an area from sub-regional to citywide, district levels down to the individual site. The control of urban design takes place mostly on the lowest or most detailed planning level: with negotiation process during the review for development/permit application and its issuance. The design review should be integrated within the planning process.[32] It should be systematic, transparent, and professional. Clarity of urban design guidelines in terms of goal, objectives, etc. can avoid the confusion of the permit applicants and make the process more transparent. This can be supported with an explicit definition of disfigurement of buildings and landscape, together with the standard to assess them.

In doing so, the guidelines put more emphasis on the urbanistic quality of the built environment, rather than its architectural quality. This happens to be the interest of many urban design theoreticians too (see Chapter 2). Their quest for a "natural" way of building the city is accommodated in the urban design guideline that has an appropriate level of prescription: it is detailed enough for clear understanding of the design idea, but does not force/prescribe any single solution or a particular built form. It should express the vision[33] and strategy, to convey a clear picture of the future urban form.

The degree of intervention on design/aesthetic matters is varied among countries and localities. A strong intervention must be based on a thorough analysis of the local character and backed with a clear assessment standards.

The format of the urban design control instrument may vary, but no one, including the personnel of the city planning office, will read the policies and the guidelines, if they are written too long. They should be presented in accessible ways: concise, highly illustrated with imaginatively presented plans, checklists, matrices, flow diagrams and the like. A more detailed explanation on the points that should be considered in the making of an urban design guideline is presented below.[34]

- The urban design should clearly formulate the intended goals of the design by clearly distinguishing the objective of each policy from what are actually performance criteria or control procedures and by linking policy objectives to design goals.

[32] Design review is only for large/landmark buildings and locations.
[33] Vision is also the initial stage of Alexander's generative planning process and Trieb's *Leitbilder*.
[34] adapted from Hall (1996) p. 119 and Prinz (193) p. 174.

- The design intentions must be presented in a clear/vivid and generally intelligible manner, in which the interaction between the design of public and private areas, and the common responsibility for the total design solution is made certain.
    - The public and/or elected representatives should give their views on these alternatives.
    - Exploring ways of expressing their performance criteria.
- The rules in the regulations must be thoroughly thought out and well suited to the situation/context. They must be explained in a way that their intentions are understood as positive, instead of harassment.
- The explanation and the planning discussion should be sufficiently long and meticulous, until the content and goals are clearly understood.
    - The explanation can be supported with computer visualization
    - Using multimedia and decision support systems to convey the above.
- During the realization phase, the planning needs a competent and constructive company and advice that do not threaten with prohibitions, but instead act as "advocates" of planning and show the involved parties of the possibilities.
    - Local government provides advisory information on possible ways of achieving the design objectives.
- The compliance of the conditions and the result of advisory consultations must be monitored.

The urban design guidelines should be revised periodically, e.g. every 5 years.

4. COMPUTER APPLICATION IN URBAN DESIGN

4.1 Introduction

To investigate the application of computers in urban design, one must refer to the activities in designing the urban space. The field of urban design is primarily built upon the expertise of architectural design, urban planning and landscape architecture. The activity of urban design, which has been described in the previous chapter, is basically a sequential combination of activities from its "parent" disciplines. An overview of the computer usage in urban planning and in architectural design sheds more light on the role of computers in designing urban space. A brief history of computer use in architectural design will "set the stage," before describing contemporary computer application in these fields.

Although the term Computer Aided Design (CAD) appeared during the 50s, the use of computers as graphic representation tools became a topic of experimentation in 1962 [Bertol, 1994: 48]. This marked the beginning of the development of computer-aided design methods in the 1960s [Streich/Weisgerber, 1996: 16-18]. During the same decade, computer-aided planning modelling began its development.[35]

The application of this experiment in praxis begins only in 1970s. At that time, CAD was used only on minicomputer platforms such as Intergraph. The role of CAD in the architecture profession was marginal, as only very few architects could afford such expensive system. Only during the following decade did CAD become much more popular, thanks to the widespread of Personal Computer [Crosley, 1988: 18]. The implementation of CAAD in the praxis during the 80s was possible, due to cost reduction in many areas of the science, application, and its production, enabling small- and medium-sized offices the use of "low-cost" PCs. [Streich/Weisgerber, 1996: 16-18]. The capability of CAD was growing swiftly during this period as well [Head/Pietra/Segal, 1992: 21].

In 1990s Artificial Intelligence is the new method paradigm for CAAD [Streich/Weisgerber, 1996: 16-18]. Knowledge based systems represent a productive field in artificial intelligence that opens a great potential for application in CAD. It incorporates the knowledge about a certain architectural element or type necessary for the design process. With knowledge based systems, the architects can use the CAD not just as a tool, but as a design assistant [Bertol, 1994: 50] or even a method in design [Streich/Weisgerber, 1996: 16].

4.1.1 Computer in Urban Planning

There is no special program that is designed specifically for planning purposes, because there is no standard activity in planning [Ingenthron, 2000]. Planning processes can differ substantially between regions and agencies, even within the same country. This is particularly true in the countries where local autonomy is strong *vis-à-vis* the central or federal government, as in the case of Germany or Austria [Schatz, 1996]. Nonetheless, there are numerous computer programs that support the planners in performing their daily tasks.

4.1.1.1 Computer for decision making in planning

Statistic programs such as SAS, SPSS or MiniTab help planners in interpreting and evaluating the results of statistic data that are collected from surveys or other sources. Data concerning social, economic, or housing conditions often come in tabular format that must be interpreted correctly, if the planner wants to make an accurate judgement. For instance, a hypothesis that needs to be verified in the form of a question: "Is the condition of social housing in area A in the past 10 years degrading compared to those in area B?" Such questions can be answered by using statistics, so that the planner can make decisions with a higher level of confidence.

[35] See Kammeier (1998) in Streich/Kötter , 1988: 242.

Since the introduction of computers for urban and regional planning, the scientific paradigm of planning has suggested the formulation of mathematical models of urban and regional development [Kammeier, 1999: 366]. Common spreadsheet programs such as Lotus 1-2-3 and Microsoft Excel may assist the planner in forecasting and modeling of future growth of the city or region in terms of population, spatial needs, economic growth, etc. For instance, urban planner can simulate several alternatives of population growth based on various assumptions. The simulation is done using mathematical models in the spreadsheet. Complex mathematical models with many interdependent table calculations can be performed, thanks to the "3d link" capability of the newer release spreadsheet software. A spreadsheet workbook file can contain large numbers of individual worksheets, and each cell within the worksheet may be linked or referred to other cell(s) in another worksheet.

However, the general-purpose statistic and spreadsheet programs are intended mainly for processing numerical data. Planning nowadays has to cope with many kinds of formats that are not only quantitative. This situation is has arisen because of the type of input from numerous participants during the planning process. Many of the inputs are qualitative data that cannot easily or directly be quantified. Hence it is necessary to have a system that can handle such information. The hyper-technique is an example of such system [Streich, 2000: 7-9].

The programs described above are hardly adequate for use in strategic planning that aim to create concrete planning policies for implementation. Strategic planning in the public sector is a complex task because the goals are often uncertain and there are many stakeholders in the process, which are influenced by economic, political and legal factors [Kammeier, 1998: 108]. Planners are assisted by process management programs (e.g. STRAD) for decision making in such uncertain conditions. The programs help the planner in delineating a clear 'solution space' (or 'decision space') and reducing the areas of uncertainty, in order to base a solid decision.

STRAD (Strategic Advisor) is developed for strategic choice approach, where the decision-making process is undertaken in terms of a balance of four basic "modes" of activity – called Shaping, Designing, Comparing and Choosing. Each mode is performed in two windows, as seen in the following diagram.

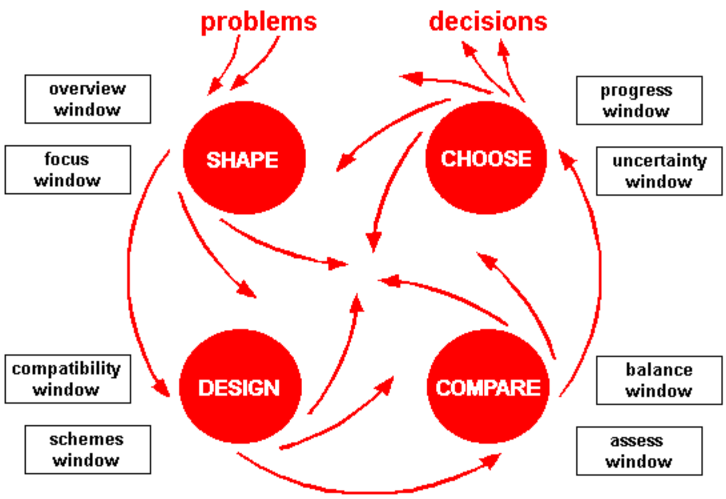

Figure 4-1 STRAD structure. Source: Stradspan website (http://www.btinternet.com/~stradspan).

'Shape' lists the issues of concern and then focuses on some problems. 'Design' explores the overall range of choice within this focus and narrows it into an actual range of solutions available by omitting incompatible combinations. 'Compare' assesses the possible courses of action in terms of their impact and examines some preferred decisions schemes in more depth. In 'Choose', STRAD helps decide what to do with the uncertainties, and finally (in the Progress window) assembles a balanced strategy for making decisions and managing uncertainty, both now and in the future.

4.1.1.2 Computer for geo-referenced information

Because urban spatial planning is based on geo-referenced data, the computer use in this field is dominated by the Geographic Information System (GIS). GIS assists the planner in storing, organizing, processing and presenting the data. GIS is mostly used in planning analysis and modeling, as well as evaluating planning permit applications and monitoring the built and natural environment. This is done by managing spatial database and overlaying maps; thus it provides a more 'routine' model of operation, as opposed to the 'non-routine' model of strategic planning approach with STRAD program.

Land-use management and policy decisions are almost always based on the analysis of the interplay of factors pertaining to an issue. Because of its ability to access and combine different data, geo-referenced as well as tabular database from survey, GIS is capable of answering queries ranging from very simple questions regarding unfiltered information from the database to complex questions requiring overlay of different information layers. The most simple query level is a direct spatial and quantitative information from the database displayed on a map. A simple query – e.g. "show single family housing" – reflects one thematic layer of information, and the result is highlighted on the given map. More complicated queries such as "show vacant buildings not exposed to street noise and pollution" require the GIS to synthesize disparate sources of spatial information through polygon overlay. Dynamic analysis in the form of simulation of possible scenarios is the most complicated query [Huang in Tan/Teh, 1995: 404].

During the last stages of planning process, the urban planner expresses the decision in the form of city plans, which have both text and graphic parts. The preparation of the plans is done with regular drafting software (CAD) for the graphic part, whereas the text part is written with word processing software. Some years ago, GIS still lacked the graphical design functionality of CAD, as actual objects were only represented with symbols in very basic forms of points, lines and polygons. To improve its 3D visualization capability, GIS is coupled with CAD [Mahoney, 1998: 46]. The hybrid program can simulate planning alternatives more compellingly, which is liked by planning groups who need better ways to visualize very abstract principles [Wright, 1997]. Many planning offices in the municipalities in Germany are using such program [Schildwächter/Lenhart, 2000]. Examples of hybrid programs are AutoCAD Map and Autodesk MapGuide [Schreiber in Schildwächter/Lenhart, 2000].

4.1.1.3 Support for collaboration

Further use of computers has been experimented in some areas, particularly for the collaboration of experts, local authority/agencies and the public. This encompasses the use of work distribution software such as Lotus Notes, interactive participation through Internet including video conferencing, AutoCAD-Map etc. Lotus Notes is a blend of various technologies including messaging (e-mail), a database engine, robust security, an application development environment, and network management. Each of Notes' components has been specialized for a class of applications that have come to be known collectively as GroupWare.[36] GroupWare such as workflow applications and discussion databases provides automated support for teams.

Lotus Notes is widely used to build workflow applications; it provides searchable databases, support for remote and mobile users, and holds discussions. Notes is an ideal platform for automating the collection, processing, and distribution of unstructured data common in many day-to-day planning processes. Many urban planning processes are unstructured and have little or no control. Decisions are made and there is little or no record of how or why they were made. It may not be possible to know ahead of time what information a specific person will need. Supporting these processes requires a very flexible database and application builder, along with a powerful search engine that is provided by Notes.

4.1.2 Computer in Architecture

The activity of architect is supported by an assortment of software. Some dedicated computer graphic programs support the main activity, i.e. architectural design. Architectural design is comprised of two major processes, namely the simulation process and the description process [Streich/Weisgerber, 1996: 43]. These

[36] GroupWare is a general term for computer systems that support different persons working together on a common task [Pews, in Streich, 2000: 72].

processes have different objectives and characteristics, and hence different sets of computer programs that support them.

1. The **simulation process** pertains to what will be perceived later in three dimensions. It is a simulation of the idea of the designer into three-dimensional models in the form of real 3-d maquette or digital 3-d simulation that is projected into a two-dimensional computer screen or a piece of paper.[37] This model will then be perceived visually by other designers or other project participants.

The simulation process occurs more often during the initial phase of design, as the architect tries to work on the conception of their spatial design with the help of modeling tools. Modelshop is a simple example of such modeling programs, whereas Form*Z represents the much more sophisticated modeling program. The modeling program uses shape primitives that are three-dimensional basic entities such as cube, ball, pyramid or tetrahedron and many more. The shape primitives can be combined using Boolean operators and also further modified. The architect can, for example, construct the model by combining a cube or a box with pyramids using the .OR. operator, and then stretch/scale or change its properties such as color, texture and so on.

2. The function of the **description process** is to communicate the design with others, who subsequently will construct the building. The architects usually use two-dimensional drawings of the design in the building-construction documents. Plan, elevation and section drawings enable the craftsmen to reconstruct the idea of the architect in full size reality. The architect does it with the aid of drafting tools such as AutoCAD™, MiniCAD™, Archicad and many more. Usually such programs are vector-based, because of the character of the drawings that are purely (or dominated by) lines, instead of areas or three-dimensional entities.

[37] Bertol uses the term visualization, which consists of the two-dimensional representation of three-dimensional object [Bertol, 1994: 31 and 43].

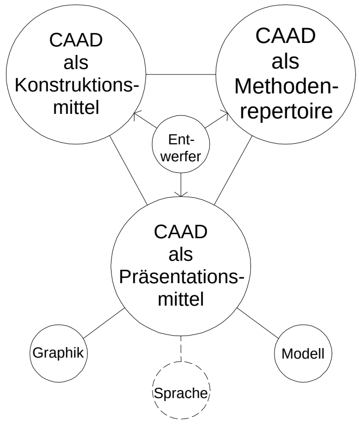

Figure 4-2 The three meanings of CAAD. Source: Streich, B. and Weisgerber, 1996.

3. Streich and Weisgerber has expanded these two basic functions of computer aided architectural design. CAAD is more than just a tool for simulating and describing the designers' idea; instead, it has three functional meanings [Streich/Weisgerber, 1996: 15-16]:

a. CAAD in the sense of the usability of certain construction means or tools, e.g. to generate and manipulate objects or entities during the graphic design process.

b. CAAD in the sense of technique and process of presentation of design results, e.g. through the use of visibility process or photorealistic computer graphics.

c. CAAD in extensive sense of development and application of certain design methods. This includes the new development in the area of knowledge-based systems, where graphic tools are actually continuously decreasing its role [Coyne, 1990].

All three meanings of CAAD, however, are related close to each other. In the application of the design method, for instance, the graphic technique is also involved. More important is the designers' stand in the middle of this meaning: it is up to them how to exploit the functionality of CAAD.

4.1.2.1 Programs supporting architectural task

During the design process, the architects may use programs borrowed from the civil engineers to simulate and calculate roughly the structural system of the designed building. This way, the architects can have a rough estimate of the dimensions of the columns and beams for the building that they design. The construction cost of the completed design can be calculated using add-on programs that can automatically extract quantity information from the drawing. Using this program, the amount of brick, roofing material, floor covering and so forth is automatically registered in a database table. The cost of construction material can be calculated easily by using this data. The prerequisite for this is that the drawing is done using attributes that can be processed by using a database system. Each entity in the drawing (i.e., wall, floor, roof, ceiling, etc.) has its own attributes, such as the type of material. This is then compiled from the drawing's database into a table of building material. The labeling process requires much time and effort, so that the architects do not always perform this technique. A simpler way to do it is by manual measurement of the drawing – using inquiry commands provided in the CAD program – to determine the floor area, the wall surface area etc. and then calculate the cost in a spreadsheet table. Another approach is by constructing the drawing with an object-oriented CAD program, so that the database of building material is built up simultaneously with the drawing.

After the design is completed, the building drawing description is accompanied with text and tables in the design report and the design specifications. The text and tables describe the building specification such as the quality of the material, performance, price and so forth. The design report explains the considerations that underlie the design decisions. Common word processing programs such as MS Word, Word Perfect or StarOffice are used for creating these design documents.

Project management programs can be used in preparing, planning and monitoring the construction process of the building. A popular program that has been widely used in this sector is the Harvard Total Project Management/HTPM. Another general-purpose version is the Microsoft Project. These programs can create flowcharts, activity tables and performance monitoring graphs that assist the project manager during the construction process.

4.1.2.2 Integrated architectural program

From the description of the computer usage in architectural design, it can be inferred that the electronic data processing is not implemented integrally. The design process is gradually phased from the beginning: from the design conception to preliminary design and design development stages, before reaching the final detailed design. Accordingly, the information system and software that are used to support the process are modular, instead of integrated. Each module has its own purpose for three-dimensional modeling, database and structural calculation, two-dimensional drafting, animation and so on.

Walter proposes a more integrated way of electronic data processing in architectural design. Instead of a computer aided design development that step-by-step completing with each factor one after the other, he proposes a development of integrated, complete conception that simultaneously addresses all of the factors. The prerequisite for an integrated electronic data processing is a planning structure with a structure of planning area and planning content that separates between the formulable and the non-formulable design work. This separation is necessary, because only after the generally non-formulable conception design can the information and tasks be determined. This information and tasks are necessary for the undertaking of the technical design process [Walter, 1997: 16-19].

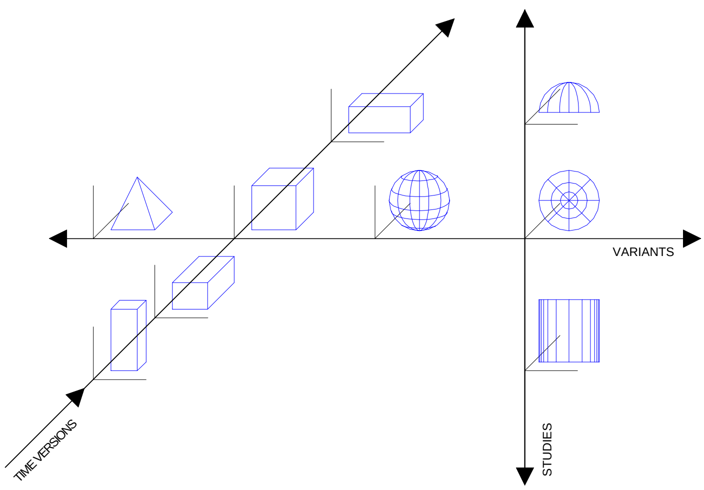

Figure 4-3 The relationship between design versions, variants and studies (from Schmeltzer and Dijkstra).

Another approach to organizing information during the design process has been proposed by Schmeltzer and Dijkstra. They have experimented using "a Time Dimension for CAAD Systems" as a tool for the organization of design information and for the reproduction of design process. The core of this experimentation is a facility to record all design states generated during architectural design process, in a temporarily coordinated manner in one information system. In this way, the computer can reproduce and compare different design states. Design states may be design versions, design variants, and design studies. Design versions succeed each other during the design process. At the same time, there may be several design variants of a certain design. To complete this process, the architect may produce various design studies for each design variant [Schmeltzer/Dijkstra in Flemming/Van Wyk, 1993: 391-403]. Because of the recording of all design states, it is possible to register and reproduce in a procedural manner the design processes that led to these states [Schmeltzer/Dijkstra in Flemming/Van Wyk, 1993: 395].

4.1.3 Computer in Urban Design

Urban design activities are less standardized than the fields of urban planning and architecture. There is no common procedure for designing the urban space, as reflected in the various areas of urban design studies (see Chapter 2). The following is a description of the current computer usage to support urban design activity in general.

There is no single program dedicated exclusively for urban design work. Some urban design software has been developed and used on experimental bases, mainly in the academic circle and not yet available in commercial versions. The urban designers utilize a collection of programs to assist their work. The basic activity in designing the urban form is the three-dimensional modeling, because in urbanscape, the enclosed space is the public space defined by the outside boundaries of buildings [Bertol, 1994: 253]. Modeling is a simulation of the reality.

In computer modeling, urban designers can see the designed urbanscape from different viewing points: from the eye level of pedestrian to bird's eye view.

Computer application in urban design involves a rich hybrid of geometric, geographic, and annotative information. Such activity requires collaboration among its various participants and data integration. Therefore, rich datasets as a basis of design work are important [McCullough/Hoinkes in Tan, 1995: 709]. A typical computer application in Urban Design may begin with an area analysis using GIS, and then the plot ratio calculation or traffic flow calculation is done on the spreadsheet or by using a specialized program. The outcome is commonly visualized with charts and graphs. More visualization of the work is done with 3D model in CAD, which is then rendered. Then it is assembled in narrative structure in the form of animated presentation. In the end, the presentation material can be made available on the world wide web.

The above-described process is effective, and constitutes some progress over the conventional manual work. Nevertheless, many tasks are separated by many pieces of software, so that the design process becomes compartmentalized, overly serial, and inadequately able to evolve a design on the basis of complex relationships. A single modular program that uses rich datasets can overcome this problem [McCullough/Hoinkes in Tan, 1995: 709-718]. By using software with rich datasets, people can link up data, expand existing datasets, and mix them. But not all of the related information is shown up simultaneously. In dynamic representation of problems, inquiries determine elaboration. Thus only pertinent information will be displayed. An object can be shown up in a polygon map, a 3D model and a table of relations.

PolyTRIM, a program developed by the Center for Landscape Research at the University of Toronto is capable of such tasks. It is a program that is comprised of several modules that are linked together.

The weakness of the approach using different independent module systems lies in the link between the modules, i.e., how do individual modules communicate with each other. For example, inconsistencies may appear during the transmission of GIS information from the parcel to the polygon-based 3D models. To overcome this problem, the use of "internal representation" as found in object-oriented design is recommended. This internal representation supplements the geometrical objects with an indication of what they represent: volume is represented as "buildings" and not just as a collection of polygons. Then, in the same way, the GIS information can be passed to "the church" and not to 32 polygons [Huang in Tan/Teh, 1995: 406-407].

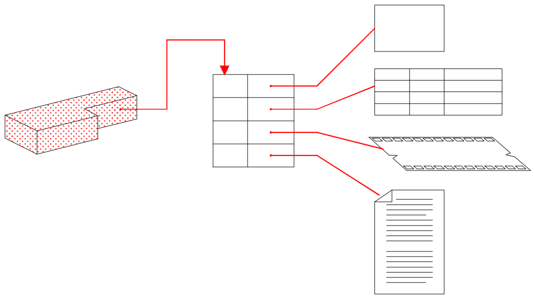

Figure 4-4 Translation Table is used to link multiple artifacts to a single form (from McCullough and Hoinkes).

With this method that emphasizes the relationships of information, urban design work does not emphasize invention (deterministic design) anymore; instead, there is more observation: collecting, integrating, interpreting a much wider variety of descriptive material. In turn, this results in a more accurate design. Urban designers pay more respect now to the content of the design, rather than the intermediate artifacts such as wooden models or 3DStudio renderings [McCullough, Hoinkes and Huang in Tan/Teh 1995: 400]. In order to be able to maneuver effectively through the various layers of the urban constructs, the urban designers need to overview the very precise data and facts about the economic-legal-political situation of the designed site. The urban designers can thereby understand the interrelationship and implications of these data and facts on the site. In this way, both visual and especially measured intervention can be determined and programmed more precisely. This will also avoid the need to mitigate subsequent problems that might arise from a form-deterministic urban design process.

The future challenge in computer-assisted urban design is to handle such complex problem fields. A possible approach to handle it is by organizing the quantitative base of urban design (e.g. quantitative projections, building intensity, cost aspect, etc.) in computer systems or by building a comprehensive body of knowledge on the extensive empirical database of other urban design projects that can offer concrete assistance during the design [Streich, 2000: 173].

In general, urban design work has the following characteristics:

- The work in urban design has an impact on many more people than the architectural design. The outcome of urban design can influence the user of the buildings, as well as visitors of the public open spaces. This is not only because of the size of the area and the number of buildings in the designed area, but also because of the synergy effect: the total effect of the entire area is more than the sum of its components, i.e., all the buildings in the designed area.

- The realization of an urban design requires a long time. Typically the design of an urban area is scheduled to be constructed in more than a decade. Its construction demands a great financial resource. The huge development cost is needed not only for the urban designer's fee, but also the fee for the architects of the buildings, as well as land costs and direct construction costs. Therefore, there is no room for "trial and error" method in urban design.[38]

- Urban design work involves multiple disciplines: at least the urban planning, architecture and landscape design disciplines have some role in designing the urbanscape. Other disciplines such as law, economy, sociology may intervene at any stage of urban design process. This results in the variety of activities in the

[38] Note: urban design takes only 0,5-1,5% of the total projected development value according to a study by Chapman and Larkham. [Chapman/Larkham, 1999: 222 and 228].

process: from analysis of the built form, traffic and natural environment, to the presentation of the final design.

This is in line with the McCullough's opinion on urban design activity that the activity of urban design tends to have the characteristic of measuring the consequence of visual moves (i.e. design improvisations) and visualizing the consequence of measured move (such as socio-economic policy). Secondly, it tends to work more extensively with documents and a wider variety of documents. The urban design work involves many participants. Lastly, computer use for urban design is a blend of CAD, spatial information system, and interactive multimedia.

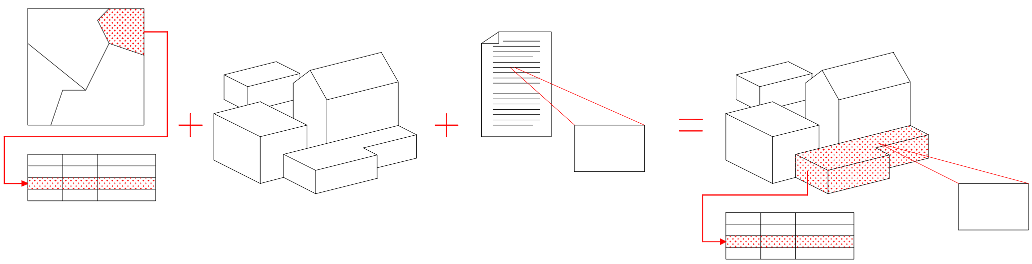

Figure 4-5 Integrating geometric modeling, GIS and hypermedia (from McCullough and Hoinkes).

In conjunction to these characteristics of urban design work, hereby a directive for the application of information technology in urban design is proposed:

- The process of urban design should be accessible to the public. The public, especially those who are affected by the design, should be able to monitor the urban design process. They can get current information quickly and easily if the latest data is ubiquitously accessible. It would be even better for them if they could give feedback, voice their concern and opinion, or be directly involved in the process.
- The public accessibility to the information on the urban design process should be coupled with the security of the data. Only entitled parties should be granted

permission to edit the data. This issue is particularly relevant in collaborative work and participatory urban design process through computer networks, where several people can manipulate the design simultaneously or at different times. The use of passwords or working via Intranet can secure the integrity of the information.

- The slow "cycle rate" of urban development does not allow learning from the mistakes of the existing project on the location. Urban designers must instead learn from the experience of other cities in the world. The empirical knowledge that is gathered worldwide provides a valuable lesson for urban designers. Accessibility of such information worldwide, e.g. through the Internet, will enable the urban designers to avoid mistakes in designing the urban space.

- The information presented by the urban designer should be easily comprehensible to the layperson. Three-dimensional graphics, animation and walk-through sequences as well as virtual reality will enhance the ease of comprehension of the design. In some cases, photorealistic presentation can help the general public, the decision-maker, and the property developers to understand and accept the urban design. In other cases, a "diagrammatical" representation is simpler and delivers enough information [Hall, 1996: 106-107].

- The activities in the urban design process are varied, not linear, and to a certain extent unstructured. Support for these activities comes from various computer software packages. These packages are not specifically designed for urban design tasks and are developed by many companies. A good knowledge of the data exchange between different software can alleviate this problem and make the software work in a somewhat more integrated manner.

This directive is not straightforward: there are some hurdles/problems that must be overcome or be solved, or options that should be considered in dealing with the electronic data processing in urban design. Some of these issues that should be addressed are discussed in the following section.

4.2 Issues in Computer Application for Design

4.2.1 Design as Creative Process

The nature of design involves a creative phase in the beginning. Designers such as architects and urban designers usually sketch their initial ideas by hand on a piece of paper. There is a strong relationship between the idea in the designer's mind and the design that is drawn in ink or pencil on the piece of paper, as expressed by several great designers [Ferrar in Martens]:

> You think and you do at the same time. You draw and you make. As pure instrument of a circular process between thinking and doing, drawing is in the middle (Renzo Piano)
>
> I draw because I want to see (Carlo Scarpa)

Computers are still too clumsy and contrived to be used in the early concept stage of design. At this stage, the designer needs to immediately sketch his idea in a rough way as design decision occurs in a matter of seconds.[39] Moreover, design ideas may appear suddenly. For example Joseph Paxton sketched the Crystal Palace on a blotting pad while he was in a restaurant. The other ground for the insufficiency of computer support in the concept stage is that the performance standard for this stage is rather difficult to formulate. In contrast to that, the performance in technical planning (i.e., the structure and construction design, utility system, details) has a clear procedure or work-steps that are easy to formalize. Therefore, digital processing can support this latter stage of design more easily [Walter, 1997: 15].

Unfortunately, the development of software design for creating computer models has proceeded into sophistication. Software has become too complex, offers too

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[39] Design is a process that consists of a series of distinct events that occupy discrete and measurable periods of time. The temporal span of these design events is very short. In fact, most of these design events happen in less than 30 seconds. Expert designers needs only up to 15 seconds to do these task. [Gero/McNeil, 1997, also available on the Web site http://www.arch.usyd.edu.au/~john/publications/ger-mcn-design/Gero-McNeill.html]

many possibilities, requires a much greater investment in time and mitigates against integration of media. Designers/architects are spending more time mastering programs and less time designing the buildings! What the designers need is appropriate software that contributes effectively and can well inform and feed into drawing work and physical models. Ideal software that is appropriate for this purpose is the Modelshop. It was cheap and cheerful 3D modeling program is simple, has a few basic primitives, is quick to learn, fast and "dirty". Modelshop is the digital equivalent to cardboard and balsa. Designers need not abandon their other (more familiar) modeling and drawing techniques; they should, however, just use these techniques as supplements. A program from the University of Oregon, called Design Workshop (http://www.artifice.com/), replaces the role of Modelshop.[40]

Object-oriented software such as Modelshop provide a much faster and more accessible approach to computer modeling than vector-based, 3d-by-extrusion software. It is also more appropriate to architectural design and easy for manipulating objects in 3D space. Form*Z is one of the contemporary developments of that approach to computer modeling. It is a very sophisticated and extremely versatile and potentially creative tool. Like Modelshop, it uses the basic approach of Object-oriented modeling, with an intense array of primitives, methods of describing them, and editing tools. Its rendering capabilities are very well developed. Form*Z works acceptably for assisting architects in regular/modest modeling, but for more ambitious models, the architect has to invest much more time and memory overheads to produce photorealistic images with surface texture, complex geometries, meshes and sculptural form [Ferrar in Martens].

4.2.2 Design Automation

Clustering or bubble diagram software and stacking/blocking software are software packages that may assist the early stage of design. They have a set of algorithms

[40] see http://ctiweb.cf.ac.uk/HABITAT/HABITAT2/dnc.html

that determine which spaces should be close to one another. It can be a very useful tool, particularly in cases where a large existing facility has to be functionally rearranged. However, in many other cases the results are not significantly better and much less controllable than designers' conventional manual methods of work. This set of software goes in the direction of "design automation" or "artificial design". There is a long line of development in academia that takes this issue much further by elaborating the software for plan-, space- and even style-generation. Although these are worthy exercises in exploring the limitations of design computing, they have found little practical application in architecture as the problem they solve tends to have a rather narrow scope [Schijf in Martens, 1997].

Design automation is based on computers' capability in comparing things and making choices based on these comparisons. The computer can be programmed to carry out sequences of steps that are based on predetermined decisions: if a certain condition exists, then certain action should be taken. This "if-then" ability allows the computers to simulate decision-making. Such programs are called knowledge-based systems or expert systems [Crosley, 1988: 159]. Most computer programs use a tree-structured decision making process. However, real-world relationships can not be simplified into linear hierarchies [Alexander, 1966]. Actually, the relationships are more like a lattice with branches that intersect and cross. Architectural design decision has closer characteristics to the lattice diagrammation.

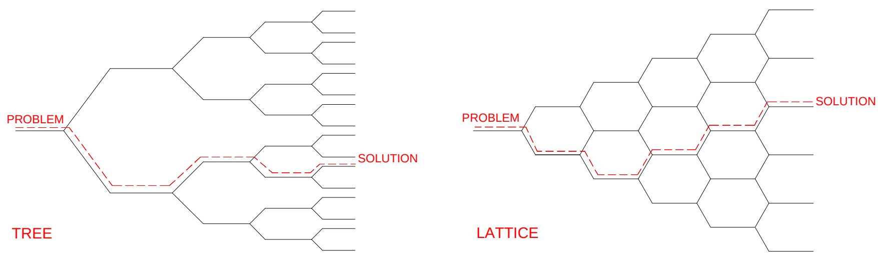

Figure 4-6 Decision-making: the tree represents sequential, linear logic, while the lattice allows decisions to jump from one path to another (from Crosley).

A research group at the University of Kaiserslautern, Germany, utilizes knowledge-based systems in an experiment to investigate the growth process of urban structures. The experiment aims to detect the apparently unplannable sequence of urban growth, and express it in algorithms. These growth rules can be inserted to computers into a virtual reality environment, with which the urban growth can be simulated and the behavior of the resulting urban structure be observed [Streich, 2000b: 5-6].

The experiment encompasses the most difficult tasks in the field of architecture and town planning, i.e., building in an already built up (existing) area and urban densification. For such tasks, it is crucial to have the correct classification of the numerous influencing factors that control the attractiveness of the respective properties. On the basis of a concrete example, a computer produces a simulation of a guided urban densification process. A building block is drawn in the computer and provided a virtual world with characteristics such as quantitative values (like structural density, land price and population density) and formal factors, like size and use. The model can also be provided with the design priorities, which reflect their weighting. The resulting attractiveness is represented as three-dimensional entities in the virtual environment [Streich, 2000b: 7-8].

In urban planning, the untypical/nonstandard procedure and the variety of planning tasks and problems peculiar to each locality make the automation unworthy of pursuing [Bühler in Streich, 2000a: 35]. Instead, support in this process is more needed in the form of a computer-aided project management [Streich, 2000a: 2].

4.2.3 Collaboration and Participation in Design

4.2.3.1 Collaboration

Few design practitioners can claim an architectural design as "This is mine, and mine alone". Instead, for the majority of practitioners, designing is an act that involves other members of their profession and members of other professions too. This is particularly the case in the context of modern buildings and cities that have highly complex systems. The designer must collaborate to create a better design.

The collaboration that takes place in the design process is categorized into the following types [Maher/Cicognani/Simoff, 1997]:[41]

- Mutual Collaboration, where the participants are "busy working with the other".
- Exclusive collaboration, in which the participants "work on separate parts of the problem, negotiating occasionally by asking advice from the other."
- Dictator collaboration, where the participants decide who is in charge. This person then leads the design process.

Usually design is regarded as a continuous close-coupled process in which the participants work closely to realize the design. They work intensely together, observing and understanding each other's moves, the reasoning behind them and the intentions. At all stages of the design, the observer cannot distinguish the contribution of each participant to the design product. The Mutual Collaboration is thought to be like this [Kvan in Martens, 1997].

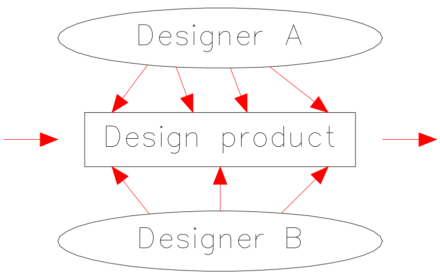

Figure 4-7 Close-coupled design process (from Kvan).

Actually, design is rather loose-coupled, with all participants contributing what they can, in different domains of expertise at moments when they have the knowledge that fits the situation. The participants work together because each has a particular expertise that can contribute to the solution process. Two or more experts can operate in their own domains on a shared problem. The design moves in discrete steps as set out in very simplified diagram below. Different from the close-coupled design that needs software allowing files to be opened simultaneously by multiple designers in the loose-coupled design process, designers have no need of such

[41] also available on the web site http://www.arch.usyd.edu.au/kcdc/cmcd/paper/

software capability. A drawing file that is currently being used by a user cannot concurrently be opened by other user. The IBP program works like this as well [Streich, 2000a: 105].

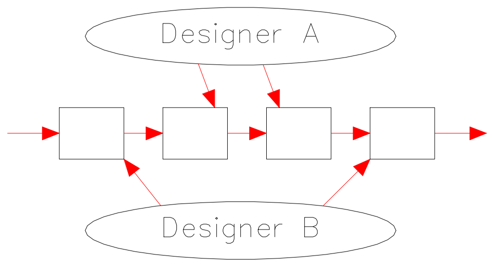

Figure 4-8 Loosely coupled design process (from Kvan).

The exclusive collaboration moves in a similar way as that depicted in the diagram above. However, the steps in exclusive collaboration occur at longer intervals.

The advancement of software technology has put the collaborative work in urban design and planning to a new height. All work-operations from data query and presentation, to processing/manipulation of task and input of feedback is done through a unified groupware. Task distribution among the many collaborator is supported with a program (e.g. Lotus Notes) that have calendars, task and mail functions, information distribution and sharing, workflow management, etc. Such programs offer the possibility for discussion of the participants over great distances. The work of a participant can be viewed in real time by all other participants of the discussion [Kaiser/Scheck, 1998].

A collection of new technology known as project extranets, project collaboration networks, or project-specific Web sites is gaining popularity among architectural firms. Project extranet systems use the Internet to improve communications and data sharing between geographically dispersed team members during design and construction. With some variations among systems, these extranets look and feel like the public Web, but their access is password-restricted to members of a project team. Project extranets have underlying database engines and a workflow structure to support the kind of interchange typical of construction communication.

Examples of project extranet systems are ActiveProject, ProjectWise and others [Novitski, 2000: 34-40].

Those are some illustrations of the growing role of computers in collaborative urban planning and design. Computers are not merely machines for processing algorithms that are ordered anymore; instead, they have characters as capable as a structured, dynamic communication media [Streich, 1998: 306-310]. This character is different from the telephone medium that is dynamic and non-structured or the printed medium that is structured but not dynamic.

The design process through Internet is by no means free from hindrance. One of the major problems of collaborative or participatory design through Internet is the speed of information transfer. Graphic data – which is intensively employed in the urban design process – has notoriously large files. The bandwidth of the current communication infrastructure is often inadequate to handle such amounts of data. In the end, computer networks become overloaded. There are several ways to avoid this problem. Principally, the server should send data in the smallest packets possible to the user. Data traffic reduction can be achieved through these measures [Wasserburger, in Schrenk, 1998]:

1. Reduction of the queried area. By selecting a smaller area in the GIS/CAD or other applications, the amount data that must be processed and transferred by the server can be reduced.
2. The server sends only the information needed by the user. If possible, additional information is appended or "inserted" on the previous one, instead of sending the whole screen anew.
3. The information is sent to the user in the smallest format possible. When necessary, the compacted information can be processed or decoded by the user before using or displaying it. For instance, sending a vector file is faster than a raster file; and jpeg or tiff format is more compact than bitmap format. CAD program is equipped with Whip! plug-in for converting dwg files into dwf format (Drawing Web Format). This enables the compacted CAD files to be viewed through the Internet.

Another way to overcome the constraining capacity of the network is by using high-speed digital networks [van Bakergem/Obata in Flemming/Van Wyk, 1993]. Nonetheless, this option requires a heavy investment for improving the computer network.

In collaborative[42] architectural design, the computer-based design environment has a shared workspace with double foci: first, the workspace that designers see and interact with, and secondly the workspace that provides an underlying computer-based representation of the persistent memory [Maher/Gero/Saad in Flemming/Van Wyk, 1993].

4.2.3.2 Participation

Urban design covers a vast area within the city. Many people work in, occupy or just visit the designed area. These people are influenced by the design, both in a positive and in negative sense. The public in general should also be granted the right to voice their concern on the design, and ideally even to directly participate in the urban design process. The public in general thus co-operates with the professional members of the design team.[43] The urban design participation process can occur through various channels or media. They can do it in person or through various telecommunication channels. In this way, the computer networks complement the conventional process as elements in a democracy [Streich, 2000a: 163].

In order to sustain a fair "stand" of all participants of the design process, there should be a balanced working environment. With this is meant that all participants have the same access to the planning/design information [Streich, 1998: 307; Streich, 2000a: 168]. Ideally, none of them may know of the design area better

[42] Collaboration is a joint problem solving, it entails working with other to find a solution than satisfies both (or all) parties concerned. This consists of agreeing on the problem definition; sharing concerns and studying in depth issues to find innovative solution alternatives. Collaboration calls for a deep level of thrust and acceptance. The word co-operation according to Oxford Dictionary means "to work together, act in conjunction ... to co-operate for ... mutual benefit". Co-operation does not require the deep level of thrust and acceptance as in Collaboration. [Kvan , 1997]

[43] See notes Kvan on collaboration.

than the other, so that the discussion flows in both directions unlike the one-way "informing" sessions of the venerable public meeting that was often undertaken. All participants can access information that is stored in the network. This is a form of equality in the planning process that avoids the terrible one-way flow of information in the participation process.

The availability of digital information through Internet is boosted by the rapid spread of websites, the explosionslike increase of internauts (Internet users) and the advancement of Internet technology. People who perform a query can become "drowned" by the amount of information available to them. The problem now is how to filter the information so that only the most relevant and required information can be received by the researcher [Burg, 1999: 77]. This is a requirement for self-limitation of information or data protection in the sense that the people are protected from the data-avalanche [Streich, 1998].

Another way to improve the design's quality and its the level of democracy is by involving all sections of community. People of different ages, backgrounds and cultures almost invariably have different perspectives. We should ensure that a full spectrum of the community is involved in the urban design process. This is usually far more important than involving large numbers of participant [Wates, 1998]. Internet-connected communities need not cover the entire spectrum, but it keeps growing and eventually will reach a satisfactory coverage. An issue that should be decided in the selection of computer support systems for participation is whether it must be done at same time-same place or not. If the work demands a "same time" type of participation, then the videoconference method is suitable. If the participants do not need to interact at the same time, then the Internet offers the best possibility.

People can participate far more effectively if information is presented visually rather than in words. A great deal of poor development and hostility to good development, is due to people not grasping what is intended. Use of graphics, illustrations, cartoons, drawings and models can explain the design intentions clearer.

Transfer of information through the Internet uses standard computer languages such as HTML (hypertext mark up language) or VRML (virtual reality markup language). The VRML is used in the case of extensive collaboration with interactive graphics that can be manipulated by the user in real time. In real time mode, the user can move and change the graphic parameter – such as viewpoint – and see the result immediately. This takes place interactively [Besser in Schildwächter/Lenhart, 2000].

4.2.4 The 3D modeling

Visualization has a crucial role in design, as has been explained before. Three-dimensional visualization takes the center stage of urban and architectural design. Owing to its importance, this section gives a quick overview on 3D CAD. The most basic classification of CAD is according to the number of the geometric dimensions that are used [Streich/Weisgerber, 1996: 70].

- 2D model has only 2 coordinate dimensions (x,y) so that also only two-dimensional objects can be generated.
- 3D model operates with three coordinate dimensions (x,y,z), so it can produce three-dimensional objects.
- 2½D model is an extension of the 2D model, in which a spatial object is generated from a two-dimensional contour plan by a single third parameter of the concerned objects. e.g. prismatic objects are defined by giving a single height value.

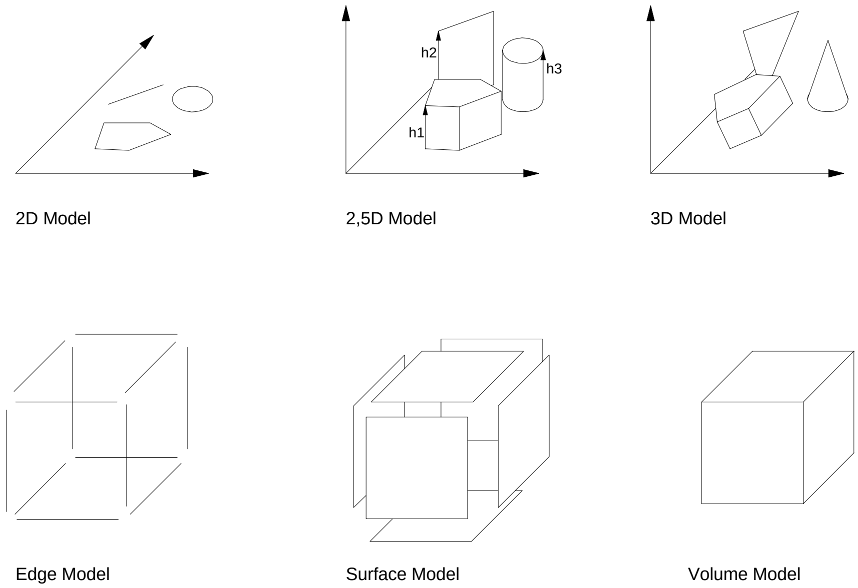

Figure 4-9 The three classes of 3D CAD and CAD modeler according to its geometric entities. (after Streich and Weisgerber 1996)

Three-dimensional CAD models are classified by the primitive elements that are used for the generation and visualization of the model. The type of primitive elements that are used in the model determines the characteristic of the model, not only its visual appearance, but also the possible methods of working and analyzing the model. The three main classes are [Bertol, 1994: 69]:

1. Wireframe model. This is the simplest model. It uses elements that display the linear boundary of the model. There is no solid-void boundary.

2. Polygon-based. Polygons define the boundary of the elements. This model has a clear spatial characteristic.

3. Solid modeling. Using three-dimensional "primitives" as elements (such as cubes, spheres, etc.) to define the model. Constructive Solid Geometry can be manipulated using Boolean operators. The model can be used for calculating mass and its center of gravity. This is the most advanced class of 3D CAD.

Similarly, the three main classes above apply to the CAD modeler according to the geometric entities of its basic element [Streich/Weisgerber, 1996: 70-71]:

1. Edge modeler that has only edges or vectors that are independent of each other as its basic element.
2. Surface modeler, in which each surface is used as basic element that is independent of each other.
3. Volume modeler, in which a complete volume description of the geometric objects is done with various methods of form description.

The three modeling systems only concern the geometric attributes of the model. They do not provide information on the material characteristic of the object, for instance, whether it is made of wood or steel. Future generations of CAD systems will provide not only information on the geometry of building parts, but also their semantics. The users of such CAD systems will not mainly construct and manipulate the geometry of their design elements anymore; instead, they will use the parametered building parts as so-called "features" with their material characteristics. The three geometric modeling types are then expanded with the following:

4. Feature-modeler, in which the semantics of the product types also plays an important role, besides their geometric information.

After the three-dimensional model defined in the computer, it can be refined to improve its appearance. Particularly the surface of the model is important for its near-reality character. There are various visualization techniques for three-dimensional images. The visualization technique determines the visual quality of the digital model, in terms of its likeness/closeness to reality. Some of the common techniques used in architectural modeling software are as follows:

1. Texture mapping. The material character of the object is simulated using a pattern drawing that is projected onto the surface of the object. Sometimes the outcome of this technique has an appearance as if it was a sticker that is

applied on the object. In such situations, it is recommended to use the solid (three-dimensional) texture instead.

2. Bump mapping. To avoid the slick appearance of the texture mapping, a method is used for creating an illusion as if the surface is coarse. The processing time with this technique is twice as long as in the texture mapping.
3. Displacement mapping. This technique is more complicated than the bump mapping, because in this technique, the geometry of the surface is actually altered. Therefore it requires a computer with large capacity, although not as large as when the surface is created in geometric modeling.
4. Particle systems. This method generates new objects to create a simulation of fire, mist, trees, grass, etc. Thus actually it is not a surface modifying technique and is used mainly for landscape design [Dorau in Schrenk, 1998].

Shade and shadow that appear when a light source is added to the scene can greatly improve the three dimensional perception of the model. The earlier version of AutoCAD uses the Gourand shadow method, which has a stark boundary between dark and light. AutoShade version 2 uses Phong-shadowing that is smoother than the Gourand method. Ray tracing is a more advanced method that requires more computer resources. Nevertheless, it can only calculate point light sources. The standard that is used for shading and rendering is Renderman by Pixar [Head, 1992: 233]. The popular rendering and animation software 3D-Studio from Autodesk also has four types of rendering presentation: the wireframe method, the flat shading, Gourand shading, and the Phong-shading [Geyer, 1992: 65-69].

The application of 3D CAD and GIS in urban design practice has been performed in some countries. Britain shows an advanced three-dimensional computer simulation for urban design. A computer model of the entire city of Bath, in England, has been made. The model of Bath is comprised of 200 sub models, each the size of a city block and occupying 60 MB of hard disk space with AutoCAD dwg format. Because of the character-defining nature of its landscape backdrop, the land contour of this city and its surrounding must be distinctively modeled too, the model is based on 3D-terrain mesh, onto which a bitmap image from 1:50.000 ordnance survey map is pasted. This image is enhanced beforehand with paint program to make it appear mode naturalistic. To enable quick viewing of the model in various zoom scales, the buildings are modeled in three levels of detail. For the purpose of strategic urban development planning, the representation of buildings as simple volumes is sufficient. Detailed models of some significant larger buildings, like churches and mosques, major skyscrapers and other landmarks are helpful in providing points of orientation in the architecture of the city [Day/Radford in Tan, 1995: 495-506].

The creation of entire cities in 3D model require a large amount of data space that hampers its interactive application because of its long processing time. A research group in MIT, together with iMAGIS group, is working to simplify city models for interactive visualization. This is a hybrid modeling approach that comprises both 3D geometric models and image-based representations called "imposters". The geometric models are used to depict objects close to the user, and the imposters are used for background items. The imposter approach differs from the polygonal simplification strategies employed by traditional visualization systems, because the imposter is not a flat image. Instead, it is a 3D mesh constructed using the geometry of the actual model [Mahoney, 1999: 17-18].

Newer GIS software allows the users to "drape" visualizations over GIS maps to give greater realism and immediacy. The users can generate fly-through that offers views of high-resolution scenes from virtually any locations. ESRI has the 3D Analist program for ArcView. Intergraph and Erdas also have their 3D modeling tools called ActiveTerrain and Imagine VirtualGIS. ActiveTerrain allows users to create objects, such as buildings, in 3D and place them into a rendered landscape. Imagine can build 3D visualizations [Hodges, 2000: 43-49].

4.2.5 Producing Physical Model

In the latter stage of design, it is often necessary that the designer test the idea in three-dimensional model. Clay and carton are the most common conventional media for this purpose. Architecture models come in various scales and levels of detail, which must be suited to the purpose of the model and the design stage. Idea models help the architect when sketching the idea, working models correspond to the stage where the architect sketches and designs drawings, whereas presentation models supplement the working drawings [Streich/Weisgerber, 1996: 26-32]. Computer model facilitates rapid exploration of the alternative ideas, and for assessing the three-dimensional implications of the idea.

The equipment for creating physical model/maquette is very costly, and the product can only be used once. That is, the model cannot, or only with difficulty, be modified after its completion. In contrast to this, digital models can be used in all stages of design. The digital model can be integrally linked to two-dimensional plans and elevation drawings of the design [Crosley, 1988: 112]. If modification of the physical model is necessary, then a more convenient method is by building the physical model automatically - with the help from model construction machinery - directly from the digital model. The coupling of a CAD System and model-construction system needs an interface, as the model-construction machine cannot directly use the vector data of the CAD drawings [Streich/Weisgerber, 1996: 83].

There are two main types of computer aided model construction methods. The first type is the subtractive process, in which the physical model is produced by reduction of the material. The second type is the additive process. In this process, model construction materials are successively put together and joined to produce the physical model [Streich/Weisgerber, 1996: 45]. The classification of the model construction process can be detailed further in the following [Streich/Weisgerber, 1996: 46-47]:

- 2D Cutting process works mainly similarly to the common pen plotter system, where two-dimensional form contour is cut out from Material plates.
- 3D Milling process that at least can control the height of the tool guide, which enables the production of three-dimensional form structures.

The 3D Milling process can be differentiated further:

- 3D milling process that during the work-process the to-be-milled material stays unmoved on the worktable.
- 3D Milling process that the worked material either constantly rotated, so that a rotation symmetrical model construction part produced, or in incremental steps rotated, so that the milling along a contour at each incremental positioning of the building material possible, and at the end it produces a spatially high-differentiated form of model construction parts.

In the area of additive process – the SMS (Solid Freeform Manufacturing) – there are very different techniques used, from automatic layering of two-dimensional building part contours to photosensitive or thermosensitive polymerization to the technique of individual particle melting and holographic process.

Nevertheless, the usage of such automatic model construction processes in the practice for architecture and urban planning consulting firms are still rare. In the USA, two dimensional laser cutting has been used for some years. Also known is the use of CNC controlled precision mill at the office of the famous architect Frank O. Gehry [Streich/Weisgerber, 1996: 25]. In the academic world, the CPE[44] lab of the University of Kaiserslautern has experimented regularly using the 3D mill.

4.2.6 Managing CAD in the Office

There are many aspects related to the topic of CAD management in an office. The following discussion will highlight some practical matters that can be handy when one is considering CAD as an information-technology tool in a design office. While the discussion is centered on CAD, the content may be applicable to other computer systems that support the task in an urban design office.

[44] CPE = *Computergestützte Planungs- und Entwurfsmethoden* (Computer-aided planning and design methods).

