UNIVERSITY OF HONG KONG
LIBRARY

This book was received
in accordance with the Books
Registration Ordinance
Section 4.
The Architectural Office and the Buildings Ordinance Office have been in existence for many years but it was not until 1 April 1982, following the break-up of the former Public Works Department, that together with a headquarters organisation they were linked to form the Building Development Department.

The responsibilities of the department extend to both public and private buildings. The advice it provides on all aspects of building design and construction and maintenance of the government estate meets the needs of the public sector, including quasi-governmental bodies such as subvented hospitals and schools, whilst the implementation of building legislation ensures that buildings in the private sector are designed and constructed to meet health and safety requirements.

The increasing number of tall buildings which constantly change the skyline of Hong Kong reflect the efforts made by the department to keep pace with the sheer volume of building development and constantly evolving building techniques. In this respect, I am conscious of the crucial role played by staff at all levels who often have to work to tight deadlines in difficult circumstances.

In a booklet of this size it is not possible to cover adequately all the activities in which the department is engaged but I believe that you will nevertheless find the contents both interesting and informative.

(CHAU Cham-son)
Director of Building Development
THE ARCHITECTURAL OFFICE
FUNCTIONS
The Architectural Office (AO) is one of the two constituent parts – the other being Buildings Ordinance Office (BOO) – that make up the Building Development Department.

The functions of AO can be broadly divided into five main areas. The first and largest of these is to provide architectural and associated services to all Government departments (some 60 in all) as well as to Her Majesty's Services in Hong Kong and the Urban Council.

Secondly, the office acts as the Government's professional and technical advisor on all building matters.

Thirdly, it oversees all government subvented building projects and advises quasi-government organisations and other managing agencies for subvented projects.

Fourthly, it is responsible for overseeing joint-venture developments between the Government and private developers, and entrusted projects such as the Mass Transit Railway.

Last, but by no means least, AO is also responsible for the maintenance and management of all public buildings in Hong Kong with the exception of public housing.

COMMITMENT
The overall commitment within the office can be divided into three groups, the first of which is the Public Works Building Programme. This constitutes by far the largest portion of AO's work, encompassing some 1,800 projects in various stages of development ranging from initial feasibility studies to the finalising of accounts and handing over to client departments.

The value of these items is estimated at over $28,000 million and covers all types of buildings for AO's 27 different client authorities, ranging from Education, Social Welfare and Urban Council to Military, Police, and Law and Order. This generates some 700 contracts running at any given time.

Annual expenditure for 1984/85 was $1,542 million and it is anticipated that this will increase to $1,960 million for 1985/86. In addition, some 120 projects, valued at $46 million and covering fitting out of leased accommodation, are currently being handled. The recurrent maintenance of some 3,000 buildings also generates over 194,000 annual works items.

The second major group within AO’s workload is that which covers subvented building projects. As well as having direct involvement in government buildings, the office is also responsible for subvented works which involve the overseeing of projects for seven managing organisations, covering such areas as education, medical and health, and recreation and cultural services. The maintenance of some 950 existing schools also falls into this category of work. The annual subvention covering this group of projects is approximately $700 million.

The third and final area of the office’s work covers Joint Venture developments and entrusted works. These can be broadly divided into government quarters, Mass Transit Railway Corporation developments and other types of joint venture, such as the Macau Ferry Terminal currently under construction. The total value of this portion of work is estimated at $1,950 million.
Tsim Sha Tsui Cultural Centre model.

New Supreme Court.

Tsim Sha Tsui Cultural Centre interior study.

New Legislative Council Chambers existing elevation.

Extensions to Queen Mary Hospital.

New Legislative Council Chambers interior study.
MULTI-DISCIPLINED TEAM
The head of AO is the Principal Government Architect who is responsible to the Building Development Department headquarters for the work and day-to-day management of the office, which is a multi-disciplinary organisation embracing the five professional disciplines which form the functional branches of AO.

The first of these is Architectural Branch, which manages, designs and co-ordinates the building projects under its control.

The second is Quantity Surveying Branch which deals with building cost evaluation, tender documentation and provides contractual advice through the architect.

Then comes Structural Engineering Branch which designs for and advises on matters connected with the strength and stability of projects, together with the structural maintenance of existing buildings.

Building Services Branch is the fourth of AO's disciplines, and although on secondment from Electrical and Mechanical Services Department and therefore not strictly part of BDD Establishment, forms an essential and integral part of the AO building team. It is responsible for all aspects of mechanical, electrical and related building services for all AO projects.

Finally, there is Maintenance Branch which, with the exception of public housing, is responsible for the maintenance of all government property including Urban Council and British Military buildings, amounting to some 3,000 properties.

In support of these five main branches is a large force of site supervisory staff organised into a team system based on zones and districts, as well as numerous professional, technical and clerical staff who handle the distribution and recording of all correspondence, dissemination of technical information and control of expenditure. This amounts to a total of 2,250 staff within AO, 316 of whom are professional officers.
ARCHITECT

The architect controls and co-ordinates the design and construction of the various types of project within AO from inception to completion. He uses his professional and creative expertise in assimilating the general and specific information related to the problem in hand, investigating the nature of the problem and its possible solutions and in developing and refining one or more of these tentative solutions, leading ultimately to a final design.

At the same time, he is responsible for the communication of this design solution to the client to ensure the brief has been met, to the associated disciplines of the design team to ensure their efforts are introduced and co-ordinated in the right order at the right time and to the contractor to enable the solution to be built. Once building work commences he will also supervise quality control to ensure that the project is implemented in accordance with user requirements and statutory controls.
STRUCTURAL ENGINEER

The structural engineer is responsible for determining the stability of a building at as low a cost as possible, consistent with specific design requirements. He ensures that the structure carries into the ground the loads and stresses which result from the design, that it copes with expansion and contraction without damage, is durable with minimum maintenance and that the structural members cause minimal obstruction to the use of the building and the passage of essential services within and around it.

He also advises on the most sensible way of building in terms of the quality, quantity and arrangement of components and the sequence in which they are used. On site, the engineer is closely involved in inspection and supervision of the structural work as it progresses and assists the contractor in understanding the key structural factors affecting the building.

Tsim Sha Tsui Space Museum.

Hong Kong Coliseum under construction.
QUANTITY SURVEYOR

The quantity surveyor (QS) advises on matters relating to cost and contracts in building and associated projects. This begins with cost advice through the feasibility, outline and design stages culminating in an agreed cost plan linked with an agreed scheme design. Next comes cost checking of the detailed design and production drawings against the agreed cost plan followed by the provision of advice on tendering documentation and contractual arrangements. This results in the production of bills of quantities or a written specification to enable contractors to submit tenders. On receipt of these tenders the QS will examine and report on them.

Once the contractor has been appointed and work has commenced on site, the QS will be responsible for regular valuations for interim payments to the contractor and for the final account.
BUILDING SERVICES ENGINEER

The building services engineer is concerned with environmental control, such as air conditioning, lighting, heating, etc., and also the provision of utilities such as lifts and escalators, and safety equipment, such as fire fighting installations. The proportion of capital costs devoted to services can vary widely with the building design and function. They are mostly energy consuming and this factor, together with the need to maintain all engineering equipment, makes their operating costs particularly important.

The building services engineer will therefore be involved in the design of a project at an early stage, advising the architect on the space provision for the services and on the level of servicing required for the project in hand. He is also responsible for producing the necessary technical information to enable their installation, operation and maintenance.

Solar heating.

Solar heating — Pik Uk Prison.
<table>
<thead>
<tr>
<th>STAGE 1</th>
<th>STAGE 5</th>
</tr>
</thead>
</table>
| - client dept. establishes project need
| - client prepares outline schedule of requirements
| - suitable site identified
| - detailed design and production information commence
| - design checked by statutory authorities
| - bill of quantities prepared

<table>
<thead>
<tr>
<th>STAGE 2</th>
</tr>
</thead>
</table>
| - AO carry out initial feasibility studies
| - site constraints identified
| - preliminary estimates obtained

<table>
<thead>
<tr>
<th>STAGE 6</th>
</tr>
</thead>
</table>
| - project tendered
| - tenders received, tender report prepared
| - contractor appointed, contract signed