4.2.6.1 Introducing computer as design tool

Managing CAD in an office goes through a typical cycle. There are phases in which CAD is accepted in a design firm. The first is the **awareness phase**. The awareness about the new technology can come into the office in three ways — top down, bottom up, or through independent third parties. The caveat of the top down process is that the high level managers may not be fully aware of how information actually enters and is processed in the office. The bottom up process is initiated by the computer experts in the office, who use the CAD program initially. They are self-taught people who have the hobby/pleasure of working with computers, and later they promote the use of CAD in the office. The third party might be a vendor of a computer system, consultant, or other users.

During a **learning period** more staff are attracted to experiment and use the CAD; at first the application of CAD by the newly trained staff is too loose that their work is inefficient, making too many hard copies or drawing print-outs, etc., that the management of the office is forced to take more restrictive measures in the **re-entrenchment period**. For instance, the office managers may standardize procedures, use a library of frequently used symbols, and control the print queue. After everything is solved and settled, CAD is **accepted** as a tool in the office, and used regularly by the designers and drafters in making their drawings [Crosley, 1988: 164-165].

Before buying a new CAD system, it is only natural that the office develops a system requirement describing what the users require from the system and the anticipated future needs. Evaluation of alternative systems is done based on the user needs analysis. One of the most common criteria in the evaluation is the user-friendliness of the system. The performance of the system can be compared with cost-benefit analysis. There is no clear rule for selecting a new CAD system to be installed in an office, but it is advisable to opt for the fastest system that is available at the time of purchase. In case an older version of the CAD system has been used in the office, the data that is completed in the old version must be transferable to the new version. This capability is called "backward compatibility".

Before selecting a CAD system, we should shop around and compare the compatibility, reliability, and the numbers (technical specification, performance etc.) of the CAD systems that are offered in the market [Crosley, 1988: 30-31].

The implementation of a CAD system in an office that has been using conventional manual methods should be done carefully. It is better to start slowly by using CAD only on some part of the work, so as to avoid catastrophe when the system fails for the first time.[45] Furthermore, there are service bureaus that can provide an outside assistance to the design consultant. This includes companies that specialize in animation and presentation of the projects. Using the service of such a firm can reduce the time that would have been required for learning, were the work done in house. The quality of the work also better guaranteed in this case [Crosley, 1988: 168].

4.2.6.2 Work organization

To the uninitiated, the computerization of an office centers on technical issues of computer systems' hardware and software, functional requirements and performance standards. These issues might be important, but they are not the ones that in the end determine whether computer application in the office will succeed or fail. The issues responsible for implementation failures are almost always **people** problems, not technology problems. This is perhaps because of the nature of techniques that are more predictable, and their performance can be calculated. In contrast, humans have various interests and politics.

People play a vital role in the office CAD system, and their coordination is crucial. Design firms are organized either vertically, in which a team works on a project from start to finish, or horizontally, where a staff of specialists passes a project from department to department. The latter kind of organizing usually has a distinct drafting department. This department is usually the first group to use a CAD system, because when CAD is initially introduced into an office, the CAD facility is

[45]The caveat of this approach is the creation of 2 societies within the offices, i.e., the computerized workers and their manual-working colleagues. [Ingenthron, in Schildwächter/Lenhart, 2000]

often assigned to an existing unit within the office. Unfortunately, in a firm with a drafting department, working drawings are often considered distinct from the design process, and designers may avoid the production of working drawings completely. In this way, the potential of using CAD as a design tool tends to be neglected. If a distinct drafting department not available, then the Data Processing Unit often receives this assignment, but this is probably not the best place either. By placing the new system in a non-user department (unit), the CAD might not be implemented in a way that adequately addresses the needs of the users [Aronoff, 1993: 265].

The CAD section within the structure of the office shall not be overemphasized, for example, as a large and separate division. The best setup is that everyone in the design firm has direct access to a computer. For example, in some German municipalities, all workers in the planning department have computer terminals with CAD/GIS and other software required for their task. These terminals are connected through an Intranet [Didinger and Theurer in Schildwächter/Lenhart, 2000].

There is a worldwide pattern that CAD systems are initially brought into a firm for use by CAD operators. Over time, firms realize that the quality of information coming out is constrained by the understanding of those putting it in. Thus, the best way to improve CAD output, both in terms of quality and quantity, has been to ensure users understand the particular needs of architecture. This means replacing the CAD operators by professionally trained architects to use the systems directly in their design activity. This model of working is most common in Asia, perhaps also due to the shortage of trained professionals to support the effort [Kvan in Tan, 1995: 774].

4.2.6.3 Common programs in design office

CAD managers set up and maintain the computer system with the firm's work philosophy as guidance. In the design firms in Asia, this has led towards some sort of uniformity in their choice of software. The similar type of work that the firms have been facing and the pragmatic attitude of the Asian firms, coupled with the equally high access to information on new software and hardware have played a role in causing this tendency of uniform software usage.

In terms of the selection of software in consulting firms, there is a correlation between firms satisfied with their CADD systems and their philosophy of practice: firms satisfied with AutoCAD were pragmatic firms, while firms that belong to the Design/Theory firms use other CADD systems [Kalisperis/Groninger in Tan, 1995: 773-774]. A survey conducted in Hong Kong shows that 60% of the design firms classified themselves as pragmatic, focusing on getting the work done, 26% pursue design distinction, and 7% handle more complex work requiring client interaction. For comparison, a similar survey in the USA shows that 34.5% of the firms there are pragmatic, 13.8% classified as Design and 51.7% as others. The pragmatic firms typically organized themselves into departments based upon task, and specialists are trained to carryout these tasks [Kvan in Tan, 1995: 773-774]. The survey further found out that 46% of the consulting firms in Hong Kong use Microsoft Word and 34% WordPerfect for word-processing, which entails 80% using a very compatible software. There is a similar situation with spreadsheet calculation, where 46% use Excel and 22% Lotus. In terms of CAD, 90% use AutoCAD and the rest are Minicad and Intergraph users. AutoCAD also dominates the 3Dmodelling and rendering systems. For comparison, only 43% of the firms in USA use AutoCAD. In terms of accounting systems, the situation looks bleaker: 52% of the firms have no accounting system in use, with the most common system being Excel (8%) or tailor-made software (8%). Similarly, very few firms use computer systems for managing project progress: 88% of them have no software for manpower resource planning, and 66% do not use it for project scheduling. This occurs despite the fact that 98% of all design firms in Hong Kong are computerized, and most of them are management-conscious.

Quality management and quality assurance should be applied by following the DIN/ISO 9000 to 9004 standard. In this standard, the work with CAD follows a standard procedure to ensure the transparency of the design process. According to a regulation in the European Union, all government projects with a value of over 100.000 ECU must be done by companies/consulting firms that have ISO certification [Guthmann, 1995: 18]. Such regulations have not been available in Indonesia, yet many consulting firms have begun implementing the ISO standard in their work process, in anticipation of the globalization that brings open competition with international design firms.

4.2.7 Affordable Computer System

There is one handicap that may impede the computer application in the urban design process, i.e., the limited financial resources of the local authority. The government in the developing countries, including Indonesia, has to carefully spend its meager budget. Local authority in Indonesia depends on the central government for their expenditure. Approx. 70-90% of their budget comes from the central government [Löffler, 1996: 49], while the rest is met by the PAD (*Pendapatan Asli Daerah* = the original regional income). Therefore it is rather difficult for the local authority to invest a great amount of money for purchasing the expensive hardware and software that have been described above. Even more expensive is the cost of training the qualified personnel who will work on the new system.[46] The training of CAD for office personnel will be less expensive if performed in house [Theurer and Ingenthron in Schildwächter/Lenhart, 2000]. Hence the city authority of Jakarta must devise a less capital-extensive solution.

There are already many computer-literate workers in the "personnel market" nowadays in Indonesia. They are usually capable of working using standard software, including AutoCAD and Windows programs. The use of more common software will reduce the time and cost needed to train the new personnel. Furthermore, such software sometimes costs less than the non-standard software because of the sheer number of its customers (the economy of scale applies here). The so-called standard software usually also comes with plenty of support from the

[46] The cost of GIS training for four personnel is almost as expensive as the software price. [Ingenthron in Schildwächter/Lenhart, 2000].

manufacturer and Internet discussion groups, as it is used by a wide public. Another reason for using the standard software its ease of transfer. Being standard, such as AutoCAD, means that practically all other software in its class uses the same exchange format or can directly work within the same format. The format for exchange of AutoCAD drawings is called DXF (Database Exchange Format) [Haas, 1993].

Even in developed nations such as Germany or Finland, local authorities and private firms face some problems in the procurement of the expensive system and personnel for computer aided urban design process. The level of computerization for planning in Germany: Until June 1997, 45.5% of the major cities in Germany had neither CAD nor GIS programs to assist their work in preparing the Regulation Plans. Most of the electronic data processing capability of the local authorities lay in the domain of word processing and table calculation. Admittedly, this is not the case with the private sector in Germany, where planning consultants produced 82.9% of their product (plans) digitally or partly digitally [Pflüger in Schrenk, 1998].

With the advent of Linux in mid1990s, there is a cheaper alternative to the Window- or DOS-based CAD and GIS systems. LinuxCAD and GRASS are programs for CAD and GIS under Linux that can be purchased at a fraction of the price of AutoCAD or Arc/Info. However, there is a need to invest some training time and cost for moving to a new platform, despite the very similar appearance of their user interface. Secondly, there can be some problem in exchange of files between the two platforms.

The common software in CAD – and GIS to a lesser extent – have been mastered by many skilled personnel. Combining the two applications, CAD and GIS will make some work easier. CAD is relatively easier to operate, but it does not have the capability of query and analysis [Mahoney, 1998: 45]. Merging the CAD and GIS applications will enable trained CAD-operators to operate the GIS application through the CAD interface. An example of such hybrid programs is AutoCAD Map, which can read and write the files that are written with other GIS programs. People can take (almost) any GIS file, bring it right into AutoCAD Map, and use it in conjunction with a dwg-based file without translation. This will alleviate the problem of the shortage of human resources that is faced by many municipalities. Fewer GIS experts are needed to set up the system, and then the readily available CAD-operators can do the rest, after a short training period.

4.3. The computer application in Indonesian Urban Design

Computers are involved in virtually all phases of producing the Urban Design Guidelines. They are used intensively in some phases of work; but in other phases, they provide only a light support to urban designers.

Development plans are prepared in the spatial planning process before the commencement of the urban design process. After completing the preparatory stage, urban designers conduct field surveys to collect data of the existing conditions of the project site. A base map of the site is produced either by digitizing a printed map or scanning an image map such as an aerial photo.[47] The surveyed data of the site is entered on the map. The data include information on the existing buildings on site: their height, material, usage, condition, etc., and also the information on vehicular traffic and pedestrian circulation. Major natural features such as coastlines, bodies of water and groups of large trees are included in the data. Aerialphotos provide information of existing buildings in and around the planned area. Urban designers use the photo, among other reasons, for interpreting the actual land-use (as opposed to the planned land use), and to see the trend of urban development in a chronological series of photos over an area. This image can also be overlaid with street- and building-plans of the area to determine the feasibility of the plan: which buildings must be torn down for the new road or other structure.

[47] Note: In Indonesia, the surveyor/planning consultants must produce their own digital map, because urban cadastral map in digital form is not readily available to the public, even to government agencies. This is due to the view that "information is power". [Rönsdorf, 1999].

Maps of city plans and some city regulations often exist in the form of printed maps. These hard-copy maps can be converted into computer files by digitizing or scanning.[48] These government plans and regulations mapped together with maps containing data of existing conditions and other pertinent information are instrumental in creating the concept of urban design. Analysis of these maps can be conducted using GIS, such as Arc/Info with ArcView. Nevertheless, the projects are usually not so large (typically encompassing an area of 10 to 60 Hectares); thus they do not warrant the utilization of the GIS. Instead, the urban designer often creates the urban design concept intuitively by manual analysis with the printed maps.

Based on the urban design concept, the urban designer can make a preliminary urban design with the help of 3D modeling tools, such as AutoCAD and 3D-Studio.[49] These programs enable the urban designer to see his design from various view points, to check whether the design looks as satisfactory as in the urban design concept. The program allows the urban designer to check whether the pedestrian zone and plaza are in the shade of tall buildings. He can also check if the protected view corridors and view planes in the design are obscured by the new structure or not. Simulation of street sequence in the city can be done with computer [Trieb, 1974: 215], the "walk through" simulation is utilized to check whether the building massing and open space layout have fulfilled the idea of the urban designer: where the path should be long and narrow, where to put the "surprise elements", etc.

At this stage, the urban designer can begin preparing the first draft of the guidelines that explains the urban design concept. To enable easy transfer between graphic and text formats of the guidelines, PageMaker and Visio programs under Windows are used to write the text and create the maps and

[48] Digitizing maps only for the purpose of the consulting firm actually poses a danger of duplication in data collection effort, as other agencies or organization might have done it. Furthermore, problems of data compatibility and quality are handled in ad hoc basis. While this solves the consultants' immediate information needs, it compromises longer-term objectives of data sharing among agencies [Aronoff, 1993: 283].

[49] At the time of this writing, only 3D-Studio Max modeler is used as modeler program by the urban designers in Indonesia due to its compatibility to the standard AutoCAD. The intuitive nature of the early phase of design keeps the urban designer from utilizing more sophisticated modeler program.

illustrations respectively. Spreadsheet programs are used for calculating the allowable floor area and the volume of the building. The building intensity table can be attached to the guidelines. The plot ratio is constantly changing, following the negotiation among the stakeholders of the project.

The preliminary urban design is elaborated and revised, following the result of the negotiations. To facilitate the discussion of the design, the ideas of the urban designer must be visualized in more communicative three-dimensional models [Barnett, 1982: 11]. The three-dimensional computer model is a practical medium for developing design, because of its characteristics that are easy to edit. Some of the programs that are commonly used to make the computer model are AutoCAD, Minicad and 3D-Studio for rendering and animation. The walk-through simulation using computer model can enhance the perception of all involved parties during the urban design discussion. Usually the computer model is accompanied by a physical scale model of the design and some perspective drawings.

To accelerate the production of the physical scale model, the urban designer can use the 3-D computer model to create the pattern for cutting the plastic- or wood-sheets of the model. The cutting and pasting of the wood- /plastic-sheet is done manually. When the scale model's dimension is not so large, a direct method of constructing the scale model from 3-D computer models is possible using material layering processes [Streich/Weisgerber, 1996]. However, the automated method is not used in Indonesia for two reasons: first, the equipment is prohibitively expensive and secondly the fee for manual maquette builders is relatively much cheaper in developing countries.

When all parties in the discussion agree on the urban design, then the urban designer should prepare the document of urban design guidelines. PageMaker or other desktop publishing programs are used in preparing the urban design guidelines. The illustrations are drawn using AutoCAD and Visio and imported in the format of windows meta-file (wmf) into the report. The three-dimensional computer model can be converted with Visio program for presenting the guideline document, so that the amount of new drawing that has to be made can be reduced.

In the final design guidelines, each land parcel is allocated its own parameters of plot ratio, land use, design parameters, including color and material of the outer surface, height of architectural expression lines, signage, utility and communication connections, vehicle entry/exit points and other elaborate specifications. Preferably not only the bare data are noted down, but also the calculation, rationale and argumentation that led to these data. The storage and processing of such data are typically what computer databases are made for.

In some instances, particularly for advertising purposes, the Indonesian urban designers produce three-dimensional animation of the project. Using command modules within the same programs AutoCAD and 3D-Studio, they prepare the animation for presentation to the client, public officials and others. The animation simulates the sequence of public open spaces and highlights important landmarks of the design area. When stored in VRML format, the digital 3D model of the city can be viewed and manipulated by the public through the Internet, using plug-ins such as CosmoPlayer for Netscape. This can support the public participation in urban design.

Phase and Activity	Manual method	Computer support
Development policy This is done by the city-planning agency.	Planning agency performs manual spatial planning process. Presents the result in hard copy/printed format.	(Workflow process with full IT support. Results in both hard and digital format for tracing of background info) → Refer to section 4.1.1
Preparation for design Identify problems, goals and make strategy; collect data.	Record the aspiration of developer and the public. Collect printed maps, plans and regulation. Survey existing condition of built environment.	Digital maps for GIS overlay. Data inserted into maps and tables.
Preliminary design Make urban design concept, including land-use and plot ratio redistribution.	Internal creative process w/ hand-drawn sketch + maps and clay models as media for communication. Manual table calculation.	(GroupWare for team work). Digital maps, 3D computer model (object-oriented model). Spreadsheet calculation.

Design development Develop design alternatives and test building massing; refine plot ratio.	Loose-coupled teamwork w/ paper/wood model + hand-drawn perspective drawings as media for discussion. Typewriter/word processor for report & table calculation.	(GroupWare in close-coupled team work). 3D comp. model rendered for testing of bldg. massing + townscape. Word processor and spreadsheet for interim design report.
Final design Elaborate selected design alternative into guidelines; present the final result.	Create design guidelines by cutting + pasting the drawing into the written text. Manual creation of maquette.	Digital presentation of 3D computer model. Desktop publishing. Semi-automatic creation of maquette.
Implementation Dissemination of the urban design guidelines; use the guidelines in design review.	Hardcopy.	Digital publication through the internet (enable public feed back); with hyperlink for rich data set.

Table 4-1 Computer support for urban design activities. Note: () indicates potential computer method not yet applied.

From the description of computer-support in Indonesian urban design processing, which is summarized in Table 4-1, it is apparent that computers serve only as a tool that aids the urban designer in the process. Computer has not become a method that improves the manual design process. An integrated urban design support system, with interdependent computer modules, is still an utopia. The only major improvement from the manual method is the computer's capability to transfer data between software and phases of development. This significantly reduces working time and possible mistakes that could happen in manual method.

4.4. Conclusion

We have to realize that computers in urban-planning and -design processes are not objective decision-making-systems. The output of computer processes looks authoritative and neutral, but within the decision-making process (including modeling) there are selections that are political in nature. In order to overcome this problem, a more transparent process is needed. Choices and assumptions should be made explicit and analytical methods and procedures must be fully documented [Aronoff, 1993: 285]. Decision support systems in spatial planning using workflow management systems have the capability of supporting such requirements.

In the urban design process, the creative nature of design in its early phase has a "black box" character of work. This very brief phase is best supported by object-oriented modeling programs.[50] The rest of the urban design process – from defining problems until the final urban design guidelines – is supported with workflow management systems capable of organizing the quantitative base of urban design as well as a database of empirical knowledge on designing the urban space (particularly the qualitative dimension). Specific workflow systems for urban design purpose are not yet available, and need to be developed.

A feasible approach for the current Indonesian urban design process is using a combination of readily applicable computer programs. Thus the process stays basically the same as in the manual method of urban design, with some improvements in the following areas:

- GroupWare supports cooperation in an urban design team, enables public participation, and records all design decisions.
- A continuous usage of 3D computer models, from preliminary- until final-design, using transfer capability between various programs. This can reduce the design-time and the mistakes that could have arisen in manual method.
- Rich datasets can link the graphic entities and text to the background information – such as spreadsheet tables and database – that clarifies the basis of the design decisions.
- Dissemination of the urban design guidelines through the Internet, with hypermedia- and hyperlink-techniques that link the main guidelines to various

[50] note: knowledge based system opens a possibility for an "automated"/AI design method here.

formats of additional information. Publication in the Internet also provides the opportunity for public feedback on the design.

Despite the high capability of computers, their role is merely **supplementary** to the human actors involved in the urban design process. Computers are capable of taking over very complex tasks in the urban design process, with one precondition: the task must be able to be routinized [Streich/Schmidt, 1997: 48]. Electronic data processing systems can not (yet) replace the creativity of planners in designing and answering complex problems. Computers can only aid and support the planners [Streich/Schmidt, 1997: 53; Streich, 2000: 2].

5. THE SILVER TRIANGLE AS A STUDY AREA

The study area is selected as an example of superblock development — an urban development type that can benefit most from its utilization of the urban design guideline. The urban design guideline is suitable for this task, thanks to its capability to precisely prescribe the built environment, thus enabling the conception of an integrated urban-built environment and avoiding the unwanted single-building type of development (*offene Bauweise*).

Superblock development requires large tract of land in city center. Such a requirement can be met in Jakarta or other major Indonesian cities by conversion of large "underutilized" land such as former airports, train stations or (most often) inner-city kampung enclaves. The study area is a representative of the last case, where an urban kampung exists on the planned area.

Before analyzing the case study area more closely in section 5.2, an introductory description on Jakarta's aspects that have ramifications on urban design will precede it. Section 5.1 presents an introduction to Jakarta, with focus on its built environment, the typology of urban development and the planning structure for handling this development. More general information on Jakarta is presented in Appendix A.

The study area is analyzed in its social and formal (physical) aspects. The analysis of social aspects is necessary because of the existence of kampung within the superblock, and the public life in public open space in Indonesian major cities that has been dominated by street hawkers. The concept for solving these problems directs the physical urban design.

The physical analysis is conducted using the urban design concepts from Chapter 2, such as the morphogenesis analysis of urban structure and urban design at the image level and appearance level that guide the implementation at the physical level of the urban design guideline. The main concern is to maintain a desirable public life or a high level of urbanity in public open space, so that the analysis of physical/formal urban design aspect is focused on its prospect for creating positive open spaces (street and square). It is intended to create a streetscape that can support pedestrian needs and the social requirements of democratic use of the public space.

The main concepts from the outcome of the social and formal analysis are summarized in the conclusion and are used as a reference in preparing the urban design guideline for this area, which is explained in Chapter 6.

5.1 The Dynamics of Jakarta's Development

5.1.1 Background Information on Jakarta

The explanation is organized following the three-component city structure (see section 2.3.5.2). Urban design concerns the urbanistic quality of the public space, where activities take place and create the public realm. The problem of street hawkers has dominated the urban design concern in the public open space; hence it will be explained in this section as well.

5.1.1.1 The urban landscape of Jakarta

Although the Dutch were the first to attempt to plan the city since early 17th century, the city layout is probably more British than Dutch in character, as can be seen from such large squares as the Medan Merdeka (then called Weltevreeden) and the Lapangan Banteng. The oriental style, or "indisch" style, as the Dutch called it, is not only apparent in the city's way of life but also in the types of colonial houses with wide verandah, the wide, tree-lined streets, and the original spacious gardens and house lots. In Kebayoran, a satellite town built since World War II on the Southwestern side of the city, and in other modern developments, the houses and garden lots are much smaller than in the older colonial districts. The general urban texture of Jakarta is made up mostly of such houses, a mixture of new as well as old office and commercial buildings, and kampung enclaves.

Jakarta has long been a city of new settlers who assimilated local ways and became Jakartans themselves. Some traditional neighborhoods can be identified. For example, the Kota district in North Jakarta was the first Fort of colonial Dutch. Now it is the central business district and Indonesia's financial capital. It houses a significant part of the Chinese population. The area of Kemayoran and Senen – originally on the eastern fringe of the city – is now almost central in its location and has become the city's major retail area.

The Jatinegara section, originally a Sundanese settlement but later incorporated as a separate town, has now merged with the rest of Jakarta and includes many new settlers. The Menteng and Gondangdia sections were formerly fashionable residential areas near the Medan Merdeka Square (with the National Monument). Tanjung Priok is the harbor, with its own community attached to it.

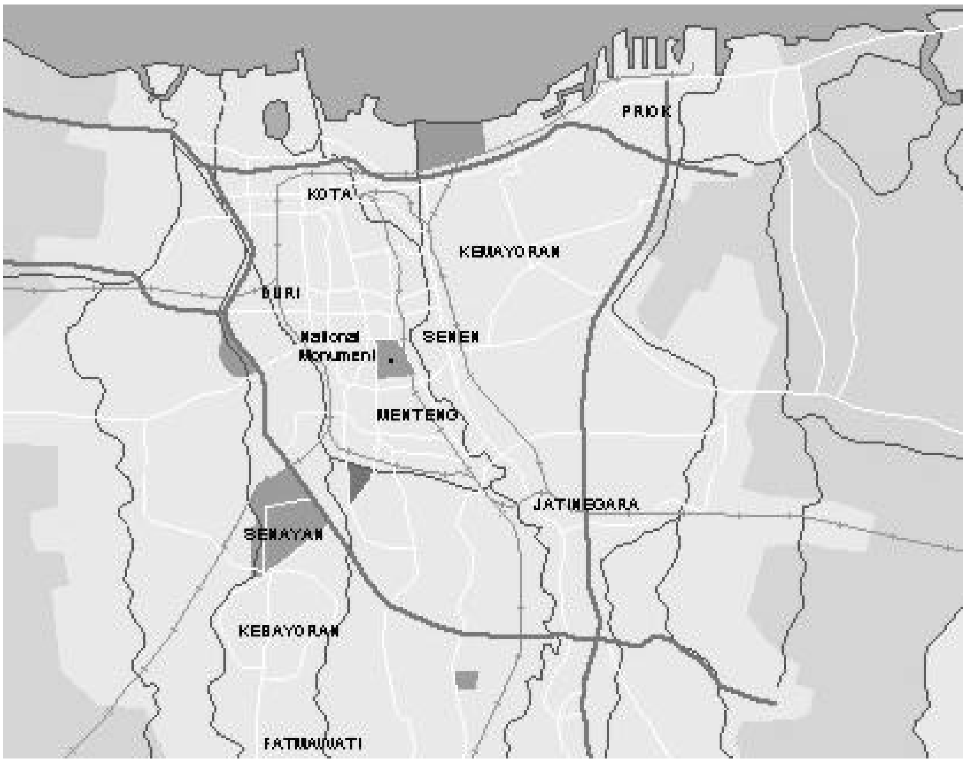

Figure 5-1 Map of Jakarta

5.1.1.2 The general urban texture

The general urban texture of central Jakarta comprises of all buildings in the "formal" area, excluding the monuments. Aside from the high-rise rental office towers and the large shopping centers, this encompasses government buildings, formal housing and apartment towers, public facilities such as school and hospital and so forth. These buildings are located along major streets.

After World War II Jakarta underwent a building boom. The city's first high-rise building, the Hotel Indonesia, and the Senayan Sports Complex were built in 1962. Most high-rise buildings are located along the Jl. Husni Thamrin and Jl. Jendral Sudirman roads, which are connecting Central Jakarta with the Kebayoran satellite town. These buildings were constructed as freestanding structures on its land parcel, and many of them with the boxy international style. During the very conducive economic situation in 1980s until 1997, the popularity of the most prestigious area in Jakarta, along Jl. Jend. Sudirman - Jl. Husni Thamrin - Jl. Rasuna Said streets, was rocketing as well. In this area, which is nicknamed the Golden Triangle, sprouted many high rise buildings.

The monetary crisis that hits Indonesia and other Asian countries since late 1997 has shown its impact on the property business. The year 1999 was still a bleak year for the property construction industry in Indonesia. In a pessimistic scenario, the project investment value dropped more than 75% of the initial forecast at Rp. (Rupiah) 31 trillion. During the previous four years, the construction sector has enjoyed a positive growth rate. In 1994, the growth was 9.7%, in 1995 it increased to 10.7%, in 1996 was 18% and in 1997 the growth was 19.6% [Suara Pembaruan, 23.12.98].

In 1995, of the total 2,1 million square meters available office space in Jakarta's CBD, only 14.8% was vacant. In 1998 the available office space has increased to 2.7 million square meters, and the vacancy rate was 17 %. In areas outside the CBD, in 1995 only 6.6% of the available 561,201 square meter office space were vacant. In 1998, the vacancy rate has jumped to 20 % of the 1 million square meter available space [Kompas daily 5.4.99 and 21.6.99]. Since the end of 1999, the rental tariff of office space has rebound with an average increase of 0.4% to Rp. 47,000 per square meter. The demand for office and retail space has been increasing again early 2000 [Kompas daily, 21.2.00].

5.1.1.3 Landmark buildings

Some of Jakarta's buildings, such as the Portuguese Church (1695) in the Kota district, are of architectural or historical interest. Most of the historically conserved buildings are colonial buildings located around the City Square in that district, including the old city hall (1710), which has been restored and now serves as the municipal museum. The Presidential Palace, North of the Medan Merdeka square, faces the National Monument that stands 110 meters high.

Unfortunately many of the old buildings have been neglected, deteriorated or even demolished due to the lack of maintenance fund, despite the fact that those buildings are a product of civilization and have high historical values. The government has put up some bylaws for preserving the historic buildings, but no incentives (such as rebate in tax payment) has been given to the owner of the buildings when they abide by this law. In Indonesia, old buildings are often demolished for other commercial purpose. It is not surprising that old buildings – particularly from the colonial Dutch era – are decreasing in number. Urban design expert Prof. Dr. Mohammad Danisworo reminded that a city that has no historical remembrance is a city that has no memory. Such a city is a crazy city [Republika daily, 28.12.98].

Contemporary landmark buildings attain their status mainly due to their characteristic of architectural beauty, large dimension (especially their height), strategic location, or the public activities that take place in them. Examples of the contemporary landmark buildings are Wisma'46, Wilma Dharmala, and Plaza

Indonesia. The old and new landmark buildings together make up the symbolic ecology of Jakarta as touristic and administrative center [Nas, 1993: 6 and 27].

5.1.1.4 Kampung

Housing is one of Jakarta's most serious problems. One-fifth of all housing in Jakarta is in slum category. That accounts for 2.9 millions (roughly one-third) of Jakarta's inhabitants live in a slum area in 1997. Despite the government's effort to construct low-cost housing, the most common type of house in the city is still the single-story kampung house. Another common type of housing, often used to house government workers, is the colonial urban house; these were mostly single-family detached or semidetached houses, each standing on a separate lot. Such housing in limited-access neighborhoods is increasingly common on the fringes of the city. Apartment buildings constitute a more modern category; although they are more economical in the use of land than single-family types, their construction costs often make them the least affordable.

Approximately 75% of all housing in Jakarta is provided by the informal sector, including the self-built housing [Wibawa, 1997: 42-45]. Most of the housing is located in the kampungs, where the houses are small and commonly known as huts/shacks, or otherwise referred to as shanties. In some cases, they occupy government-owned land [Krausse, 1975 and Milone, 1969 in Somantri, 1995: 61]. The houses are built on small plots of land ranging from 20 to 75 m^2. Seventy percent of them are only 20 square meter [Somantri, 1995: 200; Wibawa, 1997: 64]. The small size of land parcels in kampung allows a typical high density of 350 to 1250 persons per hectare. Despite its density, the life in kampung has great variety. All kinds of services are offered and peddlers are selling diverse things. All of them are informal and small scale. The mixture of activities in kampung is similar to the concept of mixed-use in contemporary city planning [Wibawa, 1997: 70-71].

The term urban kampung does not exactly equal to slum or squatter settlement. Both slum and squatter settlement can exist in a kampung [Bowo, 1999: 45]. The Indonesian government defines kampung as: "a heterogeneous form of community in a particular urban area where adequate basic infrastructure and public facilities are not available. In this sense kampung is not considered as slum or squatter, as kampung has its historical rights." [Silas, 1983 in Wibawa, 1997: 47]. The Kampung Improvement Program (KIP) administration classifies kampung into two categories: old kampung that has legal land rights, and new immigrant kampung that are illegal [Wibawa, 1997: 62]. Jakarta's kampungs are mainly inhabited by rural-urban migrants who are mostly absorbed in the informal sectors and marginal part of the formal sectors [Jellinek, 1991 in Somantri, 1995: 17].

Kampung in Jakarta is not a new phenomenon. During the Dutch colonialization era, Batavia's urban core was already surrounded by kampungs [Somantri, 1995: 83-84]. The Dutch defines kampung as the part of the city that was settled by indigenous people, while settlement outside the city was called desa or *Dorf* [Wibawa, 1997: 46]. At that time, houses and other buildings that belong to the Dutch were built along the street. These “formal” buildings act as a “screen” that conceals the view toward the kampung that lay behind them. In a city block, it could happen that the outer periphery of the block was Dutch or other foreigners' (Western) buildings and the inner block was indigenous kampung. The physical appearance and condition of those two types of buildings are very different, partly because they were built to conform to separate regulations. The Dutch area followed the colonial rules, while the kampung was free to determine its standards [Harun,1993 in Wibawa, 1997: 55].

This pattern remains until now. Contemporary Jakarta has large modern buildings along its wide streets, and high-density kampung behind them. This condition is the outcome of various causes, including economic forces, building regulations, land status, etc. It could also be intentional, because the government tries to convey the image of Jakarta as a touristic, administrative, and elitist city. In its publications and advertisements, the city does not show any kampung, slum, poverty, filth, sanitation/health problems, and traffic jams [Nas, 1993: 27].

Around 70% of Jakarta's population live in Kampung area [Somantri, 1995: 61; Wibawa, 1997: 12], which amount to 45% of the total land area in Jakarta [Wibawa, 1997: 33]. The government has tried several approaches to alleviate the kampung problem. Some of the approaches are relocating the kampung with resettlement programs, housing the kampung dwellers into apartment blocks, and improving the existing urban kampungs.

a) **Resettlement**. At the end of 1980s, hundreds of residents of Kampung Sawah, West-Jakarta, were cleared out of their homes. Their home was considered an eyesore, and the land deemed illegal. All of Kampung Sawah’s residents moved – with a mortgage subsidy scheme from the government – into simple/basic housing units (*rumah sederhana = RS, rumah sangat sederhana = RSS*) at the Perumnas Karawaci, Tangerang, approximately 18 kilometers from their former home. This resettlement effort has been not so successful because the members of the low-income families, excluding the head of the family, cannot continue their venture to earn additional income as informal worker such as drink peddler in the new place. This case shows the blunder of the government policy of relocating the poorer residents from the city center to the periphery.

The economic force exerts much pressure on kampungs in the central area of Jakarta. Combined with the local government's obsession to create an image of beautiful city without slums, they coalesce with the business community to demolish the kampungs [see also Poerbo, 1999: 48 and Brown, 2000: 34]. The process of systematic kampung demolition has been going on in Jakarta, particularly in the squatter area. Kampung dwellers have low socio-economic status and little access to the political power process in the city. Their interest is not represented and thus has no influence in the decision of urban elite (Indonesian foremost statesmen, prominent official of the city government, military groups, members of the business community) [Somantri, 1995: 22]. The kampung dweller can only protest the demolition, often with no avail. It is time to put the forced land eviction to an end. With the spirit of the democratic urban life today, the marginal group will be better honored and they will get just compensation for their land. Such act can avoid the unnecessary social unrest.

Alternatively, they sell their kampung dwellings to property developers. If this process happens naturally, i.e. without forced eviction of the kampung dweller, the kampung can be converted gradually into formal land (the general urban texture). The urban design guideline should provide the means for the change of this land type/character. This is in line with the RTRW 2010, which stated that the main objective of the development is to develop Jakarta that is based on the community, and by bettering its openness, equality, justice and legal protection. Furthermore the RTRW 2010 promised to provide more public space for Jakarta's almost 10 million inhabitants. The local government has planned to build entertainment facilities and improve the landscaping and vegetation of Jakarta by refunctioning the parks, constructing low income housing, and reordering the riverbanks [Republika daily, 13.8.99].

b) **Multi-story public housing.** A more benign government effort to redevelop slum areas involves replacing kampung with simple flat buildings. The inner city slum area can be redeveloped, and the current resident should have the priority to stay there [Kompas daily, 23.7.99]. Such approach has been practiced in Singapore, Indonesia's neighboring country, which gives the priority to the current residents to live in the redeveloped housing areas in the central city. A cross-subsidy scheme enables the use of the ground floor for the economic venture of the current residents who live in the appartement units above. In Indonesia, the majority of the former kampung dwellers cannot afford the payment of a flat, which then becomes the housing of middle and middle-lower classes instead [Somantri, 1995: 139]. The rent of these flats, even though it has been subsidized, is still higher than in the former kampung houses.

The empirical experience of providing multi-story low-income housing in Jakarta so far indicates some deficiencies that should be overcome. For example, much low-income housing is not occupied by the poor owner that has been targeted by the government. Many low-income apartment units in Bendungan Hilir, Central-Jakarta, have been rented by their owners who opted to live in other locations. The same happens with the World Bank sponsored Mohammad Husni Thamrin (MHT) project: the land in the improved kampung-slums in Jakarta has increased its value and price. The former kampung residents then ardently sold their houses at an increased price. This is not entirely unwanted, when we realize that the former poor residents enjoyed the increase in their land value. Therefore a tighter selection system must be instated to find those who may first reside in the redeveloped area [Kompas daily, 23.7.99]. The fallacy of replacing slum dwellings with apartment blocks has been known in Thailand [Kammeier, 1984:11]. This is also the case in Indonesia, where the apartments for the poor are neither socially acceptable nor financially viable.

Medium rise (four to eight floors) apartments cannot beat the density of kampung with 600 person/hectare or 800 person/ha net density. High-rise buildings with high density cannot be procured by the informal sector economy that hitherto provides the housing for kampung inhabitants. The only viable alternative is to build low-rise high-density type settlement similar to the current practice. However, provision for adequate fresh air, sunlight, and other infrastructure should be maintained. In this way we can accommodate the aspirations of the kampung dweller to live in 1-2 story house that is close to the street, school, work place, and access with public transportation system [Wibawa, 1997: 73-74].

c) **Kampung improvement.** The Jakarta's municipality has tried desperately to eradicate the worst slum enclaves, but this action is opposed by the expert who wants to let the poor live there: the responsibility of the city authority is to provide the basic infrastructure services in the kampungs, without changing their habitat.[51] He added that the Kampung Improvement Program, such as the MHT Project – a slum area upgrading (gentrification) project in Jakarta that was considered highly successful and conducted 30 years ago – should be reinstated. He saw the act of

[51] Prof. Paulus Wirutomo, a sociologist of the University of Indonesia.

clearing slum area as an unintelligent action. As an example, he cited an attempt of a multi-story apartment project that was planned to replace the tenement houses; it failed due to the total change of the habitat. As a consequence, the slum dweller moved to another place and created another slum over there [Kompas daily, 21.6.99].

This view has been supported by the minister of housing and regional infrastructure (*Permukiman dan Prasarana Wilayah*), Erna Witoelar, who believes that it is totally useless to build the housing facility far from people's place of work. The income of the dweller – particularly that from the lower income stratum – is only enough to pay the transportation costs. To undertake the improvement of the slum settlements in the cities, the ministry is going to expand the successful settlements that have been erected by some NGO (non-governmental organizations) for example, the settlement that has been built by Father Y.B. Mangunwijaya on the banks of Code River, Yogyakarta [Kompas daily, 1.11.99].

It is important that the poor live nearby their place of work, so that they can save the transportation costs and have additional income through side-jobs of the family members. The informal sector jobs are actually productive activity, because they can support the major formal work with very affordable services and home-industry goods [Nelson, 1979: 33-37]. The successful entrepreneurs in the informal sector may raise their social status and move out of the kampung into a better residential neighborhood.

5.1.1.5 The street hawker problem

One of the peculiarities of Jakarta's economy, and also other cities in Indonesia, is the dualistic situation: the formal sector and the informal sector coexist in the economy [Nelson, 1979: 24]. The formal economic sector conducts their business legally, similar to their counterparts in the developed countries in general. The informal sector undertakings are usually not registered formally and often do not pay taxes, etc. An example of this undertaking is the mobile street hawker.

The economic crisis has exacerbated the role of informal sector economy as a "buffer" to absorb the unemployment. Street vending is a transitional job between unemployment and the permanent full-time occupation [Danisworo, 2000]. The role of the informal sector to absorb unemployment has been shown by the expansion of street hawker activity in Jakarta. According to the data from *Biro Bina Perekonomian Daerah* (the Bureau for Local Economic Affairs), the number of street hawkers in Jakarta has increased almost three fold between 1998-1999 from 40,000 to around 120,000 [Kompas daily, 12.4.99] and finally to 270,000 [Kompas daily, 1.2.00].

The street hawkers have demanded that the government guarantee their freedom to work. What they desperately need is the security in conducting their activity and a freedom from fear of removal [Suroso, 2000]. It is time for Jakarta to accommodate the needs of all levels of Indonesian society. Currently, the area along Jl. Jend. Sudirman - Jl. Husni Thamrin streets only facilitates the richer people. The lack of space for street hawkers has forced the hawkers to conduct their business all over the place. Initially in the narrow side alleys, but now they dare to enter the principal street. An observation of the Senen shopping area revealed that street hawkers have occupied the entire sidewalk and 3 meters of the road width. Only two of the four lanes of the road are left for vehicle traffic. Around the Tanah Abang market, hundreds of street hawkers in semi-permanent tents have taken 75 percent of the road width. Cars spend 20-30 minutes to travel this 400-meter road segment.[52]

There is an impression that the policies of Jakarta's local authority favored the upper middle income portion of the society [Poerbo, 1999: 153]. The local government has succeeded in developing some locations for the newly unemployed (the victims of the economic crisis) to do their informal business. They get some decent places in Semanggi Tent Village, Parkir Timur Senayan and

[52] Danang Priatmodjo, an urban design researcher at the University Tarumanegara [Kompas daily, 21,6.99 and 24.1.00]

so forth, for running their sidewalk café business. These locations have developed fairly well because of the professional management. But the government provides no such location for the poor street hawkers [Wirutomo in Kompas daily, 21.6.99].

The government must totally change their view on the "street economist". The street hawkers should not be seen as disturbance to the public order; instead, they should be viewed as an integral part of the city. They should be embraced and included in the urban system. Their existence should be assimilated in the various city plans, by recognizing their existence in the RUTR (the General Spatial Plan) and by requiring the building owners with incentives and disincentives, by allocating one floor for the street hawkers [Wirutomo in Kompas daily, 21.6.99]. In the Jakarta ordinance (Perda) Number 8/1992 about private markets, it is stipulated that the owner should set aside 20% of the rentable retail floor for street hawkers. However, the hawkers are still selling their goods out there, because they dislike the space (which has poor pedestrian traffic) that has been provided by the building owner [Kompas daily, 12.1.00 and 1.2.00]. In dealing with the street hawkers in the city, it is important to realize that they are "non-fixed" elements in the urban space. Thus they should not be treated as a fixed one [Danisworo, 2000].

5.1.1.6 Transportation

Currently there are around 2.3 million private motorized vehicles in Jakarta. 1.8 million of them are motorcycle and cars. The car usage has been increasing 10% annually between 1990 and 1995. This has resulted in a relatively high ratio of 5 passengers per car in the metropolitan area, and traffic jams that occur, particularly during the morning and afternoon rush hours.

Parallel to this development, the "Modal Split" or ratio of passengers using public transportation to those travelling on private cars has been changing from 57% in 1985 to 50% in 1995 [Dreesbach, 1996 in Bowo, 1999: 27]. Although this ratio is relatively good for European standard, there are two things that differ in Jakarta's situation:

- The public transportation passengers have no private car as other option. They use the public bus involuntarily, as it is usually overcrowded and experiences technical breakdowns.
- The residential subdivisions in Jakarta's outskirts seldom have adequate connections to the public transportation system, despite the enormous size [Bowo, 1999: 27].

Public transportation in the city is by bus or minibus. The Bajaj (three-wheeled motorcycle taxi) is used mainly for short distance transportation, and regular taxis now operate throughout the metropolitan area.

Jakarta already has an urgent need for a subterranean public transportation system. According to the data of BPPT (Agency for the Assessment and Application of Technology), in year 2000 Jakarta will have 1.96 million cars and its satellite towns will have 540,000 cars. The traffic jam in Jakarta is ranked the fourth in the world – after Manila, Calcutta, and Madras – with an average traffic speed during peak hours of only 26.1 km/h [Media Indonesia, 12.10.99].

In an attempt to alleviate the traffic problem, a subway line running along the North-South axis (Kota – Fatmawati) of Jakarta has been planned. This will become the first subway line in Indonesia. The first section of the line will be constructed between Jl. Fatmawati and the National Monument. By the end of 1999, the technical work on this project is only 5% completed. The planned subway line has a total length of 17 kilometers and 18 stations. Its construction will cost 1.3 - 1.4 billion US dollars and require around 60,000 construction workers. [Kompas daily, 30.7.99; Suara Pembaruan daily, 31.3.00]. A shorter alternative of this line from Blok M to Jakarta-Kota is only 14.5 km long and requires US$1.5 billion [http://www.Indo-News.com/ 26.11.98]. To supplement this line, a second subway line has been planned in the Jakarta 2010 Master Plan. This line will connect the Duri area in West-Jakarta with the Kemayoran district in

Central-Jakarta and continue up to Bekasi satellite city in the East [Kompas daily, Jul. 30.7.99].

5.1.2 Typology of Urban Design Problems

The Department of Public Works has identified four categories of urban development that occur in Indonesian major cities. The categories are urban development in built-up areas, urban development in conservation areas, urban development in new areas and urban development in areas where mixture of the aforementioned categories coexist [Departemen Pekerjaan Umum, 1995]. Each category may pose a different mix of urban design problem.

5.1.2.1 Urban design in built-up area

Development within built-up areas in the city may be in the form of infill or partial development on small unbuilt land patches surrounded by existing buildings. Such development abides by the existing plan for the area, thus basically requiring no new design control.

A larger-scale urban development in built-up areas can occur in inner-city commercial redevelopment. The redevelopment is intended to revitalize older commercial areas in the city. For example, such redevelopment has been undertaken at the old Senen Triangle and Glodok areas, where entire city-blocks have been newly rebuilt. Total redevelopment of an area has fairly great freedom of design control, but it still needs to respect its existing surroundings if the surrounding buildings have any design significance.

Superblock development often takes place in built-up areas, especially in "underutilized" areas near the CBD, as they offer the most profitable location in the city.[53] Examples of superblock development are the Sudirman CBD, the Mega-

[53] Underutilized area mostly in the form of a mixture of residential and low intensity commercial land-uses, where the planned development intensity has not been reached or new development initiative

Kuningan superblock etc. The highly integrated nature and the large size of superblock development call for more elaborate design control for each land parcel within the superblock. The design control should also strive to maintain the relationship with the existing adjacent areas, as well as with the entire urban fabric.

From an urban design standpoint, the improvement program of existing urban-kampungs also requires some sort of design control. The design control is particularly relevant for public areas such as the alleys and community facilities (public baths, open spaces, community halls, and so on). Standards that are appropriate for kampung development, which is different from the rest of the city, should be adopted in the design control here.

5.1.2.2 Urban design in conservation area

Some areas within the cities need to be conserved in terms of the high architectural quality of the old buildings, or because of historical events that took place there. Design control in historic districts, where the old buildings are relatively intact, is straightforward: only a few rules are sufficient to keep the existing condition of the buildings and the district. A more complicated urban design control is required in mixed areas of new development near historically preserved buildings. The new buildings should be regulated so that they create a strong relationship to their surroundings, in order to capture the structure and scale of their historic neighbors, to give shape to conformity with the place, the social needs and cultural value conceptions. The design guide for the Menteng residential district, which has many houses from the colonial era, is an example of such an attempt.

Conservation in an environmental sense applies to the natural surrounding of the city, for example riverbanks, lakes, marshland, park, etc. Protection of the ecosystem, particularly the habitat of birds and other animals, is the main

is proposed by investor. The residential area is often in the form of kampung or squatter settlement, which is then cleared out of the land.

consideration here.[54] In Jakarta, most of the environmentally sensitive areas are located along the coast, particularly the East and West part of Jakarta's coastal area. In central Jakarta, this applies to river and canal banks and some smaller lakes.

5.1.2.3 Urban design control in new area

Design control in unbuilt urban areas that have the potential for new development constitutes an active form of control. As opposed to passive design control in existing urban areas, active design control attempts to anticipate the future development and shape the urban environment accordingly. Most of the new urban development occurs at the outskirts of the city, in the form of residential complex with typical area of 20-50 Ha up to new towns (e.g. Bumi Serpong Damai with a total area of 6000 Ha) [Susanto, 1999].

Urbanizing fringe areas around Jakarta need an active design control that can avoid hodgepodge development. The fringe development occurs in large residential subdivisions, new industrial areas, as well as development by individual landowners along transportation network around the city. There is an eminent lack of design control in the fringe area, as demonstrated by the new residential developments that are isolated from their surrounding neighbors. These areas are connected to the main street with only one or a few gates, and create "gated communities".

New transport corridors are undergoing rapid transformation of their built environment as well, and extending the ribbon development that already existed there. Examples of such development are the outer ring roads of Jakarta, and the new East-West arterial road Jl. Prof. Satrio near the case study area. Urban design guides for some of the new corridors have been prepared by the Center for Urban Design Research at the Institute of Technology Bandung, Indonesia.

[54] See also section 2.3.6

5.1.2.4 Urban design control in mixed area

Urban development can take place in an area with a mix of the other categories described above. Basically, the urban design problem in such area arises from the need to integrate the new development into the existing surrounding, or to change the existing building in a way that it suits new functions, without removing it from its evolving context. An example of urban development in a mixed area is the redevelopment of the former Kemayoran airport in Jakarta into commercial buildings, exhibition complex, housing and a park. The development area contained large areas of unbuilt land, a historically protected building, and existing built-up areas in its periphery.

In terms of its land-use, large part of development in the city center consists of mixed residential-commercial type. This type of development is a legacy from the Dutch colonial era, where Chinese shop-houses were introduced in the country [Home, 1997: 50]. This mix of retail and residential use is much appreciated by the people, as they can do business at home. Nevertheless, this kind of urban development takes place also because of the inadequate development control of pure residential areas.

The larger scale and more modern mixed-use development such as the Kemayoran area and the new superblocks are not an evolution of the shop-house concept. Instead they are examples of the application of mixed-use concept that is developed in the Western world [see also Procos, 1976]. Urban design control from the country of origin might be appropriate to be applied in this case as well.

5.1.3 Urban Design Guideline within the Planning Process

5.1.3.1 The hierarchy of spatial plans

Control of the built form of the various kind of urban developments is performed by a set of planning instruments, such as development plans, spatial plans, sectoral programs and projects. Figure 5-2 depicts the various levels of spatial plans (RTRW = *Rencana Tata Ruang Wilayah*) within Jakarta's planning system. The left column shows the development plan from the master development plan, to Repelitada (the five-year development plan at province level), strategic plan and sectoral program. The RTRW of Jakarta down to the building layout plan/RTLB are shown in the middle column within the dashed ----- box. The RTRW has a hierarchy parallel to the administrative level: from the DKI Jakarta (the entire city-province), to Kodya, Kecamatan and Kelurahan level. At the Kelurahan level, the plan can be announced in the LRK or city gazette. Some particular areas at the provincial and city levels have their own spatial plans, called the *RTRW Kawasan Tertentu Provinsi* and the *RTRW Kawasan Tertentu Kodya* respectively.

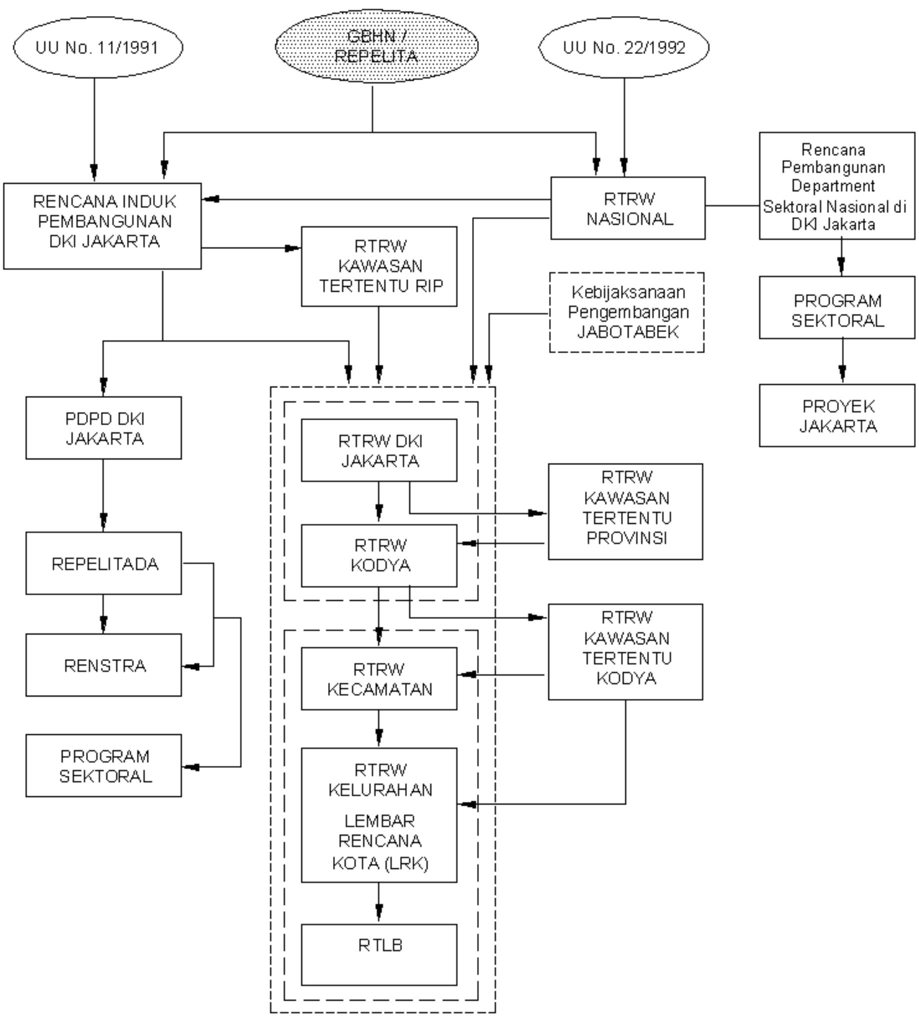

Figure 5-2 The Spatial Plans within the Planning System in Jakarta.

Strong economic forces are clearly still dictating the urban development in Jakarta. Taking advantage of the combination between strong financial and political power, it has succeeded in deviating from land use and intensity plans. The land use plan, and the regulation that requires the land developers to set aside 20% of the total development area for low cost housing, as well as the building intensity regulations can be exempted by paying a certain fee/penalty. A common example of this infringement upon the plan is the transformation of houses in residential areas into office or retail shops. In some cases, green parks have been turned into public facilities such as police stations, Kelurahan offices, or for gas stations. In CBD, where the land price is very high, the developers often pay the relatively low penalty to build over the allowable height or maximum floor area. These are bad precedents for fairness in urban development: as long as one has a lot of money for paying the penalty, he can exceed the building limitation or plans. The RTRW 2010 still has tolerance for such practices [Republika daily, 13.8.99]. The movement for reform in society that intends to abolish the corruption, collusion and nepotism in Indonesia is hoped to quell such practices. Danisworo argued, apart from the mistake of the local government that tolerates the deviations by collecting fees or penalties, the deviations of the plan occurred because of the incapability of the existing General Spatial Plan to accommodate the rapid development in social, economic and political scenes. He categorized the deviation into two general categories. First, **violation** or development activity that clearly breaks the regulation, such as building on riverbanks. Second, **deviation** due to newly a developed situation that cannot be accommodated by the General Spatial Plan.