<table>
<thead>
<tr>
<th>STAGE 3</th>
</tr>
</thead>
</table>
| - development conditions finalised and issued
| - schedule of accommodation approved
| - site formally allocated

<table>
<thead>
<tr>
<th>STAGE 7</th>
</tr>
</thead>
</table>
| - construction period
| - AO supervise site operations
| - site staff monitor quality control

<table>
<thead>
<tr>
<th>STAGE 4</th>
</tr>
</thead>
</table>
| - design work commences
| - sketch proposals submitted to client for approval
| - detailed estimates prepared

<table>
<thead>
<tr>
<th>STAGE 8</th>
</tr>
</thead>
</table>
| - construction completed
| - project handed over to client
| - AO Maintenance Branch take over building maintenance

| PROJECT IMPLEMENTATION |
DESIGN PROCESS

Design drawings range from brief exploratory sketches and draft constructional details to complete project presentation drawings. Their form varies greatly and preparation may be by any member of the design team for a variety of purposes. Design drawings express ideas at all stages of a project and need to be fluent and uninhibited by arbitrary rules. Essentially, the design process helps the designer to think and to communicate these thoughts to others. Sketches may be prolific in number and may be short-lived, as the designer constantly re-defines and refines his thoughts, leading eventually to the final design solution.
PRODUCTION INFORMATION

Production information is prepared as part of the detailed design stage to convey precise instructions, simply and clearly, to the contractors responsible for the construction of the building. Preparation of working drawings, schedules and specifications is co-ordinated with other disciplines to produce organised contract documents with clear ordered references.

Production drawings may not necessarily indicate the appearance of the building but can be supported by the concept design drawings to assist interpretation of the overall scheme. Production drawings and schedules are essentially impersonal, and will show the practical minimum, drawn with an agreed and uniform technique of dimensioning, annotation, coding and reference.

Generally they are prepared in categories, starting with layout drawings indicating the site and disposition of buildings, then location drawings showing the elements and components of the projects, before moving on to assembly drawings showing the assembly and fixing of those components.

Additionally, both the structural engineer and building services engineer will prepare their own production information in the same sequential manner, indicating the particular aspects of their respective disciplines. These will be read in conjunction with the architectural drawings to illustrate how all the various aspects of a particular building are put together. They will also be given to the quantity surveyor to enable him to measure each individual element and produce a Bill of Quantities from which prospective contractors can estimate their tender prices.
TENDER

The tender is an offer by a contractor or supplier to carry out works or provide equipment as specified in return for a stated sum of money, and there are set procedures which must be followed when tendering for government projects.

Generally for contracts let by AO, the tenders are for a fixed sum, priced in accordance with the proposed conditions of contract. Prospective tenderers originate from a select list of contractors/suppliers who have previous experience in carrying out government projects. This list is sub-divided into groups, according to level of capability.

Once a project is 'gazetted', i.e. tenders are invited, any of the contractors in the appropriate group can submit a tender. All have access to the same information from which to produce their price, all have an equal amount of time in which to prepare it, and all must submit their tenders on or before a pre-determined time and day.

These tenders are then checked by the quantity surveyor to ensure all contract conditions have been met and no errors have been made in pricing. A recommendation is then made to the Tender Review Board as to which contractor should be appointed. This is generally – although not necessarily – the contractor who submitted the lowest tender.

Harbour Road Magistracy photo montage.
CONSTRUCTION BEGINS

Construction on site begins with the excavation of building foundations which have been designed to carry the loads and stresses of the building to the ground. Due to the geological conditions in Hong Kong, piling is the most common type of foundation although there are occasions when alternatives may be used. Piling is usually carried out by a specialist contractor who will only be engaged for this particular aspect. On completion the foundations will be tested to ensure they will withstand the structural loading required. The site will then be handed over to the building contractor and construction of the superstructure will commence.
CONSTRUCTION PROGRESSES

A site staff will maintain a full-time presence on site from the start of construction to oversee the performance of the various contractors involved, ensuring the required professional disciplines are being met. In addition, the visits to inspect and supervise operations as construction progresses. When dealing with the complexities of the construction process, it is a crucial factor in maintaining smooth and successful management of site operations.

The type of construction used for a building can vary widely depending on its design and the nature of the components incorporated. A building may be fabricated almost entirely in situ so that virtually all components are made and installed on site and then assembled on site to provide the finished product. In many cases, a project may consist of a combination of these two methods in varying degrees.

Regular site meetings will also be held between project staff and representatives of the contractor to ensure timely progress is being maintained, and to discuss the day-to-day problems of the project and how to resolve them.

The overall framework of the contract period is to be carried out in various phases as follows.

The contractor can be paid for the work as it is carried out.

Before the work starts, the contractor will be asked to provide a programme of his work indicating when the various phases of the work will be undertaken. This programme will set the deadline for completion of the work as agreed in the contract.

The site staff will regularly review the works to ensure that the contractor is completing the work as required and that the site is being kept clean and tidy.

The contractor will also be required to maintain the site staff on a full-time basis to ensure that the works are carried out in a timely manner.

CONSTRUCTION PROGRESSES
HANDOVER AND MAINTENANCE

In the final one or two weeks before a building is handed over to the client, the architect and his site staff will inspect the project in its entirety to ensure as far as possible that any minor defects are dealt with before commissioning. Once these have been rectified representatives of the client department and surveyors from Maintenance Branch are invited to take possession of the building.

There is a defects liability period of six months following the completion during which time any further defects or teething problems are still rectified by the various contractors who built the project. Once this period expires however, the maintenance of the building becomes the sole responsibility of the Maintenance Branch of AO – a further addition to the 3,000 or so properties already under its control.
OTHER FUNCTIONS

Although not highlighted in the main organisation of the office, additional services and support are provided by specialist groups within AO and on occasion external consultants.

Consultants are engaged as and when necessary, to support the professional disciplines within the office. Appointment is generally determined by two principal factors: either lack of manpower at a particular time, or the need for specialist expertise in a particular field, for example, acoustic design in a concert hall. Currently, consultants are engaged on major hospital developments as well as several packages of urban projects.

AO also gives technical advice and participates with the private sector in joint venture developments. These activities are undertaken by the Technical Advisory Services section of the office. Joint ventures are essentially projects entrusted to the private sector for implementation. Technical Advisory Services' contribution comprises the drafting of technical schedules which are annexed to the Conditions of Land Sale or Grant, and state in detail the requirements of the project.

The section also monitors design proposals and the progress of a development through the various stages, including work on site. Joint ventures at present represent a sizeable proportion of the total expenditure...
on building works. Current joint ventures include major ferry termini, markets, sports facilities, schools, quarters, social welfare facilities, multi-storey car parks, transport termini, public toilets and refuse collection points.

The increasing utilisation of computers has resulted in the introduction of a Computer Aided Design Section into the office. AO has used computers for the calculation of structural and service requirements for some time. This is currently being expanded by the inclusion of a computer aided drafting system to assist in the design process and the production of working drawings.

Certain types of building designed by AO — schools and police stations, for example — are repeated in different locations throughout the territory. A large proportion of the production information for such a building can often be the same for each location. The computer enables the professional disciplines to produce and co-ordinate this information, modify it when necessary and store it for re-use as required. It is also planned to expand the system to help in the actual design of projects, using its speed and power to explore alternative schemes which would take many weeks using conventional methods, thus enabling the designer to find better solutions to the new and different problems he faces in the varied workload of AO.
Buildings Ordinance Office

Building is the most obvious activity in Hong Kong. From the 35,000 flats produced annually by the Government's Housing Authority to the huge steel and glass structures that dominate the skyline, new buildings seem to be springing up everywhere one looks.

Buildings are forced skywards by the shortage of land in the Territory, 70 per cent of which is mountainous and not suitable for building.

Because of this, Hong Kong's buildings seem to reach ever higher. The Connaught Centre, for many years dominating the Central waterfront as the tallest building in Hong Kong, has already been overshadowed by its neighbour, the newly completed Exchange Square, which will house Hong Kong's new united Stock Exchange.

Only metres away the futuristic steel structure which is the new headquarters of the Hong Kong and Shanghai Banking Corporation dominates the Central Business District.