Particular types of urban development are guided by area spatial plans (*RTRW Kawasan*) that encompass historic district conservation, watershed areas and other functional areas such as large commercial centers or industrial parks. These area spatial plans are based on the town plans, but specifically address the development problem in that particular area (see Figure 5-3). The area spatial plans give concrete direction of urban development to the lowest level of spatial plan, i.e., the RTRW Kelurahan and the RTLB and PRK. (RTLB = *Rencana Tata Letak Bangunan* / Building Lay out Plan. PRK = *Panduan Rancang Kota* / Urban Design Guidelines).

The Urban Design Guidelines together with the RTLB constitute the lowest level of town plan. The Urban Design Guidelines are the only plan that reaches the level of detail for three-dimensional design of the urban environment.

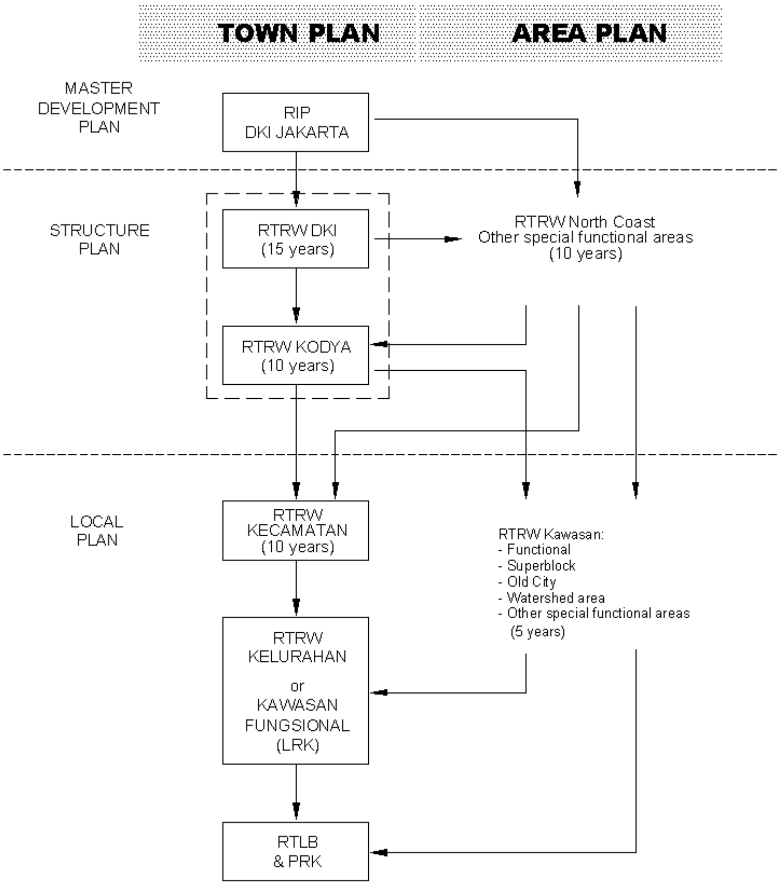

Figure 5-3 The Spatial Planning System in Jakarta.

According to Danisworo, RTRW is a general type of plan that cannot directly be used for evaluating whether a development project has violated the regulation. Therefore, the city plan must be accompanied by more specific plans for certain areas in the form of Urban Design Guideline (UDGL). "During the term of the governor Surjadi Soedirdja, we have prepared UGDLs for seven locations. In the future, all locations should have their own UDGL," he said. The guideline must be able to epitomize the potential of the location, so that it is able to find a solution for the changing situation in the future. He points out that the RTRW has not sufficiently detailed, even if it is elaborated down to the Kecamatan level. For instance, it cannot answer the problem whether a residential site may be developed into a mixed land use of housing and commercial [Kompas daily, 2.8.99].

5.1.3.2 Design review in the development process

There are three agencies that play a major role in the development permitting process at the local government. The local office of the National Land Agency (BPN = *Badan Pertanahan Nasional*) checks the land status, the municipal department for monitoring of construction (DP2K = *Dinas Pengawasan Pembangunan Kota*) scrutinizes the technical and architectural aspects of the proposed development, whereas the municipal planning department (DTK = *Dinas Tata Kota*) checks its planning aspect.

Control of the implementation of the urban plans is performed during the development permit process. Some projects are subject to design- and planning-reviews during the permit process. Projects on land larger than 3 Hectares are checked by the Dinas Tata Kota. The role of the DTK is equivalent to the *Koordinierungskomission* that is described in section 3.2.3. After the development permit is granted by the DTK, architects must submit their design for review by the urban design review board (TPAK = *Tim Penilai Arsitektur Kota*) within the DP2K. The construction of the building can only be commenced when the TPAK has given its approval.

The architectural quality of single building projects is reviewed by the TPAK. However, this procedure is only for major buildings in the city. Small residential houses and suburban development can apply for a building permit (IMB = *Ijin Mendirikan Bangunan* or Building Construction Permit) by merely submitting their plan to the DTK and the DP2K. Despite of the fact that IMB is legally required for all new building construction and also for major remodeling and renovation of existing buildings, only approximately 25% of the buildings in Jakarta's kampung area (low income neighborhood) has obtained such permit [Wibawa, 1997: 19].[55] This poor housing is built or provided by the informal sector of the economy, which often lacks the financial and administrative resources to follow the permit application procedure [Poerbo, 1999: 91].

Large development projects are reviewed by the DTK and the TPAK, because there are many more planning and design aspects that must be considered. In order to enlighten their job and to make it easier for the developer to meet the numerous urban planning and design standards, the local government makes use of an urban design guideline. The application of Urban Design Guidelines in Indonesia begins in 1993 with a guideline for a superblock development in Kuningan area in Jakarta. Since 1994 the preparation of an urban design guideline is mandatory before the development on any site, which covers over 3 ha of land area, may take place.

Nevertheless, the use of the Urban Design Guidelines in Jakarta – and generally in Indonesia for that matter – is still on project-by-project bases. Explicit city-wide design guides or plans only exist for a few significant parts of the city, encompassing the Medan Merdeka area around the National Monument, along major arterial roads of Thamrin-Sudirman, etc. The incremental nature of the development in the city is controlled by urban design guidelines for building projects on large tracts and mandatory controls and building codes for more regular projects. Some historic districts, e.g. Menteng area and Jakarta Kota, use design guide similar to those in the United Kingdom.

5.1.3.3 The Urban Design Guideline

The DTK defines the Urban Design Guidelines as:

> a detailed technical explanation on regulations, requirements, standard for dimension and standard of quality that gives a direction for the operation and the construction of a particular physical area in the city; in relation to the aspects of spatial zoning as well as building, facilities and infrastructure, utility grid and environment, so that it complies to the existing city plan.

Urban Design Guidelines translate the image of urban design, or the vision of urban designers into guidelines that are better suited for implementation, because Urban Design Guidelines explain the vision in terms of performance standards,

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[55] See also Kompas daily, 22.9.00: according to the head of DP2K, IMB is not held in 40% or 500,000 of all Jakarta's housing, all of them in slum area.

measurements, dimension, etc. that are user-friendly and easily understood. This clarifies the assessment criteria, so that it is easy to control by the responsible city agency, whether the developers abide by the guidelines or not.

Urban design guidelines are not expected to dictate the architectural form of the city; instead, they merely give a clear design directive to the new development. The new buildings are expected to be compatible to the existing surrounding structures and not strictly abide to the examples given in the urban design guidelines. The current interest in urban design guidelines is about improving the quality of our built environment. Guidelines are not aesthetic control. They are in a way more important than architectural factors in establishing the quality of our urban environment. Control of scale, form, and height, respecting the context, paying attention to street frontage, access, landmarks, variety and so on, form part of the design brief for architects. Urban Design establishes in three dimensions the parameters and principles to which the architect or developer works. This doesn't stop architectural freedom: it allows for different interpretations on an agreed theme. For this to be understandable and communicable, conceptualization is important. This is the precursor to the vision [Rowland, 1995b].

There are normally four major stakeholders that are involved in the process of formulating the Urban Design Guidelines: the Dinas Tata Kota (the municipal planning agency), the Urban Design consultant, the developers and investors. Public participation, in the form of public hearing similar to those in the United States or England, is practically non-existent in Indonesia [Poerbo, 1992].

The process of urban design formulation in Indonesia begins when a developer has the intention to develop and build on a large tract of land (over 3 hectares) in the city. When he submits an application for development to the local government agency, he will be requested to contact a consulting firm to prepare urban design guidelines for his land. During the preparation of the guidelines, stakeholders make some negotiations. The local government wants to make sure that the guidelines adhere to the existing regulations and plans and do not conflict with the public interest. The developer negotiates with the local government to get the most of allowable building space. The government can in some cases grant some exception to the developer by giving them bonus and incentives for developing the land in an integrated manner. It is the task of the consultant to find a design solution for these sometimes-conflicting interests.

When the developer, the local government agency and the consultant have reached an agreement, then the Urban Design Guideline is presented to the Governor of the province to be signed. The signed Urban Design Guideline is then legally binding. In this process, local community and individuals are often left out. Their interests and aspirations should have been represented by the city government and the urban designer. The stakeholders in UD should be composed of the city government, business community, local community, and individuals [Poerbo, 1999: 46].

5.2 The Role of the Silver Triangle in Jakarta

The case study area, nicknamed the Silver Triangle, is a 57 Ha urban development in Central Jakarta.[56] The case study area is selected as an example of superblock-type development in Jakarta, which needs the level of detail of an Urban Design Guideline to guide the formation of its built environment.[57] Typical for superblock development in Jakarta, the area was formerly a mixture of formally planned buildings and kampung neighborhoods. The role of kampung in the Silver Triangle – as is generally also the case for the rest of the city – is as an enclave for the low-income stratum of the population.

The forces that influence and dictate the shaping of the city, work likewise on this site.[58] They determine, in authoritative manner, the direction of growth in the Silver

[56] See Figure 5-4 for location of the study area.
[57] See Danisworo, M. in section 5.1.3.1.
[58] Note: The forces that shapes the structure of the city according to Curdes are explained in section 2.3.5.1 of the dissertation.

Triangle area. These forces emerge from the interests of various groups in the society, particularly those with profit-seeking motivation. Investors have expressed their intention to develop the Western and Northern sides of the triangle, after the improvement of the streets on these sides. Before this street improvement, only the land parcels abutting the Jl. Jendral Sudirman that had been developed. The land behind them was considered as "hinterland" or backyard. With clear and detailed guidelines, it is hoped to conceive an integrated area that can foster public life in urban open space.

The Silver Triangle has notable features, due to its location on the side of Jl. Jendral Sudirman, the main street that connects the administration and business center in the North with residential and retail center in the South. This street also separates the Silver Triangle from the Golden Triangle on the other side.

The Silver Triangle, as its name also indicates, is subordinate to the Golden Triangle. The Golden Triangle is an area along the Jl. HR. Rasuna Said, the Jl. Jend. Gatot Subroto and the Jl. Jend. Sudirman. Since early 1970's, it was the most sought after location for office in Jakarta. Despite the decrease of office space demand during the economic crisis, property development in Jakarta is predicted to regain its strength after the year 2000, when the social and political condition has been stabilized and the economy has returned to normal [Kompas daily 5.4.99].

Apart from the Golden Triangle, some other superblock-type developments are located around the Silver Triangle, notably the Batavia City superblock (planned), the Sudirman CBD, the Kebon Melati superblock, the Danamon complex, the Mega Kuningan, the area around Bundaran HI (HI roundabout), the Kuningan Center and its neighbor the Irco Central. A clustering of so many superblocks around the Silver Triangle offers an opportunity to build a great synergy as a central business location in the city.

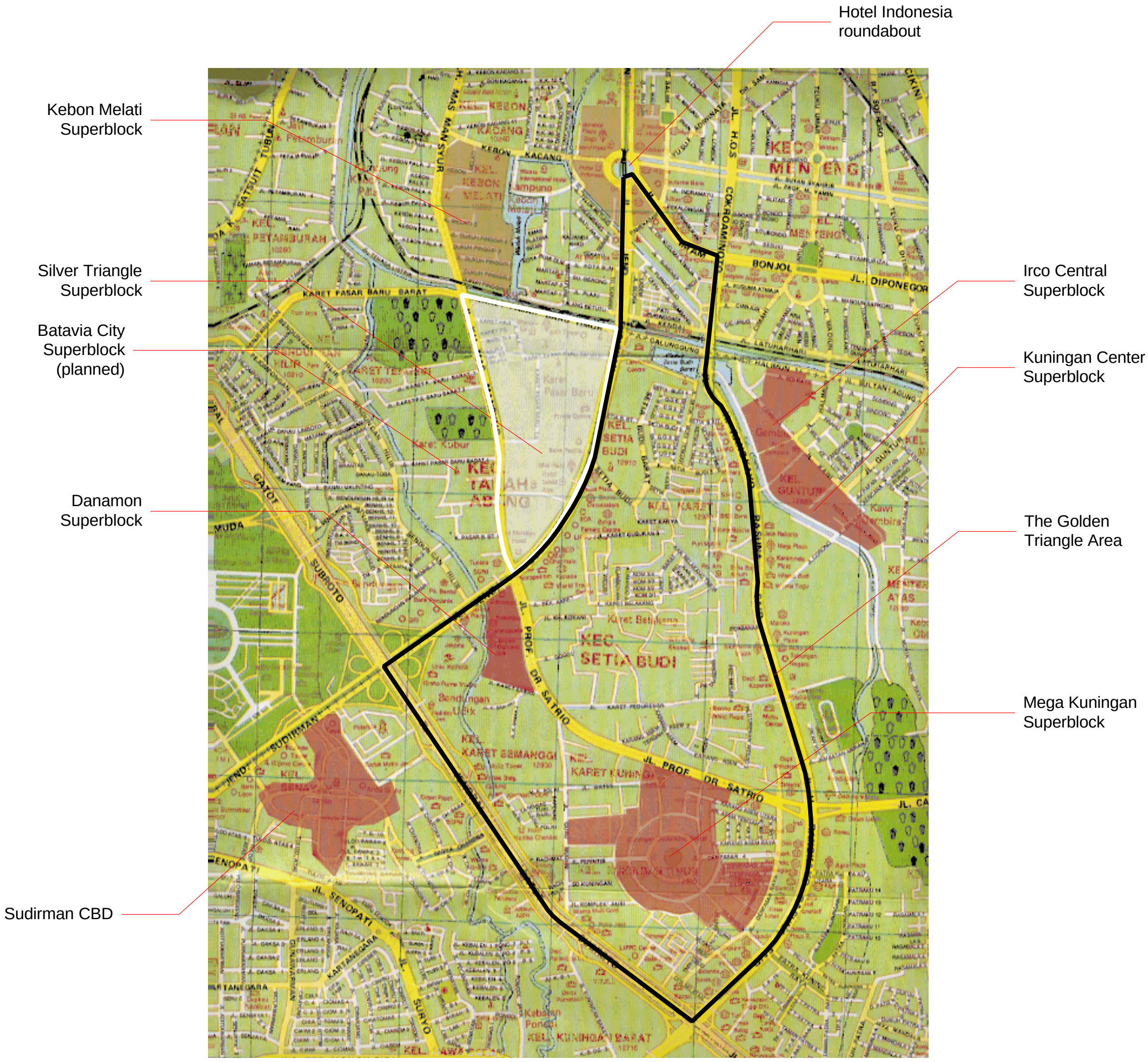

Figure 5-4 Map of other superblock developments around the Silver Triangle.

5.2.1. The Analysis of Social and Political Condition

The following analysis covers only those main socio-political aspects that influence the urban design decision. Further information on the Kelurahan (sub-district) of Karet Tengsin, where the triangle is located, is included in Appendix A.

5.2.1.1 The dualistic society

There are two groups of people in this area based on their "territories", the **kampung** dweller and the "**gedongan**" people. The kampung dwellers live in kampung and usually do their activities in the public spaces: on sidewalk, street and other open spaces. The most conspicuous of the kampung dweller activity in public space is as mobile street peddler. Nevertheless, not all of the street hawkers in this area live in this kampung. Some of them live in other kampungs in Jakarta. The kampung dwellers enter the territory of the "gedongan" only rarely, that is if they work in those buildings as cleaning service, night watch/security, office boy, etc. The gedongan people live in the high rise apartment buildings in this area, but most of them live in residential subdivisions elsewhere in Jakarta or its satellite towns.[59] The well to-do gedongan people who have a good position in the office perform all their activities in the building in/around this area, including the lunch in restaurants or fast food stalls. But those with a lower rank, such as secretary, clerk and the like still fulfill their needs – such as lunch and other goods and services (shoe polisher etc.) – from the street vendors or in tailor and small repair shops in kampung. The two social groups normally meet and interact only in the common/public space, i.e., the street and the sidewalk. The urban design must facilitate and foster the common usage of the public open spaces by the various groups of the society.

Part of the kampung in Silver Triangle area has been cleared during the 1980s to mid-1990s, to make place for the Shangri-La apartments and another location on Jl. Mas Mansur. The ex-kampung land appropriation happens in a peaceful and natural way, because the land is bought at a fair price. In fact, many kampung dwellers are eager to sell their homes, so that they can get a sizeable amount of money for buying a better house at the city's outskirts and use the remaining money as capital for expanding their economic ventures. This is a good example of a natural urban land acquisition/change.[60]

[59] The type of "colonial house" as described in section 5.1.1.1.
[60] In a certain Superblock development, land developers use harsh method of forced eviction. Such developers paid the local administration (RW, Lurah) to intimidate the dwellers to sell their land,

The existence of street hawkers on the sidewalks can be traced back to its pull and push factors. The pull factor is the need of the low-income workers for affordable services and goods, including lunch. Currently, the push factor from the supply side is more dominant, where many unemployed members of the community desperately need any kind of job to earn their living. In the Silver Triangle area, there is no localization area for street hawkers, which are urgently needed for sidewalk safety. There is one thing that should be kept in mind in selecting the location for the street hawkers: experience in other locations has shown that the localization of street hawkers must be easily accessible or close to the main pedestrian flows. Some building owners have set aside part of the basement or their backyard for the street hawkers, but the hawkers move back onto the pavement because of lack of customers in the less-accessible designated location [see also Kompas daily, 9.3.2000 about street vendors]. One possible solution to this problem is to relocate the street hawker on part of the land that is close to the pedestrian path, but not close enough to disrupt the pedestrian flow or the vehicle traffic.

Figure 5-5 Street hawkers along Jl. Jend. Sudirman

The physical solution shall also be complemented with organizational measures, by providing advice and expertise for the street hawkers so that they can establish a cooperative and integrate their venture into the quasi-formal *pujasera* (eating establishment that offers various kinds of street-peddler food stalls) [Poerbo, 1999: 157-158].

usually at a low rate. If the entire land has not been acquired, they ordered/instructed thugs to threat the remaining dwellers. Sometimes the developer dug many holes for "foundation" around the remaining kampung houses. The electrical power line to the houses was also disrupted.

Since the new reform movement in Indonesian political and social life (see section 5.2.1.2 below), the street hawkers dare to enter the main streets and occupy much of the sidewalk, and even take over part of the car lanes. Street hawkers that are ignoring the community order falsely interpret this action as an expression of freedom, but it is an irresponsible act that infringes upon others' right to use the public open space. The other residents are upset, as they cannot drive and walk safely anymore along the street.

Jakarta's urban reality is marked by the huge presence of the informal sectors in the economy [Somantri, 1995: 173]; hence, this problem must be handled by the local government, together with the private sector or the owners of the buildings in this area. For instance, they should provide part of the land for use by the street hawkers, so that the general order can be sustained. The street hawkers must pay a relatively low rental fee to the landowner, in lieu of the retribution. This should not be an extra burden to the street hawkers, because currently they are paying some formal or quasi-formal retribution to the local government.

5.2.1.2 The new politic

The willingness of the local government to conduct a more democratic administration has been stated since 1999 [Kompas daily 1.11.99; Republika daily, 13.8.99]. Some of Jakarta's policies have been administered to fulfill this intention. This act is further reaffirmed by the local government's effort to combat corruption and collusion of the officials that have led to chaos and inconsistencies in the implementation of Jakarta's plans in the past years. This intention of the Jakarta's local authority is in tune with the great political change in Indonesia that calls for a more democratic life, respect the human rights and the creation of a civil society. This fact should be put to use as a background in preparing a more democratic city plan, and its execution mechanisms that fit the new spirit in Indonesia.

The new political condition has also encouraged the community to voice their concerns on the life of the nation more freely. Demonstrations have been undertaken more often and motored mainly by the students. They protect the kampung dwellers and the street hawkers, who have low socio-economic status and who have only little access to the political power process in the city, against forced eviction. The mass media can now broadcast more politically sensitive news, without fear of censorship. After toppling the incumbent president (who has stayed in power for 27 years) in 1998 through massive demonstrations on the streets, the people have greater self-confidence to express their aspirations to the parliament. Forced land eviction, deviations in land usage, and injustices in the distribution of the urban resource and services are some issues that immediately protested by the public. Such public control is effective for ensuring that the implementation of the plan has been performed properly.

5.2.1.3 Possible options for the kampung

In the explanation on Jakarta's Kampung in section 5.1.1.4, some approaches to the urban kampung problem have been described. Selection of the available options must be performed with a thorough analysis that takes into account the overall range of choice and compares the impact of each chosen action. Planning decision support systems with computers would be particularly helpful in assessing the options.[61] This procedure is performed during the spatial planning process that precede the urban design (see diagrams in Figure 2-1 and Figure 5-3). The Indonesian urban designers usually accept this planning decision as given by their colleague in urban planning and elaborate it further into detailed urban design. This pertains mostly the formal urban design aspects of the built environment.

Because no formal decision has been written for the kampung in the Silver Triangle area, a "simulated" assessment of the possible options is presented briefly below. Please note that this might not cover the exhaustive list of possible options in handling the Silver Triangle kampung.

a) Multi-story public housing. The building blocks are to be constructed on the same location as the present kampung, with much higher population density. Part of the kampung land can be sold to the investors and used to subsidize the construction of the multi-story buildings. The positive side of this option is its location in the city center, so that the kampung residents can still earn their living there. This option is less likely to be selected because of the very high cost of building on prime land in the city center. Furthermore, the multi-story flat housing is socially and culturally less preferred by the kampung dwellers.

b) Kampung Improvement Program. This program would be appropriate if the kampung is not relocated elsewhere. The Silver Triangle kampung is relatively small in size for an urban kampung. The land value of the Silver Triangle kampung is very high, due to its location in an area with high average FAR and good accessibility (car can reach the kampung). These factors making the transformation of the informal kampung into the formal "general urban texture" is not avoidable, as shown in the acquisition of some kampung land by the developers.[62]

The protection of the existing kampung settlements is more viable in other parts of the city, where old kampungs with legal land rights have existed for long such as in Condet or Kemayoran areas. The kampungs can stay out of development pressure when they are not attractive for the investors, for example in very large kampung block with poor accessibility or located far from the business area.

c) Resettlement. Individual kampung dwellers in the northern side of the Silver Triangle have sold their land and moved to other locations with the money. This trend can be continued, but the kampung dweller should get together – preferably with the assistance from "development consultant" – so that they can negotiate a resettlement scheme linked to the sale of their land. The development consultant

[61] See section 4.1.1.1.
[62] See section 5.2.1.1

can help the kampung dwellers get the best deal in negotiations with other parties, including the government and private institutions (bank, investors, developers and so on) [Poerbo, 1999: 261-263]. A just compensation of their land will enable them to move into appropriately designed housing areas further away from the city center and to make up for the additional transportation costs that may arise due to the need to commute.

The resettlement of the kampung must be undertaken simultaneously for the entire area or at least block by block. A gradual take-over of individual kampung land plots is not convenient for development of a superblock, which requires a large tract of land. When the kampung residents can get together to make the decision on the sale of their land, then this matter can be solved easily.

The three alternatives for handling the kampung are still within the framework of the RTRW of Kecamatan Tanah Abang (the administrative district of this Silver Triangle area) and the RRTRW of Kelurahan Karet Tengsin (the detailed spatial plan at the sub-district level) that indicates the central area of the triangle as residential and mixed-use, without further indicating whether it is kampung housing or modern apartment towers. The land-use plan in both the RTRW and the RRTRW indicate further that public facilities are located in the center of the triangle. This includes a mosque, a primary school and a Kelurahan (lower-tier government administrative office) that act as the center of the community life.

5.2.2. The Analysis of Formal Urban Design Aspects

The analysis of urban planning and design aspects is based on the existing built form.

5.2.2.1 The urban structure

Using the three urban elements – the General Urban Texture , the Monuments and Kampung – in analyzing the structure of the area around the Silver Triangle, it is apparent that the pattern exists here.

The General Urban Texture is made up of formally planned structures, in the form of the building strips along Jl. Thamrin - Jl. Jend. Sudirman, Jl. Gatot Subroto, Jl. Rasuna Said, and Jl. Prof. Satrio. All of the buildings here are medium- and high-rise (average ranging between 16 - 32 floors) that and are set back from the road at the distance of at least 10 m. The buildings are free-standing, and do not touch their parcel boundaries (*offene Bauweise*), as dictated by the building code for single-building type. Each building is provided with a separate parking structure, of 4-8 levels or more, at the back and with its own driveway.

In terms of urban design, the Silver Triangle has a fairly significant role in Jakarta. One of its sides form and defines the Thamrin-Sudirman corridor, the strongest and most prestigious prime business area in Jakarta. The corridor is lined on both sides with high rise office, hotel and apartment buildings that have the common physical property for supporting a continuous street wall.

Some of Jakarta's tallest buildings are located in and around the Silver Triangle. Some of the building towers in this area have become landmarks for the city's residents because of their interesting/outstanding design, are taller than average, or have a special location. The notable buildings are the Danamon towers, the Chase building, the Wisma'46, the Wisma Dharmala, the Grand Hyatt and the Hotel Indonesia buildings. They have a status as citywide landmark buildings. A mosque in the center of this triangle has a role of local landmark. The mosque has also a good architectural quality that warrants its conservation.

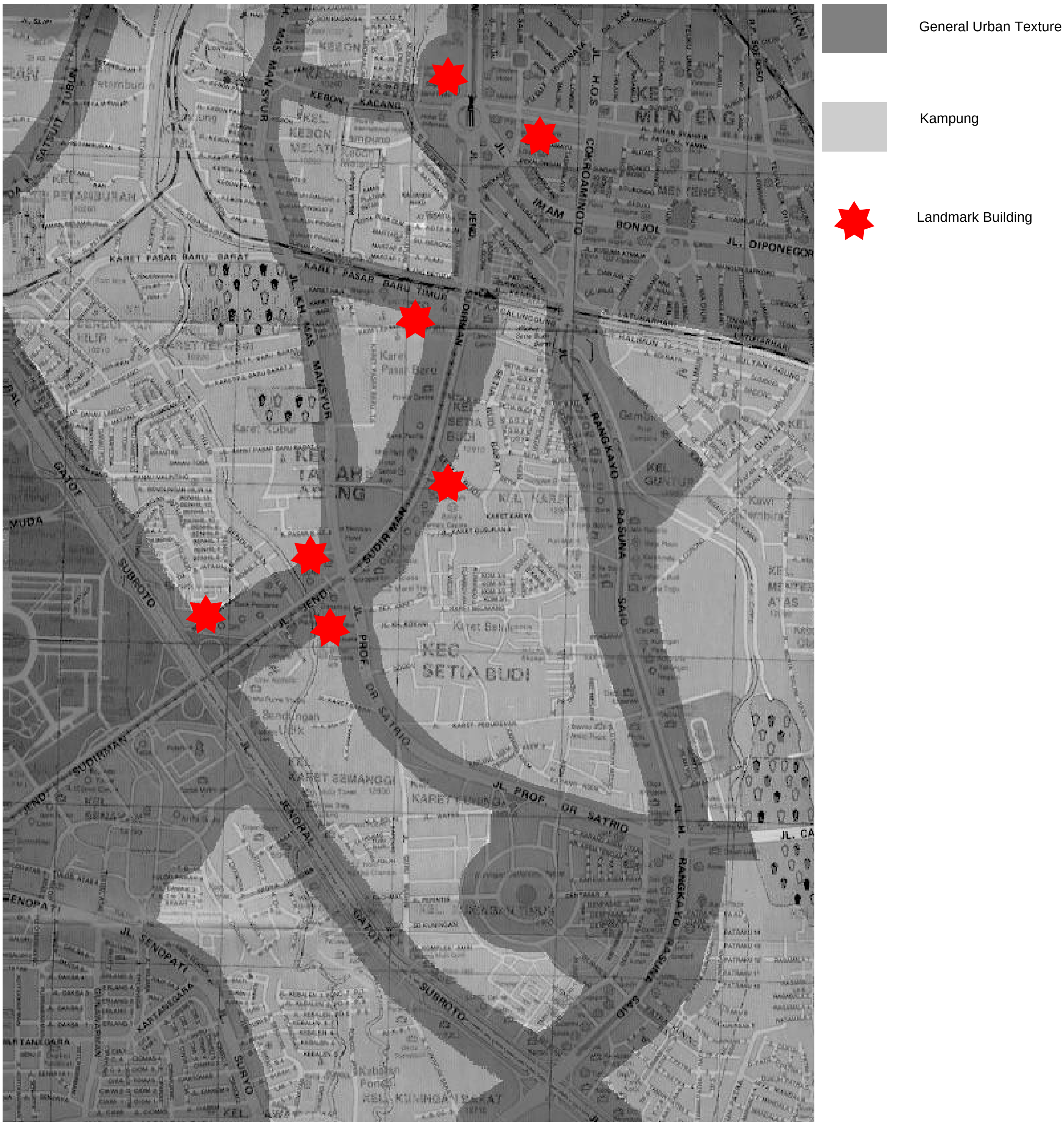

Figure 5-6 Analysis of the Urban Structure.

Kampungs can be found in the inner area of the Golden Triangle (minus the strip of Jl. Prof. Satrio), the West side of Hotel Indonesia, and in Bendungan Hilir/ Pejompongan area. In a smaller scale, the center of the Silver Triangle can be categorized as kampung as well. The Kampung dwellings consist of 1-3 story permanent or semi-permanent houses that are built very close to each other. The high-density kampung houses mostly have clay tile saddle roofs, which create the unique landscape characteristic of Indonesian cities.

Using Ashihara's theory of P&N Spaces, the kampung can be perceived as positive space that is formed/defined by the row of tall buildings around it. In this respect, the existence of taller buildings along major streets has supported the image and the level of enclosure of the kampung as "inner city village". In the Silver Triangle area, this form of formal buildings surrounding the kampung has not been realized. The strip along Jl. Mas Mansur is still partially built: Le Meridien apartment building is under construction, but construction activity has been halted since the economic crisis. Building permit has been requested for an office tower,[63] and also development permit for two blocks along this street.

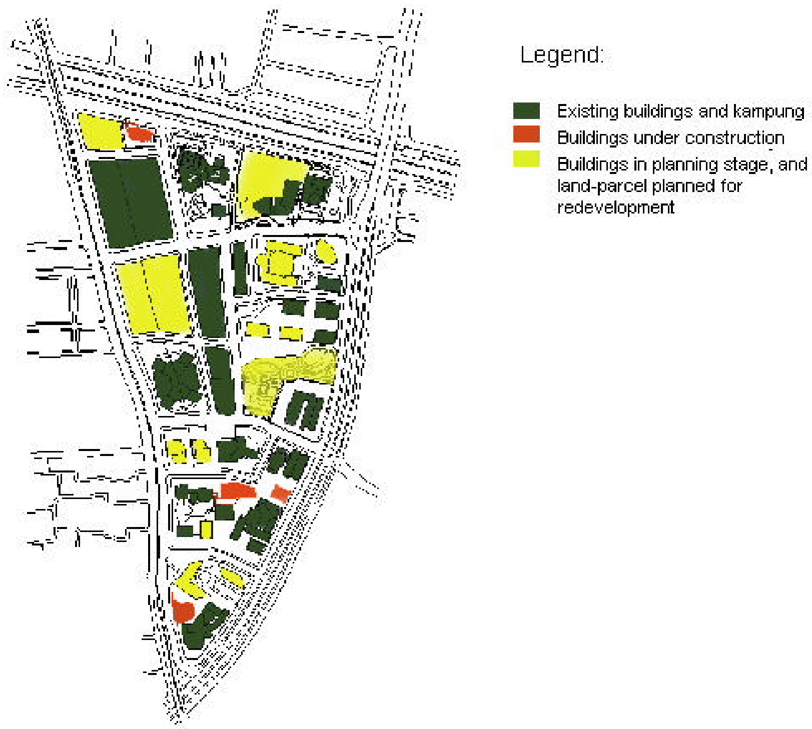

Figure 5-7 Existing buildings and proposed development within the Silver Triangle.

On the North side of the study area, an expansion of the Wisma'46 has been planned, but the construction activity of Shangri-La apartment has been halted since the economic crisis. On the East side of the study area, redevelopment of two blocks of land has been planned by the investors, as well as new development of an empty land parcel for office towers.

[63] See Architectural Record 7/1997, building designed by Brennan Beer.

It is possible that eventually a structure of "formal buildings enclosing a kampung core" will appear in the Silver Triangle, but there is a trend in superblock development that will completely replace the inner kampung area with formally-planned buildings. This is particularly the case with smaller kampung areas within a planned superblock development such as this Silver Triangle.

5.2.2.2 Analysis at the city-image level

Planning at the city-image level mainly concerns the manipulation of urban elements that generate the image of the city [Trieb, 1974: 110 ff.]. In this district, there are elements that contribute to the image of the city that has been organized after Lynch's theory, in the following manner.

- Path: major paths around this area are the Thamrin-Sudirman urban corridor and the Gatot Subroto street. Jalan Jend. Sudirman is the main thoroughfare that was constructed during the 50's to connect Jakarta to the Kebayoran new town, which is now part of Jakarta metropolitan area. The arterial street Jl. Prof. Satrio-Mas Mansur is a relatively smaller path. Different from the strong Thamrin-Sudirman corridor, the secondary path of Jl. Prof. Satrio-Mas Mansur needs to be better defined in terms of its street-wall.
- Edge: the Jend. Sudirman Street simultaneously acts as one edge of the golden triangle area. This edge is clear and distinct enough.
- Node: the HI roundabout with large fountain and statue in its middle is the most dominant node along Thamrin-Sudirman corridor. The Semanggi cloverleaf crossing of Jl. Jend. Sudirman and Jl. Gatot Subroto creates a major urban node. The overpass of Jl. Prof. Satrio as it crosses over Jl. Jend. Sudirman creates a minor node nearby the Silver Triangle. These nodes play a good role in punctuating the street sequence (see section 5.2.2.3 below).
- Landmark: some of the notable buildings in this area are Wisma'46 (currently the tallest building in the city), Wisma Dharmala (due to its position and unique

design), and the tall twin towers of Danamon building across the Wisma Dharmala. They serve as reference points for their surrounding area.

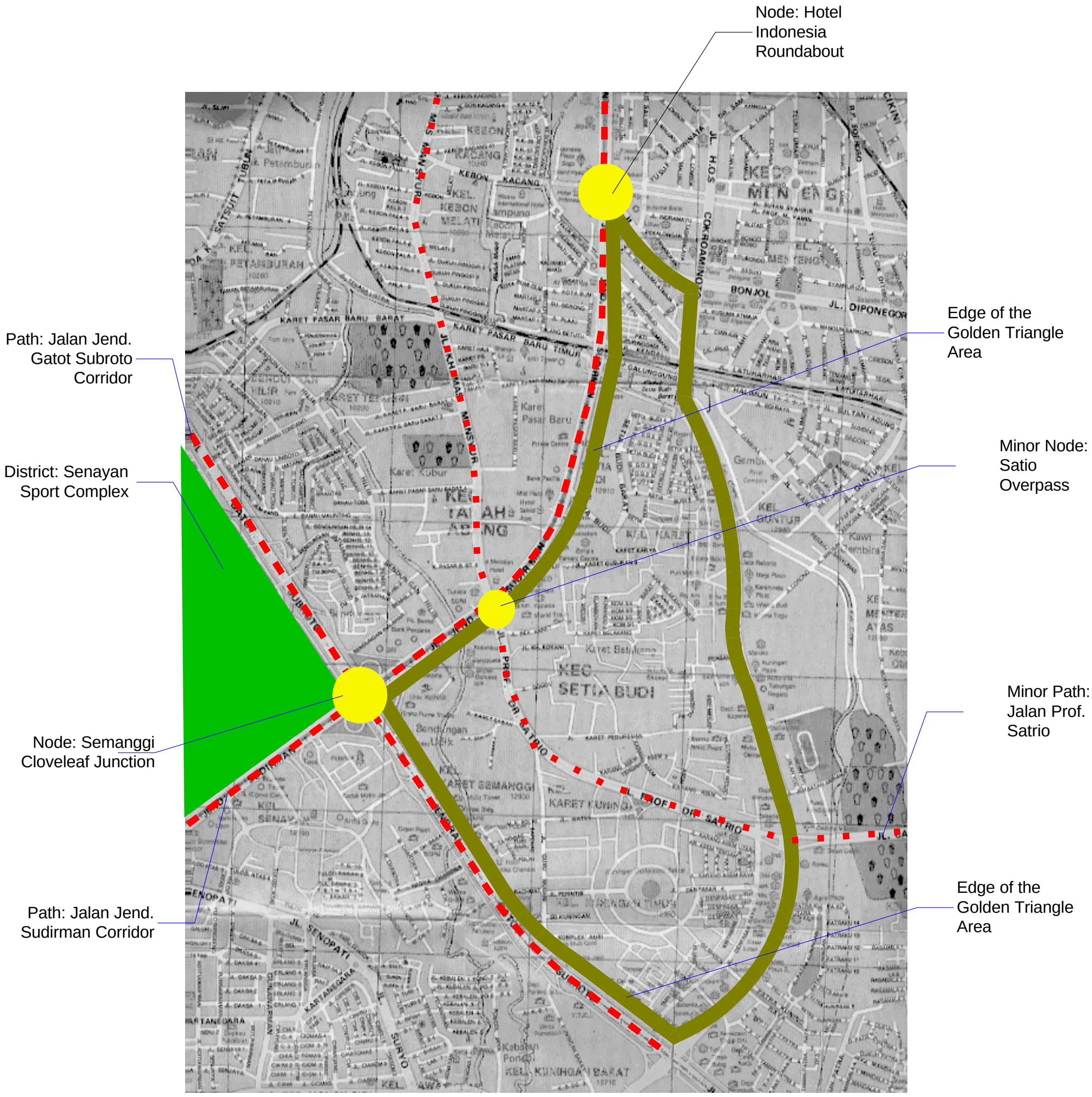

Figure 5-8 Image Analysis.

- District: the Senayan sport complex on the South side of Jl. Gatot Subroto has a distinct district quality and the Sudirman CBD has adequate size and integrity as an exclusive district. The Golden Triangle can be perceived as a district as well, but a less homogeneous one.

Different from the Golden Triangle that has stronger character along its edges but not homogeneous in its inner part, the Silver Triangle is intended as a homogeneous district.

5.2.2.3 Analysis at the city-appearance level

At the level of city-appearance (*Stadterscheinungsebene*), the perceptible part of the urban environment must be well-treated so that it delivers correct information to its user. One important task of urban designers at this level of planning is to define clear sequence in the array of public open spaces. Using Trieb's theory, the elements of this district have been analyzed in terms of its perception and usage continuity, the sequence and the effects.

The continuity of the perception of urban elements and its function. This is a question whether the perceivable part of the urban environment is accessible to the observer [Trieb, 1977:141]. The relationship between the perception-continuity and usage-continuity of the urban environment is analyzed at each side of the triangle as well as in the central area. The analysis goes further to see the fit between the physical appearance of the urban environment (its visual hierarchy) and its role or function in the city (its functional hierarchy) [Lynch, 1965: 114-119 in Lee, 1995: 57].

Jl. Jend. Sudirman has a good relationship between its function as main thoroughfare with its proportions. The street section length, the width between building facades and the height of the surrounding buildings fall within the recommended values. The buildings massing along this street can also maintain the street's image as the location for prestigious offices very well. Only the streetscape on pedestrian level needs some improvements, because the properties along this street have poor pedestrian accessibility because of the high fences and numerous curb cuts.

The existing buildings on Jl. Mas Mansur are clearly visible thanks to their height, which ranges between 16 - 24 floors. However, their usage-continuity is very poor: the buildings are hardly accessible because of the high fences complete with guard posts, and the discontinuous pedestrian sidewalk. Actually, the street width/height proportions of Jalan Mas Mansur has a large potential to support its role as a secondary thoroughfare after the Jalan Jend. Sudirman, provided that its streetscape and the built form are improved. The cemeteries on the West side of the street are hardly visible to pedestrians or travelers, because of their rather high location and fences around the cemeteries. Only the impressive monument in front of the cemetery informs the passerby of the existence of a cemetery. If the streetscape and the surrounding buildings are developed in integrated manner and abide by the design theory, then it is possible for this street to attain its status as a fine secondary thoroughfare.

When one travels along Jl. Karet Pasar Baru Timur, he will get the impression of a green urban environment. Both the rows of trees in the public space (the canal banks and the sidewalk) and the private front yard of the buildings on this street are clearly perceivable. The good visibility of the vegetation and the potentially fine proportion of the street can support the role of Jl. Karet Pasar Baru Timur as a major green corridor.[64] The usage-continuity of the urban elements along this street is rather low. Despite the absence of high fences, the landscape design of the land parcels along this street discourages people from going through the private properties. Furthermore, this area needs some improvement of the pedestrian amenities along riverside, such as pavement, benches and other street furniture so that the people can enjoy the street- and riverscape.

The kampung area in the middle of the Silver Triangle is hardly visible as a whole because of the narrow viewpoints in the alleys. The network of alleys enables a good usage-continuity of the kampung houses. In this mid-block area, the mixture of kampung and large parking lots on unbuilt land (that is recently acquired or demolished) is not particularly appealing. The kampung still has a "*Gemeinschaft*"

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[64] see Table 5-2.

atmosphere, but the feeling as a compact "inner block" area has been lost because of the many parking lots.

The street sequence. The Sudirman corridor has a fine ordering of sequence from the National Monument, through the HI roundabout, over the Dukuh Atas bridge, under the Satrio and Semanggi crossings up to the Patung Pemuda monument and beyond. Aside from those nodes, there are a number of smaller nodes spread at a good distance to mark the sequence of this corridor.

The Jl. Casablanca - Jl. Prof.Satrio - Jl. Mas Mansur - Jl. Fakhrudin streets have a less clear sequence. Mainly because this path is relatively new, and much of its part is not yet completely built up. The entire West side of the Silver Triangle must define the street-wall of Jl. Mas Mansur, so that the nodes at the triangle's corner can stand out, due to improved contrast.

The Jl. Karet Pasar Baru Timur also lacks the degree of spatial enclosure for supporting the sequence between Pejompongan and Manggarai districts. Building and/or vegetation masses needs to better define the wall of the urban corridor along Kali Malang canal, which makes up most of the street sequence between Pejompongan and Manggarai.

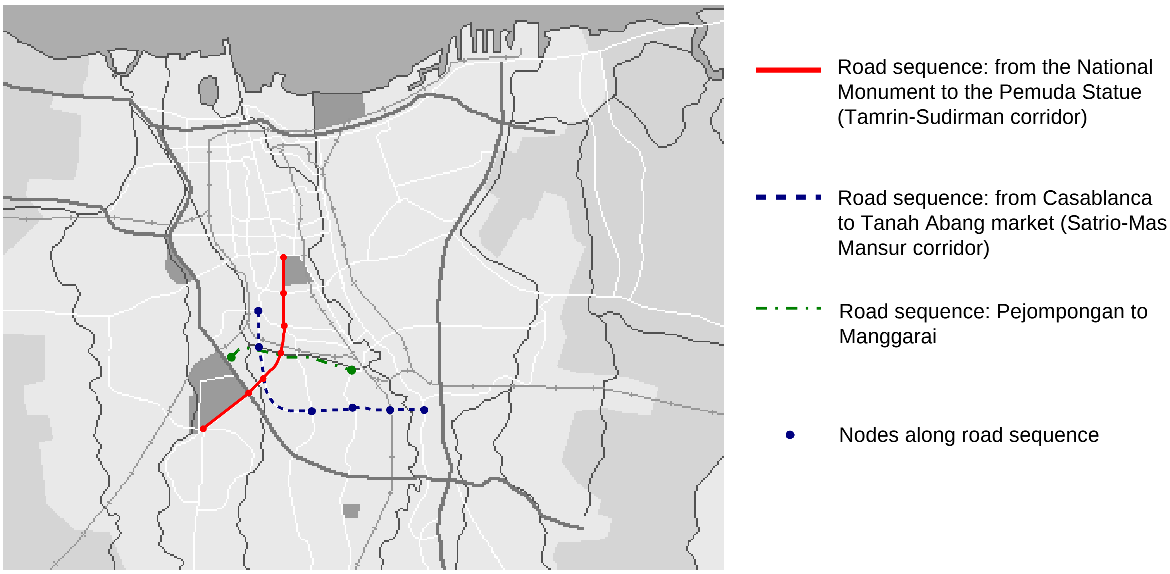

Figure 5-9 Major street sequence around the Silver Triangle.

Effect: The identification of sequence elements that have the potential to be used for spatial effects such as suspense, accentuation, stricture and so on.[65] The Dukuh Atas bridge has a great potential as a vantage point (*Vorzugslage*). From this bridge, all travelers can have a good viewpoint towards the Silver Triangle. It is the same case with Jl. Mas Mansur bridge over the Kali Malang canal as a potentially good viewpoint, particularly from the high overpass over the bridge that has a commanding view over the entire Silver Triangle (see Figure below).

The tall buildings around the Jalan Prof. Satrio overpass have the effect of emphasizing this node. The tower building masses on all corners of this major street junction contribute to the spatial quality of this urban node, which has a role in both the Sudirman corridor and the Jl. Casablanca - Jl. Prof.Satrio - Jl. Mas Mansur - Jl. Fakhrudin street sequences.

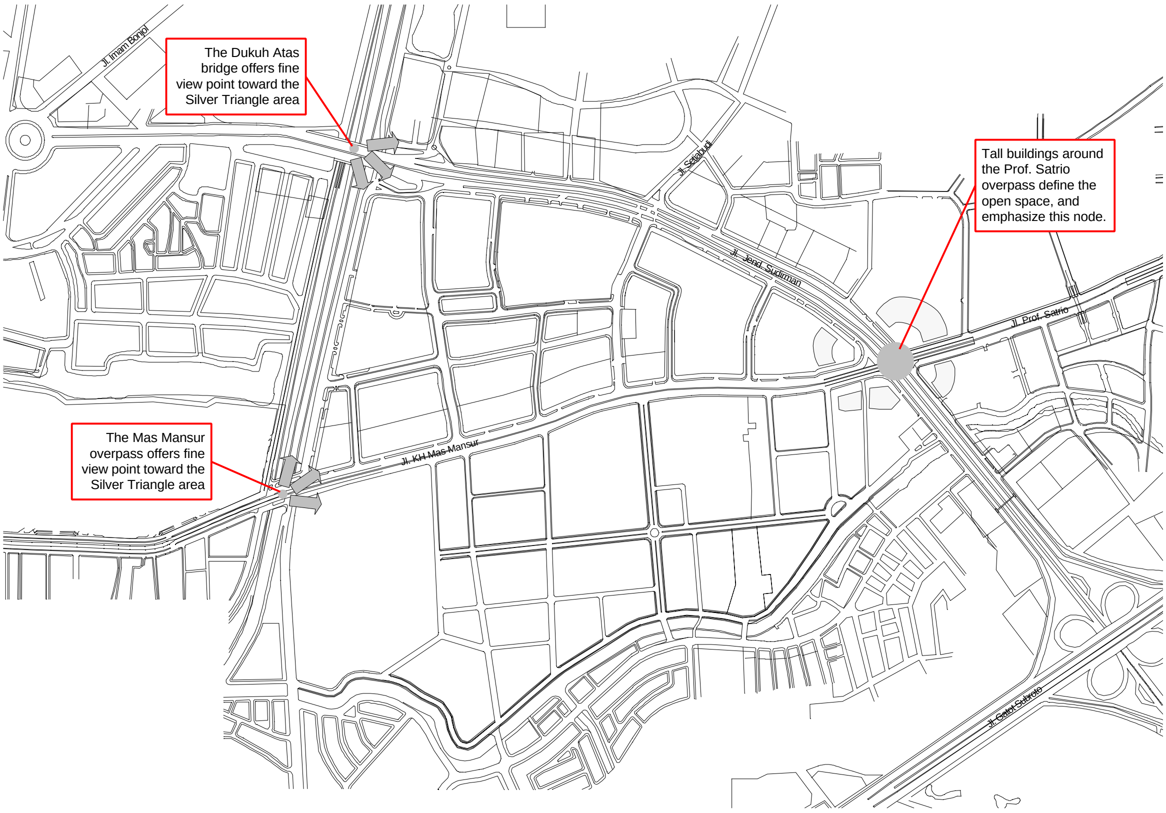

Figure 5-10 Urban design Effects around the Silver Triangle.

65 see section 2.3.2.2

5.2.2.4 Traffic and parking

The traffic forecast in year 2000 for the three sides of the triangle are between 1,307 and 5,684 passenger car unit (pcu) during peak hour [Tribina Matra Çarya Cipta, 1993]. This is a very high figure compared to the standard that was proposed by Appleyard. He sets the peak hour traffic of Light Traffic Street at 200 pcu, Moderate Traffic Street at 550 pcu and Heavy Traffic at 1,900 pcu. It is clear that the street at all three sides of the triangle falls within the category of Heavy Traffic street, which poses safety hazard to pedestrian. Hence the design of pedestrian facility along these streets should take the high traffic volume into consideration.

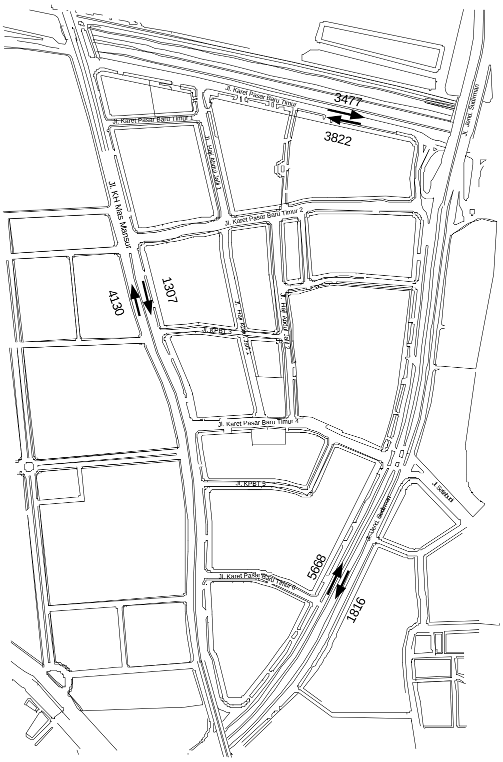

Figure 5-11 Projected year 2000 traffic around the Silver Triangle Superblock, in pcu/hour during morning peak hour.

The opening of the new arterial road Jl. Prof. Satrio - Jl. K.H. Mas Mansur - Jl. Fakhrudin up to the retail center of Tanah Abang has dramatically improved the accessibility of the Silver Triangle area. The construction of this East-West arterial road together with the Jl. Karet Pasar Baru Timur is also defining the boundaries of the Silver Triangle clearly. As the effect of the improved accessibility, the development on the West side of the Silver Triangle is also improving sensationally. The triangle's sides on Jl. Mas Mansur and on Kali Malang were hitherto neglected, as Jl. Mas Mansur only served as an access road to the two cemeteries and Jl. Karet Pasar Baru Timur was merely a canal inspection road. Now these sides have become front sides, and are sought after by property developers. The existence of development pressure is one of the reasons that prompted the need for an urban design guideline for this area.

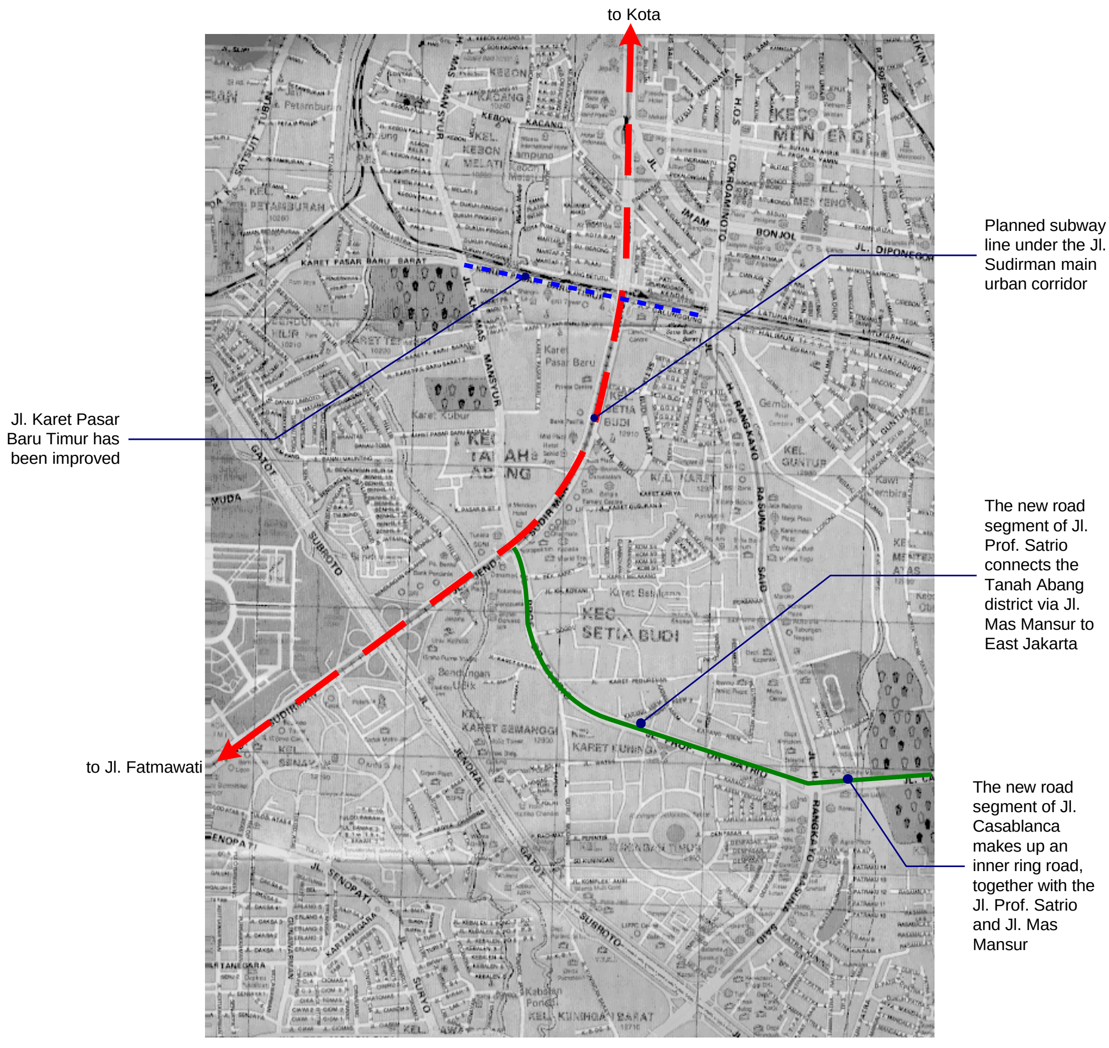

Figure 5-12 Map of changes in traffic system around the planned area.