None of these new buildings, however, is as tall as the 64-storey Hopewell Centre in Wanchai, currently the tallest building in the Territory. But even this tower will be topped by the new 74-storey Bank of China Building. Excavation work on the Central site for this new bank has just begun.

With so much building taking place in such a restricted area, tight controls on construction are essential.

As the Government's Secretary for Lands and Works, Mr Nicky Chan told a recent conference in Hong Kong: 'Nobody would challenge Government's right to lay down minimum standards for the design of tall buildings. We are faced with a complex society, rapid technological development, and a need to make the best use of resources.

'Tall building designs today are constantly under review in an attempt to achieve maximum construction efficiency. This requires innovation as well as establishing standards for design and construction.

'It is difficult to maintain a balance between innovation, which by its very nature requires the acceptance of risk, and the desire to legislate against failure by imposing stringent controls.'

Charged with maintaining this balance and with ensuring that buildings and builders comply with regulations is the Building Development Department of the Lands and Works Branch.

It is quite a task. What started as the Good Order and Cleanliness Ordinance of 1844 has grown into a document of more than 360 pages known as the Buildings Ordinance and Regulations.

The regulations have been drawn up over the years:

'To provide for the planning, design and construction of buildings and associated works; to make provision for the rendering safe of dangerous buildings and land; and to make provision for associated works.'

This legislation is administered by the Building Authority, which is vested in the Director of Building Development. His executive arm is the Buildings Ordinance Office which controls private buildings and street works as well as Mass Transit Railway works to ensure compliance with building law. The Office also deals with private buildings and hill-sides found to be dangerous, or in a potentially dangerous state.

The Buildings Ordinance Office is headed by the Principal Government Building Surveyor and its basic organisation is shown on next page.

Boundaries of divisions coincide with District Board boundaries to facilitate consultation with the boards. Communication with members of the public at all levels is an essential part of the work of the Buildings Ordinance Office and staff are called upon to assist on many occasions, particularly in connection with unauthorised buildings.

The major functions of the Buildings Ordinance Office are described and illustrated in the following pages.
The Buildings Ordinance Office Organisation

Branches, Divisions, and Duties

- General Branch
  - Geographical and administrative divisions in Hong Kong, Kowloon, and the New Territories; new buildings
  - Engineers deployed to all other Branches and divisions

- Structural Engineering Branch
  - Geographical and administrative divisions in Hong Kong, Kowloon, and the New Territories; new buildings

- Control and Enforcement Branch
  - Control Division
  - Enforcement Division; unauthorised building works

- Specialist Branch
  - Dangerous Buildings Division; dangerous buildings and slopes
  - Works Division; works by government contractor
  - Special Duties Division; licensing
  - Mass Transit Railway Division; mass transit railway matters

- Litigation Unit
  - litigation and legislation
BUILDING CONTROL

New Building Works
Development is a thriving industry in Hong Kong and each new building erected by private individuals or by corporations is the product of a commercial operation or a personal goal. It may rise from new land recently reclaimed from the sea, or from the redevelopment of any number of older properties. Given normal conditions the building will have a lengthy lifespan and thus it is important that it is safe, functional, and environmentally acceptable.

Western Reclamation

Old building for redevelopment

Typical old buildings
Planning and Approval

Once it has been decided to embark on a project, a feasibility study must be made for a suitable type of development from the standpoint of both aesthetics and profitability. Market forces often dictate the criteria.

To assess these forces, a developer may approach a specialist consultant, or seek advice from the many professionals in Hong Kong concerned with building development, who may have preliminary discussions with Government. When all requirements have been dealt with, formal Government approval to the project will be sought. It is at this point that the Buildings Ordinance Office becomes directly involved.

Plans of the scheme must be submitted to the Buildings Ordinance Office for scrutiny. The submission must be made on the developer's behalf by an architect, engineer, or surveyor, who is appropriately authorised to do so under the Buildings Ordinance. He is known as an Authorised Person. The documents accompanying the submission confirm his appointment and formally request approval of plans.

The Authorised Person takes on the responsibility for ensuring that overall compliance with the building legislation is achieved throughout the project. His activities are monitored by the Building Authority in the public interest, by means of spot checks, to make sure that he is discharging his statutory duties properly.

NOTE: As these plans have been examined only as outlined in Practice Note for Authorised Persons and Registered Structural Engineers 1983.99, particular attention is drawn to Section 4(3)(b) of the Buildings Ordinance regarding the duty of Authorised Persons and Registered Structural Engineers and to Section 14(2)(c) regarding possible contraventions of any provision of the Buildings Ordinance. This approval should not be taken as the authentication of any document required to be submitted under Building (Administration) Regulation 8(1).

The plans are passed to the appropriate division of the General Branch for processing and scrutiny for compliance with the Buildings Ordinance and Regulations. This covers such diverse matters as provisions for the handicapped, gas water heaters, refuse chutes and chambers, as well as compliance with any other allied legislation. The scrutiny also includes visits to the sites and consultation with a large number of other Government Departments which will give advice on their particular areas of interest as shown in the following diagram:
<table>
<thead>
<tr>
<th>Civil Engineering Office (Port Works Division)</th>
<th>Marine structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geotechnical Control Office</td>
<td>Sloping sites, basements Geotechnical lease conditions Works in Mid-levels</td>
</tr>
<tr>
<td>Highways Office</td>
<td>Roads, street lighting, parking Drainage (Urban Areas) Disused tunnels</td>
</tr>
<tr>
<td>Lands Department</td>
<td>Lease conditions Tree preservation</td>
</tr>
<tr>
<td>Mass Transit Office</td>
<td>Mass Transit Railway and route protection</td>
</tr>
<tr>
<td>Railway Development Office</td>
<td>Kowloon Canton Railway</td>
</tr>
<tr>
<td>N.T. Development Department</td>
<td>Drainage (Rural/N.T. Areas)</td>
</tr>
<tr>
<td>Registrar General (Land Office)</td>
<td>Land title, surrenders and dedications</td>
</tr>
<tr>
<td>Town Planning Office</td>
<td>Planning and parking proposals</td>
</tr>
<tr>
<td>Water Supplies Department</td>
<td>Water supplies, wells Water catchment areas</td>
</tr>
<tr>
<td>Agriculture and Fisheries Department</td>
<td>Country parks</td>
</tr>
<tr>
<td>Civil Aviation Department</td>
<td>Illuminated signs adjoining the airport and sky signs</td>
</tr>
<tr>
<td>Education Department</td>
<td>Requirements for schools</td>
</tr>
<tr>
<td>Fire Services Department</td>
<td>Fire services installations</td>
</tr>
<tr>
<td>Housing Department</td>
<td>Private sector participation schemes Closure of dangerous buildings Demolitions</td>
</tr>
<tr>
<td>Labour Department</td>
<td>Factories</td>
</tr>
<tr>
<td>Marine Department</td>
<td>Illuminated signs facing the harbour</td>
</tr>
<tr>
<td>Transport Department</td>
<td>Traffic management – schools Multi-storey car parks Traffic on large developments</td>
</tr>
<tr>
<td>Urban Services Department</td>
<td>Public Health matters</td>
</tr>
</tbody>
</table>
When all the views have been co-ordinated and it is considered that there are no major contraventions, the Building Authority gives his approval to the plans, copies of which are retained for public record purposes. If the plans are not acceptable, they are rejected and the Authorised Person must reappraise the scheme and start the process again until compliance is achieved.

Approval of the general building plans is not the end of the process and further approval of the structural design prepared by a Registered Structural Engineer is required. Designs submitted by him are scrutinised by staff of the Structural Engineering Branch of the Buildings Ordinance Office who, when satisfied, approve the plans on behalf of the Building Authority.

Here again the Registered Structural Engineer is responsible for ensuring that everything complies with the Buildings Ordinance and Regulations but, in the public interest, the Building Authority monitors whether or not the Registered Structural Engineer is carrying out his statutory duties properly.
Preparation

Before a new building can be started, the site itself may need some preparation. If it involves slopes the geotechnical design will have already been approved, but if the demolition of some existing buildings is required, measures to protect both the general public and the adjoining buildings must be considered before demolition starts.