The first phase of the planned subway line between Jakarta-Kota and Kebayoran will run from Jl. Fatmawati to the Monumen Nasional [Media Indonesia 12.10.99]. The rapid mass transit system is predicted to have a sound ramification on the areas around the stations. One of its 18 stations will be located on the side of the Silver Triangle on Jl. Jendral Sudirman. Despite the fact that land parcels along this side of the Silver Triangle have been thoroughly built up, an insertion of a new subway station may alter the activity pattern on these land parcels and even in the inner part of the Silver Triangle superblock.

Another effort to avoid the peak hour traffic jam on Jl. Thamrin - Jl. Jend. Sudirman and Jl. Gatot Subroto is by instating a "three in one" traffic restriction policy on these streets. According to this traffic policy, only cars with three or more passengers are allowed to enter these streets between 6.30 and 10.00 AM on workdays. The policy is hoped to improve the Modal Split, reversing its downward trend since 1985 (see section 5.1.1.6). However, the car users in this area have been known to avoid this "three in one" traffic restriction by going through side streets such as Jl. Mas Mansur. Property developers prefer to have short-cut streets, through the width of the Silver Triangle, that connect the side streets with the back of their land parcels.[66]

On-street parking is not allowed on Jl. Jend. Sudirman and Jl. Karet Pasar Baru Timur. Some limited car parking, in the form of car park on part of the site that is directly accessible from the road, is possible on Jl. Mas Mansur and other inner-block roads. In the kampung, only a few families have cars as the means of transportation. The narrowness of the kampung alleys prohibits car parking there. The large buildings in the Silver Triangle generally have their own off-street parking system, either in a basement or in multi-story parking structures, or a combination of both. The front and backyards of these buildings are usually not large enough to accommodate the developers' standard of 1 car for every 50 m^2 net floor area.[67] Hence there is a need to integrate the parking facilities of several buildings together or to build a common parking building,[68] and to link this superblock to public transit system.

[66] The need to minimize the travelling effort, as stated by Curdes in section 2.3.5.1.
[67] The local government standard requires only 1 car for every 100 m^2 net floor office area.
[68] See also Buchanan, 1963: 192 on parking policy.

5.2.2.5 Spatial quality of the urban space

The existence of large open spaces in the form of two cemeteries and the river canal, together with the plan to build a public open space in the center of the Silver Triangle, have provided a potential prospect for structuring the urban space of this area in general, and to balance the strength of the Thamrin-Sudirman urban corridor. This prospect is in line with the goal of the RTRW 2010 to create more green open spaces in Jakarta.

Lynch has found that the average dimension of fine old city squares in Europe to be 137 meter. The planned public open space in the center of the Silver Triangle is 120 m x 128 m, which is not far from the ideal dimension. A small park in the center of a superblock can also act as a node for the pedestrian network there.

Only two sides of this open space have been developed, with buildings of 96 m and 144 m tall. Thus the width to height proportion of the open space is between 1.25 and 0.9. This is still an acceptable proportion, although at such lower range of the ratio, the space will be perceived as cramped. Trieb has found that the most common height to width ratio is between 1:3 and 1:6.[69] No changes are necessary in the dimension of the planned open space, provided that the future buildings on other two sides have a height between 120 m and 20 m (for a ratio of 1:1 and 6:1). Alternatively, other design treatment of the building mass, such as podium + tower structure, can be implemented to keep the spatial quality of this central open space.

Maertens states that the ideal proportion of street length to its width should be approximately 25:1, or within the range from 5:1 to 30:1. The following table presents the proportion of street L : W of the streets around and inside the Silver Triangle area.

[69] See Table 2-4.

Street Name	Length : Width (meter)	Ratio of L:W
Jl. Jend. Sudirman	1400:70	20:1
Jl. Mas.Mansur	1470:48	30:1
Jl. Karet Pasar Baru Timur	760:23	23:1
Jl. Karet Pasar Baru Timur I	232:16	14.5:1
Jl. Haji Abdul Jalil	420:24	17.5:1
Jl. Haji Abdul Jalil II	400:12	33:1

Table 5-1 Proportion of street length : width

It is apparent that the existing length/width proportion of the street sections around the Silver Triangle falls near the ideal figure. The length/width proportion of the planned streets inside the triangle area is still acceptable as well. No change in the street proportion is required.

The proportion of street profiles (street cross section) has a significant role in defining the quality of the space that is formed by the buildings on its sides. The ratio of the street width to building height ideally should be between 1:1 and 3:1.

Street Name	Str. Width W (meter)	Building Name	Bldg. Height H (meter)	Ratio of W:H
Jl. J. Sudirman	90 meter	Metropolitan	68	1.32
Jl. J. Sudirman	90 meter	Sahid	80	1.13
Jl. J. Sudirman	90 meter	Mid-plaza and Bank Pacific	80	1.13
Jl. J. Sudirman	90 meter	Lippo	64	1.41
Jl. J. Sudirman	90 meter	B. Dharmala	84	1.07
Jl. J. Sudirman	90 meter	Chase	104	0.87
Jl. Mas Mansur	68 meter	Pavillion Park	96	0.71
Jl. Karet Pasar Baru Timur 1	36 meter	Mid-plaza and Bank Pacific	80	0.45
Jl. Karet Pasar Baru Timur 4	24 meter	Kempinsky	144	0.17
Jl. Haji Abdul Jalil 1	12 meter	kampung houses	6-8	1.5-2

Jl. Karet Pasar Baru Timur and	150 meter	BNI '46	128	1.52
Kali Malang canal and		Wisma 46	184	0.57
Jl. Talang Betutu		Shangrilla	128	1.17

Table 5-2 Proportion of street width : building height

The table shows that the narrow inner-block streets, with a planned width between 12 and 36 meters, have ratios of less than 1.0 if tall tower buildings are defining their street-walls. In this case, urban design intervention is necessary to keep the ratio of street cross-section between 1 and 3. The creation of three- to four-story podium structures under the tower buildings can yield a pedestrian-friendlier scale of street cross-section.

5.3 Conclusion: Main Concepts

The recent political momentum (the reform for democracy movement) in Indonesia calls for more equitable use of the urban space. This social concern shall be reflected in the urban design guideline for its realization.

The major pointers of the social aspect that should be noted in the urban design guideline are as following:

- The existing kampung shall only be replaced in a natural manner, i.e., the kampung dwellers voluntarily sell their property at a fair market price that compensate for the valuable land with high plot ratio.
- The informal sector street vendors will persist for quite a while, mainly due to the vast amounts of the supply sector from poor people and the unemployed who need to make a living. However, the street hawkers should be organized and localized so that the public will not be disturbed: the sidewalks stay clean and safe for pedestrian, and the beauty of the streetscape can be maintained.

- The public open spaces – which include the space between buildings, street and alleys, sidewalk, park and riverbanks – should be best utilized to vitalize public life in public space, as the place of interaction of all levels of the society.

The design of the physical environment should support the social policy, i.e. by:

- creating adequate public open spaces. Unlike the public activities in most Western cities that take place in squares/plazas, public activities in Indonesia take place in alleys, streets, riverside and the vacant spaces between buildings. Hence we should activate all these locations as the place for public interaction, and possibly for use by street vendors. Public open spaces, including the street, have an important role in integrating the entire planned area.
- fostering a pedestrian-friendly streetscape, with humanely scaled public open space that has a good spatial quality as well as positive open space, where people of all social levels can interact.

The conclusion from the formal urban design analysis of the physically built environment that will be used as the input in preparing the urban design guideline are as follows:

- The resettlement of the existing kampung allows the transformation of the entire triangle area into a homogeneous District. The Wisma'46 building as a Landmark at city-level should be visible from the advantage points (*Vorzugslage*). The mosque at the center of the triangle serves as a local Landmark that is worth conserving because of its architectural merit.[70]
- The continuity of perception along major streets around the triangle can be maintained. The street wall of Jl. Mas Mansur needs some improvement and design measures to keep the width to height ratio within the ideal range.
- Generally, the elaboration of the building proportion, scale, massing and landmarks can create a humanely scaled environment and ease the orientation as well as provide weather protection (mainly against rainfall and sun heat). In inner

[70] See note on Homogeneity and Contrast in section 2.4.

streets and the central open space of this superblock, the proportion of the enclosing buildings needs to be adjusted to fit the preferred values.

- Support the use of public transportation system. The linkage from the planned mass rapid transit station to the pedestrian network in the triangle area must be provided and well- maintained.

- Creating a pedestrian-friendly environment, by restricting on street parking within the Silver Triangle. A centralized parking building and/or interconnected parking basement between neighboring land parcels can further improve the quality of the pedestrian area (by reducing local traffic).

- Encourage mixed land use. This will yield a more compact and sustainable district, also as a way to attain a higher land-use flexibly as an attempt to anticipate future changes.

6. THE URBAN DESIGN GUIDELINE FOR THE SILVER TRIANGLE SUPERBLOCK.

6.1 Introduction

This chapter provides an example of how the urban design intentions and ideas are translated into a guideline so that the resulted urban environment fits the urban designer's vision. The guideline in this chapter is a continuation of the urban design process in the form of description and analysis of the existing condition that has been performed and explained in the Chapter 5.

This urban design guideline is only a simulation and not intended to be implemented on the actual site. In order to avoid repetitiveness that will make this dissertation unnecessarily long, only three Sub-blocks will be detailed in this model of urban design guideline. The three Sub-blocks – numbers 1.1, 5.2 and 6.2 – are selected as representatives of the three general types of development in this superblock, which are built land-parcel along the major urban corridor, unbuilt land (formerly kampung housing) along secondary urban corridors, and an inner-block parcel for common facilities. The simulated urban design guideline is presented in Appendix B, whereas the explanation of the structure of the urban design guideline and the rationale of its design decisions is presented in this chapter.[71]

The Urban Design Guideline is comprised of three main parts, namely:

1. The first Section explains the urban design goals, the role and the usage of the Urban Design Guideline within the urban planning framework, and the concept of Superblock. The project scenario in this section is an elaborative narration to guide its formulation.

2. The second Section refines on the elements of urban design and its development infrastructure. The design goals of the project scenario are translated into objectives for each element of urban design. (see section 6.2)

[71] The explanation of the first two sections of the urban design guideline will not be repeated in Appendix B. Only the plans from section 2 of the guideline, together with the section 3, will be presented in Appendix B.

3. The third Section provides technical guidance for the development of the Blocks and the Sub-blocks. In this Section, the architectural quality, the development standards and the urban design concept are established in the regulating instruments for this area. (see section 6.3 and appendix B)

In some cases, a fourth section is appended to the guidelines. The fourth section is devoted to the strategy of the development of the area. This section is particularly relevant when the development will be staged in time into several stages. The text clarifies development issues such as which part of the entire area will be developed first, what kind of land use – permanent as well as temporary – will be put there, which part of the infrastructure network will be laid out first or other necessary endeavor such as the relocation of existing streets and waterways.

The first section of the Urban Design Guideline contains the definition and purpose of the Urban Design Guidelines, the direction for use of the Urban Design Guidelines, and a "Project Scenario". The Urban Design Guidelines that has been formulated in Indonesia for several superblock developments begins with an explanation of its purpose, which is

> to create a high quality urban environment that is human- and/or public-oriented, with an emphasis on the aspects of functional quality, visual quality and environmental quality. This Urban Design Guideline is expected to facilitate the creation of an integrated urban environment, that at the end can improve the efficiency of the land utilization and its carrying capacity; to create an urban-scape that has an adequate level of performance, and to create an urban architecture that is accommodative to various environmental issues – both physical as well as socio-cultural. [Dinas Tata Kota, 1997: ii]

The direction for use explains the definitions and terminology that are used in the text. Concepts that are new to the general public, such as the concept of superblock, are explained here. It contains also an explanation on the levels of decision-making for the guideline: who has the authority to make decision and to change the guiding text.

The introduction part of the Urban Design Guideline gives a lead in the form of an urban design scenario. The scenario is a kind of a vision from the urban designer, depicting the future condition of the project and its surrounding environment. It contains basic assumptions of the prevalent social-economic-political conditions that determine the planned area. The urban design scenario provides a setting or acts as the stage for the entire Urban Design Guideline, because it also implicitly contains the urban design goals that will be pursued. The intention and the wishes of the developer and investor might be incorporated in the project scenario. In other words, project scenario is the “core” for the elaboration of the urban design. This is similar to the practice in Germany, where the important design ideas are included in the preamble of the building regulations (*Bauvorschriften)* for that municipality as goals [Simon, 1992: 29].

6.1.1 Defining the Superblock

By definition, an integrated urban development – or commonly called a "superblock" – is a mixed-use area that is developed in an integrated manner, bordering on at least two of its sides with collector roads (or a collector road and other equivalent infrastructure), in accordance with the city's master plan that stipulates one or more major land use with a minimum land area of three hectares.

The performance and the environmental quality of a superblock are much superior than the sum of its components. The poor urban quality in Jakarta at present is caused mainly by the parcel-oriented development. In the superblock concept, a better urban built environment can be created through an integrated planning process of all its functions and the treatment of the planned area as a single large entity. In this viewpoint, a superblock has an important role in improving the quality of the urban environment in its area, as well as the surrounding areas. Such superblocks often act as catalysts for the development of the district.

The advantages of a superblock-type development are, among others,

- It has a higher flexibility in spatial concept.
- It promotes a mixed-use type land development.
- It fosters a unified architectural concept.
- It enhances the land capability to support the development with higher intensity.

- It has a higher efficiency in the usage of public utility network.
- It enables a more distinct separation of various modes of circulation (pedestrian and vehicular).

The Silver Triangle superblock is divided into 6 Blocks, or a tract of land that is circumscribed with at least a local street or its equivalent. Each block has its specific characteristic, which is generally attributed to the main land use in the block. The delineation of the blocks does not represent the staging of the development; instead, it reflects the linkage between the neighboring land parcels in terms of urban design concept.

The Blocks are divided further into 24 Sub-blocks, or the tract of land that consists of one or more land-parcels as shown in the cadastral map. The Sub-block is delineated based on the practicality of specifying the guideline to this area, due to its uniform character. The Sub-block is the smallest "unit" for describing the urban design guideline.

The guideline is prepared for each Block, with more specific design guidelines for each Sub-block. This division is in line with the morphological levels of the city, which comprises of parcel, block, district (*Stadtteil*), city or region [See Curdes, 1997: 66]. With a spatially hierarchical design guideline, it is hoped that the general urban design idea can be translated correctly to the detailed level while maintaining the coherence in the entire superblock.

The six Blocks in the Silver Triangle superblock are (see Plan B-10 in Appendix B):

1. The Riverside Block
2. The Sudirman Block
3. The Corner Block
4. The Mansur-High Block
5. The Mansur-Low Block
6. The Central Block

6.1.2 The Decision Structure within the Urban Design Guidelines

The implementation of the Urban Design Guidelines involves various parties, as stipulated in the administrative procedure and system in DKI Jakarta. Basically, there is a three-tiered decision-making authority in this process. The highest authority is served by the Governor of the province, who has the authority to alter the "mandatory" part of the guidelines. This encompasses the allowable land use, maximum floor areas, building height. The second level is held by the head of the DTK (the municipal planning agency) and his staff, who has the authority over the "major recommendatory" part of the guideline. They may alter the building line and setback, the floor area of each land use, the open space allocation and so on. The third level is held by the TPAK (the architectural review board) who makes revisions of the "recommendatory" part of the guidelines. This includes the visual quality such as the color and material of the building façade, the functional quality of the pedestrian path and the environmental quality through the control of sun lighting, air circulation, greenery and so forth. Each tier has its clear authority to decide on the urban design matter, as shown in the authority matrix (Table 6-1). In general, the decision-makers have to deal with the tasks of assessing development proposals for the planned area based on its design merit and of supervising the implementation of the guidelines.

The three levels of rules are clearly reflected in the third Section of the Urban Design Guideline, which has

1. Mandatory regulations are regulations that have been set according to the RBWK (the District Plan) and the Jakarta's General Land Use and Intensity Plans.
2. Major Recommendatory regulations are a control mechanism that is intended as guidance for creating a high quality Superblock, in accordance with the technical regulations or the Building Code.
3. Recommendatory regulations are control mechanisms for creating a high-quality environment, as envisioned by the site developers and the urban designers.

Notwithstanding their terminology, all three levels of regulation are binding and controlled with urban planning and design reviews (see section 5.1.3.2). Only the recommendatory regulation is generally negotiable, as it needs some interpretation before its implementation.

As already indicated in the mandatory and major recommendatory regulations above, the urban design guideline is subordinate to all development regulations in Jakarta.[72] Specifically these encompass the following regulations:

1. Perda (Ordinance) DKI No. 3/1987 on establishing local spatial plans
2. Perda (Ordinance) DKI No. 4/1975 on multi-story building in Jakarta
3. Perda (Ordinance) DKI No. 9/1985 on local retribution in development
4. Perda (Ordinance) DKI No. 7/1991 on building in Jakarta
5. SK Gub. (Governorial edict) KDKI No. 678/1994 on land-use intensity
6. Detailed Technical Urban Planning Guide on single building type
7. The scheme for building intensity increase in Jakarta
8. RBWK 1991 for Kecamatan Tanah Abang
9. Urban Planning Standard of DKI Jakarta.

The relationship between the different levels of regulations and the authority of the decision-makers is depicted in the following table:

	Authority		
	the Governor of Jakarta (decree)	**the municipal planning agency / DTK (decree)**	**the Urban Design Review Board / TPAK (recommendation)**
Mandatory	-General Land Use Plan -Floor Area Ratio -Building Coverage -Building height (floors) -Transfer of FAR > 10% -Planning Standard	-Building Line -Building setback -Transfer of FAR < 10% within the same Block	
		-Transfer of FAR < 10% inter	Blocks is discussed together
Major Recommendatory		-Land area -Combine/divide the Sub-block -Land use composition -Open space -Vehicular circulation -Pedestrian circulation at macro level -Building Massing	Gives advice

[72] See also section 5.1.3.1

Recommendatory			Adheres to the UDGuideline -**Functional Quality:** *Organization and linkage of functions *Pedestrian and vehicular circulation at micro level *Transportation mode -**Visual Quality:** *Aesthetic and architectural performance *Built form and streetscape *Signage *Building color and material -**Environmental Quality:** *Lighting and air circulation *Open space & landscaping *Public facility *Socio-cultural aspect

Table 6-1 Decision making authority in the urban design guideline.

In the Urban Design Guideline, the illustrations (particularly those depicting the image of the area) is only a simulation of the implementation of the Guidelines. Hence the illustrations are not binding. The actual building design may be an alternative or variation of this simulation.

The drawings in the third Section of the Urban Design Guideline (see Appendix B) are diagrammatical representations of the written regulations that are explained in the Guideline. Any additional information in the drawings that is not explained in the text has a simulative function and is not binding, thus only suggestive. Examples of such information are the building design and the driveway within the Sub-block.

The tables of correlation between building height, building setback, FAR, BCR for closed and open building types – which is stipulated in Perda DKI No. 4/1975 – have been interpreted more flexibly in this Guideline. The concept of Superblock allows a higher flexibility in determining the correlation between the parameters in accordance with the urban design scenario and concepts as well as the redistribution of the building intensity plan. However, the final composition of the correlation should be approved and signed by the Governor of Jakarta.

During the development of the sub-blocks, it is still possible to combine two or more sub-blocks into a single sub-block, or vice versa (division of a sub-block into smaller land parcel). Such a proposal should be consulted beforehand, for the consent of the Jakarta municipal government.

There are two legally binding prescripts in the Urban Design Guideline:

1. The General Land Use Plan (Plan B-2 in Appendix B)
2. The Building Intensity Redistribution Plan (Plan B-5 in Appendix B)

6.1.3 The Urban Design Scenario

The guideline is intended for a projected condition in the near future between 2005 and 2020. At that time, the Indonesian economic development is predicted to have fully recovered from the severe monetary crisis that loomed over the country since the end of 1997. Jakarta, and particularly the center of the city, will enjoy the economic growth. The demand for commercial space of retail and office will grow back to the pre-economic crisis level. This is also pertinent to the prestigious offices, hotel and apartment buildings that accommodate the people who work there.

Similar to the condition during the pre-crisis era, the reality of street hawkers in Jakarta is projected to stay in the near future and must be faced by the decision-makers in the municipality. This problem has even gotten worse during the economic crisis. The Silver Triangle area is intended as an example of a social planning solution in developing a city district where formal buildings and informal activities in public space are mixed together.

Since the construction of the Jl. Jend. Sudirman after the Indonesian independence, the land along this road has a great prospect to be developed as a prime business area, thanks to its fine accessibility level. The high land value on both sides of Jl. Sudirman – that has increased rapidly during 1970s-1990s – will be perpetuated and expanded to the entire Silver Triangle superblock. Improving the level of accessibility further, a MRT line will have been completed by the end of 2001, according to the plan, so that this area is part of the locations that enjoy an increase of demand for development of commercial space.

The Master Plan for this district, which is stated in the RBWK of the Kecamatan Tanah Abang, stipulates the general planning strategy of the district development. The urban design plan is a further effort to create a distinctive and integrated urban environment that takes into consideration the formal aspects of physical design as well as the social condition. The urban design guideline will be more responsive to future changes by allowing a greater flexibility in building formation and a periodical review and revision of the guidelines.

The specific objectives of this Urban Design Guideline are the following:

- To create a high quality urban environment in terms of its socio-cultural aspect, i.e. by fulfilling the needs of the human users for orientation, stimulation, interaction, and beauty/aesthetic.
- To develop the area as an integral part of Jakarta, but still possessing a distinct identity that distinguishes it from other major development projects in the city.
- To reinforce its identity as a mixed-use area of commercial/business center that serves the national and international level, and residential facility and other activities that support the main business operation in the superblock.
- To give a higher priority for a landscape design that is suitable for tropical climates and for open spaces that encourage positive interaction of its users.
- To have a higher design flexibility that enables the modification and expansion measures, if the situation suddenly changes.

These planning and design objectives serve as the basis for formulating this Urban Design Guideline. The basic urban design principle of this Master Plan is to create a "humane urban environment". The main concept is to build a perimeter area of business/commercial use with service, residential and support facility in the middle, which is bound by the network of pedestrian paths and public open spaces where the public realm exists and the public transit system that connects this superblock to the rest of the city.

6.2 The Area Development Guide

The second section of the Urban Design Guidelines describes the concept of urban design for this area, as well as other urban planning concepts that determine or influence the appearance of the planned urban environment. These concepts are later developed further in the third section into detailed guideline for each parcel. These concepts are built upon the general vision that has been explained in the project scenario and the outcome of the analysis in Chapter 5. The concept of urban design is elaborated with the following concepts and plans:

- The Macro and Micro Land Use Plan, which shows the allowable use of the land both horizontally and vertically.
- The Land use Intensity Plan showing the maximum amount of floor space allowed to be built on each parcel of land.
- The Circulation and Traffic System that explains the pedestrian and vehicular linkage within and around the developed area.
- The Open Space and Landscape Plan, which shows the location, design and relationship of all kinds of public and private open spaces in the design area.
- The Built Form, which explains the form of the building mass.
- The Signage and Streetscape Design for signboards, billboards, street sections including the street furniture, etc.
- The Neighborhood Service and Public Facilities clarify the location, type, size/capacity of the public facilities such as school, fire brigade, police station, mosque, sport facility, etc. that should be provided on the site.

6.2.1 The Urban Design Concept

The urban design concept of the Silver Triangle superblock is a product of a synthesis of the main policies for the physical urban elements. The image of the Silver Triangle superblock will emerge from the combination of those elements.

The most important urban design goal for this superblock is to create a "humane urban environment". This is expressed in the main urban design concept of providing much support for the user, especially the pedestrian, in terms of orientation, physical comfort and interaction among residents. A network of pedestrian paths, public open spaces and public facilities in its center, where the public realm can emanate, ties the entire area together.

The proposed pedestrian network will let the people orient themselves in the superblock. The podium-structure of the building lends a human-friendly scale, yet the design of tower buildings on top of it and other details of the building give a cue for orientation.[73] On strategic points along this network, there are public transit nodes that connect this superblock via the public transportation system to the rest of Jakarta. There is an opportunity in the future to connect this pedestrian spine with the network of pedestrian paths in neighboring superblocks, i.e., the Kebon Melati superblock and the Danamon superblock.

Almost the entire land parcels along Jl. Jend. Sudirman have been developed individually within the context of the Sudirman major urban corridor. The existence of a major pedestrian network at the back of these land parcels will unite the various activities along the sides with the support facilities in the center of the superblock. This network will also improve the linkage among the parcels and reduce the traffic between parcels on Jl. Jend. Sudirman. The pedestrian-friendly approach of the superblock supports the decision of the Jakarta municipality to ban the tall fences along Jl. Jend. Sudirman and Jl. Thamrin [Kompas daily, 13.7. 99].

[73] See also section 6.2.8

The improved accessibility of Jl. Mas Mansur that is connected to Jl. Prof. Satrio and Jl. Fakhrudin, has also increased the economic value of the land. The improvement of land value is commensurate with the increase in the type and the scale of activities on this land. Therefore, the land parcels along Jl. Mas Mansur are intended for multi-story development, with a moderately high building density that counterbalance the street wall of existing buildings along this street.

The architectural image of the Jl. Mas Mansur corridor is not yet clearly defined. Along this side of the superblock, there has been a trend of hotel, office and apartment development. This trend can be continued in the unbuilt areas along this road, which will also agree with the land-use plan in the RRTRW of Kelurahan Karet Tengsin. Thus a "residential building pattern" will dominate this side of the superblock.[74] The newer apartment towers shall not be as tall as those towers along Jl. Jend. Sudirman, in order to keep the height/width proportion of the Mas Mansur corridor within the ideal range.

The center of the triangle superblock has been planned in the RBWK of Kecamatan Tanah Abang 2005 as a mixture of public facility, commercial and residential area. The central area will functionally support the main activity at the superblock's perimeter. The permeability of the superblock is maintained by providing through-streets between Jl. Mas Mansur and Jl. Jend. Sudirman, encouraging pedestrian access through the ground floor of large building block.

The row of buildings along Jl. Karet Pasar Baru Timur shall enhance and support the urban green corridor of Kali Malang canal, so that this area is not "abandoned" anymore as it is today. The Jl. Karet Pasar Baru Timur becomes a "frontage" and a city park for the enjoyment of the travelling public. In turn, it will improve the value of the surrounding land. The riverbank of the Kali Malang canal has a great potential to be developed as a place for public amenity a la "riverfront development".

6.2.2 The Macro Land Use Plan

The Macro Land Use Plan strives to amalgamate and to integrate the land-use of the Silver Triangle superblock with its neighboring developments. The Silver Triangle Superblock is located in the center of some other major superblock developments that are planned or are under construction in central Jakarta. The map (Figure 5-4) shows the planned Kebon Melati superblock located just across the Kali Malang canal, and the area around the HI roundabout that has long had a reputation as one of Jakarta's main activity points. To the South lie three other superblocks, namely the Danamon superblock, the Sudirman CBD, and the Mega Kuningan superblock. Further east are the Kuningan Center and the Irco Central superblocks. All these superblocks are intended as centers for commercial retail and service activity, combined with high rise apartment.

The Silver Triangle Superblock has a bright prospect by taking advantage of its central location. The interaction of these activity nodes in this district will yield a good synergy. The interaction is facilitated by pedestrian links and the public transportation network that connects those developments. The commercial use (at least on the ground floor) along the perimeter of this superblock is compatible with those in the contiguous Kebon Melati and Danamon superblocks

6.2.3 The Micro Land Use Plan

The Micro Land Use Plan allocates the land use types spatially within the superblock. The objectives of this plan are the following:

- To establish functional linkages between various land uses
- To determine the recommended uses on basement, ground floor, and upper floors of the building; and their horizontal as well as vertical linkage.
- To foster a mixed-use type development.
- To delineate the public, common, and private areas.

[74] See section 6.2.8.1 on the residential pattern.

The mixture of land-uses can be done vertically with various uses within a single building or horizontally combining different land-use on a contiguous area.

The delineation of areas in terms of their public accessibility is accomplished by identifying the public area (parks, pedestrian spine and riverbank promenade, etc.), common area in public facilities, and the private area that applies generally to the office and apartment towers. The ground floors of shopping malls and hotels are semi-public areas. The layout of public area in the center and the semi-public area in the perimeter of the superblock is intended to maintain the permeability of this superblock.

6.2.3.1 The General Land Use

The general land use plan indicates the predominant land use in each sub-block. At the same time, it also directs the elaboration of the land use plan for the ground and upper floors. Other functions that support the predominant land use of the sub-block may be allowed.

The general land-use for the Silver Triangle superblock and its surrounding area is presented in the Plan B-2 in Appendix B. This plan is essentially the same as those in the RBWK Kecamatan Tanah Abang and RRTRW Kelurahan Karet Tengsin. In this plan, the perimeter of the Silver Triangle is intended more for commercial use, except for the side on Jl. Mas Mansur that has some residential character, while the core is a mix of public facility, commercial and residential area.

6.2.3.2 The Ground Floor Use

The ground floor use plan strives to build an interesting and delightful pedestrian environment that fulfills the objectives of the land use plan and the circulation plan. This plan tries to maintain the linkage between the sub-blocks of this superblock, and provides a smooth transition between sub-blocks that have contrasting land uses. Pedestrian-supporting facilities or establishments – such as café, retail shop, restaurants, etc. – are encouraged in locations along the pedestrian path. This includes the ground floor of the Sub-blocks that both commercial and residential land-use in the general land-use plan. The ground floor use for the Silver Triangle area is presented in the following plan (see Plan B-3).

6.2.3.3 The Upper Floors Use

The Upper Floors Use in the Silver Triangle Superblock is similar to the general land use that has been indicated for each Sub-block. Other activities that support the main land use are also allowed. Some commonly allowed activities in the upper floors of an office or hotel tower are restaurants, fitness center etc. Residential apartment and hotel are preferred over the commercial retail floors in part of the Mansur-Low Block, which is indicated as residential in Plan B-2.

6.2.3.4 The Basement Use

The basement floors are customarily put to use for car parks, storage, loading and unloading, and other utility and service functions such as the building's mechanical and electrical plants. The urban design concept for the Silver Triangle superblock envisions other uses for the basement, such as retail shops under the commercial and central blocks and waiting rooms for the chauffeurs that are connected directly to the network of pedestrian paths above.

Basement floors of neighboring sub-blocks may be connected to each other. Jakarta's building regulation permits up to 80% of the land parcel area to be built as basement. The rest of the land should be greened for rainwater to seep naturally into the ground. The interconnected parking basement will reduce the traffic in local streets, which is generated by those searching for parking space. This will also support an integrated parking system, where the excess capacity of office parking can be used by entertainment or shopping facilities in the evening.

Plan B-4 shows the possibility of interconnecting the parking basement, particularly between neighboring land parcels in new areas to be developed.

6.2.4 The Building Intensity Plan

The goal of the Building Intensity Plan is to achieve a more balanced distribution of building intensities, which are appropriate to its land use type. The building intensity plan is presented in Plan B-5.

The objectives of the Building Intensity Plan are the following:

- to delineate the planned area for building intensity distribution,
- to spatially distribute the building intensity according to its land use,
- to determine the average floor area ratio of the superblock,
- to set the building coverage ratio,
- to carry out the bonus and incentive scheme.

6.2.4.1 The Building Intensity

The Building Intensity is expressed as the ratio between the total allowable floor area to the net total land plot of the planned area. The building intensity indicates the intensity of the land usage, which should not exceed the value 5.0 pre-set in the city master plan of this district. It limits the average of allowable floor area, hence represents also the scale of the development in this superblock.

The development intensity can be redistributed within the superblock, provided that the average does not exceed the value stated in RRTRW. Several buildings along Jl. Jend. Sudirman have been constructed with an intensity lower than those prescribed. The low requirement of floor space in the public facility has also resulted in an excess of development rights. Part of this unused right is balanced by some existing developments (the Wisma 46 and the Berlian building) that have above average FAR. For reasons of equity, the building intensity of the newly planned development is initially limited to the value stated in the RRTRW.

6.2.4.2 The Planned Area

The planned area is a piece of land with clearly defined boundaries, as indicated in the municipal plans. The planned area encompasses privately owned land including its part that is publicly accessible and the public land such as pedestrian paths, ditches, park and green areas. The planned area concept is used mainly for the deposit concept, where the excess of unused development right (FAR) from each land parcel is accumulated as a reserve in a deposit, which later can be transferred as necessary to other land parcels within the superblock. The transfer should be accompanied with financial compensation from the "buying" party to the "selling" party at the same rate as the regular increase of FAR or BCR.[75]

6.2.4.3 The Floor Area Ratio

The Floor Area Ratio (FAR) is the ratio between total floor area on each land parcel with the land area [_____, 1993: 12]. The FAR limits the maximum buildable floor area on each land parcel. In the concept of superblock, the building intensity value – that represents the average FAR for the entire planned area – is more important than the FAR. In other words, the floor area can be redistributed to each land parcel within the superblock as deemed necessary by the urban design. However, it should still satisfy the principles of land use planning: equity for all stakeholders, including the land owners, based on projected demand, making the best use of the land values, implement planning strategy, etc.

A deposit concept is proposed for the Silver Triangle superblock to enable transfer of the excess of unbuilt allowable floor area from one land parcel to other parcel within the planned area. A transfer of more than 10% of the allowable floor area of the land parcel needs the approval of the Governor, whereas a transfer of less than 10% can be decided together by the DTK and the TPAK. In the case of the Silver Triangle superblock, the 10% boundary generally means a transfer of FAR 0.5.

[75] Currently, it is often possible to request for a raise in FAR or BCR by paying some penalty to the local government. The penalty is calculated using a formula based on the NJOP (the land value as indicated in tax register). There is no regulation on direct transfer of development rights between private parties, let alone on the flow of financial compensation. See also section 5.1.3.1.

The average FAR of 5.0 in the Silver Triangle superblock has been redistributed to the sub-blocks as indicated in the map in Appendix B (Plan B-3). The Building Intensity Redistribution Plan is one of the two legally binding plans in the urban design guideline. The redistribution has been performed to reflect the actual demand of existing development and in the negotiation process.

6.2.4.4 The Building Coverage Ratio

The building coverage is a ratio between the allowable ground floor area of the building and its land parcel area [_____, 1993: 12]. The Building Coverage Ratio (BCR) indicates the maximum buildable ground floor area, expressed in the percentage of the land parcel area. The concept of deposit and redistribution of average BCR is also proposed, similar to that of the FAR. The average density of the entire superblock is still within the value prescribed in the master plan, because the existing superblock's perimeter (along Jl. Jend. Sudirman) has a relatively lower coverage of 40%.

The newly planned area in the Mansur-Low Block has a BCR of 60% and the Central Block of 75%. A higher BCR in these blocks enables the creation of a more continuous street wall, which has better urbanistic quality. Excessively high BCR is avoided, in order to allow natural rainwater seepage and more planting.

6.2.4.5 The Development Incentives

Some development incentives are proposed for improving the attractiveness of this superblock. It is hoped that all parties – the municipal government, the land developers, and the public user – will enjoy the benefit of this scheme. The incentives are focused particularly on the public usage of private space, with the purpose of improving the public interaction and the public realm.

The incentives are in the form of discounts in the calculation of FAR and BCR. The following items are exempted in the calculation of FAR on each Sub-block:

- Corridor or bridge between buildings with a minimum width of 4 meter that is used exclusively for pedestrian and open to the public.
- The building floor area that is beyond doubt used continuously for public at least 15 hours per day.
- The room or hall that functions as a place for social interaction of the public may have a ceiling height up to 10 meters and not calculated as two full floors.
- Floor area that is used for mechanical, electrical and water installations and for the street vendors — and hence does not have any commercial value for the building owner — may be exempted up to 15% of the total gross floor area.

The item that is exempted in the calculation of BCR is the floor area over 200 m² that is continuously open to public use for at least 15 hours each day, provided that it does not exceed 20% of the maximum ground floor area.

6.2.5 The Circulation Plan

Improved accessibility into and within the superblock is one of the prerequisites for an increase in land capacity in terms of total allowable floor area. In this superblock, the improved accessibility is intended more for increasing the desirability of the location, so that the development is more economically viable. The circulation concept is presented in Plan B-6 in Appendix B.

The objectives of the circulation plan are as follows:

- To maintain the linkage between the superblock and the city's circulation system.
- To improve the functional relationship between the various land uses in the superblock.
- To build the link and simultaneously the separation of the different modes of circulation for pedestrian, public transportation, private vehicle, and service or delivery vehicle.
- To integrate the circulation system and the car parking facility.

6.2.5.1 Vehicular Circulation

Improvement of vehicular accessibility to the back of the perimeter Sub-blocks, or to the center of the superblock, particularly for service/delivery car and emergency vehicles,will raise the land value of the hitherto inaccessible area. Through-traffic in this superblock is enabled by two main through-streets, which are connected to the network of local streets. The possibility to reach the Jl. Jend. Sudirman parcels from the back is very attractive to the users of those parcels, because currently they are suffering under the "three-in-one" traffic restriction policy that is applied on Jl. Jend. Sudirman street. This traffic policy only allows cars with three or more passengers to enter this street between 6.30 and 10.00 AM on workdays.

6.2.5.2 Pedestrian Circulation

A major pedestrian spine – in the form of interlinked green open spaces and pedestrian paths – acts as the backbone of the internal circulation system of the superblock. The system supports the movement of people that is safer from the vehicular traffic. It connects the public transit points and the central parking facility to the inner part of the superblock. Due to the large block size, it is encouraged to provide pedestrian passage through the ground floor of some buildings along Jl. Mas Mansur. The development incentive in section 6.2.4.5 explains some possible scheme.

The ground level use of the building that faces the pedestrian system should promote the pedestrian activity and give an interesting spatial experience and view. Design elements that are suggested for use in this area are showcase windows, building entrance, cafe, arcade and canopy over the paths[76]. All part of the pedestrian system should take into consideration the accessibility of wheel chair users.

[76] This is similar to Alexander's concept of pattern. See section 2.3.3.3.

6.2.5.3 Parking System

The parking system influences the quality of the urban environment in two ways: functionally it supports the commercial or other activities and the second is its negative visual impact. A selection of car park facility may be built in this superblock, in order of its preference: basement car park, multi-story car park structure, and on ground open parking. The basement car park provides possibility of interconnection. The multi-story car park is less expensive than the basement, but it has negative visual impact. The open parking on ground has merely adequate capacity to meet Jakarta's parking standard.

The parking basement of neighboring land parcels is encouraged to be connected, in order to reduce the traffic volume on public roads and to reach a higher level of efficiency from an integrated parking system. When the mass rapid transit is operational, the parking space requirement in the superblock can be lowered to force the improvement of the modal split.[77]

6.2.6 The Open Space and Landscape Plan

The goal of the Open Space and Landscape Plan is to improve the urban quality of life by providing a safe, healthy, ecologically sound and attractive environment through the creation of various open spaces and greenery as the place of interaction among all levels of society and to create the urban realm.

The availability of public open space, including wide pedestrian paths, provides the chance of meeting in public space and for the street hawkers. See Plan B-7 for the open space concept.

[77] See section 5.1.1.6 on modal split.

6.2.6.1. Public Open Space

The public open spaces, including the streets, give a clear internal structure of the superblock. The open spaces arrange and divide the land into smaller blocks and simultaneously connect and unite all these blocks. The square acts as a node for the pedestrian network and gives a spacious feeling in the middle of tall buildings. It also balances the low-density public facility in the North section of the Central Block. The linear open space in the form of wide sidewalks in the center of this superblock also contributes to the spaciousness of the central area and has the role as the place of public interaction.[78]

The public open space can be used as outdoor sports and recreation facilities with a very low building density. The open space has an important role in allowing the sunshine and fresh air circulation in this area. Furthermore, it has the role as "visual amenity" for all users of the superblock. The public open space must be planted with lush trees and grass and paving where appropriate (as a place for street vendors).

6.2.6.2. Private Open Space that is accessible to the Public

The major pedestrian spine in this superblock is planned on a combination of public and privately owned land (but open for public use). An example of this is the pedestrian paths, either open passage or in arcade, that are built over private property but open to the public. Retail arcade and pedestrian-scale landscaping will support the pedestrian flow. Other functions that are encouraged on this type of land are café, food court, and small park with sitting benches. The opening of private land for public access can increase the chance for public interaction, which in turn will improve the urban quality of this place.

[78] Typical of Indonesian or Asian, where public activity occurs along the streets instead of in the square. See also section 2.3.2.4.

6.2.6.3 Private Open Space

This type of open space has a restricted access, and generally is not open to the public. An example of such open space is the front and back yard of an apartment building. The structure of apartment towers on top of commercial/shopping podium has the intention to increase the portion of private open space that is accessible to the public.

In this superblock, there are two major private open spaces. Both open spaces are situated adjacent to the central square and the low-density public facility. Hence the two private open spaces can directly contribute to the spaciousness of the central block.

6.2.6.4 Landscaping Plan

Proper landscaping and the manipulation of the microclimate around the buildings play a critical role in the design of open space in a tropical city. These are utilized to subdue the unpleasant hot and humid climate, with wide-canopy deciduous trees along the canal and medium-canopy tree along the streets (see Plan B-7). The landscaping must support the visual integration between neighboring sub-blocks, using uniform species of trees. Water is used as an element in open space design that lends an attractive visual impression and coolness. The design of the open space must allow a healthy air circulation.

6.2.7 The Built Form

The goal of planning the built form is to determine the form, size and building mass that can create and define an urban (open) space that is accommodative for the activities that take place in the Silver Triangle superblock.

The objectives of this plan are:

- To delineate the building line, the form and distance of the setback lines.
- To set the bulk of the buildings.
- To suggest the size and proportion of the building masses.
- To set the maximum building height.
- To recommend the building envelope limits.
- To give recommendation on building layout in relation to visual orientation, ecological, and climate aspects.
- To strive for an architecturally integrated concept that fits the intended function and performance of the building.

The Built Form encompasses the formation and the arrangement/grouping of the building masses that contributes to the creation of an integrated urban environment. Furthermore the Built Form also pertains to the conception of open spaces as the outcome of the building composition. This is evident from the first six objectives above that attempt to reach a good urbanistic quality.

The built form is controlled through an imaginary volumetric boundary of the building, called the "building envelope", which arises principally from the combination of the building height regulation and the boundary of buildable floor area on the ground level (see Plan B-9). The boundary is determined using the value from the regulations described in section 6.1.2. This approach is taken to ensure a high flexibility in designing the building. Within this envelope, the architect can design the building, with reference to the recommended built form that is presented in the urban design guideline.

A more detailed building setback and streetwall design for each Sub-block is explained in the third section of the guideline. The building envelope may not be violated, as also the case with the mandatory rules for each land parcel that is presented in that section. The image of the building design in that section gives ideas to the architects, and serves as a basis for discussion or negotiation between the architect and the TPAK.[79]

The silver Triangle's built form aims to create a strong architectural identity and a clear image that contributes to the "sense of place". This is attained through a harmony between the architectural concept and the urban open space, and to align the architectural performance with its landuse. Details of the building's appearance, its material and color, the texture and the patterns of the facade support the sense of place as well. The use of a single palette of colors and materials on the façade of the buildings can reinforce the identity of this area as superblock, which stands out of the rest of the city.

Many of the existing buildings along Jl. Jend. Sudirman (Blocks 1, 2 and 3) have been erected with tower-over-small-podium form, for example the buildings in Sub-blocks 1.1, 2.5, 2.6, 3.1 and 3.3. All towers have the form of slab instead of point (square floor plan) with its wider face towards the main street. Such configuration is ideal for supporting the streetscape of Sudirman as the major urban corridor; hence it will be recommended on new development or redevelopment sites in Blocks 2 and 3 as well.

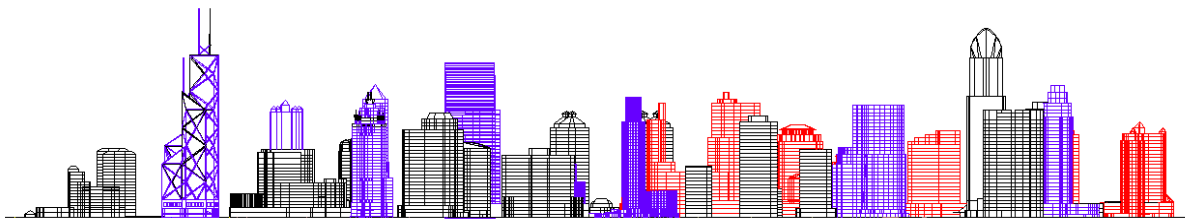

Figure 6-1 View from the East of the superblock.

[79] The TPAK is involved in the formulation process of the urban design guideline; hence it can understand the design intentions of the simulated built form. The TPAK can help ascertain that the urban design guideline is implemented as the urban designer has envisioned it.

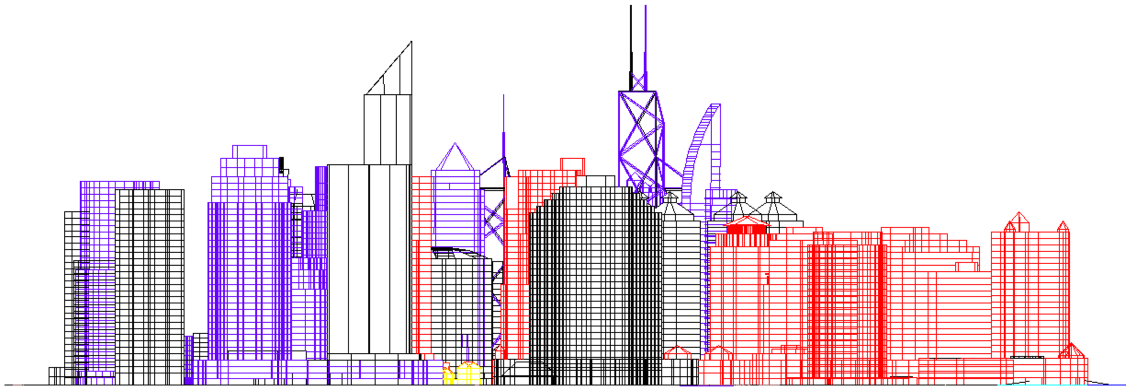

Figure 6-2 View from the North of the superblock.

Currently, there is a lack of street-wall enclosure along Jl. Mas Mansur. This will be formed by the podium structure of all buildings in the new Block 5 (the Low-Mansur Block). The from of the four story podium is also compatible to the three to five story shophouse development down this street. The medium-rise towers over this podium structure hint the rank of this street that is secondary to the Sudirman corridor that has high-rise buildings. The medium-rise towers act as a transition between the high-rise towers in Sudirman area and the low-rise development in Tanah Abang area. The tower over the podium structure can utilize the podium's flat roof as its private open space.

The central part of the superblock is planned as a unifying element for the entire development area.[80] This is achieved mainly through the network of pedestrian path and open space. The buildings in the North part of this block (Sub-blocks 6.3 and 6.4) are public facilities with a height up to three floors. The other buildings (Sub-blocks 6.1 and 6.2) match this scale with four-story podium structure. Apartment towers can be built over this podium.

The buildings at the back/West side of Block 2, which face this central block, should have a low podium structure as well. This form will ensure the pursued urbanistic quality as analyzed in section 5.2.2.5.

6.2.8 Signage and Streetscape

The goal of the signage and streetscape concept is to create an informative environment that allows the user of the superblock to orient and circulate in it.

6.2.8.1 The Integrated Information System

The integrated information system pertains to the image, the character and the form and exterior material of the building. The intrinsic characteristic of the building functions as a reference or focal point that gives clues to the people as they orient themselves in the environment. For example, the form of saddle or ridge terracotta roof for apartment buildings[81] and the absence of glass curtain-wall in hotel towers are intended to give such clue. Glass curtain-wall is only allowed in office buildings.

At a closer distance, the shape of the building's podium can direct the visitors toward the main entrance. For instance, the inner-corner of the podium has the character of "attracting" guests; therefore it is suitable for the location of the main entrance. Entry point to the service area for loading and unloading should be placed in visually undisturbing or secluded part of the building.

6.2.8.2 The Directional Information System

The Directional Information System explains the identity and location of commercial, retail, service and public facilities in the superblock. These include traffic directional signs, pedestrian signs etc. The signs must have consistent design, and may use written or preferably graphic symbols. All signs must conform to the directives from the municipal's architectural review board.

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[80] Note: this block has the function as support area, as implicated by its land-use for public facility and mixed-use.
[81] This is a pattern language for vernacular residential buildings in Indonesia.

To reinforce the image as a superblock, there should be a consistent or uniform design-style for all-directional information system and signage, except for signs that are standardized such as traffic sign. The design-style can be presented as examples in the design catalog in the annex of the urban design guidelines.

6.2.8.3 Signage

The dimensions and the quality of advertising signs, e.g. billboard or building signs, must be regulated in order to achieve a harmonic environment and to avoid / hinder the negative visual impact of the development. The building signs must support a positive sense of place, and may not disturb the residential areas. For practical use, the building signs on upper part of the tower shall face outward of the superblock. The building signs on the podium structure face to the site's entrance – when applicable, on both sides (towards the center and the periphery of the superblock).

Directional signs should be strategically located, and have clear and consistent design. A well-integrated concept of built form and signage system will improve the quality of the superblock environment in terms of legibility and orientation. In order to avoid cluttered design, some signs and street furniture can be combined in a single armature. Example of such design can be presented in the design catalog.

6.2.8.4 Street Furniture

The Street Furniture contributes to shaping the character of the superblock. It can also make the streetscape livelier. Included in this category of street furniture are statues, sitting benches, street lampposts, public telephone box, trashcan, kiosk, bus shelters and billboard. To reinforce the image as a superblock, there should be a consistent or uniform design-style for street furniture. The design-style can be presented as examples in the design catalog.

The pedestrian network gets the highest priority for all kinds of street furniture where appropriate. The street furniture here must be designed for heavy duty and vandal proof. Sitting benches in the park or bus shelters must be designed in a form that is uncomfortable for sleeping on.

6.2.8.5 Support Activities

An aspect that also promotes the attractiveness of the streetscape is the existence of support activities, which pertains to all informal functions that support the quality of the public open spaces. Included in the support activities are food stalls or other well-organized street hawkers. The informal sector economy should be realized as an integral part of the Indonesian urban life. If the informal sector vendors are arranged neatly, then the superblock will have a characteristic image of vibrant and attractive urban life.

The activity of street hawker can be conducted in pedestrian spine in the center of the superblock and the internal courtyard of the building blocks. The objective of the arranging of the street hawkers and other informal sector establishments is to foster the social integration and interaction. Some of the design considerations in arranging the hawkers are social organization, localization of the hawkers, sanitation and hygiene, public safety and the visual performance.

6.2.9 Public Facilities

The public facility within the Silver Triangle comprises of public open spaces/parks and major pedestrian paths with adequate street furniture including the bus shelters. A Mass Rapid Transit (subway) station will be included to this list in the near future.

Neighborhood facility such as a mosque, children play area, daycare units, an elementary school, and a Kelurahan office are built at the center of the superblock so that all user can reach them easily. The scale of this neighborhood facility balances the spaciousness of the square in the Southern part of the Central Block.

6.3 Guidelines for Each Block and Sub-block

The third section of the guideline is a technical detail of the urban design concept and its accompanying plans from section two. Here we can see the effect of the urban design concept and the plans on each land parcel or each building lot in the planned area. The Guideline for each Block and Sub-block is the most detailed level of the array of plans and regulations/ordinances that guide the shaping of the physical urban space.

This section begins with explaining the detailed urban design concept for each group of several land-parcels. This group of land-parcels is called a "Block". The urban design concept for the Block details the general concepts that have been presented in the previous section, and matched to the character of the Block.[82] The urban design concept is explained in terms of its pursued image and other urban design-related development policies of the Block, such as allowed land use, entrances and circulation system, allocation of building intensity, the design of the built form and the landscape.

The urban design concept of each Block is elaborated further in the design guideline for each Sub-block. A Sub-block can contain one or more land-parcels. In Sub-block with multiple land-parcels, the design guideline of the Sub-block is uniformly valid in all land-parcels.

The detailed explanation for each Sub-block is comprised of four parts, which are the principles, the mandatory regulation, the major recommendatory regulation and the recommendatory regulation. The principles contain the pursued main image and urban design characteristic for that particular Sub-block. These principles are used in formulating the recommendatory regulations and in the simulation drawing

[82] The character of the block pertains mostly to its location and other physical characteristics.

of the built form. Thus the contents of the principles have more explanatory role rather than a requirement. It also helps the TPAK in reviewing proposed design on each land-parcel.

The mandatory regulation contains the general land-use, the building intensity and the maximum building height. The values in this regulation come from the two legally binding prescripts in the Urban Design Guideline, i.e., the General Land Use Plan and the Building Intensity Redistribution Plan. Therefore, the local government requires this part of the urban design guideline. The building lines, which are shown in the drawing of mandatory regulation, are expected to be observed by the landowners too because the lines are drawn according to local bylaws (see section 6.1.2). An exception to this is the case where a Sub-block is comprised of more than one tower building over a podium structure or more than one land-parcel. The tower buildings over a podium are considered as built over the ground, i.e., the roof of the podium as the "ground" in determining the distance of the building setback between the towers. In multiple land-parcels within a Sub-block, all buildings shall not exceed the building envelope, but the distance between these buildings is free.