These measures include the provision of hoardings and covered walkways so that passers-by are not endangered by debris, as well as proper support to adjoining buildings by timber shoring, if necessary, both before and during the demolition works.

Expert supervision by the contractor is specifically required. If, during the course of routine inspections, it is considered that the way the work is being done is dangerous, then the Buildings Ordinance Office can and will order work to stop until adequate precautionary measures have been taken. Hoardings and walkways are also provided to give protection during construction works.
Construction

With all site preparation completed and all approvals obtained the developer will be able to commence building, but he must first obtain the consent of the Building Authority and then appoint a Registered Contractor who himself has responsibilities under the law to comply with all the appropriate regulations. Once again the Building Authority keeps a watching brief on him just as for the Authorised Person and for the Registered Structural Engineer.

The first steps in any major site works involve the aspects governing the ground and slopes - geotechnical matters as they are known - together with the basic foundations. The latter can be steel or concrete piles (bored or driven), caissons, rafts or any other type of foundation that a Registered Structural Engineer has selected as the most suitable for the site conditions and the type or development proposed. The Registered Structural Engineer (who is wholly responsible) should carefully supervise this aspect but the Structural Engineering Branch of the Buildings Ordinance Office will also monitor the works.

Once the building is 'out of the ground' the work of the Authorised Person and Registered Structural Engineer is monitored through spot checks by both a surveyor and an engineer from the Buildings Ordinance Office to confirm that the building is being erected in accordance with the approved plans, and is in general compliance with the Buildings Ordinance and Regulations. Particular attention is paid to the quality of concrete used in construction.

With the completion of the structure all the internal services such as fire services installation, water, air-conditioning (if provided) and lifts can be installed, and both internal and external finishing put in hand. Drainage is laid and tested to satisfy the Building Authority that it is in order and that, once covered, there will be no potential health risks.
Completion

The building should now be standing on its site as it was planned and ready for occupation. Final checks are made by the Building Authority to ensure that fresh water and flushing water are available, gas safety precautions have been followed, lifts are working and fire services installations have been completed to the satisfaction of the Fire Services Department.

If all these checks are satisfactory and everything is found to be in order, the developer will receive a permit to occupy the building. He will, in many cases, also need to obtain a certificate of compliance with the lease conditions, from the Director of Lands, before he can put the building on the market for sale.

The work of the General Branch of the Buildings Ordinance Office is then ended and the finished building comes into a new phase of control directed to ensure that the standards of public health and safety are not relaxed.
Illegal Building Works

Due to shortage of accommodation in Hong Kong, owners and occupiers of buildings sometimes carry out illegal alterations and extensions to their premises. Whilst at first glance minor changes may seem to cause little problem, it is when such minor changes are multiplied that they can become a risk to life or a hazard to health. So many unauthorised building works have been and are being carried out that control must be exercised to preserve both the safety of buildings and the environment of those who live or work in them.

The usual way the existence of unauthorised building work becomes known to the Buildings Ordinance Office is through complaints from the general public. These are passed in the first instance to the Control Division of the Control and Enforcement Branch of the Buildings Ordinance Office. Their aim is to make an inspection of the premises featuring in the complaint, and technical officers are assigned to inspect and compare what they find on the site with what was originally approved.

The more common types of unauthorised works are rooftop structures, extensions to flats, cages, filled in re-entrants or filled-in light wells, all of which could represent both a danger to the building or the public or be a health hazard. Security gates to flats also represent a well known danger as they could interfere with means of escape from the premises.

In some cases a word to the owner may result in the removal of the offending structure, but more often than not it is necessary to serve an order on the owner giving him a reasonable period to remove the structure. If he complies this is all to the good but if not, he will be warned that unless he does so by a certain date, the Government contractor will be instructed to remove the offending structure and the owner will be charged with the actual cost of the work plus supervision charges.

If he persists in building unauthorised structures, the owner will be prosecuted and, on conviction, will suffer a fine and/or imprisonment.

In an attempt to reduce the number of unauthorised structures, particularly in new buildings, the Control and Enforcement Branch has programmed inspections which assist in detection and enable rapid action to be taken. Further, as prevention is better than cure, the public at large is continually being informed of what is not permitted, through radio and T.V. announcements and advisory posters.