These mandatory and major recommendatory regulations are expressed in quantitative or measurable terms, thus enabling an easy control and monitoring of the building development process by the staff at the local government office (*Pemerintah Daerah*). The simulation drawing of the built form is only one design alternative out of many possible design solutions. The architect has the freedom to design the building within the prescribed envelope. The design is expected to follow the urban design intention that is stated in the principles of urban design guideline for that Sub-block. This is controlled during the review by the TPAK, which may include discussions between the architect and members of the review board. In evaluating the proposed design, the TPAK bases its judgement also on the functional-, visual- and environmental qualities of the designed building, which are stated in the recommendatory regulation.

In some superblocks, there is a fourth section in their urban design guidelines. This last section is devoted for the strategy of the development of the area. This section is particularly relevant when the development will be staged into several stages along the time. The text clarifies development issues such as which part of the entire area will be developed first, what kind of land use – permanent as well as temporary – will be designated there, which part of the infrastructure network will be laid out first, or other necessary endeavors such as the relocation of existing streets and waterways.

6.3.1 What is required, expected and possible in each Sub-Block

In the urban design guideline for each Sub-block, the requirement is stated in the major recommendatory regulation in terms of building intensity and land-use. The building lines, which are projected to build the building envelope, are also required by the authority.

The landowners are expected to observe the urban design intention that is stated in the principles, as well as parking standards and some clauses in the recommendatory regulations that define the built form. Despite the legally non-compulsory nature of these clauses, their implementation in the actual practice is controlled during the urban design review by the TPAK. The TPAK can assess the proposed design using the whole urban design guideline as a reference, on the ground that the urban design guideline has been formulated together by all concerned parties.[83] In doing so, it attempts to maintain the integration of all urban design concepts. The language in the urban design guideline, particularly in the third part (the Sub-block level), indicates the level of compulsory whether it is required, expected or possible.

In the recommendatory regulation, many suggestive notions and qualitative design aspects, details such as signage, building color and material, lighting, accommodating the social activities in sidewalk or courtyard etc. may be discussed

[83] Note: the negotiation process occurs mainly during the stage when the urban design guideline is being formulated, and less intensive in the architectural or urban design review for permit process.

by the architect with the authority to find a common agreed alternative of their implementation. The interpretation of such regulation is still open for negotiation.

The required, expected and possible contents of the regulation for the three Sub-blocks that are selected as example is presented in the following table.

Sub-block	**Required**	**Expected**	**Possible**
1.1	• General land-use for commercial service and office. • FAR* = 2.98 • BCR* = 40% • Height* = 32 floors • Built within building lines and set back.	• Parking = DKI standard. • Podium with arcade. ** • Arcade is open to public; courtyard is semi-public. ** • The location of main and secondary vehicle access. • Wide sidewalk. • Wide-canopied trees are planted on the land parcel. • Provision of park bench and other street furniture.	• Location of signboard. • Building material + color. • Setting of outdoor lighting. • Provision for community activities on the sidewalk and courtyard.
5.2	• General Land-use for commercial retail, office and residential. • FAR = 5.00 • BCR = 60% • Height = 24 floors • Built within building lines and set back.	• Ground floor for pedestr. supporting activities. • Parking = DKI standard. • Podium to be built close to the building line. *** • The pedestrian arcade is open for public 15 hrs/day. • Semi-public courtyard and semi-private inner-courtyard. • The location of main and secondary vehicle access. • Retail function in podium and office or residential in the tower structure. • Wide sidewalks. • Trees should be planted on the inner court. • Provision of park bench and other street furniture.	• Composition of land-uses. • Location of signboard. • Porte-cochere. • Building material + color. • Setting of outdoor lighting. • Provision for community activities on the sidewalk and courtyard. • Pedestrian passage through the building.

* The existing value of the constructed building.
** This is not yet existed, but expected if the building is renovated.
*** Built-to-line regulation is the opposite of the setback lines. This regulation requires the building to be constructed on this line, instead of prohibiting the building to cross the line as the setback. Built-to-line regulation can be specified further with the minimum façade area to be built there, e.g. 70%.

6.2	• General Land-use: mixed use of commercial and residential • FAR = 5.50 • BCR = 75% • Height = 32 floors • Built within building lines and set back.	• Ground floor for pedestr. supporting activities. • Parking above the required in DKI standard. • Podium to be built close to the building line on the East and West sides. [***] • Podium with a gallery along its centerline. • Gallery for pujasera and open to public access. • The location of main and secondary vehicle access. • Wide sidewalks for main pedestrian spine. • Trees should be planted along pedestrian spine. • Provision of park bench and other street furniture.	• Composition of land-uses. • Location of signboard. • Building material + color. • Setting of outdoor lighting. • Provision for community activities on the pedestrian spine and the gallery.

Table 6-2 Levels of requirement in the three Sub-block examples.

6.3.2 Explanation on specific urban design decisions

In **Block 5** (the Mansur Low Block), the building is expected to define well the urban open space, particularly the Mas Mansur corridor and the central part of the superblock. This is attained by using an inner-courtyard (*Hof*) type of urban morphology element. A three to four story podium structure with inner court is ideal for this purpose, for following reasons:

- It gives a humane scale of urban space. The three to four story podium allows the ideal depth to height proportion of the resulting *outdoors* open space.
- Commercial retail function, which is conducive for pedestrian activity, is most effective in these levels.
- The podium structure with inner-court can utilize the most of the limited BCR and can still define the public open space (street) very well.

Built-to-line regulation was codified in New York's special zoning district [Barnett, 1987: 116], but such regulation in Indonesia is not as yet codified.

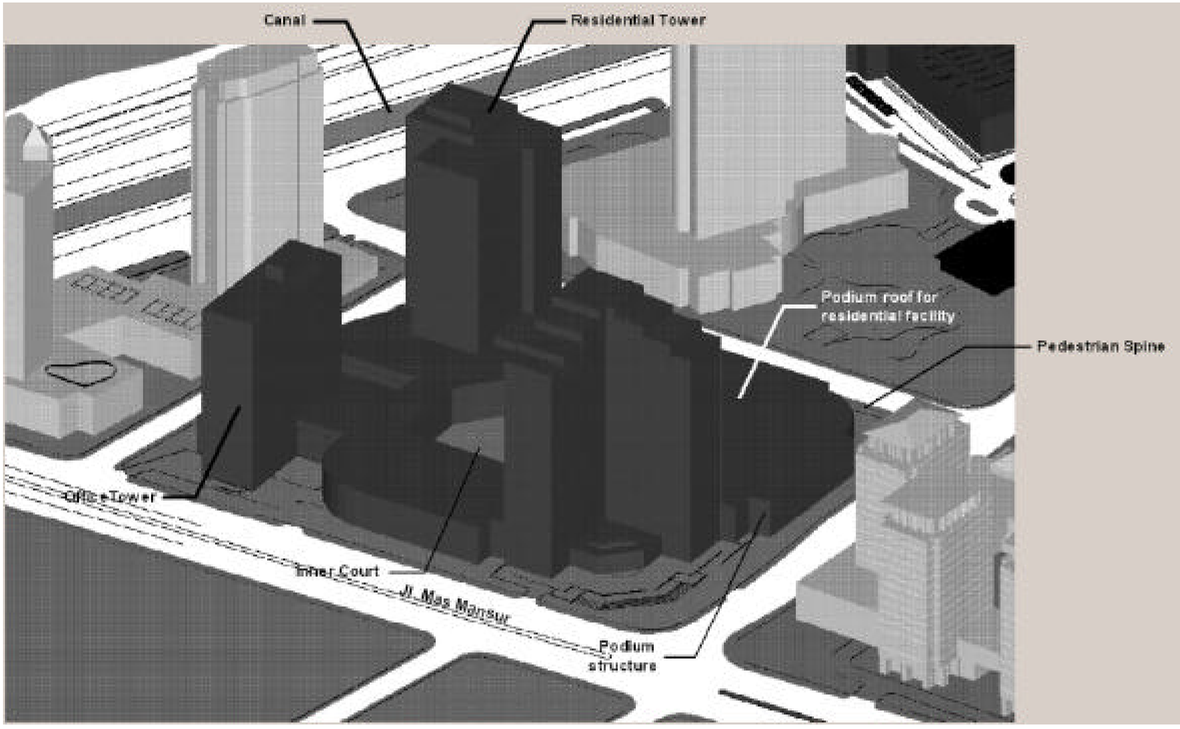

Figure 6-3 Urban design concept for buildings in Block 5.

- The rest of the FAR is still feasible to be used in the tower portion, which is necessary for orientation of the users in the street and for creating the corporate image of the firms in the building.
- Seen from the ground, the tower is not too imposing/disturbing thanks to the "break" created by the podium structure.
- The residential towers can use the roof of the podium structure as their private open space. The location of the residential tower is preferably on the Eastern side of the Sub-block, where traffic noise is lower and the land-use in the RRTRW indicates residential use.

In **Block 6** (the Central Block), the podium structure of Sub-blocks 6.1 and 6.2 is intended to define the walls of the major pedestrian spines that lay on the West and East sides of these Sub-blocks. A high Building Coverage Ratio will enable the podium structure to be constructed along the pedestrian spine. The three to four-story podium structure creates a humane scale urban environment with an ideal ratio of street width to its height of 1.5 to 1.

These Sub-blocks have the role as a central service provider for the surrounding blocks. A central parking facility will be located here in the form of large parking basement (that also includes the area under the pedestrian spine) and some multi-story parking structure. A direct link between this facility and the mass rapid transit line is planned for the future. Another service facility that will be accommodated here is the *pujasera* for the street hawkers. This will be housed in a wide gallery that will be built along the centerline of these Sub-blocks. The gallery connects the public facility in Sub-block 6.3 to the square at the Southern tip of the Central Block. The gallery shall be open for public access at all times. Activities in the public spaces can contribute to the liveliness of the pedestrian atmosphere, which in the end creates the urban realm.

As a compensation for the provision of public facilities, these Sub-blocks 6.1 and 6.2 are awarded with an extra FAR, which comes from the discount of FAR and BCR calculation in public areas as development incentive (see section 6.2.4.5) and some transfer of FAR from the public-owned land in Sub-block 6.3 and 6.4. Sub-blocks 6.3 and 6.4 have an excess FAR, as they are planned only for a low-rise school, a mosque and a Kelurahan office. In the actual practice, the transfer of FAR as an incentive of development shall be calculated carefully. The formula, which is based on the NJOP (the land value as indicated in tax register), for calculating the penalty that should have been paid to the local government for the raise of FAR can be used in the negotiation process between the landowner and the local government.

With the extra allowable floor area, it is possible in Sub-block 6.1 and 6.2 to build office and apartment towers up to 32 floors high. At this height, the tower buildings will serve as a transition between the taller (40 floors or more) towers along Jl. Jend. Sudirman and the medium rise towers (up to 24 floors) in the Mansur-Low Block.

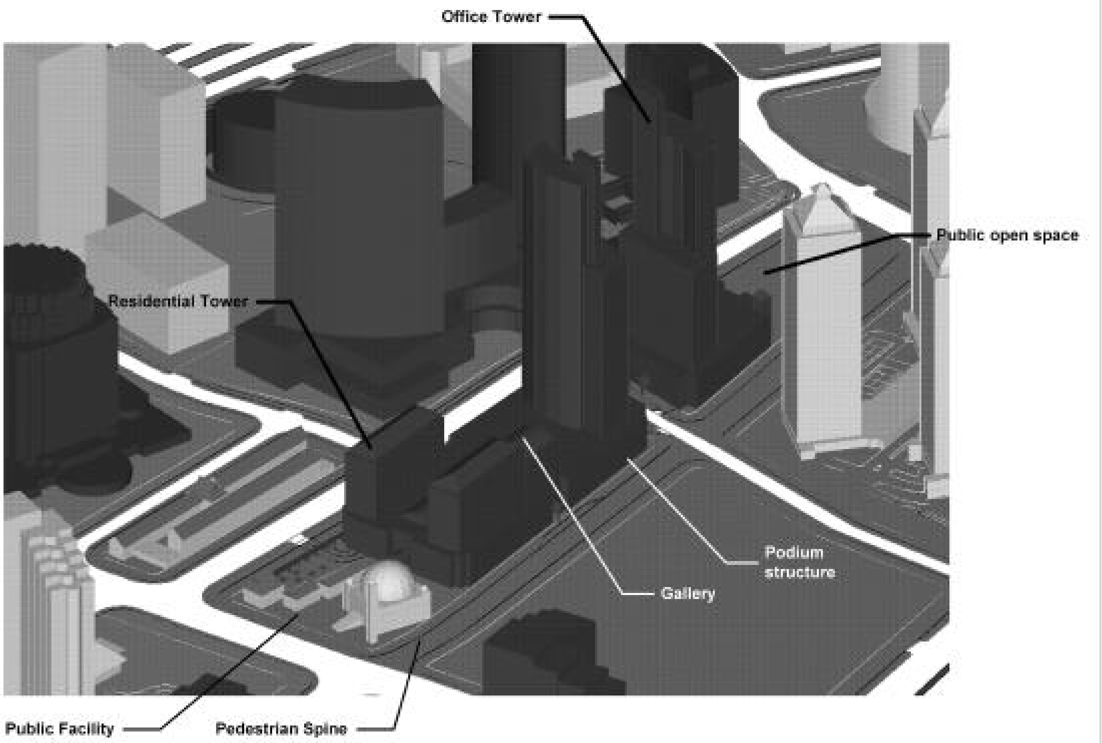

Figure 6-4 Urban design concept for buildings in Sub-blocks 6.1 and 6.2.

7. CONCLUSION

The first part of this study (chapters two to four) has presented major urban design theories, methods of controlling the design of urban space and the available computer techniques for supporting this task. The application of this conceptual framework has been demonstrated in the case study of a superblock development. Herewith is the conclusion of this study.

7.1 Applying Urban Design Theories

Urban design in Indonesia is defined as the accumulation of a long process of giving physical design direction in the city. This process is an integral part of the city and regional planning that primarily pertains to the three-dimensional design aspect of city planning and also to the non-visual socio-cultural aspects. The three-dimensional design strives essentially to fulfill the urbanistic criteria, where buildings define the urban open space. Contextual design concerns the relationship of new development to existing surrounding structures.

The function of contemporary urban design in Indonesia is to satisfy the needs of the population in terms of psychological needs for safety and stimulation, emotional needs for identity and interaction among residents, perceptual need for orientation and physical need for comfort. In public open spaces in the city, these functions must also come to terms with the reality of the street peddler problem.

Simulating the attempt to fulfill these needs, a compilation of urban design theories has been implemented in the case study. In the case study area, the urban design theory is used for maintaining the homogeneity of the district, simultaneously complemented with contrast from landmark structures and nodes of open spaces. Sequence planning or serial vision precedes the design/arrangement of the open space, the pedestrian paths and the streetscape that is formed by the buildings along its sides.

The bulk of urban design activities takes place after the urban planning process for that part of the city is completed. The outcome of this planning process – in terms of general land use pattern, floor space area distribution, traffic capacity, etc. – is used as the decision environment or constraints in urban design.

The public realm emanates from public activity in public open space. Hence the quality of open space receives much attention from urban designers. To create positive open space with adequate degrees of enclosure, the values in Tables 2-3 to 2-6 have been used in determining the dimension of the space, including the street section. This only determines the proportion of streetscape and squares, but their size/dimension come from the traffic planning and standards of open space area per person.

The promotion of mixed-use development and the pedestrianization of city centers are some of the measures to enhance their vitality and the public realm. In the Indonesian context, the public realm is the dualistic urban life of formal and informal sectors that take place in the public open spaces. Urban designers in Jakarta have to think beyond the aesthetic proportion and composition of buildings and open space, but must also address the issues of equal opportunity of use of the urban space and the security and safety of all its users.

The application of these theories in the case study area has been able to produce a homogeneous area of medium- to high-rise buildings with open space and low-intensity development in the middle as contrast elements. At the pedestrian level, this is translated in the form of homogeneous street wall with human scale. Some tall towers slightly behind the street wall serve as markers or contrast.

Pattern language can be used in specifying building details that can give some clues to improve the legibility of the built environment. Examples of this are the use of saddle/ridge roof with terracotta shingles in residential buildings and the location of building entrance in the inner-corner of the podium that has the character of "attracting" guests.

Findings from studies on human perception have been used in determining the proportions of the street (urban corridor) cross section and the public square. This is coupled with the effort to create a human-scale pedestrian areas, where four-story podium structures of the buildings define the open space, without imposing on pedestrians.

To maintain the freedom of artistic expression, the urban design guideline should be less architecturally prescriptive and avoid much detail. Instead, it should focus more on the urbanistic quality of shaping the public open spaces. Many of the selected theories can be used for designing fine (well enclosed, attractive, pleasing) urban open space and built form. The urban design theoreticians even provide us with concrete examples of design solutions, detail and design rules. These are helpful suggestions that can be readily used in designing the urbanscape in the central part of Jakarta or other major Indonesian cities. However, the physically built urban environment is only a container for the activities that take place in it. The urban realm can arise only if the built environment is designed to fit the activities. This needs the support of managerial measures, such as organizing *pujasera* or founding cooperatives of street peddlers so that they can be regulated and localized into an appropriately designed pedestrian network.

7.2 Using the Urban Design Guideline

The social, emotional and perceptual intentions of the design need to be stated clearly in the urban design guideline, so that the users (developers and their investors and the public officials who review the development proposal) can understand the rationale of the regulation of the physical buildings. This is accomplished with a clear relationship between design objectives, design principles and design guidelines. In the urban design guideline document, they are expressed in the form of urban design scenarios in section I, the objectives and the explanation of each plan in section II and the regulations in section III of the guideline.

The wholeness of the city's structure can be secured by linking urban design objectives of each level to the higher level and to the lower level in the city–district–block–parcel hierarchy. In the case study, this is demonstrated among others in the hierarchy of Jl. Satrio - Jl. Mas Mansur as a secondary urban corridor in Jakarta, the character of development on the Western side of the Silver Triangle superblock (as a special district), the urban design character of the Mansur-Low Block and finally the design principle of the Sub-block 5.2 example. The above implies that urban design consideration can enter at a higher level than the current project-by-project basis. A citywide urban design policy, or at least in city center and some key areas/*kawasan khusus*, would be very beneficial in directing the urban design guidelines for each district.[84]

Lessons from other countries have shown that the design control instrument of urban built environment has two categories. The first is the measurable mandatory control in terms of land use and building intensity that is enforced in the zoning plan and building plan (*Bebauungsplan*).[85] The second is the non-measurable design guideline that may include aesthetic or other performance.

The various character of urban design control instrument is influenced by the difference of development pressure, administrative and legal framework in each country (see section 3.4). In Jakarta and other major Indonesian cities, the form of the urban design guideline accommodates the interests of the developer and some effort to make the planned urban environment serve the general public as well.

The urban design guideline in Jakarta is legally binding, which is different from the British system where design guide has only a support role for explaining the development policy. The urban design guideline is part of the planning documents that are used for controlling the construction of built environment. It is subordinate to all spatial plans and building ordinance in Jakarta, but re-interpreting the content of those plans and regulations so that they apply as an "average" over the entire planned area. By so doing, it is possible to prescribe vertical layers of mixed use

[84] Indonesian urban design expert, Prof. M. Danisworo, believes that the Urban Design Guideline is necessary for all part of the city.
[85] Note: apart from the plot ratio, the Bebauungsplan prescribes also the building lines and building type as well as some other details such as the direction of roof ridge.

development and a more specific forming of the building through a combination of "building envelope" definition and explanatory text and design simulation.

Similar to the practice in USA, design review in Jakarta is required only for important or large development proposals. The clarity of design goal, objective and regulations within the urban design guideline will make the review easier. Examples of how to meet the guidelines in the form of illustrative simulations and design catalog can help further. However, officials of the Jakarta local government prefer to have a more flexible urban design guideline so that they have greater discretionary power during the building permit application process.[86]

With compelling arguments, design review can encourage the builders to follow the entire design intention in the urban design guideline, despite the recommendatory nature of part of the regulation. In order to reduce the subjectivity of assessing the proposed design, which may fall into the variable whims of likes and dislikes, a clear standard of assessment is necessary here.[87] Currently, the TPAK assesses the design proposal in terms of its functional quality, visual quality, and environmental quality that serve the general public ("for public good").

The specification of building color, material and the like is potential for creating an image of "unity" in the entire planned area. However, the specification of such details should be used sparingly and be based on a thorough analysis of the existing urban environment, as it may limit the freedom of art expression of the architect.

The negotiation between the local government and the site developers occurs mostly during the process of formulating the urban design guideline. The urban designer that is directly hired by the developer of the planned area has a relatively weak position *vis-à-vis* his client. It is sometimes difficult for the urban designer to decline his client's wish for a profit-oriented design (e.g. by maximizing rentable space that can be built on that land). It would be better if the urban designer is

[86] Indonesian urban planning expert, D. Zulkaidy, personal communication.
[87] Similar to the standard of "average educated person" that is used in assessing the aesthetic quality of buildings in some German states [see Mohr, 1993: 33].

hired by the local authority, so that he can act more as mediator in the negotiation and as an advocate of the good urban realm.[88] The fund for this can be paid indirectly by the developer through the local authority.

Urban design guideline is suitable for directing the physical form of the urban environment at neighborhood level (see Table 3-1) in areas where the urbanistic quality of the public open spaces and the surrounding built form need to be carefully defined. The guideline is particularly effective in large-scale inner-city commercial redevelopment (including superblock development), historic district and mixed development in city center. This is because of its capability to relate new development to existing context that needs to be preserved or to the urban fabric. The center of new towns can also enjoy the benefit from the UDGL if it is used to guide the creation of the public space through the formation of the built form there. Its capability of rearranging land uses and the transfer of building intensity make the urban design guideline more appropriate for controlling the design of special districts like the superblock development in Jakarta.

Urban design guidelines need not to be prepared for the entire city area. Just like the American urban design guideline, it needs to be instated in certain critical areas only, because not all areas need the special design integration like that specified in the UDGL. The complex elaboration of the UDGL requires more resources for its preparation and more intensive design review process than the conventional method.

Using urban design guideline, we can create a hitherto unattainable urban environment in Jakarta, which has continuous street wall, well-defined streetscape that is pedestrian-friendly, various building heights and form for homogeneous and contrast, vertically mixed use and so forth. The use of urban design guidelines in special district opens the possibility to prescribe special requirements such as a gallery though a building that is open to public for certain hours daily, construction of pedestrian bridges between buildings or interconnection of parking basements in the urban design guidelines when necessary (including its exact location). Such

[88] See also Poerbo, 1999: 46-52 on the role of design consultant.

requirements are difficult to ask for using the conventional urban plans and regulations in Jakarta or other major Indonesian cities.

The urban design guideline is not intended for handling urban development problems, such as squatter settlement or traffic jam. Other planning instruments are required in solving such problems. These instruments, e.g. land management, social policy (including the self-empowerment of the kampung residents) and transportation policy, are usually engaged prior to the conception of the urban design guidelines.

7.3 Computer support for the Urban Design Guideline

In the preparation process of the Indonesian urban design guidelines, the role of computers is merely as an ersatz to manual methods, instead of an extensive development and application of new urban design method that may include the area of knowledge-based systems. The substitution of manual methods with computer software brings some advantages, such as the computer's capability to transfer the data between various programs and between the phases of urban design process. This significantly reduces working time and possible mistakes that could happen in manual method.

If the urban design process involves planning decision, decision support system such as STRAD that is essentially a process/workflow management program would have been very useful in the process.

Two areas – spreadsheet calculation and design visualization – dominate the support of computer in the current Indonesian urban design practice. Spreadsheet program is used in table calculation of land and floor area. Computer visualization for the expression of the contents of the guideline is done, although only during the process of preparing the urban design report. In this case, the computer graphic was used as a replacement of paper drawings.

7.4 Future Research

This study has investigated the application of urban design guideline for a superblock in Jakarta. The application of the guideline in other Indonesian cities need to be investigated further, as not all cities have the same administrative structure and local ordinance as in Jakarta. For instance, only the city of Semarang also has TPAK in its local administration structure. The conceptual framework of this study can be used as the base of the further study.

In experiment, and also in actual practice, computer technology can support the task of urban planners and designers. The introduction of this technology for Indonesia should be investigated further, for instance, computer support for collaborative urban design process. The utilization of the interactive computer graphic and decision support system in the collaborative design process between the urban designer, the urban planner, the local authority and the developer can reduce the risk of misunderstanding among them, so that the outcome will be more satisfying.

Multimedia via the Internet has not been employed fully to convey the guidelines to the public and/or the stakeholders in the process of formulating the guidelines. There is no complete Indonesian urban design guideline available on the web, let alone in the form of interactive multimedia that would enable user feedback or design collaboration.[89] This should be investigated together with the possibility of public participation through Internet. Interactive web page has the potential for use in the public participation process: for presenting alternative ideas, and also for the feedback from the public who want to convey their preference. After the Urban Design Guideline is completed, the multimedia presentation via Internet can be utilized to disseminate the guidelines so that all architects and stakeholders will know of its existence and can access it at any time.

[89] Note: there are already some drawings and images of the Indonesian urban design guideline that are available on the network (http://psud.ar.itb.ac.id). But they are only part of the homepage of the institution that produced the guideline.

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A. BACKGROUND INFORMATION ON JAKARTA

Jakarta (formerly Batavia) is the largest city and capital of Indonesia, a Southeast Asian nation consisting of over 13,000 islands with a population of over 200 million. Only 6,000 of these islands are inhabited. The islands spread between the Indian and Pacific oceans, linking the continent of Asia and Australia. The main islands are Sumatra (473,606 sq.km), Kalimantan (539,460 sq.km), Sulawesi (189,216 sq.km), Papua (421,981 sq.km), and Java (132,187 sq.km). Indonesia shares the islands of Kalimantan with Malaysian, and Papua with Papua New Guinea. The name Indonesia is composed of two Greek words: "Indos" which means Indian and "nesos" which means islands [Encyclopedia Britannica].

Figure A-1 Map of Indonesia

Coextensive with the metropolitan district of Jakarta Raya, Jakarta has an area of 661 square kilometers and lies at the mouth of the Ciliwung River on the Northwest coast of Java. Due to Jakarta's location on a low, flat alluvial plain, with extensive swampy areas; it is easily flooded during the rainy seasons. The parts of the city farther inland are slightly higher. The draining of swamps for building purposes and the continuous decrease of upland forest vegetation has increased the danger of floods. With an excess of water in the soil, Jakarta still has a shortage of clean drinking water, for which there is an increasing demand. The area is quite fertile for fruit and other horticulture, as most of the soil is of old volcanic origin.

Jakarta has long been a major trade and financial center; it has also become an important industrial city. The city is the center of the nation's industrial, political and cultural life. It is home to many of the country's finest research institutes, educational facilities, and cultural organizations. Jakarta is uniquely the seat of both the national as well as the regional government. In 1966 the city was declared to be a special metropolitan district (*Daerah Khusus Ibukota*), thus gaining a status approximately equivalent to that of a state or a province. Strategically positioned in the archipelago, the city is also the principal gateway to the rest of Indonesia. From the capital city, sophisticated land, air, and sea transport is available to the rest of the country and beyond.

Since the early 1970s the urban sprawl of Jakarta has grown into the adjacent province of West Java. For development and planning purposes, this large urban area is known as Jabotabek, an acronym for Jakarta and its West Java satellite towns of Bogor, Tangerang, and Bekasi.

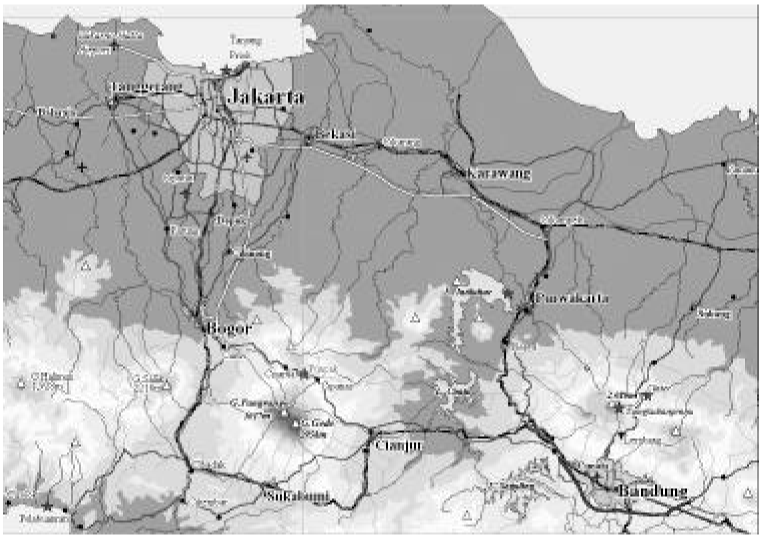


Figure A-2 Map of Jabotabek

A.1 Climate

Jakarta is a tropical, humid city, with temperatures ranging between the extremes of 24° and 34°C and a relative humidity between 75 and 85 percent. The average mean temperatures are 26°C in January and 28°C in October. The annual rainfall is more than 1,700 millimeters. Temperatures are often modified by sea winds. Jakarta, like any other large city, now also has its share of air and noise pollution.

A.2 The population

The population of Jakarta has increased more than 100 percent since 1940. Much of this increase is attributed to immigration. Although government regulations close the city to unemployed new settlers, better economic conditions inevitably attract new people. In addition, much of the population is young and fertile, resulting in a very high natural increase potential.

The projected population of Jakarta in 1997 based on 1995 census is 9,373,900, comprised of 4,673,800 male and 4,700,100 female. This corresponds to a density of 14,117 person per sq.km. The growth rate of the population between 1980 and 1990 was 2.42. The Male Life Expectancy at Birth 1986 was 64.3 years and Female Life Expectancy at Birth 68.2 years [Biro Pusat Statisitik, 2000].

A.3 The economy

Economically, Jakarta plays several roles. It can be identified first as the national capital and a central place of control for the national economy, then as an administrative center in its own right, and, finally, as a significant industrial hub. In addition, its location as a port makes it an important center for trade. The Gross

Regional Domestic Product in Jakarta at current market prices is Rp.91,885,344 million (1997 figure), and the general inflation rate in 1999 was 1.77%.

The national economy is centered in Jakarta. During the peak of the Indonesian economic growth in 1996, DKI Jakarta was one of the provinces that enjoyed the most. At that time the average economic growth was 8.23 percent nationally, but in Jakarta it was 8.32 percent. According to the former Governor of DKI Jakarta, Soerjadi Sudirdja, the income of Jakartan at that time was much higher than the national average of 917 US dollar. "The per capita income of my constituents at that time was approximately 3,600 US dollar," he said. It is not surprising that not less than 70 percent of the money circulating in Indonesia is in Jakarta [Kompas daily, 11.12.98].

A.4 Industry

Jakarta has some manufacturing industries, including several iron foundries and repair shops, margarine and soap factories, breweries, and printing works. Machinery, cigarettes, paper, glassware, wire cable, and aluminum and asbestos, and more recently also automotive, products are manufactured. There are also tanneries, sawmills, textile mills, food-processing plants, and a film industry. Other notable manufacturing products include footwear, apparel, chemicals, plastics, and metal products. Tourism is also a growing industry.

A.5 Commerce and trade

The Indonesian Chamber of Commerce is active in promoting trade with other countries; the annual Jakarta Fair (usually held from July to August) also serves to promote trade. To meet the needs of the local city population, the municipality operates several markets. The central city markets (Pasar Kota), like the markets of Pasar Senen to the east of the central city and Pasar Glodok in the Kota area, are major retail centers. The Pasar Jatinegara is primarily a food supply center. The district markets are fairly large, with each one catering to a whole section of the city. There are also small neighborhood markets, each serving only a limited area. Special markets include one selling fish, one selling used and new automobile parts, the Pasar Rumput flea market, and the Jalan Surabaya souvenir and antique market. Jakarta also has several general neighborhood markets.

One of the gravest and most immediate problems faced by the Jakarta's authority is the street hawker. Since early 1980s the government of Jakarta has been fostering the street hawkers by providing authorized location for them. During the fiscal year of 1984/1985 there were 15,729 hawkers that were relocated into 458 formally allocated areas. During the fiscal year of 1989/1990 and 1990/1991, the figure has increased to 16.270 hawkers. In the following years, the number of street hawkers in Jakarta has increased, but the number of fostered hawkers was declining continuously. In fiscal year 1991/1992, the figure was still 14,804 hawkers, and by fiscal year 1999/2000 it has dropped to 11,996 person. The number of formally authorized location for street hawkers has also dropped to 302. The problem is that the unit that is decreed to conduct this program lies outside of the structure of Jakarta's local authority, so that it is difficult for them to coordinate their activities with other office or authority. Moreover, it is more difficult to find new locations for the street hawkers. "Actually, we expect the participation of land owners at the places suitable for the street hawkers. They can receive additional earnings from the daily rent of Rp. 800 - Rp. 1,500 per person." [Kompas daily, 21.6.99; Pikiran Rakyat daily, 22.9.99]

The Jakarta Bylaw (Perda) Number 8/1992 stipulates that commercial building owner shall set aside 20% of the rentable retail floor for street hawkers. If this is not possible, they can pay some compensation fee. The compensation fee from 1993 until 2000 has amounted to Rp. 15 billion. Around Rp. 9 billion has been spent on creating seven locations for the informal sector street hawkers. This is not enough, and more street hawkers are still selling their goods out there [Kompas daily, 12.1.00 and 2.2.00].

A.6 Transportation

Major road arteries lead West from the center of the Kota old city and East and South from the administrative center in Gambir. To the East, a major railroad connects the city with the entire island of Java. There is also a highway, primarily a regional supply road, running between Jakarta and the agriculturally productive areas of East and Central Java. To the South, a road and railroad connect Jakarta with Bogor, Sukabumi, and Bandung. To the West, a railroad and road run to Banten and to the harbor in Merak, which is connected by ferry to Lampung in Sumatra.

Traffic jams occur particularly during the morning and afternoon rush hours. Public transportation in the city is by bus or minibus. The bajaj, or tricycle taxi, is used mainly for short distance transportation, and regular taxis now operate throughout the metropolitan area.

A.7 Urban settlement

The overall level of urbanization in Indonesia is low in relation to other countries that are at a comparable stage of economic growth. This can be explained in part by the phenomenon of nonpermanent, or "circular," migration on Java and elsewhere: individuals from rural families live and work in the cities, but they return to their homes at least once every six months. Although there is some regional variation in urban growth rates, generally cities of every population size are growing rapidly. The cost of living in the city continues to rise. Land is expensive, and rents are high, so that industrial development and the construction of new housing usually are undertaken on the outskirts, while commerce and banking remain concentrated in the city center.

Few of Indonesia's cities, except for Jakarta, Surabaya, and Medan, have the heterogeneity of a true urban center. Instead, they are the economic, governmental, cultural, and social centers for highly populated and distinct regions. The growth of the cities has not been accompanied by a parallel growth of industry, and the outlook of much of the urban population is still rural. Large parts of the population, even in Jakarta, live in replicas of rural villages, or kampungs, characterized by rural customs. Urban dwellers generally are better off than their rural counterparts, and urban services have gradually improved; but the availability of decent housing, potable water, and public transportation services have remained critical concerns.

A transient foreign element of diplomats and company representatives plays a minor role in city structure. The permanent foreign element – mainly of Chinese, Indian, and Arab business families – is more fully integrated, but each group maintains its own contacts and patterns of life. The Indonesians gradually are developing an urban culture. This notion, perhaps more appropriately viewed as urban sophistication, is most conspicuous in Jakarta, with its strong international contacts. Since association with this international culture implies a degree of wealth, it is largely confined to the families of officials, professionals, and prominent businessmen. The lower-income groups, on the other hand, retain their basic ethnic cultures, strengthened by trips to home villages during times of harvest or during the Muslim month of Ramadhan.

Although Indonesia's social structure is decentralized, its administrative structure is highly centralized, with Jakarta as the headquarters of the central government. Most taxes, including land and real estate taxes, are collected by the central government, on which city and provincial governments must depend for their revenue. Efforts have been made, however, to decentralize some government functions, particularly with respect to finance and to the management and delivery of various services.

A.8 Administrative system and public facility

A.8.1 Government

The mayor of the city has the same status as the governor of a province. The city government is composed of two branches, the executive and the electorate. The executive consists of a governor assisted by four vice governors, an executive staff, and a regional secretary; there are also a number of city directorates, bureaus, and agencies attached to the executive. The electorate consists of 35 to 40 members. It is headed by a council of five members: one chairman, and four vice-chairmen.

The structure of the government is adopted from the Dutch colonial system, which was then integrated with Sukarno's (the first president) concept for "nation building". This background has resulted in the current administrative system in Jakarta that is very centralized [Rutz, 1985 in Bowo, 1999: 92]. This government system has a clear hierarchical subdivision and has a "top-down" character. With this background, it is unsurprising that the decentralization of governmental organization is merely to serve the purpose of the political guides from the central government in dealing with the development of the local area [Bowo, 1999: 92]. The structure of Jakarta's local government is presented in the following diagram. The Silver Triangle area is located in the Kecamatan Tanah Abang and Kelurahan Karet Tengsin. Thus within the governmental hierarchy it is at the second lowest level in the diagram.

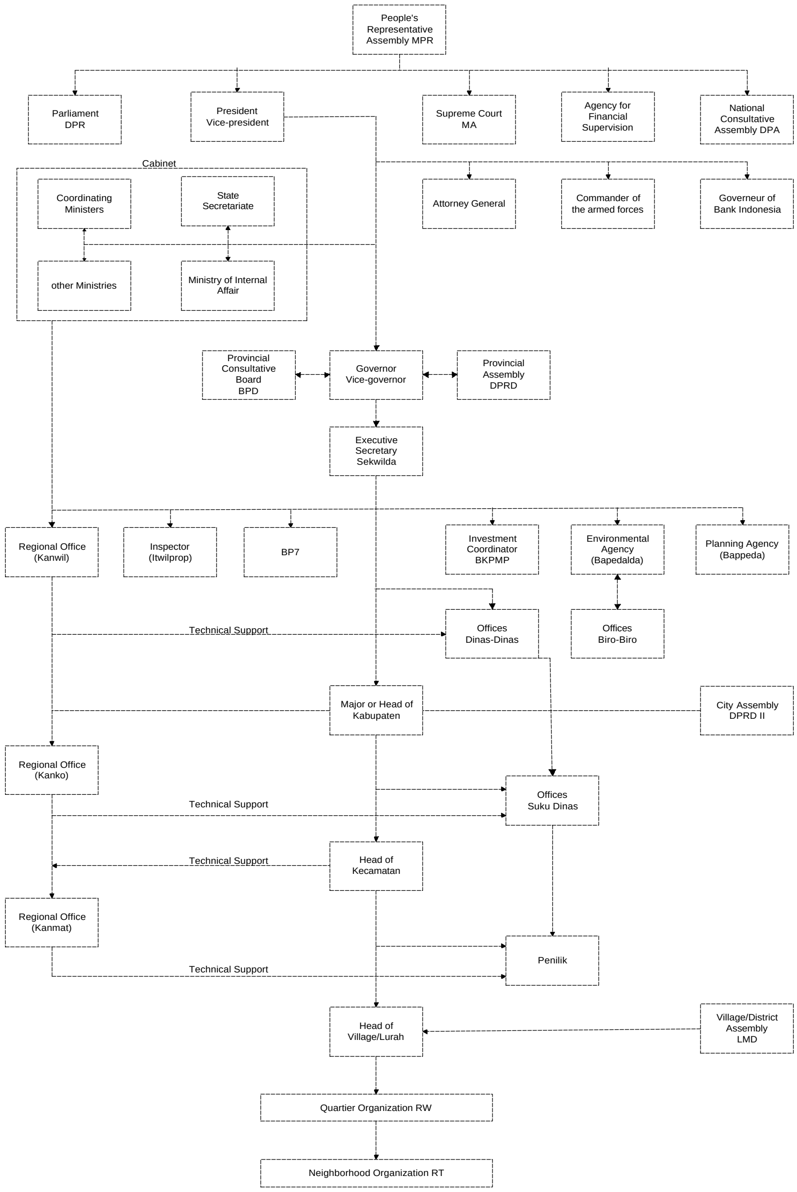


Figure A-3 Diagram of the governmental structure of DKI Jakarta. From Bowo p. 93.

A.8.2 Public utilities

Public utilities are usually operated or owned by the Indonesian government. The State Electricity Company and the Subsidiary State Gas Company both supply Jakarta. Postal and cable services and telephone services are supplied by quasi state companies working under the aegis of the Department of Communications. Jakarta's electricity comes from several sources; these include the thermal plant in Ancol, close to the port of Tanjungpriok, smaller diesel plants in various parts of the city, and the Jatiluhur hydroelectricity project located close to Purwakarta, about 110 kilometers southeast of Jakarta.

The city government is responsible for the water supply. The city water is obtained in part from freshwater springs in the Bogor area, but most of the supply comes from the Pejompongan water treatment plant. Water is required mainly for domestic purposes but is also needed for industry and to supply ships. The removal of garbage and the provision of other sanitation services are also the responsibility of the municipality.

Most houses have electricity for lighting. However, water supply and sewage disposals are still inadequate. Not all of the residential area in Jakarta is covered by the water supply and sewage network. In slum areas, the water pipes only reach certain places. At those places, the residents have to buy the water from the public water tap, which cost approximately Rp. 2,000 per day [Kompas daily, 21.6.99]. The austerity of Jakarta's public utility problem can be described with a result from a survey in this city [Mc Granahan/Songsore in Bowo, 1999: 9]:

- Lacking water supply 13%
- Lacking water supply within the house 33%
- Sharing toilet with more than 10 households 20%
- Lacking trash removal 37%
- Rats or mouse within living area 82%

A.8.3 Health

There are three major hospitals – one operated directly by the Department of Health, one by the Roman Catholic Church, and one by a Protestant mission. Three municipal hospitals each serve a separate area of the city – the Sumber Waras Hospital in western Jakarta, the Fatmawati Hospital in Kebayoran (southern Jakarta), and the Persahabatan (Friendship) Hospital in eastern Jakarta. Altogether Jakarta has about 40 general or special hospitals. In addition, there are several hundred general clinics or polyclinics located throughout the city. A quarantine hospital is in operation in Tanjungpriok. The city also operates a hospital and rehabilitation centers for the mentally ill and destitute, and there are many family planning and childcare clinics.

A.8.4 Education and Cultural life

To meet the needs for primary education, many new elementary schools and secondary schools have been built, and a number of old school buildings have been renovated. There is a well-developed system of kindergartens, elementary schools, madrasahs (religious schools), secondary schools, and high schools. There are also many vocational and special schools and more than 100 universities, academies, and institutes for higher learning. The largest and best-known university is the University of Indonesia (founded 1950).

Among other cultural activities, the Taman Ismail Marzuki center has facilities for traditional or classical art performances as well as theatres for presenting modern plays and concerts; the center also has a planetarium. Traditional performances representing the culture of other parts of Indonesia are included in the programs presented at the annual Jakarta Fair. Important museums include the Jakarta History Museum, the Museum of Fine Arts, and the National Museum.

Extensive public recreation areas in and around Jakarta include the Bina Ria seaside recreation area at Ancol and the Ragunan zoo, near Pasarminggu. Playgrounds include, among others, the Taman Ria complex. The 100-hectare Taman Mini Indonesia Indah (Beautiful Indonesia in Miniature) park, just southeast of the city, contains exhibits of traditional houses representing each of Indonesia's 27 provinces. The city also provides public recreation facilities, but it has severe shortage of playground at neighborhood level. Only luxury housing subdivision can afford such playground. In urban kampungs, the children play in alleys or vacant lots.

A.9 Life in public space

Many of the public space users are still lacking discipline or acceptable manner in the usage of the common space. For instance, the local government had to erect fences in the median of some major street just to force the pedestrian to cross over pedestrian bridge and keep them from crossing on ground level. In 1970s the cinemas in Indonesia still had rail fence in front of the ticket booth to force people to queue in line. Similar railings had been put up in Singapore for taxi queue. Up until now, some bus shelters and terminal in Jakarta are still equipped with such railings to "force" the passenger to queue and board the bus at the designated location.

The strategy to put the railing fence has work quite well, as proved by the number of pedestrian who crosses the street properly and uses the public space in generally acceptable manner. Nonetheless, some of them still cannot behave properly in the public space. One of the possible reason for the difference in the usage of public space is the lack of education, but not school education in the formal sense. What is needed instead is to teach the general public about the "acceptable" manners in the public space. Educating the public is one of the endeavor that must be pursued by Indonesian urban designers, so that such fences are not necessary anymore to enforce the common norm in urban open space. The urban design should also facilitates and fosters the common usage of the public open spaces by the various groups of the society.

A.10 Kampung

A.10.1 Kampung dwellers

The sense of community (*Gemeinschaft*) or the kampung lifestyle is still perceivable in the existing kampung at the Silver Triangle. A mosque, a primary school and a Kelurahan office act as the center of the community life. Intra-city migrants from other kampungs develop new social relations in this place. Urban reality consists not only of the physical structure, but also the sum of the socio-economic activities and relations of the city's inhabitants. Their social relations and networks are crucial for carrying out their informal business and for survival in urban economic life [Somantri, 1995: 173]. Social ties are important for the kampung dweller. Their social fabric should be kept intact, if they want to survive in the harsh Jakarta urban environment.

A social hierarchy exists that is roughly composed of an elite group of government officials, military officers, and business leaders with a Western orientation; a growing middle class of civil servants, teachers, and other professionals and skilled workers who are significantly underpaid and must struggle to maintain their economic position; and a larger number of poorly educated unskilled laborers, traders, and other members of the informal economy who strongly identify with their villages and frequently move back and forth to engage in economic pursuits in both areas. This three-tiered hierarchy also conforms closely to an economic structure that is based on various government opportunities and on formal and informal business activities.

A.10.2 Clearing of kampung

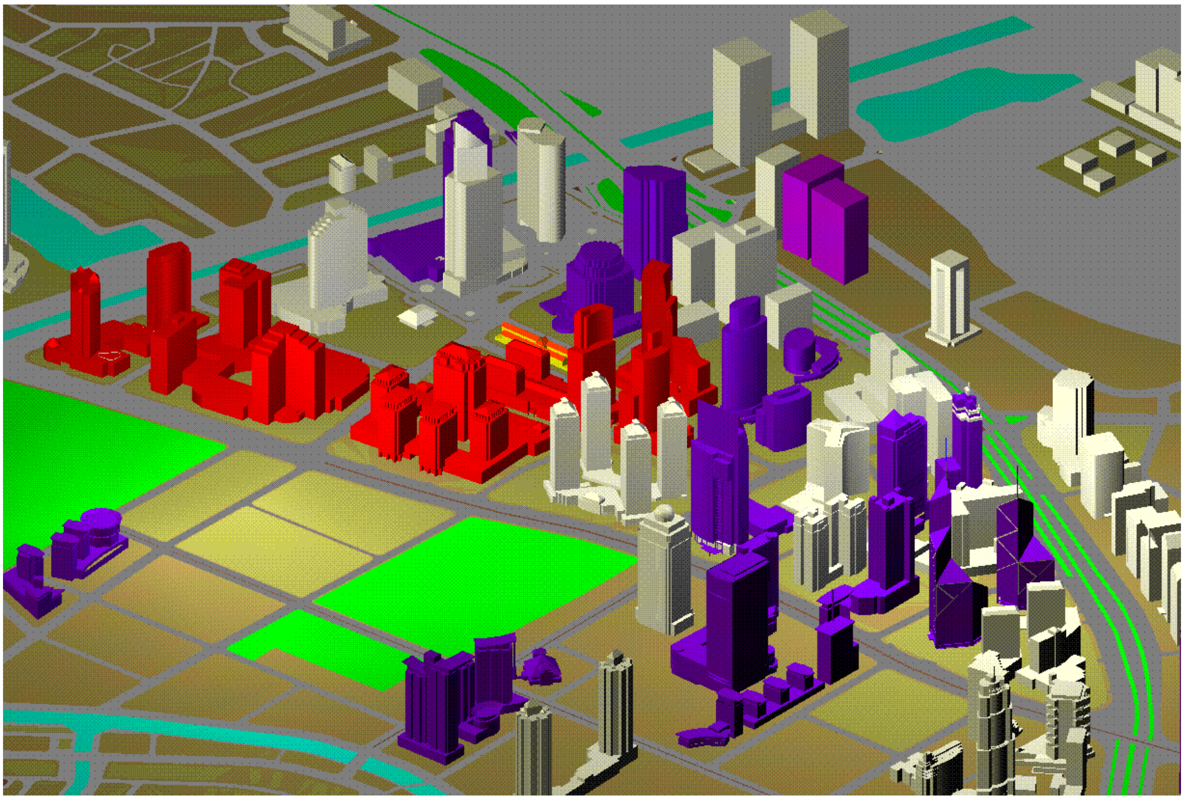
Some superblock developments are built on existing kampungs land. For example in the Sudirman CBD, PT Danayasa Arthatama has cleared 40 Ha in 1990 to build the new superblock. The former landowners were compensated between Rp. 150 thousand and Rp. 4 million per square meter (approximately DM 40 to DM 1,081 in 2000 exchange rate) depends on the ownership and the location of the land [Somantri, 1995: 137]. An owner with a certificate may get 100% of this value, those with HGB (the right to use the building) receive 70%, and those with *Hak Guna Lahan* (the right to use the land) get 25%. But squatters only receive *uang pesangon* or certain amount of money to finance the move to somewhere else [Somantri, 1995: 175]. Sometimes land developers use harsh method of forced eviction. Such developers paid the local administration (RW or Lurah) to intimidate the dwellers to sell their land, usually at a low rate. When the entire land had not been acquired, they ordered thugs to threat the remaining dwellers. In a certain Superblock development, the electrical power line to the houses was also disrupted. It is time to put such cruel practice to an end. With the spirit of the democratic urban life today, the marginal group will be better honored and they will get just compensation for their land.

The arrogant parties who practiced the forced land eviction are usually dominated by the cooperation, sometimes in collusive manner, between financially strong investors and public officials who posses great political power, including high ranked member of the military [see also Procos, 1976: 126; Brown, 2000: 34]. Taking advantage of the combination between strong financial and political power, they have succeeded in clearing large tracts of land in Jakarta, and even deviated the land use and intensity plan. The movement for reformation in the society that intends to abolish the corruption, collusion and nepotism in Indonesia is hoped to quell such practice.

B. Urban Design Guidelines for the Silver Triangle Superblock

This appendix complements the explanation in Chapter 6 on the Urban Design Guideline for the case study area. The contents of section 6.1 would make up most of the first section of the Urban Design Guideline. Section II of the Urban Design Guideline has been explained in section 6.2 of this dissertation. The explanations would have been complemented with the corresponding plans (Plan B-1 to Plan B-10 in the following pages) or other pertinent plans in the real Guideline.

Within the Urban Design Guideline – particularly in conjunction with the explanation on urban design concept and on the built form – three dimensional images of the designed environment can be inserted. These images depict a possible urban environment that can emerge in accordance to the urban design vision, plans and regulations in this urban design guideline.



The table and plans in the following pages complement the guiding text in section 6.2 of this dissertation. The table summarizes the building intensity regulation, which makes up the mandatory regulation in section III of the Urban Design Guideline for each Sub-block. The table on transfer of TDR calculation usually is not included in the real guideline.

Table of Development Intensity Distribution

Block Number and Name	Sub-block Number	Land Area (m2)	Mandatory Control			Maximum Floor Area (m2)		General Land Use
			BC (%)	FAR	Bld.Height	Ground	Total	
1. Riverside	1.1	17.991	40,00	2,98	32	7.196	53.613	Commercial service and office
	1.2	28.702	40,00	7,29	46	11.481	209.238	Commercial service and office
	1.3	34.226	40,00	2,26	32	13.690	77.351	Commercial hotel
2. Sudirman	2.1	33.335	40,00	5,00	32	13.334	166.675	Commercial service and office
	2.2	19.261	34,00	5,00	28	6.549	96.305	Commercial service and office
	2.3	18.725	40,00	5,00	32	7.490	93.625	Commercial retail and office
	2.4	24.108	40,00	5,00	45	9.643	120.540	Commercial retail and office
	2.5	17.150	45,00	5,00	20	7.718	85.750	Commercial service and office
	2.6	9.000	50,00	5,00	28	4.500	45.000	Commercial service and office
	2.7	3.645	40,00	5,74	40	1.458	20.922	Commercial service and office
3. Corner	3.1	17.632	40,00	3,50	32	7.053	61.712	Commercial hotel
	3.2	21.021	40,00	6,00	40	8.408	126.126	Commercial service and office
	3.3	50.735	40,00	6,00	45	20.294	304.410	Commercial hotel
4. Mansur-High	4.1	6.501	40,00	5,00	46	2.600	32.505	Commercial service and office
	4.2	23.990	30,39	3,19	24	7.291	76.528	Residential
	4.3	14.472	31,50	3,10	36	4.559	44.863	Residential
5. Mansur Low	5.1	32.696	60,00	5,00	24	19.618	163.480	Mixed: commercial and residential
	5.2	40.905	60,00	5,00	24	24.543	204.525	Mixed: commercial and residential
	5.3	10.190	60,00	5,00	24	6.114	50.950	Mixed: commercial and residential
	5.4	6.149	60,00	5,00	24	3.689	30.745	Residential
6. Central	6.0	4.513	0,00	0,00	0	0	0	Park
	6.1	5.595	70,00	6,00	32	3.917	33.570	Mixed: commercial and residential
	6.2	14.398	70,00	5,50	32	10.079	79.189	Mixed: commercial and residential
	6.3	4.634	50,00	1,80	4	2.317	8.341	Public facility
	6.4	5.887	50,00	1,80	4	2.944	10.597	School
Total:		**465.461**				**206.483**	**2.196.560**	
Average:			**44,36%**	**4,72**				

Calculation of TDR in Block 6

Average value of development intensity as stated in RRTRW

Sub-block Number	Land Area (m2)	Mandatory Control		Maximum Floor Area (m2)	
		BC (%)	FAR	Ground	Total
6.0	4.513	0,00	0,00	0	0
6.1	5.595	60,00	5,00	3.357	27.975
6.2	14.398	60,00	5,00	8.639	71.990
6.3	4.634	60,00	5,00	2.780	23.170
6.4	5.887	60,00	5,00	3.532	29.435
Total	**35.027**			**18.308**	**152.570**
Average		**52,27%**	**4,36**		

Required building intensity for public facilities

6.3	4.634	50,00	1,80	2.317	8.341
6.4	5.887	50,00	1,80	2.944	10.597

Excess of development rights of public facilities (in sq.meter)

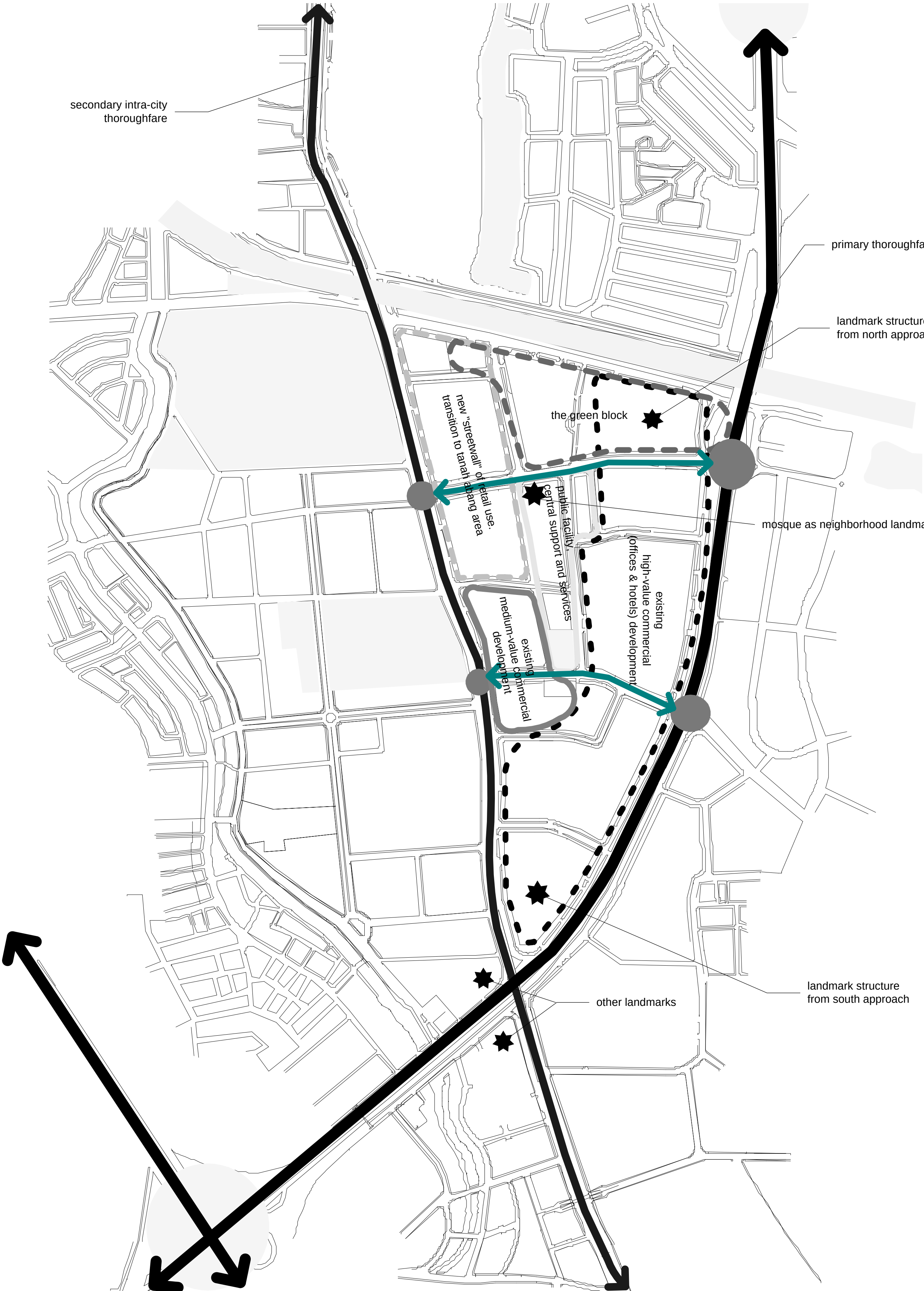
6.3		463	14.829
6.4		589	18.838

Proposed building intensity for Block 6 Central

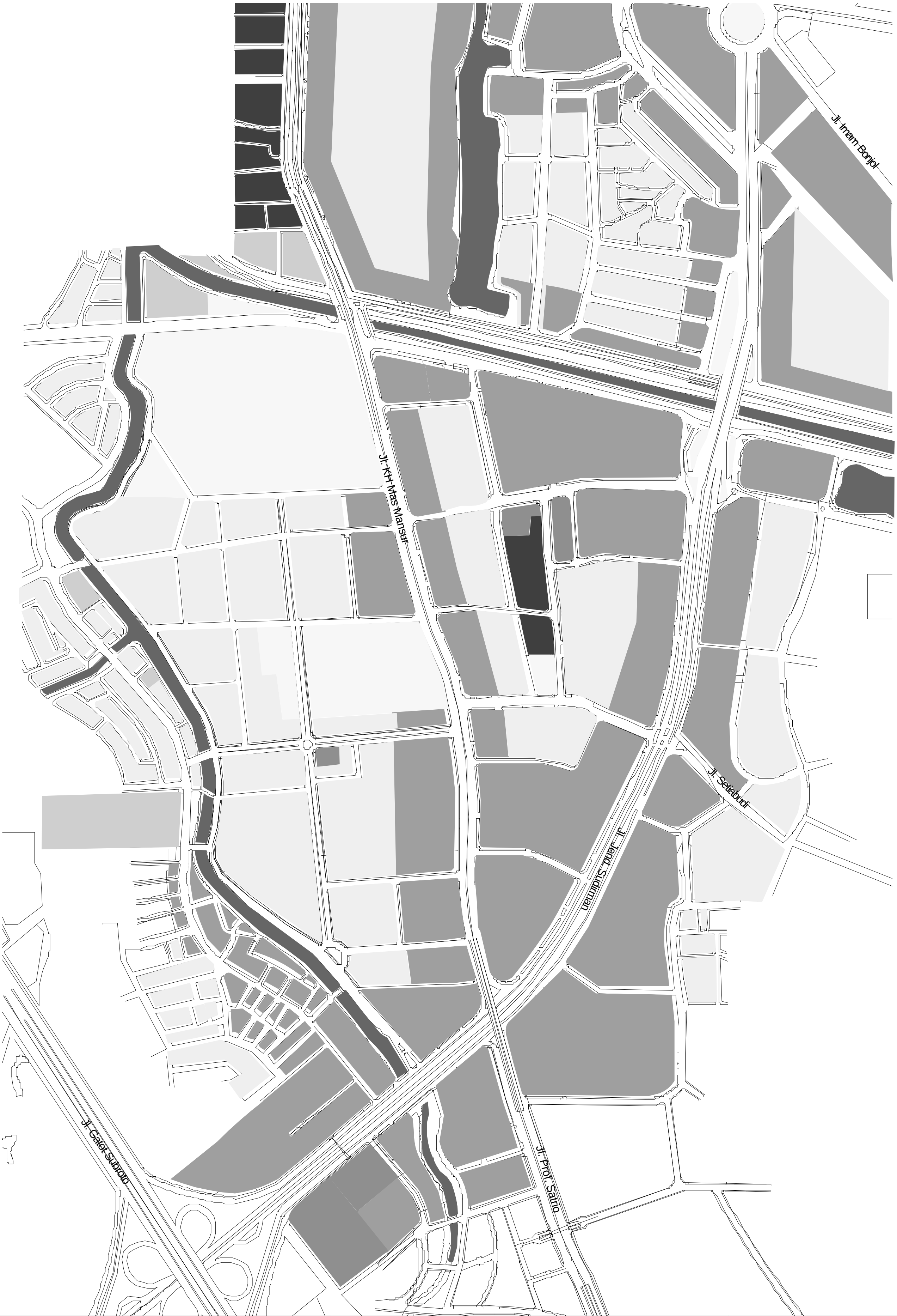
Sub-block Number	Land Area (m2)	Mandatory Control		Maximum Floor Area (m2)	
		BC (%)	FAR	Ground	Total
6.0	4.513	0,00	0,00	0	0
6.1	5.595	70,00	6,00	3.917	33.570
6.2	14.398	70,00	5,50	10.079	79.189
6.3	4.634	50,00	1,80	2.317	8.341
6.4	5.887	50,00	1,80	2.944	10.597
Total	**35.027**			**19.256**	**131.697**
Average		**54,97%**	**3,76**		

Increase of development rights for Sub-blocks 6.1 and 6.2 (in sq.meter)

6.1		560	5.595
6.2		1.440	7.199



Drawing Title: **Urban Design Concept**		
Source: Analysis of the study area (in Chapter 5)	Landmarks / Entrance to the planned area / Major open spaces / Main access	N / 0 300 m.
Purpose: Presents the overview of urban design concepts		Plan B-1 / page 261



Drawing Title:

General Land Use Plan

Source:

RBWK 2005 Kecamatan Tanah Abang

Purpose:
Shows the planned land use in the superblock and its surrounding area

commercial

mixed: commercial and residential

government

public facility

residential

open space

body of water

N

0 300 m.

Plan B-2

Drawing Title:

Ground Floor Use Plan

Source:

Urban design concept for the study area (in Chapter 6)

Purpose:

Shows the possible main land use at ground level

- Residential and hotel common facilities
- Public facility
- Open space
- Commercial Retail
- Commercial: office support
- Mixed use: pedestrian support

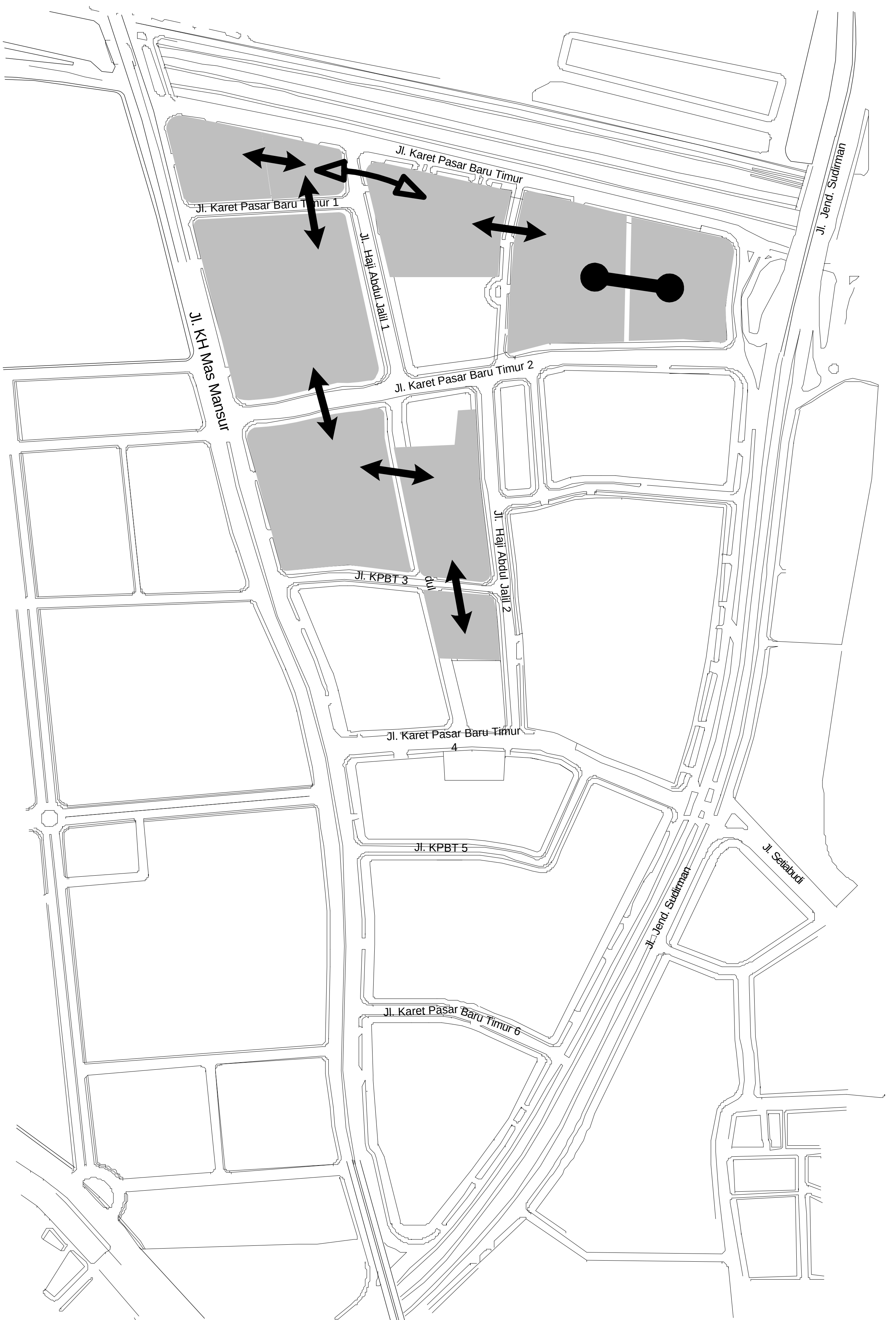
N

0 150 m.

Plan B-3

page

263



Drawing Title:

Basement Plan

Source:

Urban design concept for the study area (in Chapter 6)

Purpose:

Shows the possibility of interconnecting the parking basement between neighboring land parcels.

Parking basement

Proposed link

Linkage under construction

Existing link

N

0 150 m.

Plan B-4

Drawing Title:

Building Intensity

Source:

Redistribution of the average intensity as indicated in the RRTRW 2005 Kecamatan Tanah Abang

Purpose:

Shows the maximum allowable building intensity on each sub-block.

Sub-block Boundary

building type

building height (floors)

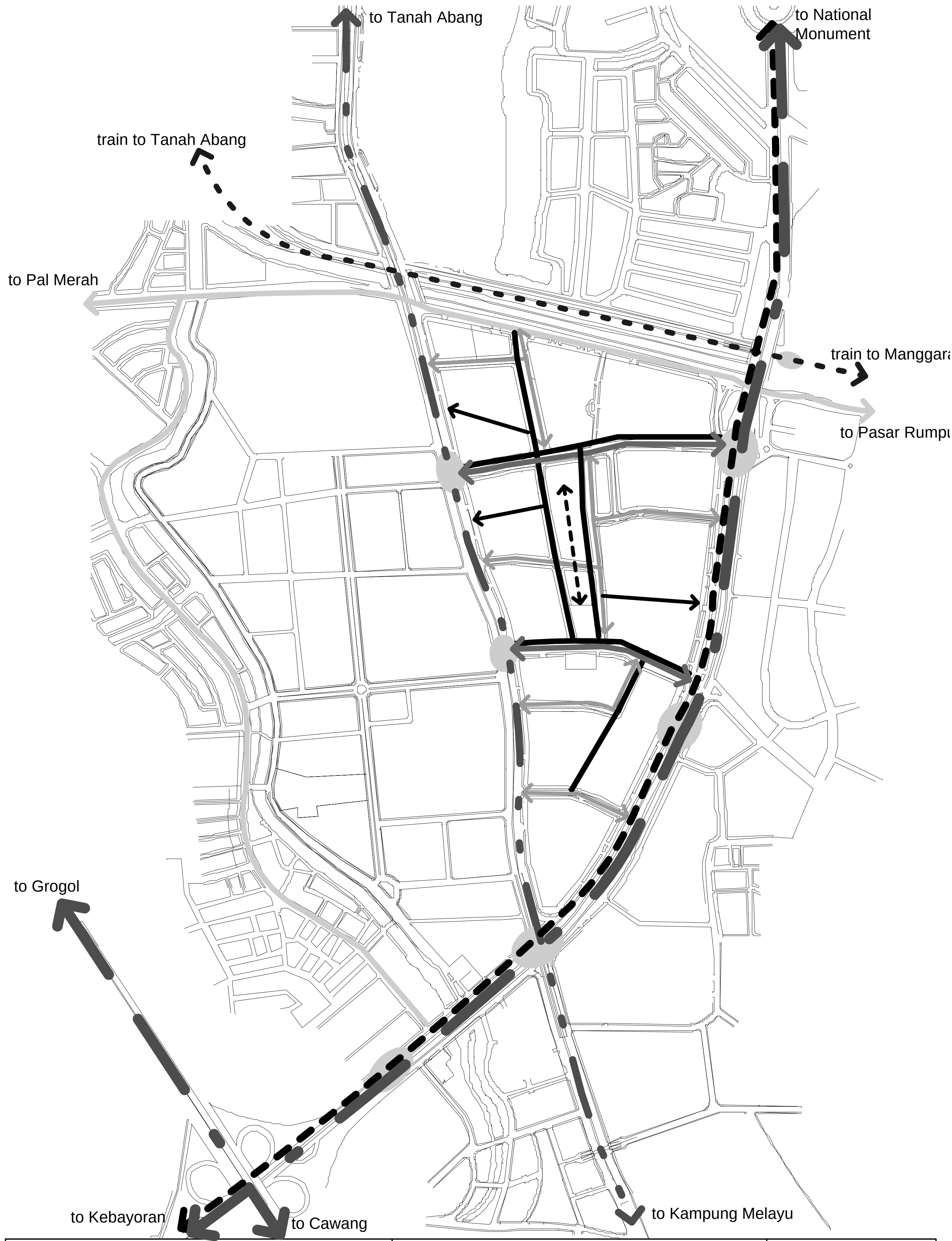
Building Coverage (%)

Floor Area Ratio

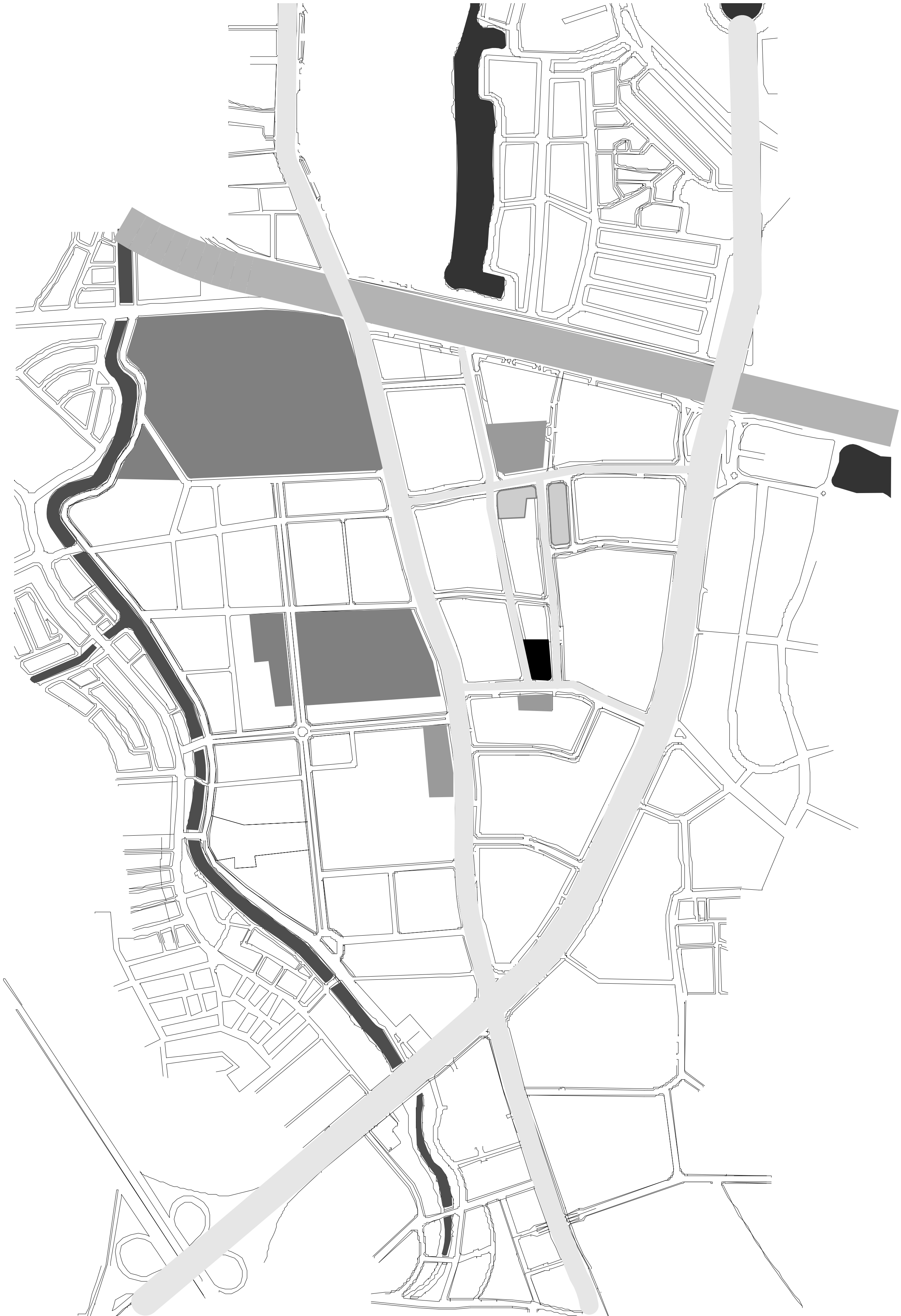
N

0 150 m.

Plan B-5



Drawing Title: **Traffic & Circulation Concept**	main thoroughfare; minor inner road; arterial street; pedestrian paths; regional train track; other road; mass rapid transit; major inner road; main transit point	N; 0 300 m.
Source: Urban design concept for the study area (in Chapter 6)		
Purpose: Illustrates the main pedestrian and vehicular circulation concept in and around the planned area.		Plan B-6 page 266



Drawing Title:

Open Space Concept

Source:

Urban design concept for the study area (in Chapter 6)

Purpose:

Shows the structure of major open spaces

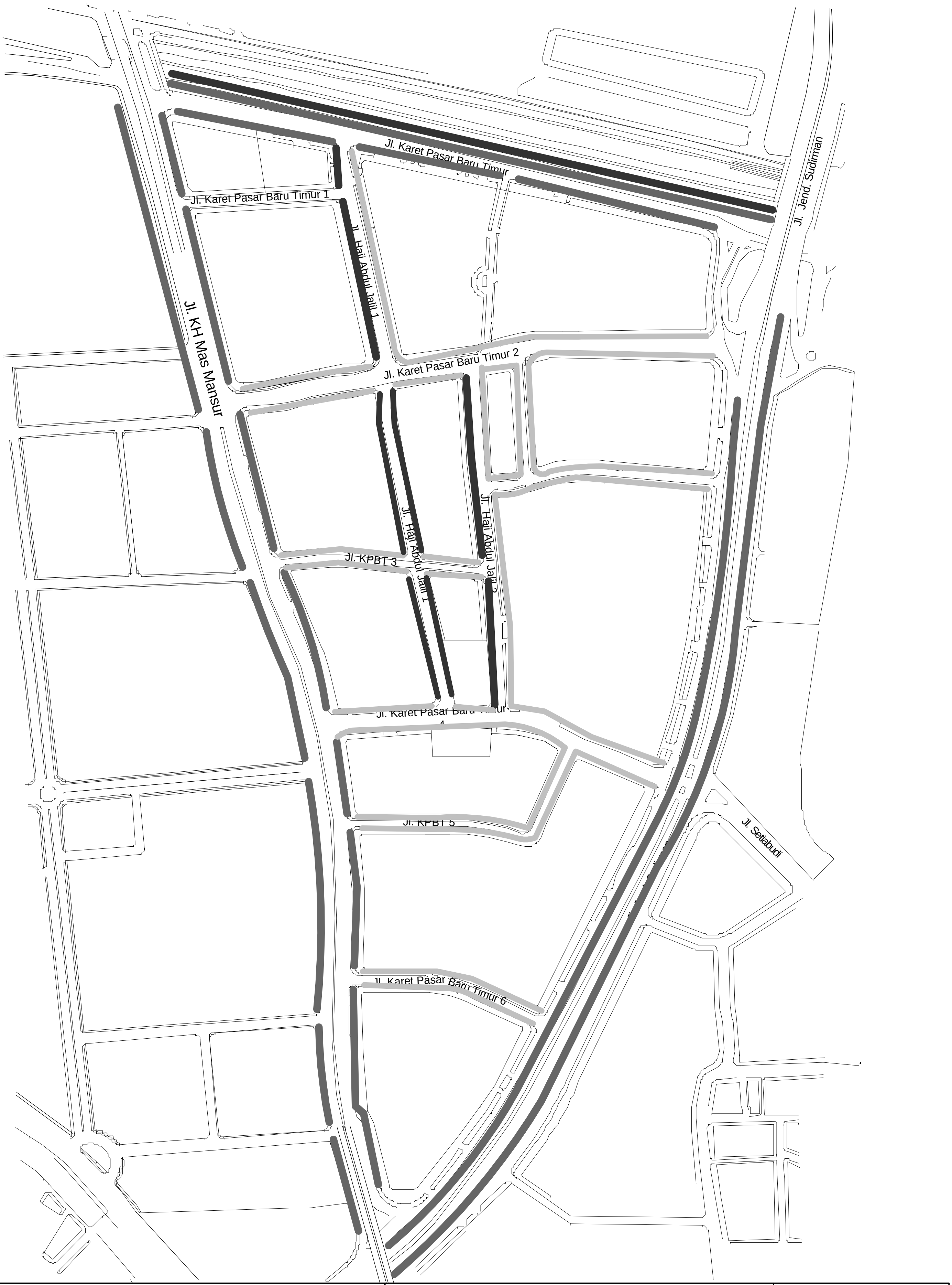
green corridor along canal	major open space on private land
boulevard, major street+trees, pedestrian paths	low-density development
	Body of water:
cemetery	river, canal
planned public open space	pond, fountain

N

0 300 m.

Plan B-7

page 267



Drawing Title:

Tree Plan

Source:

Urban design concept for the study area (in Chapter 6)

Purpose:

Shows the plan for tree planting on sidewalks

Angsana Tree
Height: 10 m.

Angsana Tree
Height: 8 m.

Wide canopy Trees
Height: 10 m.

Note: the median of Jl. Sudirman is planted with shrubs & flowers

N

0 150 m.

Plan B-8

page

Drawing Title: **Building Envelope**		
Source: Building lines and building height regulations in the third part of the Urban Design Guideline (at Sub-block level)		
Purpose: Shows the volume within which the building may be constructed on each Sub-block		Plan B-9

Drawing Title:

Blocks division in the planned area

Source:

Urban design concept for the study area (in Chapter 6)

Purpose:

Shows the division of the Superblock into Blocks and Sub-blocks

Riverside Block
Mansur-High Block
Sudirman Block
Mansur-Low Block
Corner Block
Central Block
Sub-block Boundary

N

0 150 m.

Plan B-10

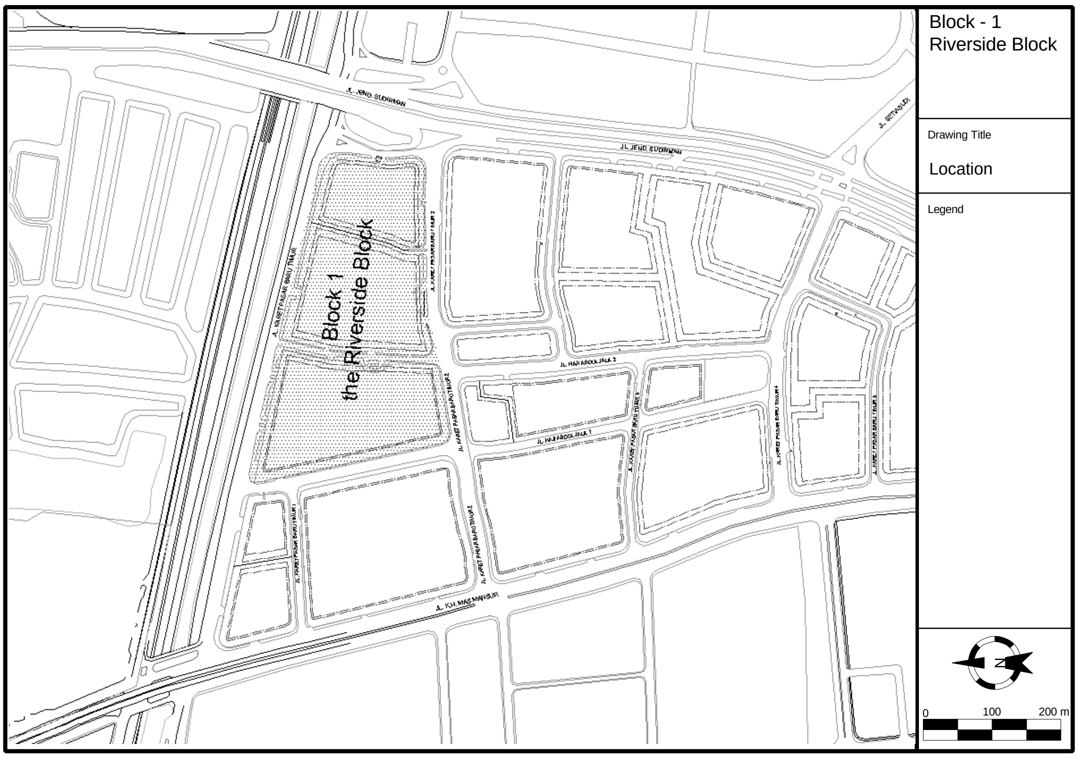
page 270

Guidelines for Each Block and Sub-block

The third section of the Guideline is a technical detail of the urban design concept and its accompanying plans from section two. The Guideline for each Block and Sub-block is the most detailed level of the array of plans and regulations or ordinances that guide the shaping of the urban space. Here we can see the effect of the urban design concept and the plans on each parcel or each building lot in the planned area. This section begins with explaining the detailed urban design concept for each group of several land-parcels: their allowed land use, entrances and circulation system, allocated building density, the design of the built form and the landscape. This group of land-parcels is called a "Block". Finally there is a detailed explanation for each land parcel: the development principles, the mandatory regulations and the recommendatory regulations. These latter regulations are measurable, thus enabling the control and monitoring of the building development process by the staff at the local government office (*Pemerintah Daerah*).

B.1 Riverside Block

The Riverside Block gives a strong image of "high class development" to the entire plan area. This block is highly visible to travelers approaching this area from the city center through the major thoroughfare of Jl. Jend. Sudirman. Its location along the canal of Kali Malang that has a fairly wide riverside easement with mature existing trees makes it natural that it is planned as major open space corridor for the planned area. This greenery/landscaping plan is consistent with the objective of creating a high-class development on this site.



This block, and the entire planned area, is intended as pedestrian-friendly area, hence must satisfy the needs of pedestrians. Pedestrian paths link the train station, the MRT station and bus shelters on the Jl. Jend. Sudirman to the entire Silver Triangle superblock. An improved protection of the pedestrian against the harsh sunshine and rain should be provided. Pedestrian path should be safe from vehicle traffic. The block is foreseen as a humane environment: high fence around the perimeter of the land plots is discouraged because such fence makes a depressing image and force the people take a long detour when they walk from one building to the other. The possibility for walking through land parcels and buildings during the office hours is encouraged. Encourage pedestrian-supporting activities such as small retail, café and street hawkers along the main pedestrian path.

* Land-use

The riverside block is intended as a mixture of commercial functions, such as office, retail shops and eating establishments, and hotel/convention facility.

* Circulation and Linkage

The location of public transit network with regional train station at Dukuh Atas Bridge, planned MRT station at Jl. Sudirman (near the BNI building), and a bus shelter in front of this block allow excellent accessibility of this site.

Despite the "three-in-one" traffic restriction policy on Jl. Sudirman, access to the parcels on this block by private car remains good because of the availability of the alternate route through Jl. Karet Pasar Baru Timur. Public access is also possible from within the Silver Triangle superblock to the Kali Malang riverside esplanade.

* Building Intensity

The block is granted a high average FAR due to its fine accessibility, the high demand or office space, and to enable the tall landmark building.

A moderate BCR is planned to leave aside ample space for vegetation.

* Built Form

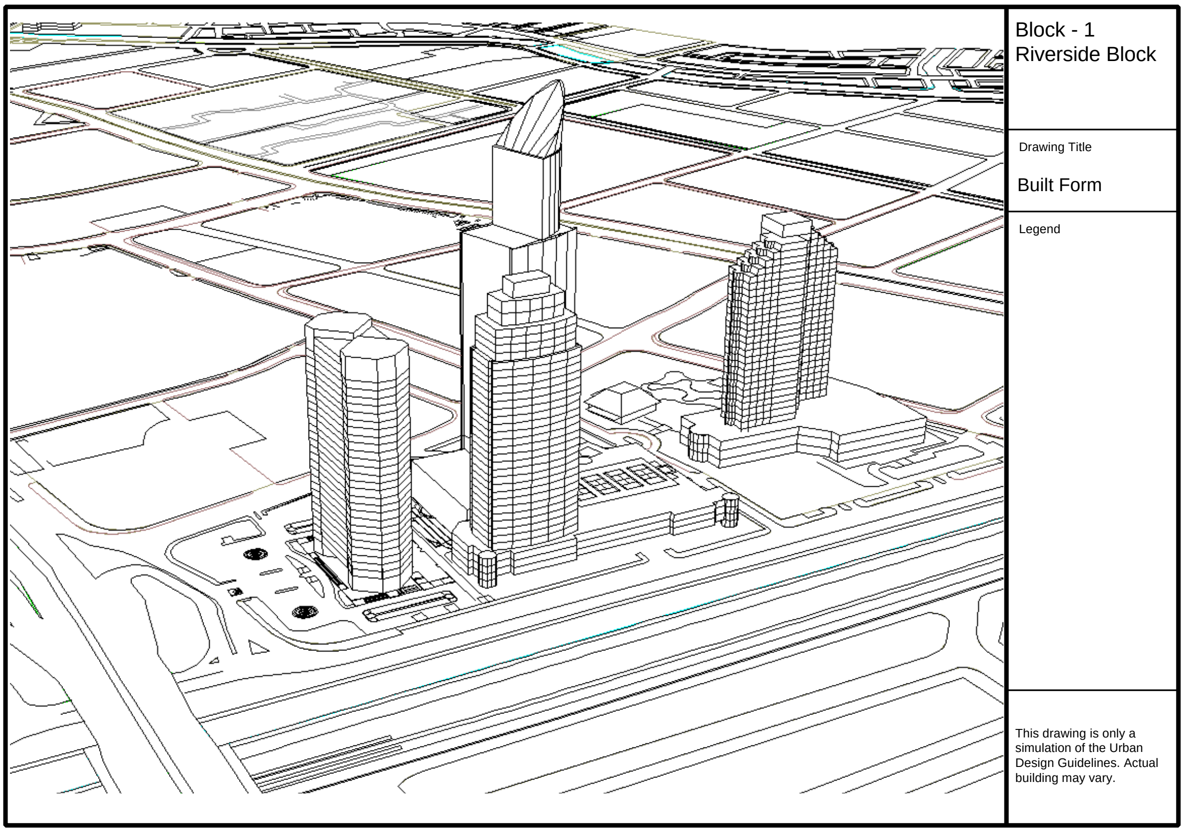
The mixed-use commercial buildings on this block may reach 46 floors. Podium structure can be built under the tower buildings. The podium houses retail shops under office tower, or common functions such as banquette hall, lobby and cafe under hotel and apartment towers.

The orientation of the tower buildings is toward the main streets, i.e., Jl. Jend. Sudirman or Jl. Karet Pasar Baru Timur.

The Wisma 46, with pointed shape on its top and a tall structure, deserves a special treatment as the landmark on this block.

* Landscape

This block is surrounded with lush greenery. Tree and planting on this site will provide amenity to pedestrian. Planters on the façade and around the building enhance the natural character of the block. A wide building setback line of 10 m provides ample space for greenery. This acts together with the trees on the riverbank to create the green corridor of the Kali Malang canal.



Most of parking space in this block is accommodated either in parking buildings or in parking basement. Only a small fraction of the parking capacity is allowed on ground. All remaining unbuilt and overdeck (the deck above basement structure) spaces on this block must be planted with grass or covered with paving blocks.

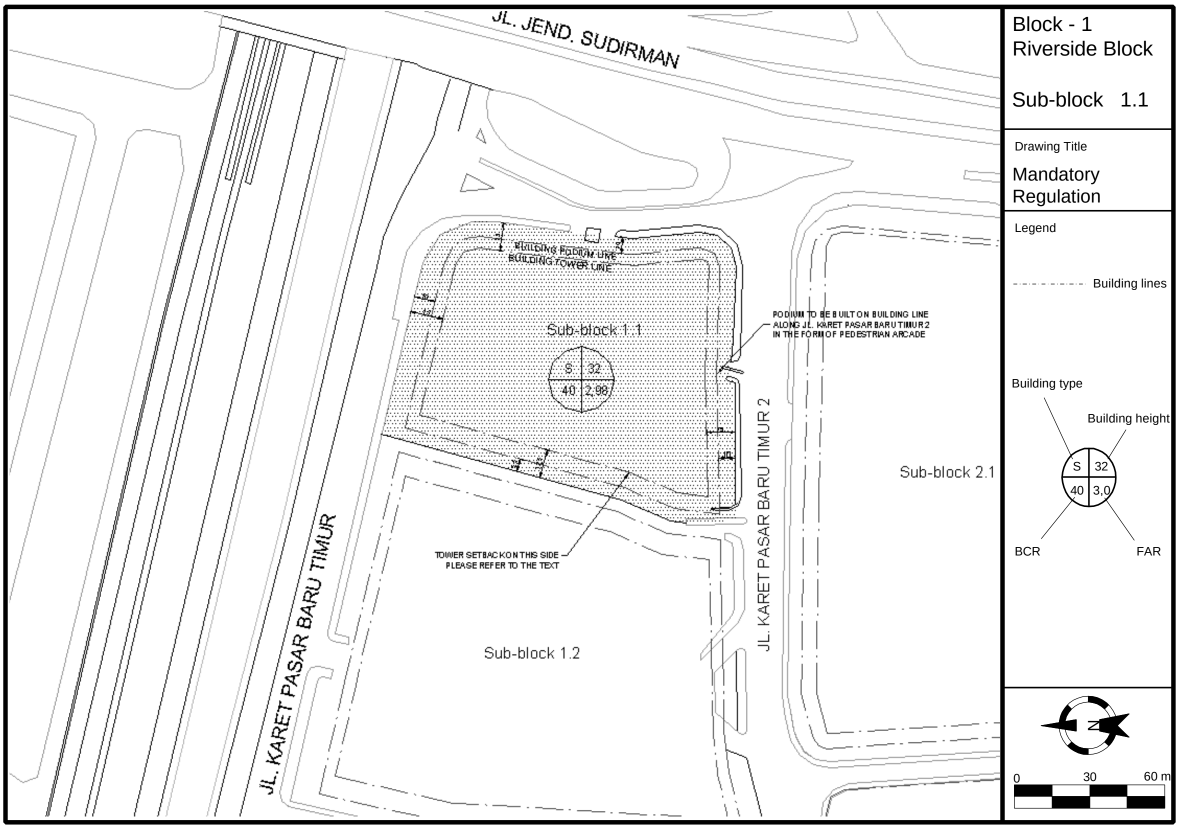
B.1.1 Sub-block 1.1 BNI

PRINCIPLES

The location of this parcel on the corner of the Silver Triangle makes it ideal as a "greeting structure " that welcomes visitor approaching from the city center. This is especially true because a regional railway station and a planned subway station is located in front of the parcel. In anticipation of the high pedestrian flow from these stations, the pedestrian sidewalk and supporting facilities (street furniture, pedestrian supporting activities) should be adequately provided. Protection of the pedestrian against heat and rain in the form of trees will concurrently support the role of the block as a green block, and the Kali Malang green corridor.

MANDATORY REGULATION

- General Land Use Commercial service and office
- Floor Area Ratio 2.98
- Building Coverage 40%
- Maximum building height 32 floors



MAJOR RECOMMENDATORY REGULATION

- Land area 17,991 m^2
- Maximum floor area 53,613 m^2
- Recommended land use:
    - o commercial office 53,613 m^2
    - o pedestrian supporting function, e.g. retail, is allowed up tp 20% of ground floor area
- Parking: DKI standard 537 cars (1 car for 100 sqm floor area), in 1 to 3 floors of parking basement (up to 80% of land area), and/or in parking building.
- Building lines
    - o 10 m to podium, from parcel boundary on Jl. Karet Pasar Baru Timur
    - o 10 m to podium, from parcel boundary on Jl. Jend. Sudirman
    - o 10 m to podium, from parcel boundary on Jl. Karet Pasar Baru Timur 2
    - o 15 m tower setback from parcel boundary on all streets

- Podium is encouraged to be built on the building line of Jl. Karet Pasar Baru Timur 2 in the form of a pedestrian arcade.
- Building setback of the tower building to Sub-block 1.2:
  - podium (1^{st} to 4^{th} floor) 4.00 - 5.50 m
  - for 5^{th} to 24^{th} floor as regulated in the SK Gubernur No. 678/1994
  - 12.5 m for 25^{th} to 32^{th} floor.

- Public facility
  Pedestrian arcade should be kept open to public at least 15 hours each day.

- Open Space
  The land area within the building lines along Jl. Karet Pasar Baru Timur and Jl. Jend. Sudirman serves as semi public space.

- Vehicular access
  Main vehicle access on the Jl.Sudirman side and an optional secondary (service) access on Jl. Karet Pasar Baru Timur 2

- Major pedestrian circulation
  Main pedestrian path/sidewalk goes through the side of the parcel on Jl. Karet Pasar Baru Timur2

RECOMMENDATORY REGULATION

- Functional Quality

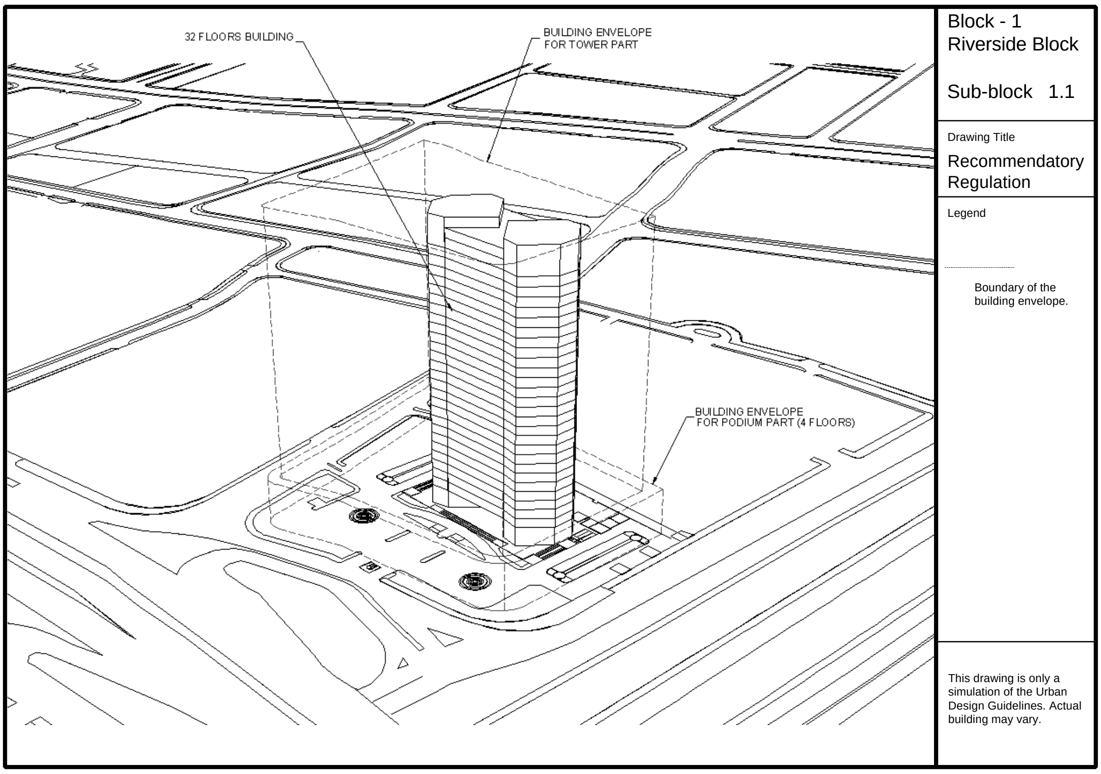
  - Functional Organization
    The main activity in this building is banking office, but other supporting functions can be accommodated in the top floor (such as restaurant) or in the ground floor (for retail function).

  - Pedestrian and vehicular circulation at micro level
    Sidewalks must be wide enough for large pedestrian flow.

- Visual Quality

  - Aesthetic and architectural performance
    Building with a maximum height of 32 floor has a role as a transition to the taller landmark building (Wisma 46) in the center of the block. The building mass, especially its front façade, contributes to the formation of the Jl. Jend. Sudirman urban corridor.

  - Streetscape
    Jl. Karet Pasar Baru Timur 2 as part of the main pedestrian network should have the capacity to let a large flow of people move smoothly into the superblock. Therefore not so many street vendor will be permitted to operate here. Podium part of the building is expected to contribute to the streetscape with pedestrian scale, and to maintain the eclosure of Jl. Karet Pasar Baru Timur 2 street wall.



- Signage
  - On the podium structure: Signboard may be placed on parapet, facing Jl. Karet Pasar Baru Timur 2
  - On the tower structure: signboard facing Jl. Jend. Sudirman
  - Clear shape of main entry to the building, with *porte cochere*
  - Graphical sign should clearly indicates the functions within the building

- Building material and color
  Outer wall of the building is cladded with weatherproof, low maintenance (non dust catching) material with light color as the theme of the superblock.

• Environmental Quality

- Lighting
  Flood lights are directed toward the top portion of the building facing Jl. Karet Pasar Baru Timur 2 and Jl. Jend. Sudirman.

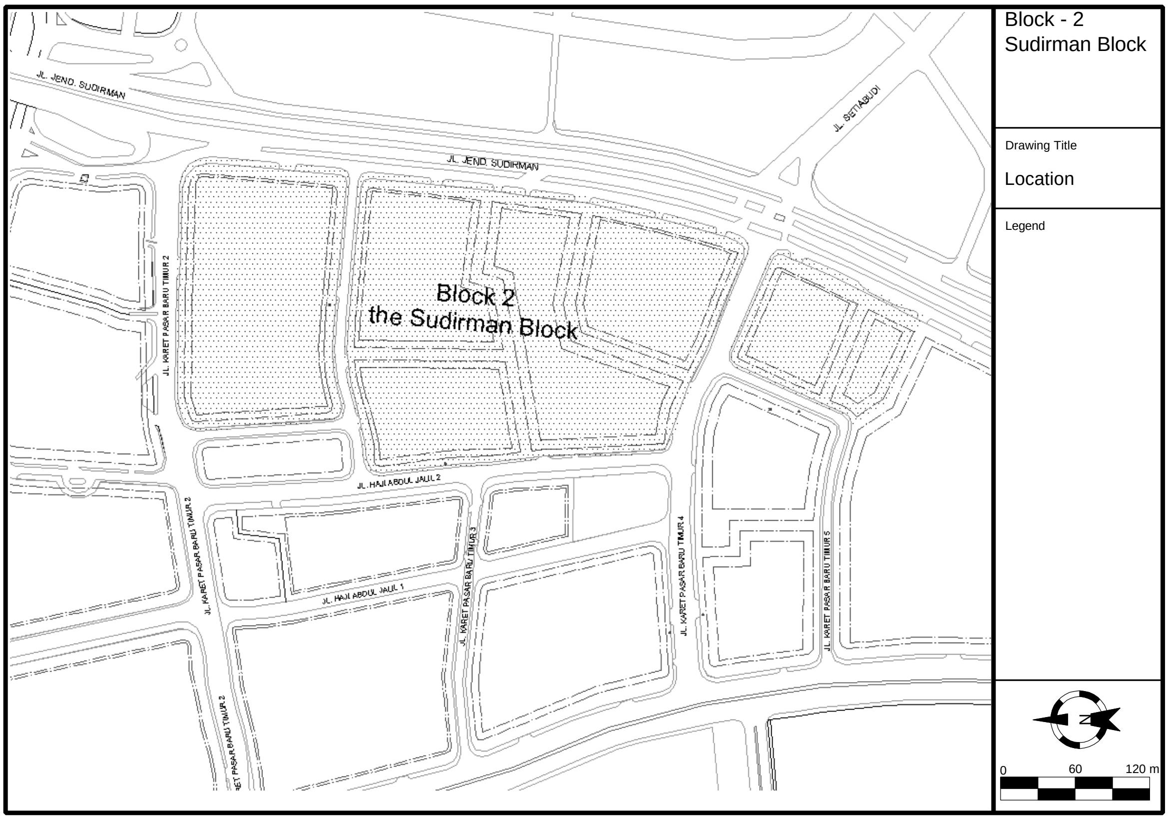
- Open space and landscaping
  Wide-canopied trees should be planted on the land parcel. The trees also give shade to the car parking and pedestrian who are crossing this land parcel. Further, provision of small fountains are encouraged to create a cool micro climate.

- Public Facility
  Encourage to provide public facility such as park bench, public telephone, trash can, statue or other kinds of public art.

- o Socio cultural aspect
  Acommodate activities and custom that prevails in the community. Sidewalk and (to lesser extent) courtyard as place for social interaction.

B.2 Sudirman Block

Jl. Jend. Sudirman has already a strong image of "high class development" with modern office towers along its sides. This block supports the prestigious image of this major thoroughfare and the Golden Triangle area that lies across the Jl. Jend. Sudirman.



* Land-use

This block is planned – and partly has been built – for commercial office and hotel. Small retail establishments are included on the lower floors of the office buildings. The back portion of the land parcels in this block that face the central block can take advantage of the pedestrian-oriented establishments in that block.

* Circulation and Linkage

Bus, minibus and a planned MRT line along Jl. Jend. Sudirman provide public access to the land parcels. Excellent linkage from public transit points to the pedestrian path network should be provided.

Due to the three-in-one private vehicle traffic restriction that is imposed on this street every weekday from 6.30 – 10am, a secondary access to each site from Jl. Mas Mansur through the middle of the planned area is desired.

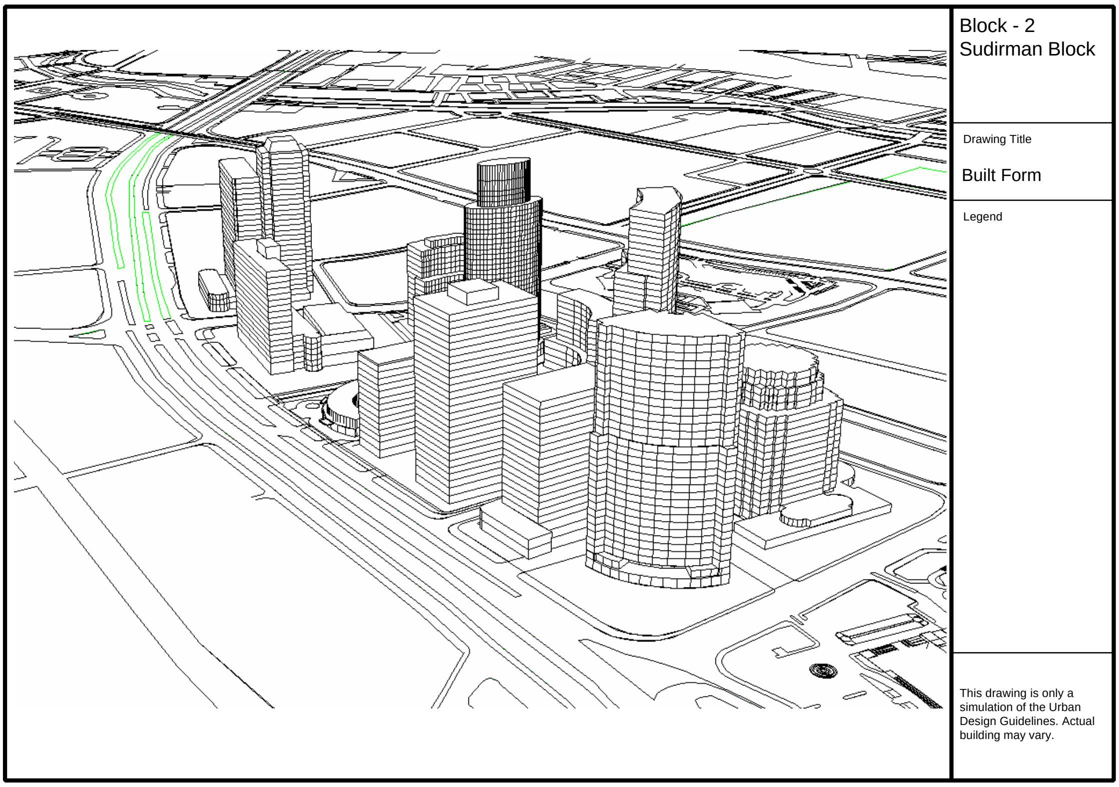
* Building Intensity

A high FAR can be granted to parcels in this block due to the high accessibility and the high demand of commercial space. The high FAR is also necessary for maintaining/enabling the designed built form of the Sudirman corridor.
A medium BCR is planned for the tower buildings and their parking structures.

* Built Form

The built form along Jl. Jend. Sudirman shall consistently shape this main street as the most important urban corridor in Jakarta. Rows of office tower buildings lined both sides of the street These buildings are constructed mostly on or near the building line/GSB. The built form serve the role as enclosure that protects the kampung housing in the center of the superblock from traffic noise in Jl. Jend. Sudirman, and as a "curtain" that visually obscure the view toward the kampung.

The tower buildings in this block may have small to medium sized podium and an annex structure at the back for car park.

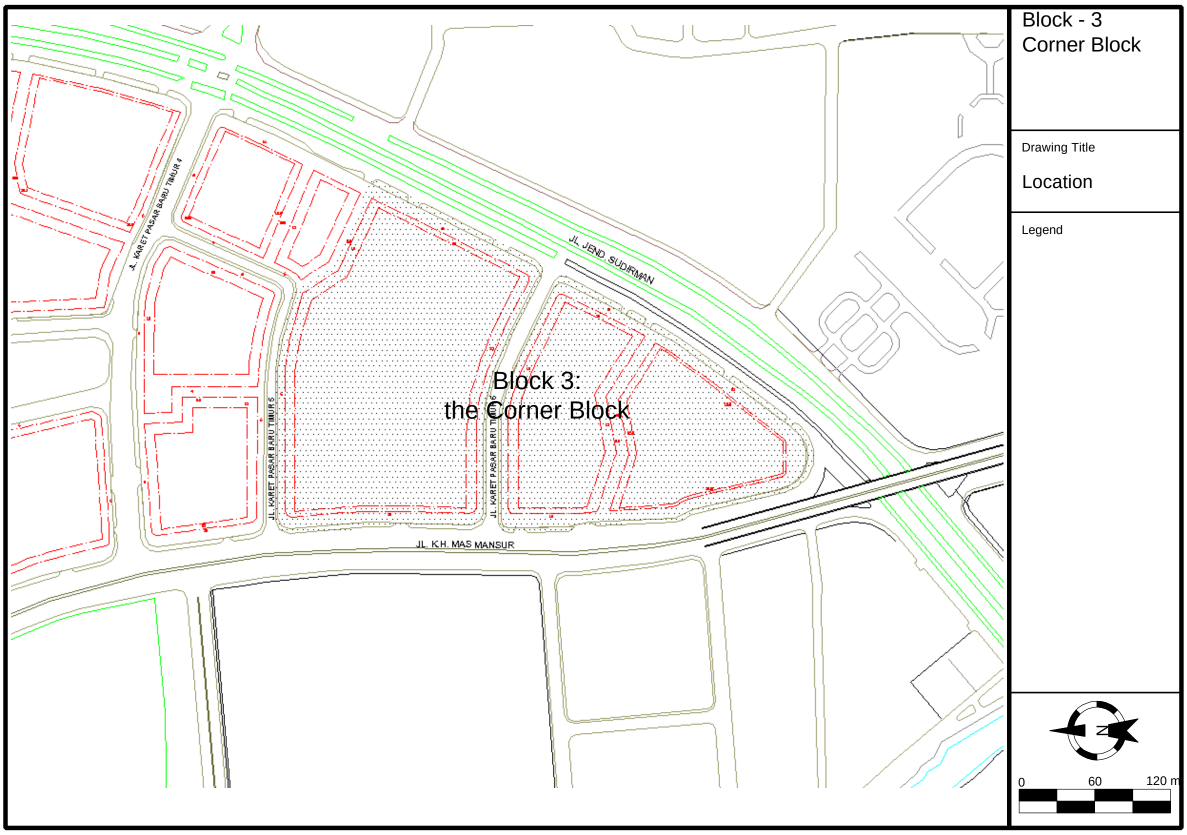


* Landscape

Jl. Jend. Sudirman has a form of boulevard, with two rows of trees that are planted on each street sides and flowerbeds on the street median. The unbuilt part of the Sudirman Block shall be as much as possible planted with trees and shrubs. In order to enhance the boulevard streetscape and creates a pedestrian-friendly environment, fence may not be erected on street-side property-boundary. Only low hedge or planters are allowed in this case. The lawn and sidewalks should be designed integrally for pedestrian with adequate street furniture.

B.3 Corner Block

The corner block lends a strong image to the entire Silver Triangle, as seen from the South part of Jl. Jend. Sudirman. It is the same image that is presented by the Sudirman Block, i.e., "high class / prestigious development" with office and hotel towers. This block also continues the streetscape of the Jl. Prof. Satrio corridor into the Jl. Mas Mansur.



* Land-use

The block is intended for commercial use such as office, hotel, and (in small proportion) retail shop. Residential apartment is preferred on the Mas Mansur side of this block.

* Circulation and Linkage

Public transportation to the land parcels is provided by public bus/minibus and the planned MRT line along Jl. Jend. Sudirman. A good linkage from public transit points to the pedestrian path network should be maintained. The pedestrian path in this block connects the pedestrian flow along the Jl. Satrio corridor and the Jl. Mas Mansur to the Jl. Jend. Sudirman.

Due to the three-in-one private vehicle traffic restriction that is imposed on Jl. Jend. Sudirman every weekday from 6.30 – 10.00 AM, a secondary access at the back of each site from Jl. Mas Mansur has been provided.

Pedestrian access links the Corner Block, through the Sahid compound (Sub-block 5.3), to the center of the superblock.

* Building Intensity

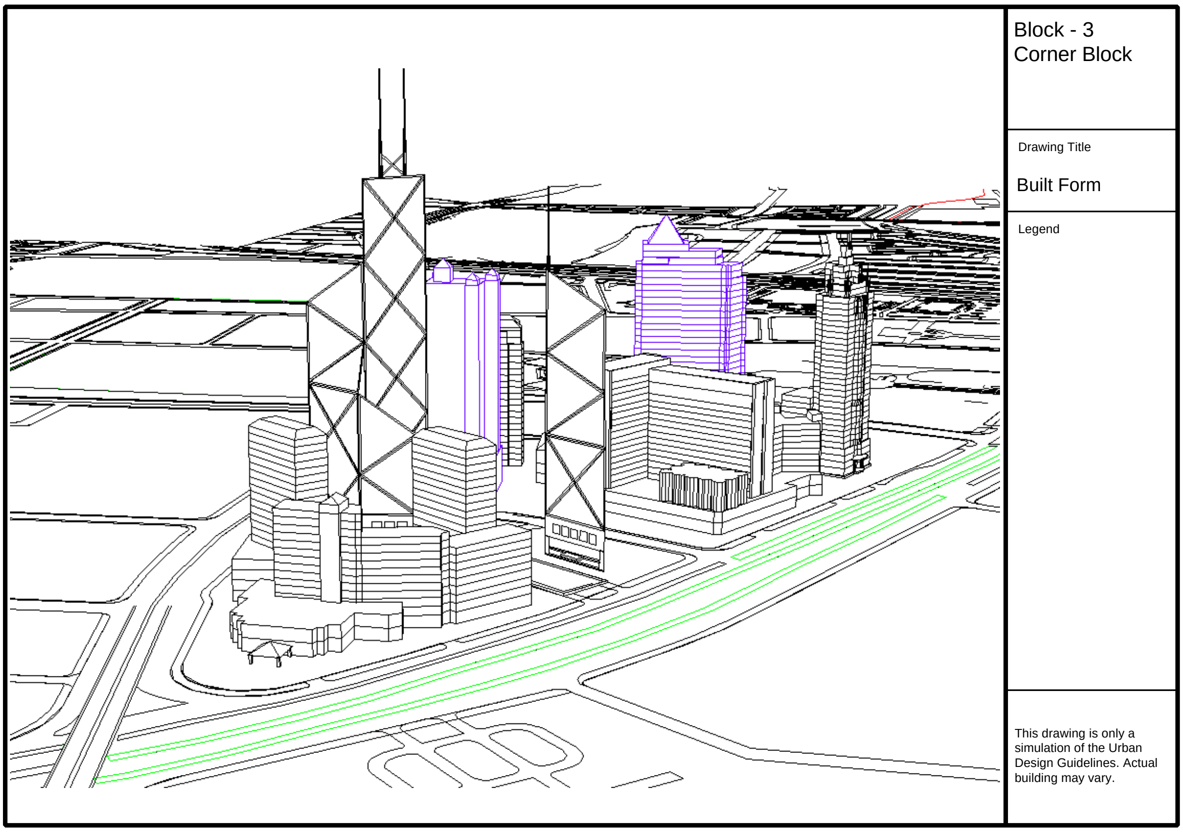
A high FAR can be granted to parcels in this block due to the high accessibility level of the block and the high demand of commercial space. The high FAR is also necessary for maintaining and enabling the designed built form of the Sudirman urban corridor.

A medium BCR is planned for the tower buildings and their parking structures.

* Built Form

Most of the buildings on this block is already constructed and occupied. The buildings celebrate the junction of Jl. Prof. Satrio - Jl. Mas Mansur overpass, which is expressed in the unique feature of the Dharmala building that has slanted parapet. The slanting parapet is repeated in the Le Meridien Hotel and in parts of the Sahid Jaya Hotel. This slanted parapet feature, that evidently is an interpretation of the traditional tropical roof form, may become the distinctive character of the block. The podium part of the Le Meridien Hotel is shaped following the curvature of the road, so that it defines well the open space junction.

Apartment towers in this block should have pitched-roof as a character-giving form and to distinguish it from other functions. The main orientation of the block is to Jl. Jend. Sudirman.

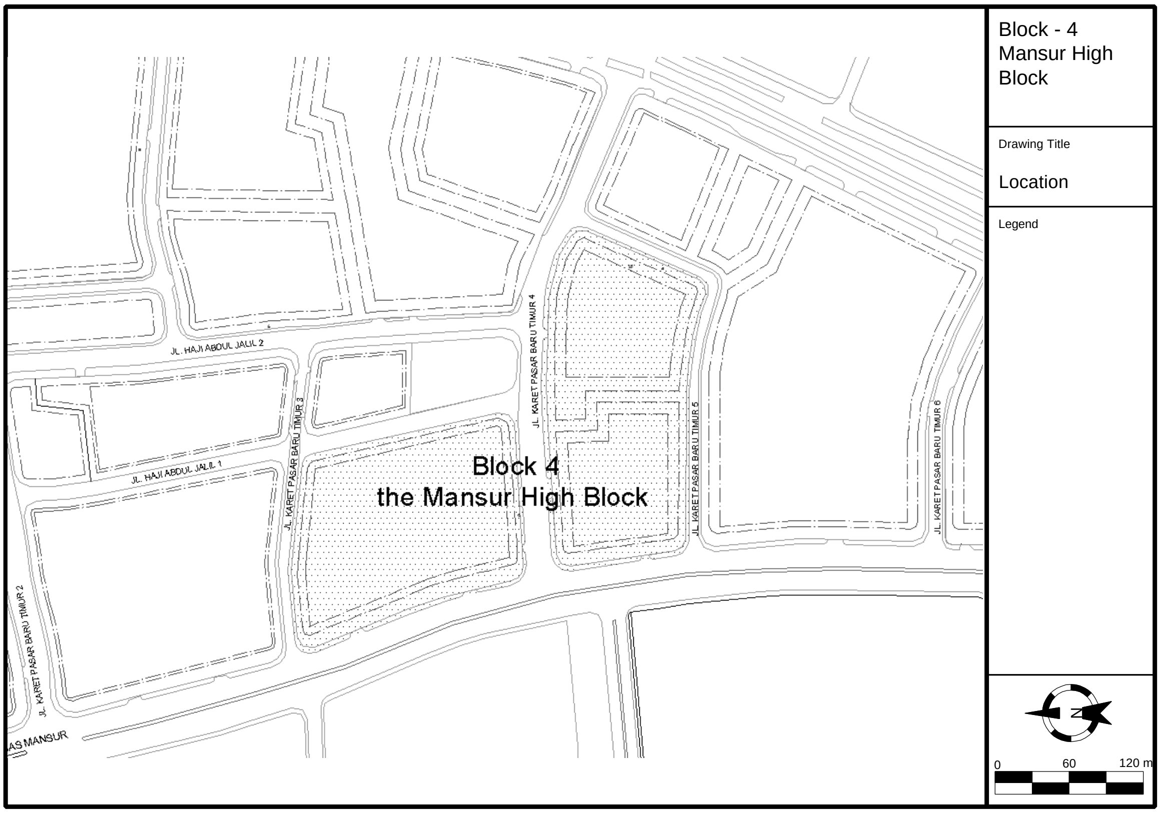


* Landscape

Jl. Jend. Sudirman has a form of boulevard, with two rows of trees that are planted on each street sides and flowerbeds on the street median. The unbuilt part of the land parcel shall be as much as possible planted with trees and shrubs. In order to enhance the boulevard streetscape and to create a pedestrian-friendly environment, fence may not be erected on street side property-boundary. Only low hedge or planters are allowed in this case. The lawn and sidewalks should be designed integrally for pedestrian with adequate street furniture.

B.4 Mansur-High Block

The Mansur-High block shall have the image of a high quality urban development for commercial use. A mixture of office, service and retail facilities and apartment is portrayed here. The development on this block will reflect the rank of Mas Mansur corridor that is secondary (subordinate) to that of the Sudirman corridor. The Mansur blocks will have more residential character than the Sudirman block, which is dominated by office use.



* Land-use

This block is intended as a mixture of residential apartment, office and commercial retail uses.

* Circulation and Linkage

The pedestrian sidewalks along the streets in this block serve as part of the entire pedestrian system of the Silver Triangle superblock. Adequate street furniture should be provided along the public area.

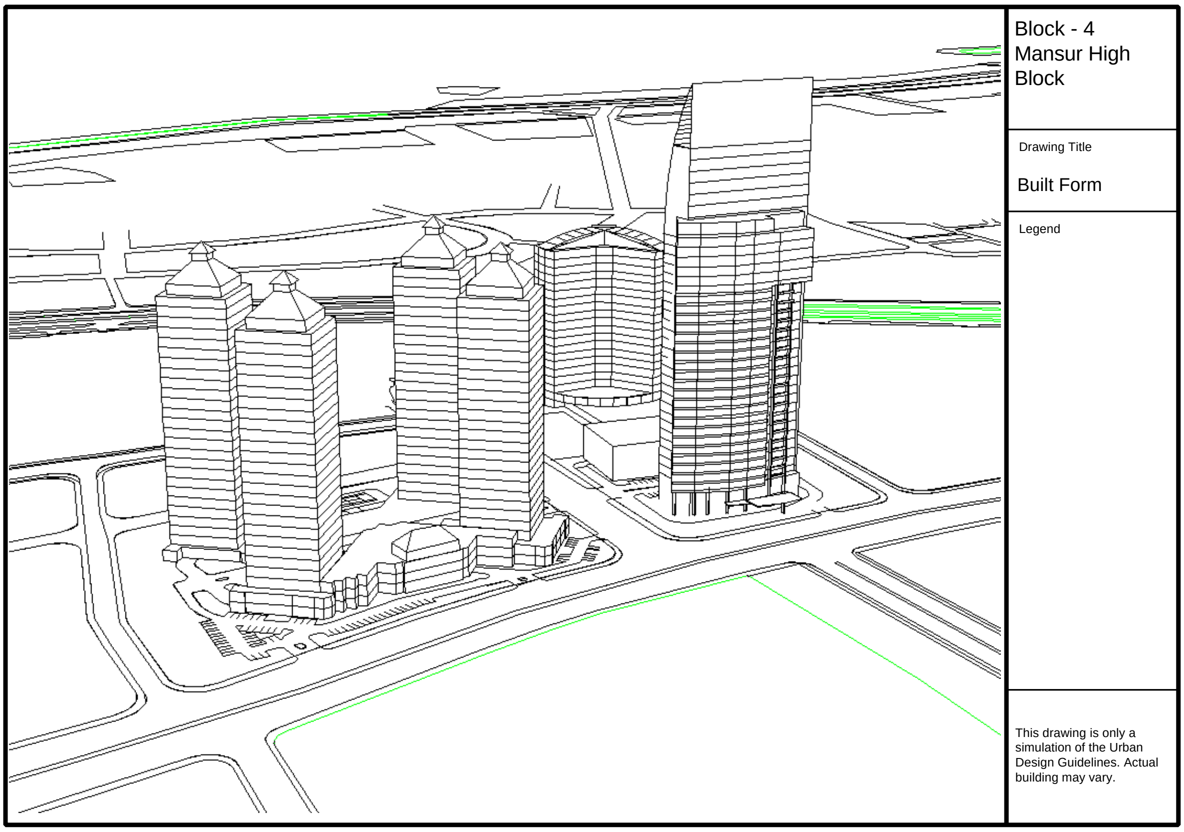
* Building Intensity

A moderately high FAR, but less than the average FAR of the Sudirman Block, is planned for this block. A moderately low BCR will be sufficient for the tower buildings over small podium structure designed on this block.

* Built Form

Single free standing tower building or a cluster of towers will give balance to the building masses on the Batavia City superblock on the other side of Jl. Mas Mansur Street.

Apartment towers should have pitched-roof as a distinctive form and to give an image characteristic of local house.



* Landscape

The loose distribution of tower buildings on this block yields ample outdoor space for planting that is compatible to the surrounding. The Mansur-High Block lies across the street from the existing open space of Karet Bivak cemetery and adjacent to the planned open space (green) at the center of the Silver Triangle superblock.

Parcel boundary shall be planted with trees to give more protection for the pedestrian on sidewalk. Jl. Mas Mansur will be planted with trees on both sides.

B.5 Mansur-Low Block

The Mansur-Low Block has the role as an interface/transition between the high rise tower buildings on Jl. Jend. Sudirman, medium rise towers on Mansur-high block and the lower buildings in Tanah Abang district located to the North of the Silver Triangle superblock. This block also contributes in shaping the streetwall along the Mas Mansur corridor on its eastern side, and the pedestrian spine on its western side.

* Land-use

The land-use of this block is similar to that of the Mansur-High block with a mixture of commercial and residential (apartment), but a higher portion of retail use is possible in this block due to its role as a transition towards the Tanah Abang grocery center. Ground level use must accommodate pedestrian-supporting activities, such as retail shop, eating establishment and so forth.

Residential function is preferred on the eastern side of this block, or towards the inner side of the superblock. This will conform the mixed land-use to the RTRW plan and also avoids the traffic noise from Jl. Mas Mansur.

* Circulation and Linkage

The pedestrian link is very important in this block. Along the East side of this block lies the main pedestrian spine of this superblock. The block should ensure a high permeability, i.e., people from the Central and the Riverside blocks must be able to easily reach Jl. Mas Mansur. The construction of pedestrian paths that go through the podium building are encouraged.

A link to the planned Kebon Melati superblock on the North of this site should be considered in the future.

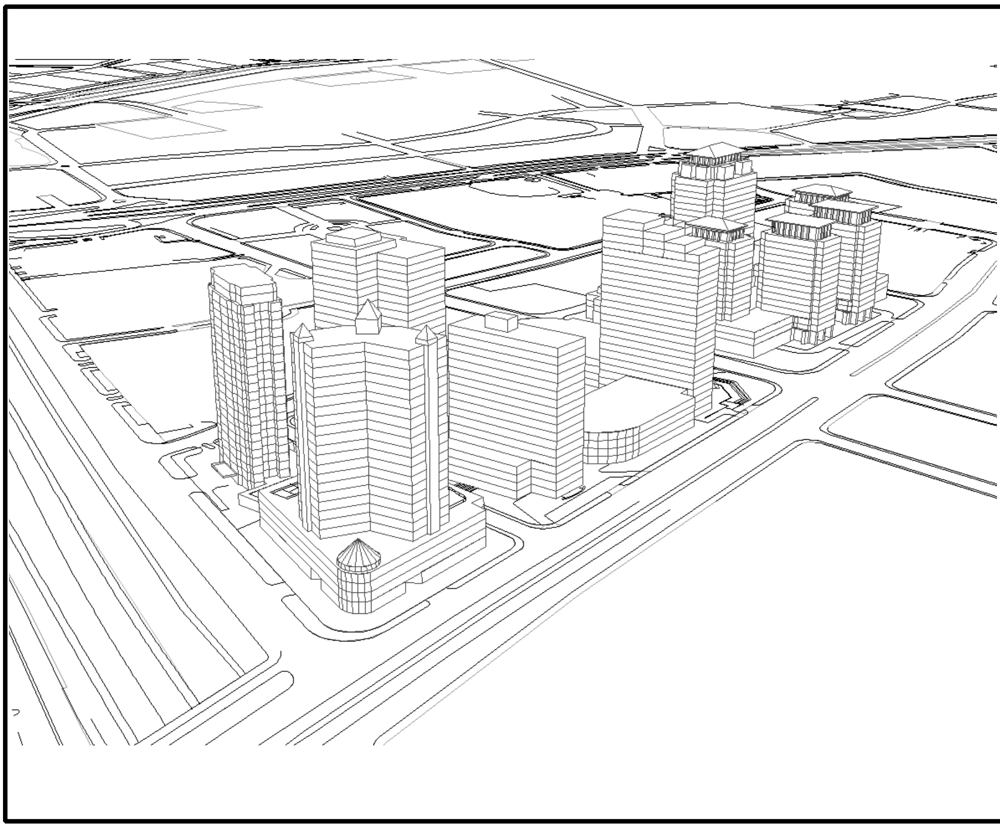
* Building Intensity

A moderately high FAR equals to that in the Mansur-High block is planned for this block. A moderately high BCR will make possible the construction of large podium structure with inner courtyard.

* Built Form

A continuous streetwall should be built for fostering pedestrian movement along Jl. Mas Mansur and Jl. Karet Pasar Baru Timur. Some passages through the ground floor of the podium structure along the streetwall will connect it to the pedestrian spine. Structures along the frontage of the ground floor that is suitable for protecting the shop strollers against bad weather – for instance arcade and canopy – are encouraged.

The human scale of the podium structure should be harmonious to the pedestrian spine. Stepping of the building mass is favored to enhance the humane quality of the street environment. This continuous streetwall podium structure will create a quieter atmosphere in inner area of the superblock. Low-rise office or apartment tower structure can be built on top of the podium mass.



Block - 5
Mansur Low
Block

Drawing Title

Built Form

Legend

This drawing is only a simulation of the Urban Design Guidelines. Actual building may vary.

* Landscape

Inner courtyard that is surrounded by the podium structure can be designed as a semi private garden of office buildings or for outdoors café etc.

The remaining unbuilt land parcel should be planted with trees and grass in order to give more pleasant atmosphere to the pedestrian. The lawn and the sidewalk should be designed integrally for pedestrian with adequate street furniture. The roof deck of the podium structure can be landscaped and used for amenity facilities of the office/apartment towers.

B.5.2 Sub-block 5.2 Lyman

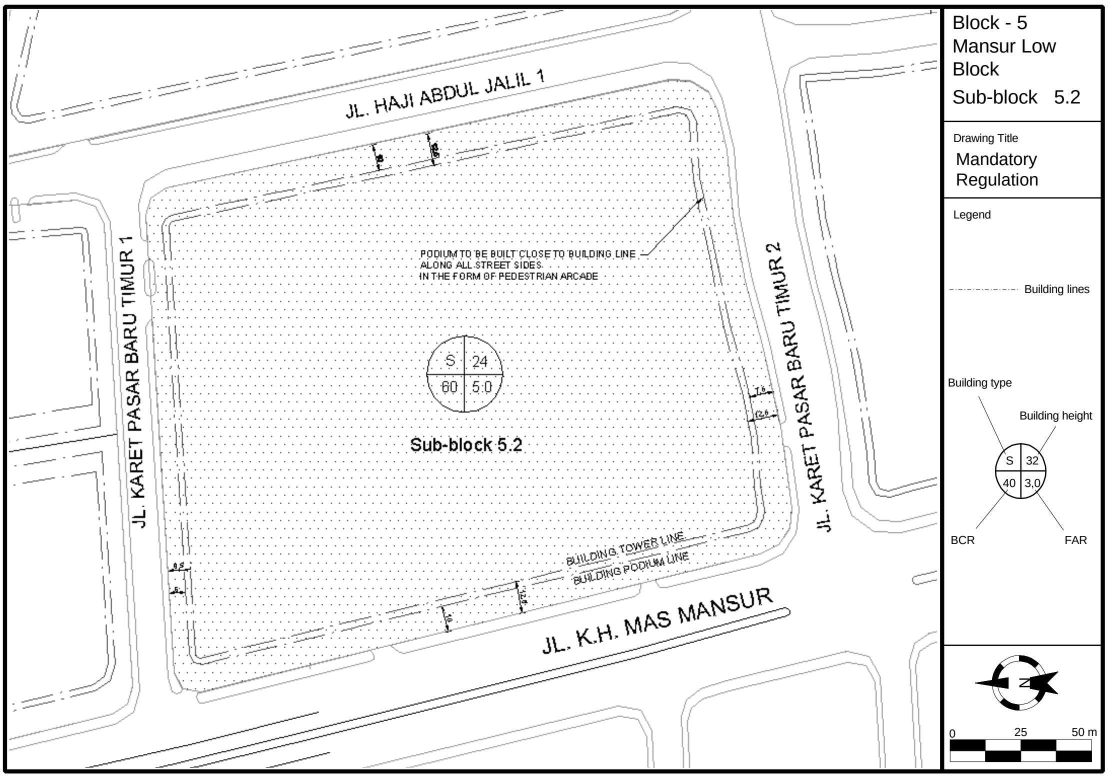
PRINCIPLES

This Sub-block serves as "curtain" for the central area behind it, to reduce the traffic noise from Jl. Mas Mansur. It simultaneously defines the streetwall of the Jl. Mas Mansur corridor. However, this curtain is only visual: the building mass on this land parcel is not meant to block the pedestrian access between the pedestrian spine in the center of the superblock and Jl. Mas Mansur.

The other role of the Sub-block is to carry on the retail activity and pedestrian flow along the Mas Mansur corridor up to Tanah Abang market. In term of built form, this Sub-block serves as a transition between the high rise towers along the Sudirman corridor and the lower buildings in Tanah Abang district located to the North. A building with a height of up to 24 floors is envisaged here.

MANDATORY REGULATION

- General Land Use: mixed-use of commercial and residential
- Floor Area Ratio 5.0
- Building Coverage 60%
- Maximum building height 24 floors



MAJOR RECOMMENDATORY REGULATION

- Land area 40,905 m^2
- Maximum floor area 204,525 m^2
- Recommended land use:
    - Commercial retail up to 98,000 m^2
    - Commercial office up to 88,510 m^2
    - Residential appartment at least 20% of total floor area.
    - Ground floor is reserved mainly for pedestrian supporting function, e.g. retail

- Parking
  DKI standard 1 car for 100 sqm office floor area, 1 car per apartment, and 1 car per 60 sqm of net retail area. Parking facility in 1 to 3 floors of basement (up to 80% of land area), and/or combined with parking structure that is integrated into the podium building.

  Connections between the parking basement of this Sub-block to those on the neighboring Sub-blocks 5.1 and 5.2 can be provided in the future.

- Building lines
    - 10 m to podium, from parcel boundary on Jl. Mas Mansur
    - 7.5 m to podium, from parcel boundary on Jl. Karet Pasar Baru Timur 2
    - 6 m to podium, from parcel boundary on Jl. Karet Pasar Baru Timur 1
    - 12.5 m tower setback from parcel boundary on Jl. Karet Pasar Baru Timur 2 and Jl. Mas Mansur streets
    - 8.5 m tower setback from Jl. Karet Pasar Baru Timur 1
    - Podium is encouraged to be built close to the building line on all streets sides in the form of pedestrian arcade.

- Public facility
  Pedestrian arcade should be kept open for public use at least 15 hours each day. The pedestrian passage on the ground floor must be kept open between 7.00 – 22.00 hrs on work days.

- Open Space
  The courtyard within the building lines along Jl. Karet Pasar Baru Timur 2 and Jl. Karet Pasar Baru Timur 1 and Jl. Haji Abdul Jalil 1 serves as semi public space. The inner court in the center of the podium structure serves as semi private space for café etc

- Vehicular access
  The main vehicle access is on the Jl.Mas Mansur side and optional secondary access on Jl. Karet Pasar Baru Timur 2 and 1.

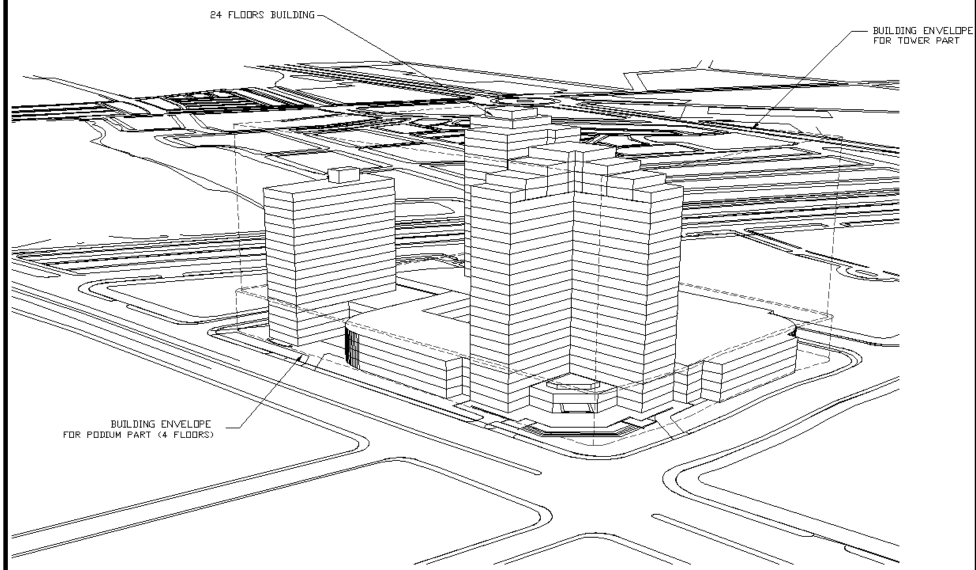
- Major pedestrian circulation
  The main pedestrian spine goes through the East side of the parcel on Jl. Haji Abdul Jalil 1. Pedestrian flow is anticipated from the central part of the superblock to public transit points on Jl. Mas Mansur through this Sub-block.

RECOMMENDATORY REGULATION

- Functional Quality
  - Functional Organization
    The main activities in this building are commercial retail in the podium part and office and residential towers on top of it. The residential appartment tower(s) is preferred on the eastern side of the Sub-block.
  - Pedestrian and vehicular circulation at micro level
    The sidewalks on Jl. Haji Abdul Jalil 1 and Jl. Mas Mansur must be adequate to sustain large pedestrian flow. Pedestrian passage through the building from the pedestrian spine to public transit points on Jl. Mas Mansur should be provided.

    Short term on ground car parking is possible on this Sub-block within the semi public courtyard.
- Visual Quality
  - Aesthetic and architectural performance
    Building with a maximum height of 24 floor and the large podium structure has a role as an transition to the Tanah Abang district, and to form the Jl. Mas Mansur corridor.

    Design of the building on Jl. Mas Mansur side shall pay a respect to the monument at the entrance to the cemetery across this street.



Block - 5
Mansur Low Block
Sub-block 5.2

Drawing Title
Recommendatory Regulation

Legend

Boundary of the building envelope.

This drawing is only a simulation of the Urban Design Guidelines. Actual building may vary.

- Streetscape

  The large podium structure has a special role to form the streetwall of Jl. Mas Mansur and to create an eclosure for the inner part of the superblock. The arcade on its ground floor contributes to the atmosphere of retail shop and to protect the pedestrian.

  Jl. Haji Abdul Jalil 1 as part of the main pedestrian network leads to the park/promenade on the riverbank. Trees shall be planted along this pedestrian path to give shade to the users. The podium structure is expected to create a pedestrian-scale streetscape along this street.

- Signage
  - On the podium structure: Signboard may be placed on parapet, mainly facing Jl. Mas Mansur
  - On the tower structure: signboard facing Jl. Mas Mansur or North/South
  - Clear shape of the main entry to the building, with *porte cochere*
  - Graphic signs should clearly indicate the functions within the building

- Building material and color

  Outer wall of the building is cladded with weatherproof, low maintenance (non dust catching) material with light color as the theme of the superblock. Abrasion resistance material (such as polished stone) is recommended on the outer wall surface on ground floor, where large pedestrian flow is expected.

- Environmental Quality

  - Lighting

    Flood lights are directed toward the top portion of the building facing Jl. Mas Mansur. No bright lighting on the outer side of tower structure facing residential towers.

  - Open space and landscaping

    Trees should be planted on the inner court, to give shade to the café and the pedestrians who are crossing this land parcel. Further, provision of small fountains are encouraged to create a cool micro climate.

  - Public Facility

    Encourage to provide public facility such as park bench, public telephone, trash can, statue or other kinds of public art.

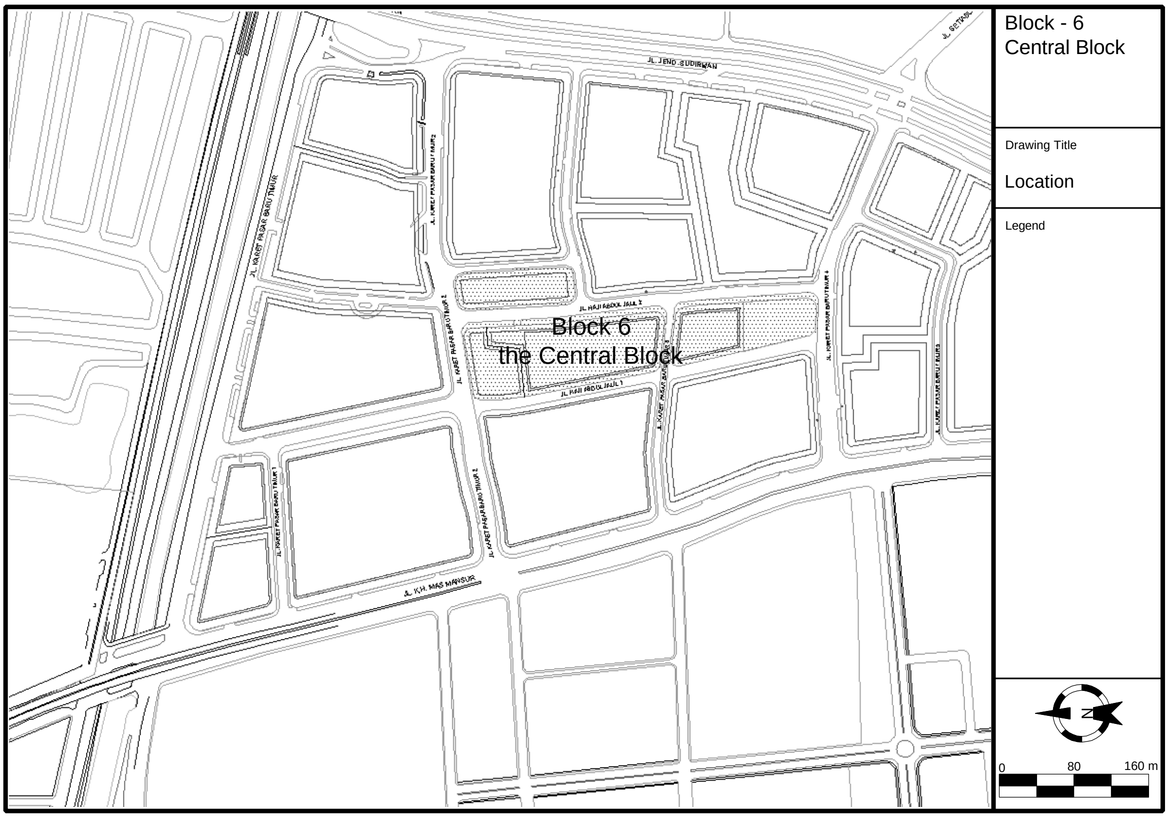
  - Socio cultural aspect

    Acommodate activities and custom that prevails in the community. Sidewalk and courtyard as place for social interaction.

B.6 Central Block

The central block shall assume the role of a support center with public facilities such as mosque, school, Kelurahan office, and other support services for the entire superblock and its surrounding.

In general, the RTRW of Tanah Abang district has indicated that the South part of this block will be allocated for public open space, Sub-block 6.4 for school and its expansion, whereas most of the Sub-block 6.3 is allocated for a mosque and a Kelurahan office that are already in operation. The mosque is worth preserving socially as well as architecturally.



* Land-use

The Land Use of this block is predominantly mixed-use of commercial and residential (in Sub-blocks 6.1 and 6.2), with some public and social facilities on the North tip and an open space (small park) on the South tip of the block. Location of street hawker is possible along the major pedestrian path and in the gallery, but it should only be allowed under strict control and regulation. For example, they should be localized and organized into pujasera. The pedestrian spine can be divided into two lanes; one side for the hawkers and the other for walking.

* Circulation and Linkage

The streets around and through the Central Block allow traffic to flow through the Silver Triangle area from Jl. Jend. Sudirman to Jl. Mas Mansur and return. This makes the Silver Triangle more attractive because it provides alternative routes that can overcome the traffic jam on Jl. Jend. Sudirman.

The main pedestrian spine will be built through the central block, in the form of an extra wide sidewalk on the North side of the block and limiting vehicle traffic along its South side. The pedestrian network will connect all the blocks in the entire Silver Triangle area.

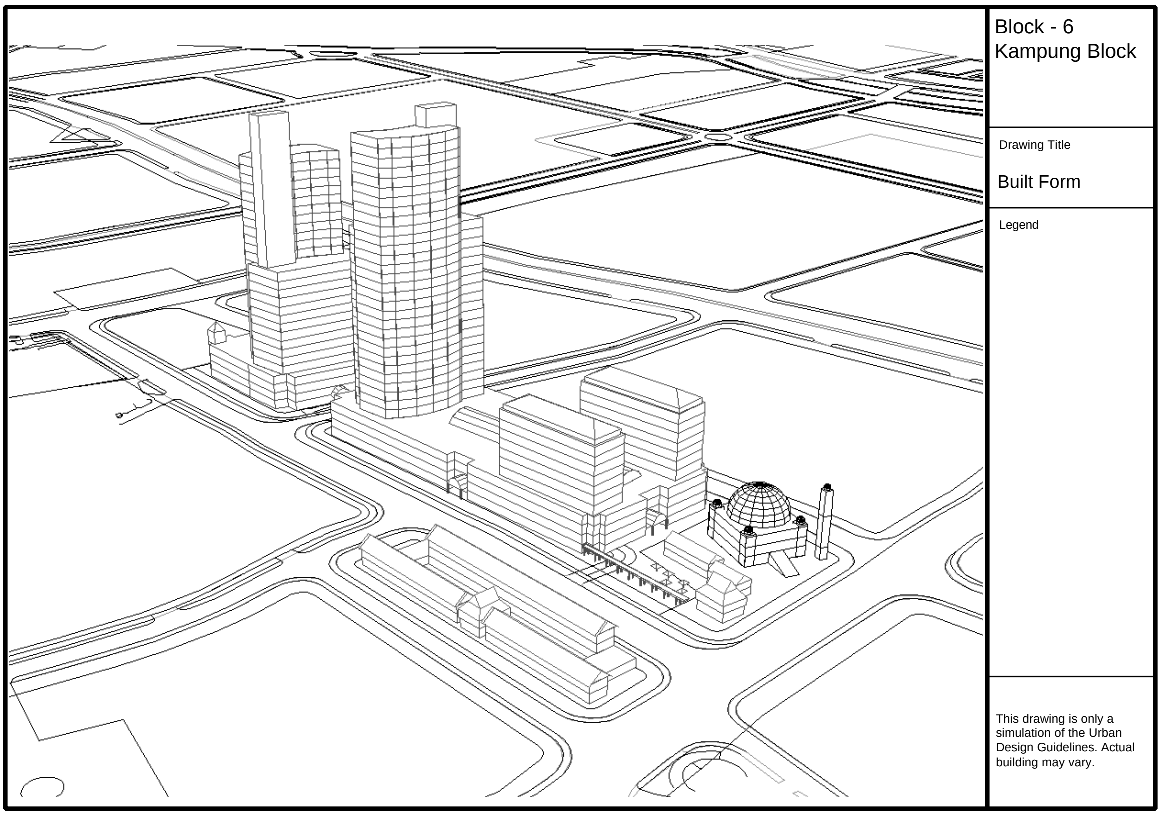
* Building Intensity

The block will be a combination of low density park and public facilities and high-density mixed-use development. The mixed-use developments on Sub-blocks 6.1 and 6.2 are compensated with extra FAR in exchange for the provision of public space (gallery) and location for street hawkers.

To enable the formation of streetwall along the pedestrian spine and a gallery along the centerline of Sub-blocks 6.1 and 6.2, a very high BCR of 70% was granted to these Sub-blocks. The extra BCR and FAR were transferred from the public land on Sub-blocks 6.3 and 6.4 and the park. The average FAR of this block is 3.76 and the BCR is 54.97%, or still below the planned average of respectively 5.0 and 60% for the entire superblock.

* Built Form

Public buildings may have up to four floors, the existing design with pitched roof can be maintained.



The buildings on Sub-blocks 6.1 and 6.2 are expected to define the walls of the streets/pedestrian spine on their East and West. Four story podium structure with arcade along these sides are encouraged here. A gallery along the centerline of these Sub-blocks is expected to connect the public facilities on Sub-block 6.3 to the park. Tower buildings for office and apartment can be built on top of the podium structure.

* Landscape

Trees with medium wide canopy should be planted along the major pedestrian spine to give more weather protection. The lawn of the public facilities – in this case the mosque, a school, and the Kelurahan office – can be planted with lush vegetation to balance the dense mixed-use Sub-blocks.

The central public open space shall be planted with wide canopied trees to provide shade for the users.

B.6.2 Sub-block 6.2 Central North

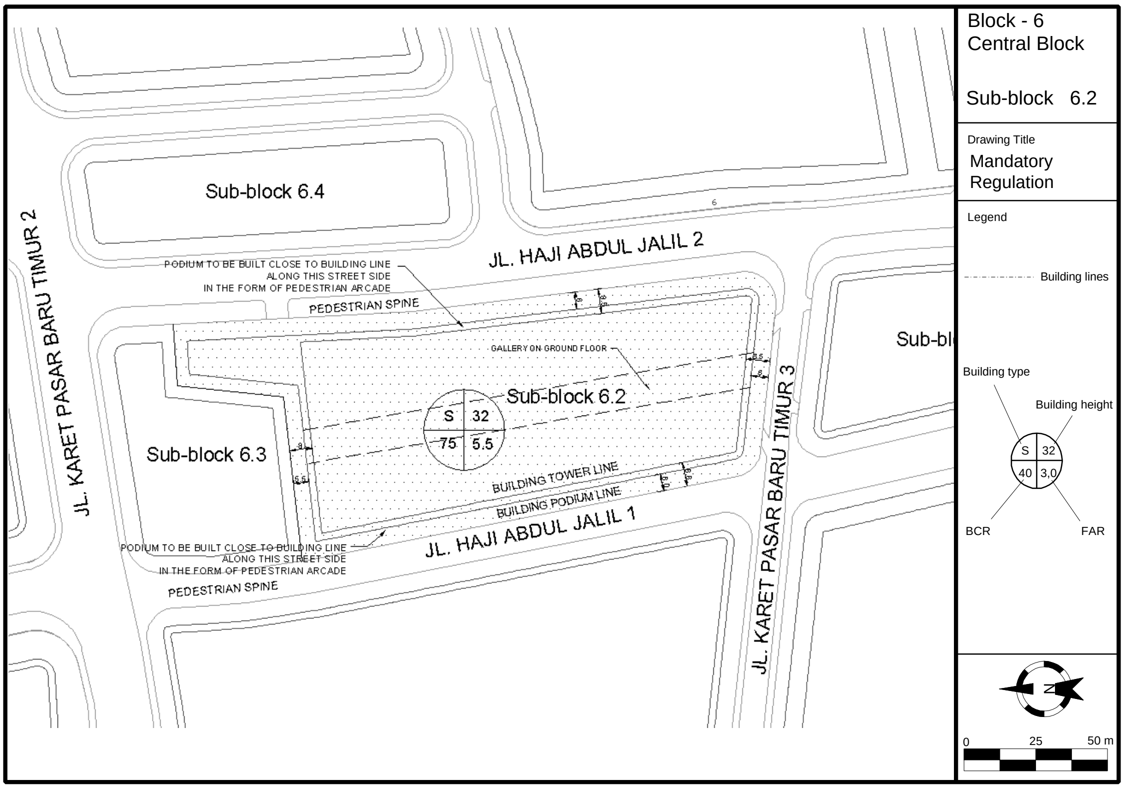
PRINCIPLES

This Sub-block provides services to other Sub-blocks in the superblock. It also links the public facilities in Sub-block 6.3 to the park on the South, through pedestrian paths on its East and West sides and a gallery along the centerline of its ground floor. Most of the open spaces and indoor public space is devoted for public activity.

This is proposed in light of the location of this Sub-block in the center of the superblock. To cope with such requirements, the Floor Area Ratio and the Building Coverage have been raised with a transfer from Sub-blocks 6.3 and 6.4.

MANDATORY REGULATION

- General Land Use: mixed-use of commercial and residential
- Floor Area Ratio 5.50
- Building Coverage 70%
- Maximum building height 32 floors



MAJOR RECOMMENDATORY REGULATION

- Land area 14,398 m^2
- Maximum floor area 79,189 m^2
- Recommended land use:
  - Commercial retail up to 39,000 m^2
  - The remaining allowable floor area may be used for commercial service (office) and residential apartment.

- Parking
  Above the required DKI standard. Parking facility may be built in multi level parking basement that spans to areas under the pedestrian spine. Connection between the parking basement of this Sub-block and that in the neighboring Sub-block 5.1 should be considered.

- Building lines
  - 6 m to podium, from parcel boundary
  - 8.5 m tower setback from parcel boundary
  - Podium is encouraged to be built close to the building line on all streets sides. Pedestrian arcade is encouraged on ground floor along Jl. Haji Abdul Jalil 1 and 2 streets

- Public facility
  Jl. Haji Abdul Jalil 1 is planned as pedestrian street with limited traffic. Jl. Haji Abdul Jalil 2 planned with an extra-wide sidewalk (7 m), of which 4.5 m is devoted for street vendor activity.

  The gallery on the ground floor of this building should be kept open for public access between 7.00 – 22.00 hrs on work days.

- Open Space
  The pedestrian street Jl. Haji Abdul Jalil 1 should be designed as a linear open space, integrated with its sidewalks and part of the private land up to the building line. This will form the pedestrian spine of the superblock. A similar design of linear urban open space is also expected on the wide sidewalk of in Jl. Haji Abdul Jalil 2 up to the building line.

- Vehicular access
  Jl. Haji Abdul Jalil 1 is intended for emergency and service access and passenger drop off only. Jl. Haji Abdul Jalil 2 connects the two superblock through-streets of Jl. Jl. Karet Pasar Baru Timur 2 and 4.

  Jl. Karet Pasar Baru Timur 3 connects this Sub-block to Jl. Mas Mansur, but not directly to Jl. Sudirman. Therefore this street is not for vehicular through-traffic.

- Major pedestrian circulation
  The main pedestrian spine goes through the sides of this Sub-block on Jl. Haji Abdul Jalil 1 and 2. A gallery along the centerline on the ground floor of the podium provides an additional all weather pedestrian access between the public facility on the North and the park on the South of this Sub-block.

RECOMMENDATORY REGULATION

- Functional Quality

    - Functional Organization
      The general function of this Sub-block is a mixture of commercial and residential uses. Commercial retail and service providers, preferably that are pedestrian-oriented, shall be accommodated in the lower floors. The upper floors (in tower buildings) are intended for rental office and apartment or hotel.

      Public activities and organized street peddlers may take place in the gallery, the pedestrian spine and on the unbuilt land of this Sub-block.

    - Pedestrian and vehicular circulation at micro level
      The sidewalks of Jl. Haji Abdul Jalil 1 and 2 make up the main part of the pedestrian network in this superblock.

      Short term car parking is allowed on Jl. Haji Abdul Jalil 2, mainly for the customers of the street vendors on its sidewalk. Parking on Jl. Haji Abdul Jalil 1 is prohibited. Car entrance into the building can be provided on its sides on Jl. Karet Pasar Baru Timur 4 and Jl. Haji Abdul Jalil 2

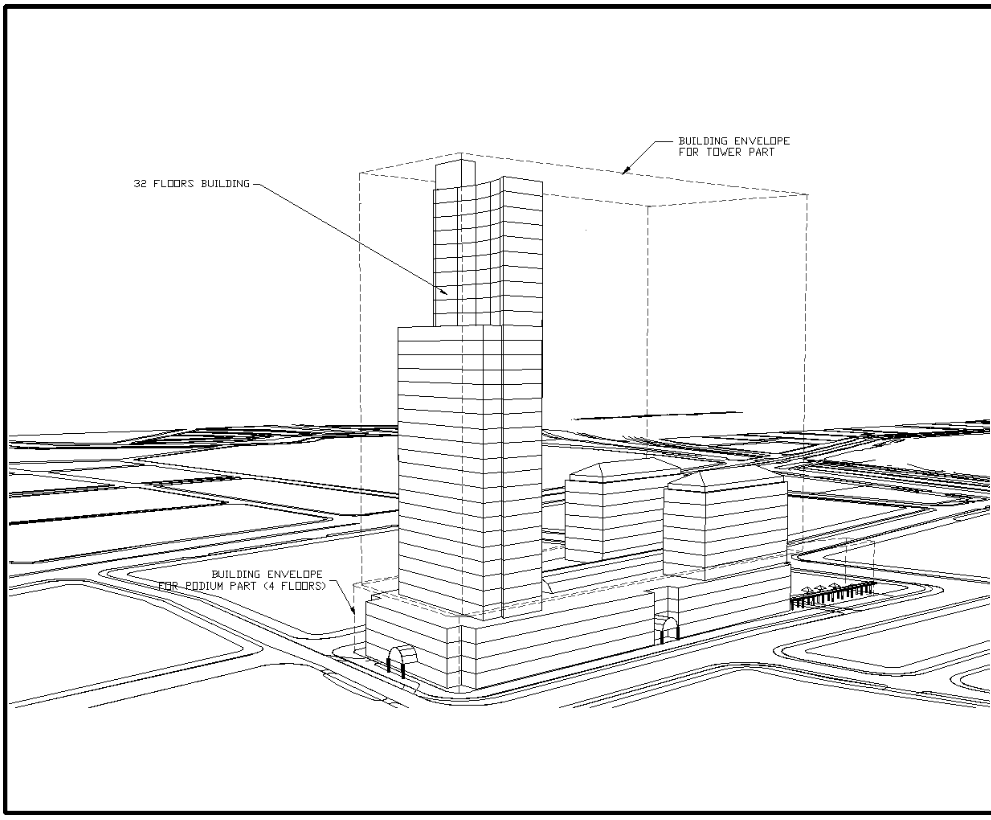
- Visual Quality

    - Aesthetic and architectural performance
      Building with a maximum height of 32 floor and the large podium structure has a role as the center of the superblock. Podium structure shall be enjoyable for people on the ground level, with arcade or colonnade along its perimeter and clear form of the entrances (using *porte cochere*). The residential tower shall have pitched roof.

    - Streetscape
      Jl. Haji Abdul Jalil 2 as the pedestrian spine must enable a smooth flow connecting it to other blocks in the superblock. Clear separation between the pedestrian path and the street vendor area can be done with differentiation of the pavement colors.

      Jl. Haji Abdul Jalil 1 should have a streetscape with a pedestrian scale. The pavement should be covered with paving blocks instead of asphalt. The layout of street furniture and planting here should slow the traffic, while the trees provide shade to the pedestrian.

    - Signage
        - On the podium structure: Signboard may be placed on parapet, facing the streets on three sides
        - On the tower structure: signboard facing outwards
        - Graphic signs should clearly indicate the functions within the building



Block - 6
Central Block

Sub-block 6.2

Drawing Title
Recommendatory Regulation

Legend

Boundary of the building envelope.

This drawing is only a simulation of the Urban Design Guidelines. Actual building may vary.

- Building material and color
  Outer wall of the building is cladded with weatherproof, low maintenance (non dust catching) material with light color as the theme of the superblock. Abrasion resistance material (such as polished stone) is recommended on the outer wall surface on the ground floor and in the gallery, where large pedestrian flow is expected.

- Environmental Quality

  - Lighting
    Flood lights are directed toward the top portion of the tower buildings.

  - Open space and landscaping
    Deciduous trees with a height of approximately 8 meter should be planted on Jl. Haji Abdul Jalil 1, interspersed with planter boxes to create comfortable walking paths and places for public activities. Jl. Haji Abdul Jalil 2 shall be planted with medium canopied trees.

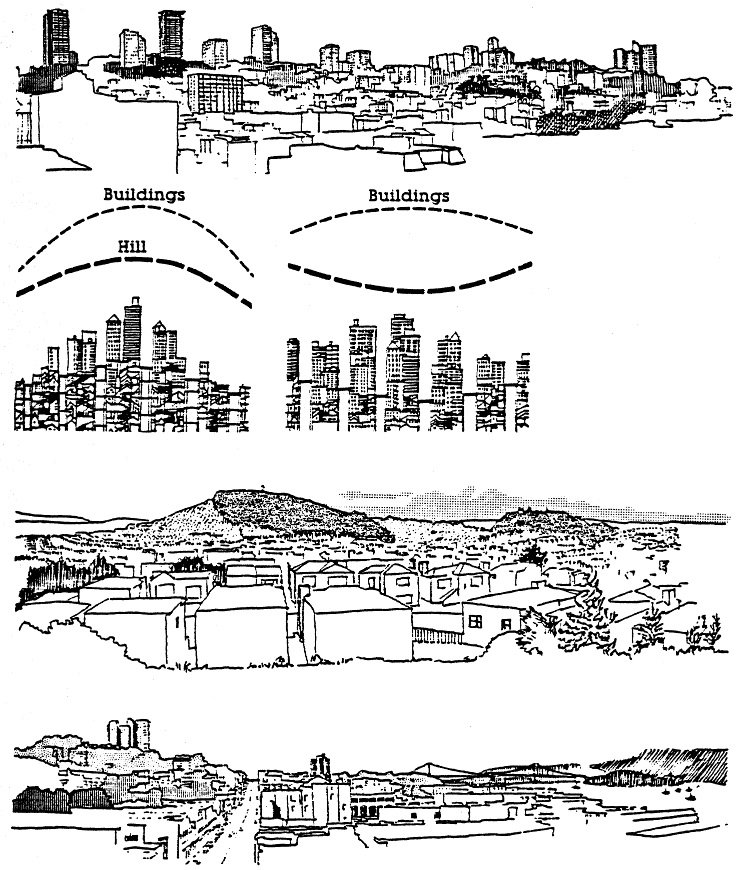
  - Public Facility
    Encourage to provide public facility such as park bench, public telephone, trash can.

  - Socio cultural aspect
    Acommodate activities and custom that prevails in the community. Sidewalk and courtyard as place for social interaction.

C. EXAMPLES OF DESIGN GUIDELINES IN THE USA

San Francisco is one of the first American cities that have comprehensive urban design plans. The urban design plan for downtown San Francisco was very successful and conducive to the effort of the public and private sector in directing the shape of the built environment. It became a model of urban design control for many other municipalities in the USA.

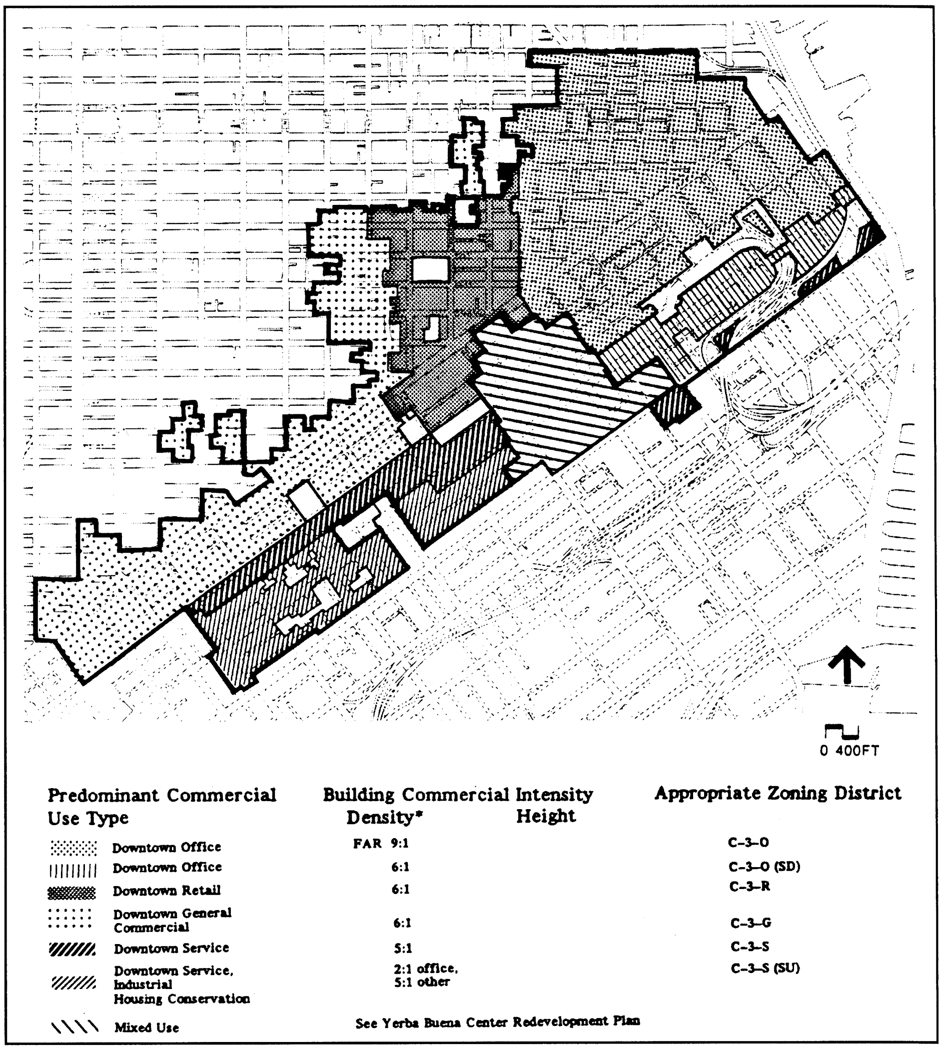
The notable features of this design guideline are its base on the assessment of the existing built form and natural condition (for example the hilly landscape of the city), and the way it expresses the guideline clearly through a hierarchy of design objectives and policies.



The illustration on the right is an example of design guidelines in relation to hillside development and building height as a part of the San Francisco Urban Design Plan (Source: City of San Francisco in Shirvani, 1985: 15). It demonstrates how the building height distribution can reinforce the image of undulating terrain, and not "flattening" it or creating a hill skyline over a valley.

Such urban design consideration is then expressed in a hierarchy of urban design objectives and policies and the detailed explanation of the policies. Examples of the urban design objectives and polices and their detailed implementation guide are presented in the following pages.

The map below shows 1985 Downtown Land Use and Density Plan of San Francisco. Source: Punter, 1999: 114. It demonstrates the possibility of delineating mixed-use development with different densities in central city areas using zoning plan.



The list below (taken from San Francisco Downtown Plan 1985) presents the urban design objectives and policies for open space, preserving the past and urban form. Source: Punter, 1999: 120-121.

OPEN SPACE

OBJECTIVE 9

PROVIDE QUALITY OPEN SPACE IN SUFFICIENT QUANTITY AND VARIETY T0 MEET THE NEEDS OF DOWNTOWN WORKERS, RESIDENTS, AND VISIT0RS.

P0LICY 1

Require usable indoor and outdoor open space, accessible to the public, as part of new downtown development.

POLICY 2

Provide different kinds of open space downtown.

POLICY 3

Give priority to development of two categories of highly valued open space; sunlit plazas and parks.

POLICY 4

Provide a variety of seating arrangements in open spaces throughout downtown.

POLICY 5

Improve the usefulness of publicly owned rights-of-way as open space.

OBJECTIVE 10

ASSURE THATOPEN SPACES ARE ACCESSIBLE AND USABLE.

POLICY 1

Develop an open space System that gives every person living and working downtown access to a sizeable sunlit open space within convenient walking distance.

POLICY 2

Encourage the creation of new open spaces that become a part of an interconnected pedestrian network.

POLICY 3

Keep open space facilities available to the public.

POLICY 4

Provide open space that is clearly visible and easily reached from the street or pedestrian way.

POLICY 5

Address the need for human comfort in the design of open spaces by minimizing wind and maximizing sunshine.

OBJECTIVE 11

PROVIDE CONTRASTAND FORM BY CONSCIOUSLY TREATING OPEN SPACE AS A COUNTER-POINT T0 THE BUILT ENVIRON-MENT.

POLICY 1

Place and arrange open space to complement and structure the urban form by creating distinct openings in the otherwise dominant streetwall form of downtown.

POLICY 2

Introduce elements of the natural environment in open space to contrast with the built-up environment.

PRESERVING THE PAST

OBJECTIVE 12

CONSERVE RESOURCES THAT PROVIDE CONTINUITY WITH SAN FRANCISCO'S PAST

POLICY 1

Preserve notable landmarks and areas of historic, architectural, or aesthetic value, and promote the preservation of other buildings and features that provide continuity with past development.

POLICY 2

Use care in remodeling significant older buildings to enhance rather than weaken their original character.

POLICY 3

Design new buildings to respect the character of older development nearby.

URBAN FORM

Height and Bulk

OBJECTIVE 13

CREATE AN URBAN FORM FOR DOWNTOWN THAT ENHANCES SAN FRANCISCO'S STATURE AS ONE OF THE WORLD'S MOST VISUALLY ATTRACTIVE CITIES.

POLICY 1

Relate the height of buildings to important attributes of the City pattern and to the height and character of existing and proposed development.

POLICY 2

Foster sculpturing of building form to create less overpowering buildings and more interesting building tops, particularly the tops of towers.

POLICY 3

Create visually interesting terminations to building towers.

POLICY 4

Maintain separation between buildings to preserve light and air and prevent excessive bulk.

Sunlight and Wind

OBJECTIVE 14

CREATE AND MAINTAIN A COM-FORTABLE PEDESTRIAN ENVIR-ONMENT

POLICY 1

Promote building forms that will maximize the sun access to open spaces and other public areas.

POLICY 2

Promote building forms that will minimize the creation of surface winds near the base of buildings.

Building Appearance

OBJECTIVE 15

T0 CREATE A BUILDING FORM THAT IS VISUALLY INTERESTING AND HARMONIZES WITH SUR-ROUNDING BUILDINGS.

POLICY 1

Ensure that new facades relate harmoniously with nearby facade patterns.

POLICY 2

Assure that new buildings contribute to the visual unity of the city

POLICY 3

Encourage more variation in building facades and greater harmony with older buildings through use of architectural embellishments and bay or recessed windows.

Streetscape

OBJECTIVE 16

CREATE AND MAINTAIN AT-TRACTIVE, INTERESTING URBAN STREEISCAPES.

POLICY 1

Conserve the traditional Street to building relationship that characterizes downtown San Francisco.

POLICY 2

Provide setbacks above a building base to maintain the continuity of the predominant streetwalls along the Street.

POLICY 3

Maintain and enhance the traditional downtown Street pattern of projecting cornices on smaller buildings and projecting belt courses on taller buildings.

POLICY 4

Use designs and materials and include activities at the ground floor to create pedestrian interest.

POLICY 5

Encourage the incorporation of publicly visible art works in new private development and in various public spaces downtown.

The example below is a section taken from the San Francisco Downtown Plan (1983), which details further the Building Appearance and Streetscape Objectives and Policies from the list of urban design objectives and policies above.

BUILDING APPEARANCE

OBJECTIVES AND POLICIES

OBJECTIVE 15

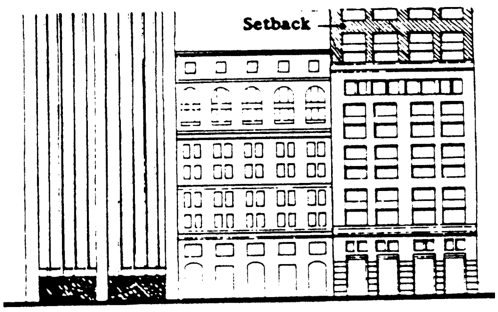
TO CREATE A BUILDING FORM THAT IS VISUALLY INTERESTING AND HARMONIZES WITH SURROUND-ING BUILDINGS.

POLICY 1

Ensure that new facades relate harmoniously with nearby façade patterns.

When designing the façade pattern for new buildings, the patterns of large nearby existing façade should be considered to avoid unpleasant juxtapositions. Incongruous materials, proportions, and sense of mass should be avoided.

As a general rule, façades composed of both vertical and horizontal elements fit better with older as well as most new facades.



The all vertical pattern of this building has little in common with the center structure

Strong verticals and horizontals strong base and similar street wall height help give building a positive relationship to center building

POLICY 2

Assure that new buildings contribute to the visual unity of the city.

For the most part, buildings in San Francisco are light in tone. The overall effect, particularly under certain light conditions, is that of a whole city spread over the hills. To maintain continuity with this existing pattern, disharmonious colors or building materials should be avoided. Buildings should be light in color. Highly reflective materials, particularly mirrored or highly reflective glass, should be used sparingly.

POLICY 3

Encourage more variation in building facades and greater harmony with older buildings through use of architectural embellishments and bay or recessed windows.

STREETSCAPE

OBJECTIVES AND POLICIES

OBJECTIVE 16

CREATE AND MAINTAIN ATTRACTIVE, INTEREST-ING URBAN STREETSCAPES.

POLICY 1

Conserve the traditional street to building relation-ship that characterizes downtown San Francisco.

San Francisco is noted for streets that are at the property line with little or no space between them. This historical pattern of development gives San Francisco its intense urban quality.

This pattern should be preserved and fostered. Structures generally should be built to the street property line along the entire frontage to a sufficient height for proper definition of street space. Exceptions to this streetwall should be allowed to create open space and circulation space where desirable and appropriate. However, open spaces should not be so frequent or close together that they undermine the sense of a continuous streetwall.

POLICY 2

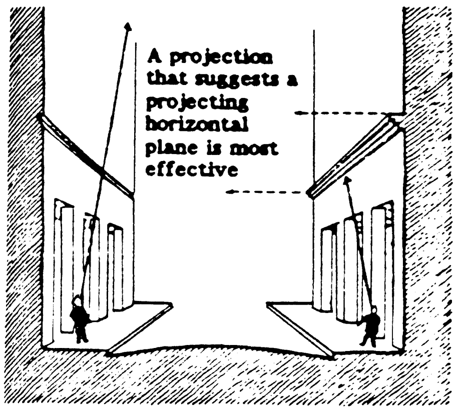
Provide setbacks above a building base to maintain the continuity of the predominant streetwalls along the street.

Many downtown streets contain ornate older buildings of modest scale, which should be preserved for future generations to appreciate. While the heights of these buildings vary when taken together, they often create a sense of a unitary street façade or wall. This streetwall gives continuity and unity to the streetscape. The intrusion of large, flat planed modern buildings among small-scaled and decorated older buildings can break up the continuity and unity.

If the new taller is set back an appropriate distance above the existing predominant streetwall height, the upper portion of the building will not be perceived as part of the streetwall, and if the lower portion were given a similar texture and projecting cornice the disruption would be minimized. The depth of the setback required would be a function of the width of the street and the height of the existing streetwall.

The height of the streetwall cannot be determined with great precision by a mathematical formula. Often there are considerable variations in the heights of buildings on the same block. Determination of an appropriate streetwall height for the new building is a question of judgement – "What height would be consistent with the general scale of the buildings on the block that are likely to remain?" This question will be resolved in a case-by-case basis.

In areas where there is no pre-existing streetwall worthy of retention, setbacks may not always be needed if a strong, pedestrian-scaled building base is created and the building tower is well separated from other towers. However, setbacks might still be needed for sunlight access or to create windbreak.



At the base of a building with a recessed band vision can slide by along the surface of the building

The projecting beltcourse firmly interrupts the line of vision and sets a scale for the street

POLICY 3

Maintain and enhance the traditional downtown street pattern of projecting cornices on smaller buildings and projecting belt courses on taller buildings.

The projecting cornice is a very distinctive San Francisco architectural feature. Most older buildings have them. Most tall older buildings also have horizontal architectural features that clearly define the building base at a level typically half to one times the width of the street. These projections, together with the generous use of decorative embellishments, contribute to the architectural sense and comfortable human scale of downtown San Francisco. Their contemporary use should be encouraged in new development. Alternative means of terminating the shorter building or defining the base of a taller one could be employed if effective in creating a sense of street scale. However, it is extremely difficult to do this unless one's eye is interrupted by a projection as it moves up the façade from the base. Change of color, colored bands, and grooves are generally ineffectual and rely on the projections on adjacent buildings for what effect they do have.

POLICY 4

Use designs and materials and include activities at the ground floor to create pedestrian interest.

Retail Uses

Shops and restaurants contribute liveliness and visual interest to street frontages, lobbies and plazas of office buildings. Group floor space fronting on streets, pedestrianways, plazas, and courtyards outside the retail district should be developed primarily to retail and service uses that are of interest to pedestrians and that meet the needs of workers and visitors to nearby buildings.

Glass

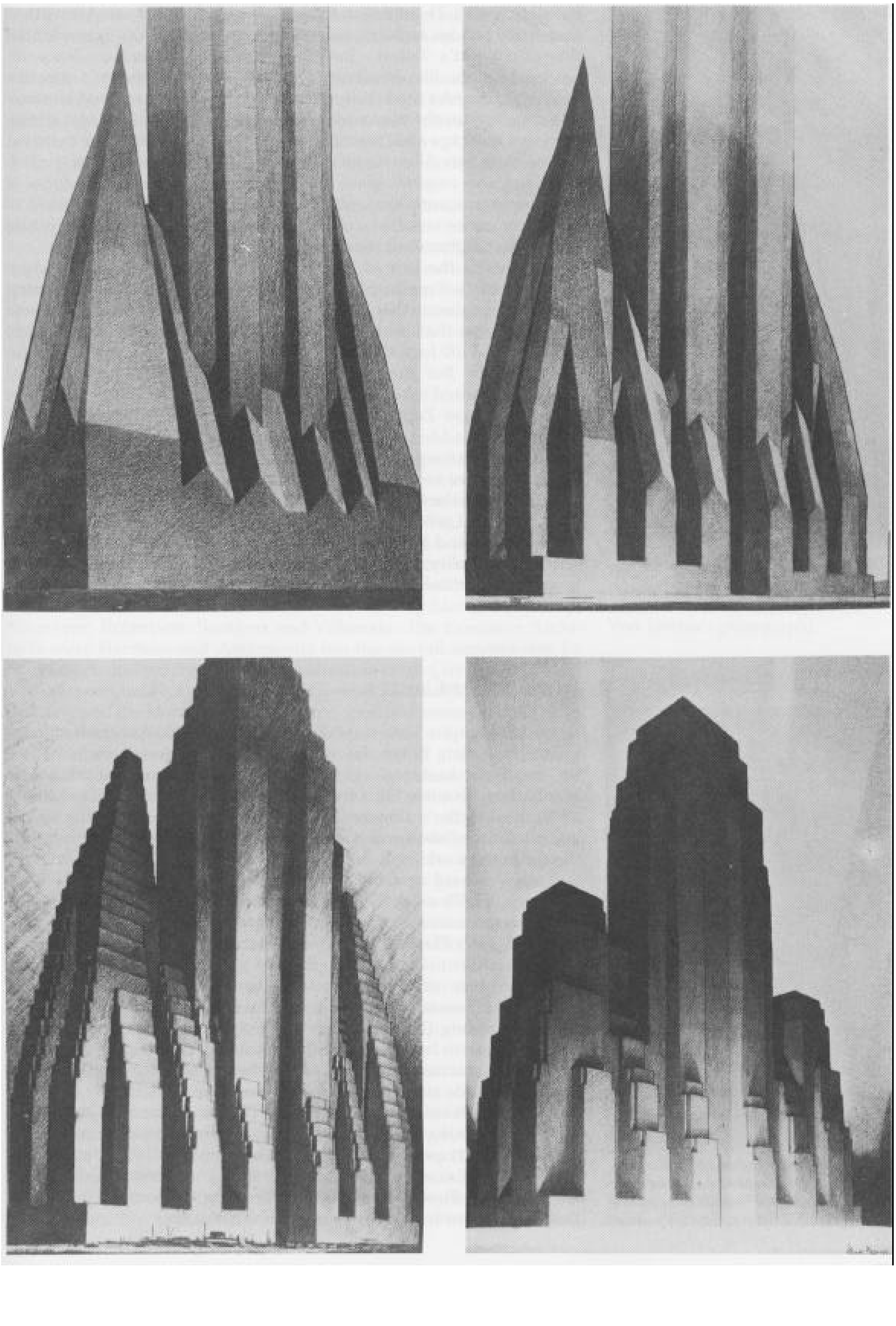
The use of clear untinted glass on the first two or three floors of buildings permits pedestrians to glimpse the activity within, contributing to the overall sense of liveliness of the street. Dark tinted windows create a blank impersonal street front with no sense of life or activity, and should be discouraged.

Detailed Bases

Incorporation of visually interesting details and/or decoration into the design of the base avoids an excessively dull frontage.

Decorative features, including the detailing found on many older and some contemporary designs, assure needed visual interest for the pedestrian. They should be used whenever practical.

Hugh Ferris in 1980 has illustrated the impact of 1922 zoning law in New York upon the "envelope" that shows allowable building mass. He showed the building envelope as formed / constrained by the need of daylight penetration (above left), the realities of steel frame construction (above right), the realities of renting (below left), and the architectural needs (below right) [Broadbent, 1990: 68].



THE ESSEX DESIGN GUIDE for Residential and Mixed Use Areas

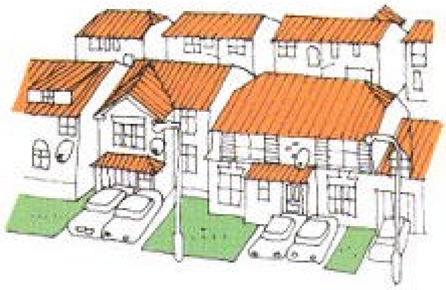
Introduction

The Essex Design Guide for Residential Areas first appeared in 1973, published by Essex County Council, and has been used in development control in Essex over the ensuing period. The Guide has been influential and useful, but, though many of its recommendations remain relevant, was due for updating as a result of changing circumstances.

The 1973 Design Guide was a response to concern about the poor appearance of new housing areas at the time. It set out underlying visual principles of past and present built environments and objective visual criteria against which proposals could be assessed.

Even in those cases where there have been attempts to apply them, it is evident that many housebuilders have been pulling in the opposite direction. Thinking is still dominated by the perceived need to purvey the suburban ideal of the detached house on its plot. The problem is that when back gardens and side ways have been squeezed to get as many houses on the site as possible, and multiple car ownership catered for, often in front of houses, this ideal becomes unworkable.

Suburban dream



Suburban reality

Since the publication of the 1973 Design Guide there have been a number of changes in the context for setting physical criteria. Internal space standards became non-mandatory in 1975. Experience has shown rear privacy requirements not to have to be as stringent as recommended by the Guide.

Summary of Main Changes

The following is a summary of the main changes in this Guide from the 1973 Guide:

1. A site appraisal is now required for all development sites larger than 1 hectare (2.5 acres).
2. Any residential development larger than 500 dwellings must incorporate some mixed-use development of an employment and/or retail nature.
3. Sustainability issues must be addressed for development sites larger than 1 hectare (2.5 acres).

acres).

4. The layout structure on development sites larger than 1 hectare (2.5 acres) must be both permeable and legible.

5. There is greater emphasis given to the need for continuity of built frontage and the setting forward of buildings to enclose space in the case of densities over 20 dwellings per hectare (8 dwellings per acre).

6. Schemes must be designed with crime prevention in mind.

7. Access for the disabled must be provided in certain situations.

8. Any residential development containing a road over 100 metres in length must be designed to reduce traffic speeds to 20 mph (30 kph) by means of physical speed restraints.

9. Where future residents are prepared to enter into an agreement not to own cars, it is possible to lay out residential development as a Car Free Zone.

The Planning Context

The County Structure Plan identifies broad areas for growth and development in Essex within the context of which Local Plans specify which sites and locations are appropriate for different types of development. Both Structure and Local Plans require all new development to be well designed and to fit in with its surroundings. It is the purpose of this document to provide Supplementary Planning Guidance as to how to achieve these aims, and it should be read in conjunction with other design advice contained in Local Plans and design briefs.

The government also issues advice in the form of Planning Policy Guidance Notes, Traffic Advisory Leaflets, Design Bulletins, etc. Generally, planning authorities are expected to ensure that development is environmentally sustainable, efficient and well located in its use of land, does not give rise to unnecessary use of motor vehicles, is energy-efficient, is safe to move about in, provides minimum opportunity for crime, does not disadvantage the disabled and, significantly, is well designed in terms of its appearance.

PPG1 recognises that the appearance of a development is a material planning consideration and draws particular attention to the setting of buildings and the treatment of spaces between and around them.

Case law* has established that the design of individual buildings is also a consideration insofar as it affects the layout, and this Guide therefore extends to the detailed design of dwellings. PPG13 recommends that, where possible, residential development should not be single-use but incorporate commercial and employment uses in order to create more self-contained communities and reduce the need to travel. Whilst the actual creation of communities is beyond the scope of planning, it is an aim of this Guide to encourage layouts that foster the eventual emergence of a local community.

Application of the Design Guide

PPG1 states that good design should be the aim of all involved in the development process, and that it is primarily the responsibility of designers and their clients, who should recognise the benefits of engaging skilled advisers. Unfortunately the majority of planning applications for residential development in Essex continue to be submitted without the assistance of an architect. The overriding application of cost constraints by developers means that the planning system therefore has to remain the long stop for ensuring an acceptable standard of design.

It is hoped that the Guide will encourage more developers to re-examine their approach and employ an architect in order to meet this standard.

At the same time, were good design to be dismissed as a matter of opinion or taste, planning authorities would be left open to accepting the lowest common denominator of quality. By setting out a clearly related structure of design and layout principles, planning authorities have a basis for refusing 'obviously poor' schemes, as required by PPG2.

As Supplementary Planning Guidance, this Guide is part of planning policy, and it is therefore not the intention that its provisions be set aside in exchange for other planning obligations, e.g. the provision of social housing by a developer, that may be negotiated by a planning authority.

Context

Some sites will be 'greenfield' in which the context of surrounding development is not significant. Others will have to fit into a context of pre-existing development. Depending on the context, the planning authority will have to determine whether a new scheme should perpetuate the format of the surrounding area or establish a new one. If surrounding development has a strong pattern and character that could be detracted from by insensitive new development, the new scheme should pick up the theme of the existing and seek to enhance it. This would be the case, for example, with a site surrounded by pre-20th century development.

Obviously a context consisting of average twentieth century housing will not fall into this category. If, more typically, the surrounding area has no distinctive character and only a weak identity, the preferable course may be to establish a strong, new pattern, based on the principles in this Guide, that contrasts with the surrounding area and forms a focus for it.

In the case of, say, a nineteenth century context, the planning authority would have to be selective in its choice of policies from this Guide if it wished new development to fit in with its context.

Essex Character

It is the aim of this Guide to encourage new development to respect and fit in with the character of traditional Essex towns and villages. Obviously this character is very varied, but for the purposes of new housing it is the 'background' urban texture of a historic settlement which is important.

(a) Pre-I8th century pattern

A surprisingly large proportion of the core areas of historic settlements is made up of structures and layouts dating from before the 18th century.

pre-18th

Generally buildings are joined together & directly front the street without front gardens. Building elements are shallow in plan - no more than 5 metres - and roofed at 50 degree pitch, with the skyline enlivened by chimneys and dormers. More usually the flank of the building is presented to the street, but gables and jetties project at intervals. Buildings of this date are timber framed and normally rendered in smooth lime plaster and roofed in hand-made plain clay tiles. White painted weatherboarding is sometimes found, particularly in coastal areas, and black-painted weatherboarding & clay pantiles on outbuildings and barns.

(b) 18th and 19th century pattern

18th and 19th century buildings are generally deeper in plan, typically two rooms deep, and have shallower pitched roofs, down to 30 degrees. In the 18th century these buildings tend to appear as incidents within the historic townscape. They are typically of orange-red brick with tiled or slate roofs and vertically-proportioned sliding sash windows. In addition, many older buildings were refronted in this style at the same period, but their origins are betrayed by their shallower plan and original roofs.

18th - 19th

In the 19th century buildings also appear as incidents in the historic townscape, but whole streets of usually terrace but sometimes semidetached houses start to be developed. Sometimes houses are built up to the street frontage and sometimes they have enclosed front gardens. They have vertically proportioned sash windows and substantial, centrally placed chimney stacks. In addition to red brick and tiled roofs, slate roofs are very common, and gault and Suffolk white bricks are found in the north of the county with yellow London stock bricks in the south.

(c) 20th century

Whilst the 19th century disciplines survive up to 1914, the rest of the 20th century is characterised by a fragmentation of built form much of which has largely failed to relate to the townscape of previous centuries. Houses tend to be detached or semidetached, sit on individual plots and are set back from the road. This type of development is referred to as suburban, and is typical of that found in all parts of the country. The format of such housing can be handled successfully in design terms, however, but only at densities below 20 houses per hectare (8 dwellings per acre) - see page 17 - in order to provide an adequate landscape setting. At higher densities the aim should be to create urban streets typical of pre-20th century development.

20th

The Principles of Spacial Organisation

The aim of fitting in with the character of traditional towns and villages requires, for its fulfilment, the enclosure of space, whether by buildings or by landscape. Enclosed spaces are visually pleasing and create a sense of place. They provide variety of visual interest, and are more "comfortable" at the pedestrian scale. If the space is too large, a frequent problem, there is a loss of comfortable contact with the surroundings and a tendency towards a feeling of agoraphobia. The counterpart, less frequently encountered, is a space which is too small, leading towards a feeling of claustrophobia. Enclosed spaces also create safer and more secure environments, and influence drivers' perception of speed in residential areas.

Traditionally there are two ways of organising space and buildings:

(a) Rural System

Here the landscape contains the buildings. Buildings are set in landscape space: a mansion in its park or a group of farm buildings in their agricultural setting.

The key is: **Landscape Containing Buildings.**

(b) Urban System

Here the previous example is reversed, with buildings containing the space: the streets, squares. alleys and courts which make up the character of our historic towns and villages.

The key is: **Buildings Containing the Space.**

(c) Unsatisfactory Suburbia

Much twentieth century housing development has failed to recognise these two basic principles. This has resulted in unsatisfactory suburbia, where there are too many buildings for the landscape to dominate and yet buildings are too loosely grouped or of insufficient height to enclose space. THIS IS THE FIRST AND MOST IMPORTANT REASON FOR THE VISUAL FAILURE OF MUCH HOUSING DEVELOPMENT.

The increase in visual density from uninhabited landscape to the urbanity of the city may be viewed as a spectrum with individual buildings in the landscape forming one extremity and the city centre the other, and all other types of settlement pattern coming in between.

At the beginning of the spectrum is the truly rural situation, where an isolated dwelling or small group is located in the landscape. As such development is a very small proportion of the total of new building, detailed consideration falls outside the scope of this document. Suffice it to say that on such occasions siting and relationship to landscape should receive the same sort of care as would a proposal in a Conservation Area.

Next come those types of development where there is a greater quantity of housing laid out according to landscape-dominated principles, creating the illusion of a rural environment in a residential area. This is Arcadia, and its principles are set out on page 17. This effect cannot usually be achieved at densities over 8 houses per hectare (3 houses per acre). Then come those types of development in which trees still predominate and enclose the public space, but a more formal arrangement of the houses permits higher density, 10 to 20 houses per hectare (4 to 8 houses per acre). This is Boulevard Planning, and its principles are set out on pages 17 and 18.

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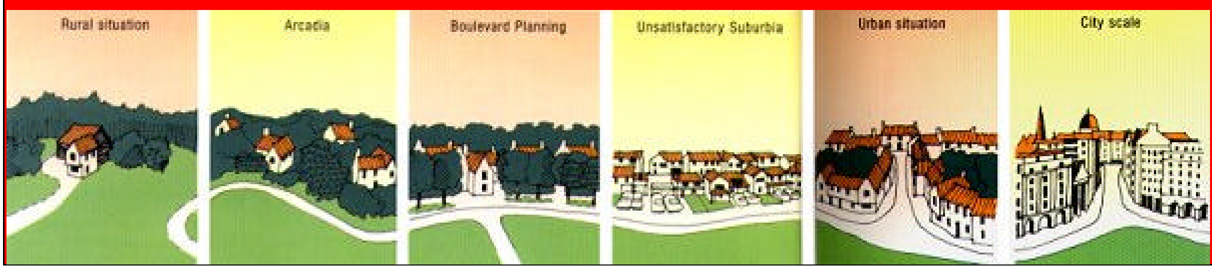
In the middle of the spectrum is Unsatisfactory Suburbia, where houses are still set on plots, but in such a cramped fashion that there is no illusion of the houses being within a landscape setting yet the houses are too loosely grouped to contain spaces satisfactorily. Frontages are fragmented by gaps, and the public space dominated by estate roads and car hardstandings. This failure to organise space properly is the most fundamental reason why most suburbia fails visually.

At the farther end of the spectrum are urban groupings in which space is enclosed by more or less continuous building frontages. The principles of handling this kind of development are set out on page 21 on Development at Densities above 20 houses per hectare (8 houses per acre). These are the types of grouping characteristic of historic towns and villages in Essex. The extreme end of the spectrum, the City Scale, is not found in Essex, and therefore falls outside the scope of this document.

In a large development, one would expect to see a variety of densities of development, from Arcadia to urban groupings.

Spectrum of Visual Density

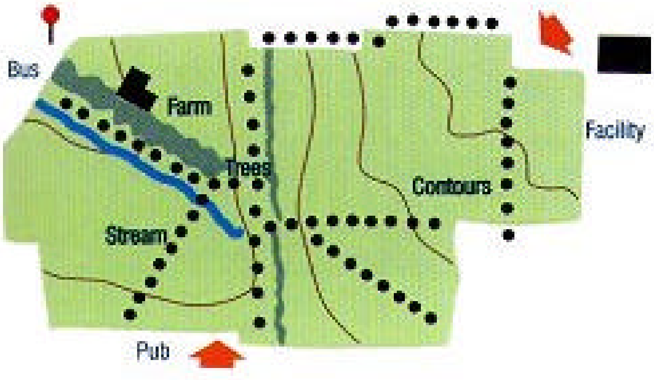


Site Appraisal

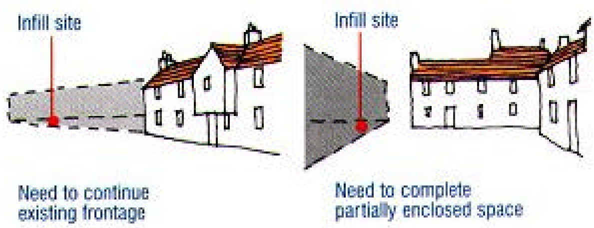
The planning applicant should carry out an appraisal of the site before designing the scheme. IN THE CASE OF SITES LARGER THAN 1 HECTARE (2.5 ACRES) THIS SITE APPRAISAL MUST PRECEDE OR ACCOMPANY THE PLANNING APPLICATION.

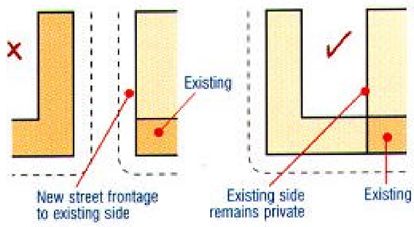
The site appraisal should cover the following aspects, which should be plotted on a plan:

- An analysis of visual and physical character of the site and the visual and physical relationship of the site to its townscape and landscape context.
- Views into and out of the site, landmarks in the surrounding area.
- Existing movement pattern and desire lines across and around the site.
- Access points to the site.
- Existing and potential nodal points within or near the site.
- Existing buildings and structures on and adjacent to the site and whether they are to be retained.
- Wayleaves and easement strips that cannot be built on.
- Slopes, wind shelter, overshadowing.
- Trees, their spread, height and condition, hedges, boundary features and whether they are to be retained.
- Wildlife habitats and whether they are to be preserved.

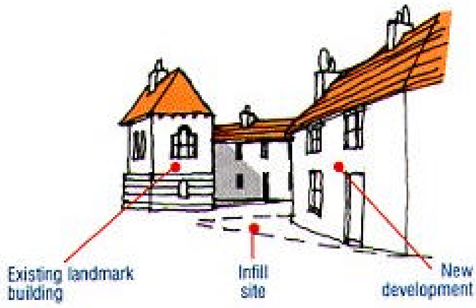


Decisions should be made as to where built frontages are required and to what scale in terms of building heights. For example, an existing road frontage may need continuation, or a space which is already partly enclosed may need completion of the enclosure by the new development. Attention should also be paid to ensure that the new development is a good neighbour to existing properties, for example that the sides and rears of existing properties do not become a frontage to a new road or publicly accessible area.





Existing key views and landmark buildings should be identified and respected by the new scheme. Similarly, points where new key buildings and views are required should be established, and the desirable form they should take.



E. German Bebauungsplan and Gestaltungssatzung

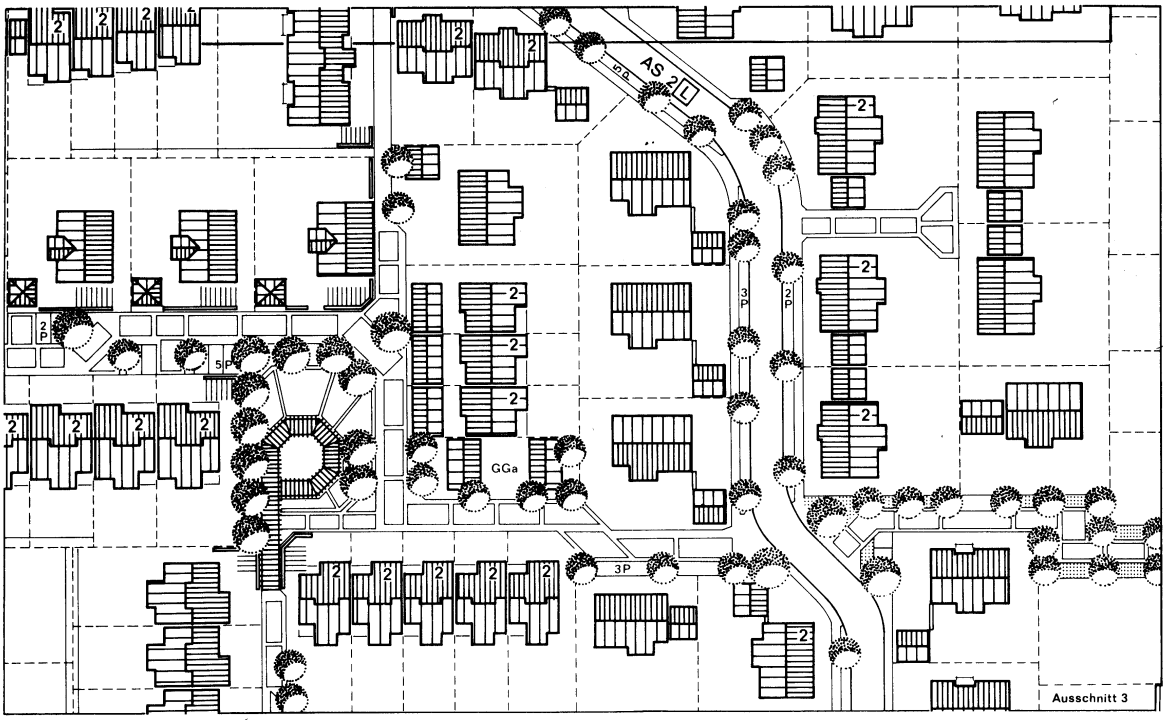
According to the BauGB (the federal building code), *Bauleitplanung* (urban land-use planning) in Germany is conducted through the *Flächennutzungsplan* and the *Bebauungsplan*. The *Flächennutzungsplan* or land-use plan is already familiar to the town planners in other countries, but the *Bebauungsplan* or building plan is somewhat different from the common planning instrument in other countries. The *Bebauungsplan* has enough level of detail for delineating the building mass. However, if we want to prescribe specific detailed design of an area, the graphic part of the *Bebauungsplan* must be supported with a detailed text part, or it can be complemented with a separate design code.

Examples from the graphic part of a *Bebauungsplan* are presented in the next page. The top figure shows an urban design plan for a residential area. In the urban design plan, the buildings, major vegetation and body of water, street and paths etc. are drawn as they are seen from above. On the building roof, number (e.g. 2 in the example figure) indicates the number of floors of the building. Dashed lines are the boundary of each land parcel.

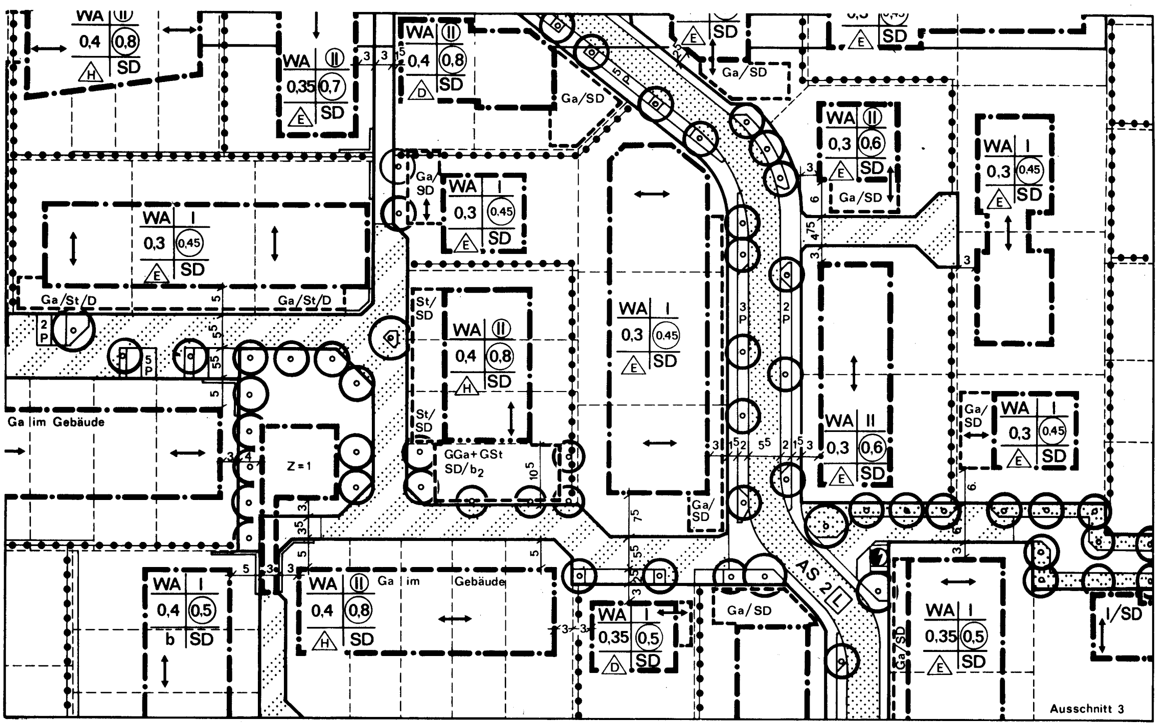
The urban design plan in the top figure is translated into the graphic part of a *Bebauungsplan* in the bottom figure by using standard notations for indicating the building use (WA = *Allgemeines Wohngebiet*, general residential area), the number of floors, FAR, BCR, building type (H = House group, E = detached housing), roof type (SD = Satteldach, saddle roof) and the direction of the roof ridge with ? symbol. Dash-dot line delineates the building line, which can be drawn free from the parcel boundary (dashed line). Numbers or letters within circle or triangle are mandatory; for instance encircled II means 2-story building is there mandatory.

Gestaltungssatzung can reinforce the directives of the *Bebauungsplan,* but it can be used also independently in areas that has no *Bebauungsplan.* An example of local design code for Speicher municipality in the German state of Rhineland-Palatinate is presented on the following pages (source: Mohr, 1993).

The figure below shows an urban design plan for a residential area + common facility



The plan above is translated into the graphic part of a Bebauungsplan as following. Source: Hangarter, 1999: 190.



Örtliche Bauvorschriften zur Gestaltung der Gemeinde Speicher

Gesetzesgrundlagen

Der Gemeinderat hat aufgrund des § 86 des Landesbauordnung (LBauO) vom 28. November 1986 (GVBl. S. 307), zul. geänd. durch G v. 8.4.1991 (GVBI. 8.118) i.V. mit § 24 der Gemeindeordnung (GemO) für Rheinland-Pfalz vom 14.12.1973 (GVBI. 5. 419), zul. geänd. durch G v. 2.6.1992 (GVBl. S. 143) im Benehmen mit der zuständigen Denkmalschutzbehörde die folgende Satzung beschlossen, die nach Genehmigung durch die Kreisverwaltung Bitburg-Prüm in Bitburg vom ______ hiermit bekannt gemacht wird.

Präambel

Das Erscheinungsbild des Ortsinnenbereiches von Speicher wird geprägt durch die dominierende Größe der Kirche, durch eine Vielzahl maßstäblich unterschiedlicher Geschäfts- und Bürgerhäuser, durch eine vielfältige Raumfolge von Straßen und Plätzen.

Ziel der Satzung ist, das mit großem privaten und öffentlichen Aufwand im Rahmen der Ortssanierung entwickelte Ortsbild zu erhalten bzw. weiterzuentwickeln. Die getroffenen Regelungen sollen dazu beitragen, dass sich Neu-, Um- und An. bauten in das Entwicklungskonzept einfügen. Die sonstigen Vorschriften der Landesbauordnung sowie die hierzu erlassenen Rechtsverordnungen und die Vorschriften des Denkmalschutzgesetzes in der jeweils geltenden Fassung bleiben unberührt.

Begründung zur örtlichen Bauvorschrift

Wegen der regionalen Bedeutung des Mittelzentrums Speicher im Schnittpunkt der umgebenden Zentren - Trier, Bitburg, Wittlich - sind u.a. besondere Anstrengungen im kulturellen und städtebaulichen Bereich sowie Anforderungen gestalterischer Art an bauliche Anlagen, an Werbeanlagen und Automaten, insbesondere im durchgeführten Sanierungsgebiet, erforderlich.

Die Gemeinde Speicher bemüht sich durch planerische und gestalterische Maßnahmen, ihr Straßen-, Orts- und Landschaftsbild entscheidend zu verbessern. Den Instandsetzungs-, Erneuerungs- und Neubaumaßnahmen im Ortsinnenbereich ist folglich in Zukunft ganz besondere Beachtung zu widmen. Jede einzelne Maßnahme muss mehr als bisher im Zusammenhang mit anderen betrachtet werden, damit das Ortsbild ausgewogen und lebendig bleibt bzw. verbessert wird. Dies gilt sowohl für das Sanierungsgebiet und die bebaute Ortslage als auch für die neu auszuweisenden Baugebiete.

Insbesondere wird angestrebt:

- Die baulichen Anlagen und die sonstige Nutzung der Grundstücke sollen ein geschlossenes Ortsbild mit klarer Gliederung ergeben.
- Landschafts- und regionalgebundene Bauelemente sind in zeitgemäße Formen zu übersetzen.
- Bauliche Anlagen sind in Stellung, Proportion und Gestaltung in die sie umgebende Situation einzufügen.
- Details sollen funktionsgerecht wirken.

Die Umsetzung der vorgenannten Gestaltungsziele sind zwingend geboten, damit die städtebaulichen Vorgaben der Ortssanierung ergänzt und sinnvoll weitergeführt werden können.

Inhaltsübersicht

Teil I

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§1
Räumlicher Geltungsbereich

Diese Satzung gilt für alle bebauten und unbebauten Grundstücke im inneren Ortsbereich. Die Gebietsabgrenzung ist im beigefügten Lageplan dargestellt. Der Lageplan ist Bestandteil der Satzung.

Die Bestimmungen rechtskräftiger Bebauungspläne sind anzuwenden.

§2
Sachlicher Geltungsbereich

Die Vorschriften dieser Satzung regeln im Geltungsbereich

- die Gestaltung aller nach der LBauO genehmigungsbedürftigen (§ 60) und genehmigungsfreien (§ 61) Vorhaben.

- die Gestaltung und Anbringung von Werbeanlagen und Automaten aller Art, Größe und Anbringungsrot sowie deren Genehmigungspflicht

- die Gestaltung der:
  - Lager-, Abstell-, Aufstell- und Ausstellungsplätze
  - Kfz-Stellplätze
  - unbebaute Flächen bebauter Grundstücke

- die Notwendigkeit, Art, Gestaltung und Höhe von Einfriedungen
- Verbot der Vorgärtennutzung als Arbeits- oder Lagerflächen
- geringere oder größere Abstandsflächen
- den Anbringungsrot und die Gestaltung von Hausnummern
- die Anbringung von Außenantennen.

§3
Erweiterte Genehmigungsbedürftigkeit

Durch diese Satzung werden Änderungen der äußeren Gestalt baulicher Anlagen durch Anstrich, Verputz oder Dacheindeckung oder durch den Austausch von Fenstern, Fenstertüren oder Außentüren sowie durch Bekleidungen und Verblendungen von Wänden mit nicht mehr als 8 m Höhe über der Geländeoberfläche (0 61 Abs. 2) genehmigungspflichtig.

Teil II Äußere Gestaltung baulicher Anlagen

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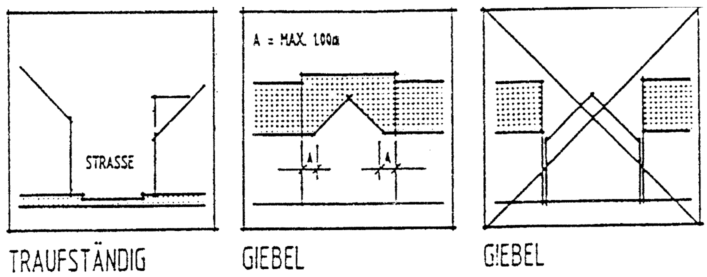
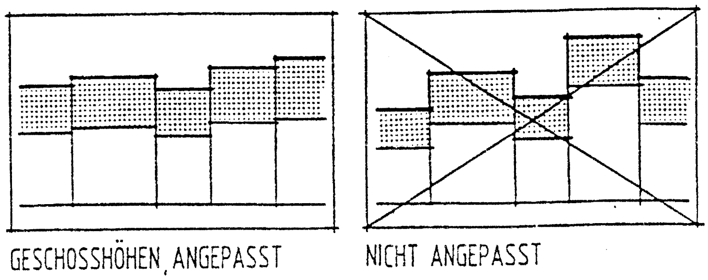
§4
Fassade

4.1 Gebäudestellung
Die Fassaden sind traufständig zur Haupterschließungsstraße anzuordnen. Bei giebelständigen Vorbauten und aufgesetzten Giebeln sind an beiden Seiten Trauflängen von mind. 1 m vorzusehen.



4.2 Gebäudehöhe
Die Gebäudehöhe soll sich der Anzahl der Geschosse der angrenzenden Gebäude in der geschlossenen Bauzeile angleichen.



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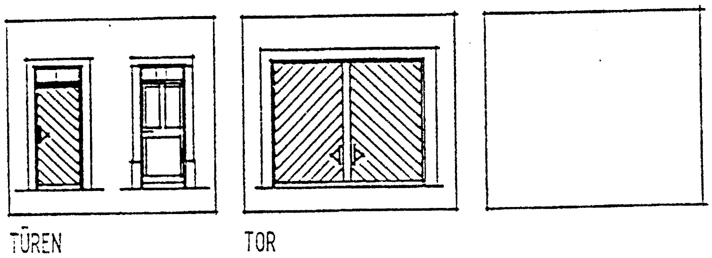
4.9 Grundton an Putzbauten
Der Grundton der Fassade muss grundsätzlich pastellfarbenen Charakter aufweisen und einheitlich auf sämtliche Wandflächen aufgetragen werden. Ausnahmsweise können an städtebaulich wichtigen Stellen (Ecksituationen, aus der Gebäudeflucht hervortretende Häuser etc.) dunkel getrübte Farbtöne verwendet werden. Lokalfremde Pastelltöne, wie die Farbabstufung lila bis blau, dürfen wegen der großen Gefahr einer Disharmonie innerhalb einer Häuserzeile oder Umgebung nicht zur Anwendung kommen.

§5
Türen und Tore

5.1 Historische Türen und Tore
Historische Türen und Tore einschließlich ihrer Gewände sind grundsätzlich zu erhalten. Bei erforderlicher Erneuerung sind straßenseitige Türen und Tore in Holz mit maßstäblicher Gliederung zu ersetzen.

5.2 Türen und Tore in Neubauten
Türen und Tore in Neubauten und sonstigen vorhandenen Gebäuden sollen in Holz mit entsprechender Gliederung ausgeführt werden. Ausnahmsweise kann auch dunkel gestrichenes Metall verwendet werden.



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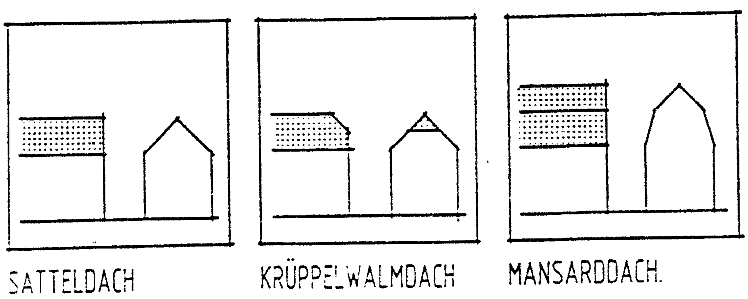
6.5. Markisen
Im Zusammenhang mit Schaufenstern sind Markisen zulässig, wenn jeweils nur eine Fensterachse überspannt wird.

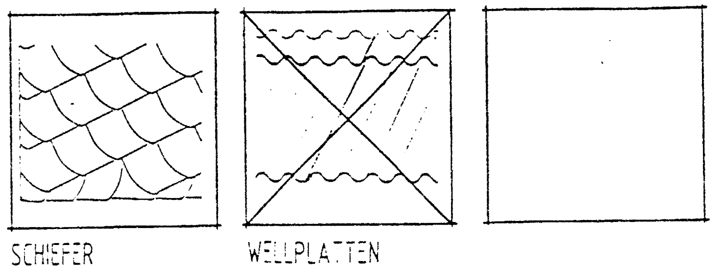
§7
Dach

7.1 Dachform
Zur Erhaltung der Dachlandschaft sind nur Satteldächer, Krüppelwalmdächer und Mansarddächer zulässig. Im nicht einsehbaren rückwärtigen Grundstücksbereich sind andere Dachformen erlaubt.



7.2 Dachneigung
Die Dachneigung sowie die Firsthöhe ist unter Beachtung der Nachbargebäude festzulegen. Die Mindestneigung der baulichen Anlagen beträgt 42° +/- 2° (Altgrad). Als Dachfarbe ist schieferfarbig vorzusehen.

7.3 Dacheindickung
Als Dacheindeckung sind Natur- bzw. Kunstschiefer zu verwenden. Großformatige Wellplatten und Blechdeckungen sind nicht zugelassen.



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§ 14
Antennen

Je Gebäude ist höchstens eine Aul3enantenne zulässig.

§15
Ausnahmen und Befreiungen

15.1 Für Seitenwände und Rückfronten baulicher Anlagen können Ausnahmen gestattet werden, wenn diese Ansichten nicht von ortgestalterischer Bedeutung sind.

15.2 Darüber hinaus können von dieser Satzung Ausnahmen gestattet und Befreiungen gewährt werden, wenn bauliche Anlagen so gestaltet werden, dass sie nach Form, Maßstab, Verhältnis der Baumassen und Bauteile zueinander, Werkstoff und Farbe nicht störend wirken und mit ihrer Umgebung so in Einklang gebracht werden, dass sie auf das Straßen-, Orts- und Landschaftsbild oder deren beabsichtigte Gestaltung besondere Rücksicht nehmen.

15.3 Im übrigen richten sich die Ausnahmen und Befreiungen nach §§ 67 und 86 Abs. 7 LBauO Rh.-Pf.

§16
Ordnungswidrigkeiten/Geldbuße

Wer vorsätzlich oder fahrlässig den Geboten und Verboten der Satzung oder einer aufgrund der Satzung ergangenen vollziehbaren Anordnung zuwiderhandelt, handelt ordnungswidrig im Sinne des § 24 Abs. 5 LBauO. Eine Ordnungswidrigkeit kann mit einer Geldbuße bis zu 10.000,-- DM geahndet werden. Das Bundesgesetz über Ordnungswidrigkeiten vom 24. Mai 1968 (BGBI. 5. 489) in seiner jeweils geltenden Fassung findet Anwendung.

Personal

Name:	Heru Wibowo Poerbo
Date of birth:	6 September 1963
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Family status:	married, one daughter

Academic

Jan 1970 - Dec 1975	Elementary School in Bandung, Indonesia
Jan 1976 - Jun 1979	Junior High School in Bandung, Indonesia
Jul 1979 - Jun 1982	Senior High School in Bandung, Indonesia
Aug 1983 - Oct 1988	Dept. of Architecture, Institute Technology Bandung
Final Project:	Multi-function Building in Simpang Dago Prof. Ir. M. Danisworo, Ph.D., M.Arch., MUP
Degree:	Sarjana (Bachelor) in Architecture
Aug 1990 - Dec 1992	Department of Urban and Regional Planning, the University of Hawaii, USA
Final Paper:	Co-Design: Community Participation in Urban Design Prof. Gordon K. Lowry, Ph.D.
Degree:	Master of Urban and Regional Planning
Sept 1993 - Aug 1994	Post-graduate study at the International Institute for Aerospace Survey and Earth Sciences (ITC) in Enschede, the Netherlands
Degree:	Diploma in Geo-information System for Urban Application (with distinction)
Sep 1994 - Oct 1994	GIS course at the Universidad Complutense Madrid

Occupation

Since Dec 1988	Architect and planer at Encona Engineering Inc.
Since 1990	Lecturer at the Department of Architecture, Institute Technology Bandung. Field of concentration in urban design.
Since 1994	Research staff at the Center for Urban Design Studies, Institute Technology Bandung.
Since 1995	member of the Indonesian Institute of Architect