Staff of the Buildings Ordinance Office are always willing to advise the public on what would be considered to be unauthorised building work and it is therefore in everybody's interest to call the office if in doubt.
OTHER FUNCTIONS

Dangerous Buildings
No building will remain in good condition indefinitely unless properly maintained and with the passage of time it will suffer general deterioration until parts or the whole of it become a hazard to the occupants or the public at large.

Tropical cyclones (typhoons), fires, and building works on adjoining sites are all additional dangers to buildings and can result in damage. Deterioration may also be the result of the use of poor materials in construction. In the interests of public safety, precautionary measures and remedial works may be necessary.

Dangerous and defective buildings are usually brought to the attention of the Dangerous Buildings Division of the Buildings Ordinance Office through a complaint from the public or a report from another Government Department of a specific incident. On receipt of the complaint an immediate inspection is made.
If a building is in a dangerous condition and represents a threat to the safety of the occupants it can be closed on application to the courts. The time of closure is usually a month following the application, but in emergency cases the closure can be immediate or in a few days. Arrangements for the temporary rehousing of tenants displaced by a closure are made in co-operation with the Housing Department. Where a building cannot be reasonably repaired an Order to demolish it will be issued.

If repair is possible and reasonable, then an Order will be served upon the owner stating the works that must be carried out. The owner will be given the appropriate time to complete the repairs but if he fails to comply with the Order, the works will be carried out by the Government Contractor. The cost of the work, plus a supervision charge, is then recovered from the owner.

There are still some 2,500 pre-war buildings in Hong Kong, many of which are in a dilapidated condition. In anticipation of further deterioration, the Buildings Ordinance Office makes planned surveys of various selected areas where the buildings are likely to be in a particularly sensitive condition. Such surveys reduce significantly any danger of unexpected collapses. The aim of the Dangerous Buildings Division is to seek out any potentially dangerous buildings, monitor them and advise of further deterioration, with a view to closure and possible demolition if it is unreasonable to repair them.
Dangerous Slopes
Many potentially dangerous slopes and land supported by retaining walls of dubious strength have been identified as the result of extensive surveys carried out under the supervision of the Geotechnical Control Office of the Engineering Development Department. Where these surveys involve private buildings or land, an order to stabilise or repair them may be served on the owners, who in a large development may be numerous.

The size and complexity of the works required often lead to difficulties in getting all the owners to agree with the result that, in the interests of public safety, the Government may step in and carry out the works on behalf of the owners. Such projects nearly always need a specialist consultant for the design and supervision of the works and his charges will be included in the costs to be recovered from the owners.

Dangerous Signs
With the thousands of signs in Hong Kong it is inevitable that some become so neglected that they represent a danger to pedestrians and traffic, especially the large ones over public thoroughfares. Where an owner can be located he is required to remove any dilapidated sign but in cases where he cannot be found and the sign is dangerous, the Buildings Ordinance Office arranges for immediate removal by the Government Contractor.
Defective Drains
Not only buildings can be dangerous, but also defective drains, for example, which can pose a danger to health. Where drains are clearly such a danger, a statutory order will be issued requiring the owner to carry out repairs (which may be above and/or below ground) and if he defaults, the work will be carried out by the Government Contractor. It is of interest that where a large building has a proper management committee, this will generally arrange for the work to be done by a contractor familiar with the building.

The Government Contractor
Whenever owners have failed to carry out works required by a statutory order, and where works are required for emergency reasons, they are normally carried out by a contractor appointed by the Government, who works under the supervision of the Works Division of the Buildings Ordinance Office. This division also liaises with other Government departments in such matters as the removal of projections from buildings, which may interfere with the construction of new fly-overs or obstruct bus routes.

Mass Transit
In the case of the Mass Transit Railway, care has to be taken to ensure that development along an existing route does not affect the railway, and similarly that potential developments do not prejudice any future railway routes. The Buildings Ordinance Office therefore continues to monitor both situations.

Licensing
Licensing covers a wide range of subjects including schools, kindergartens, child care centres, restaurants, food business premises, cinemas, theatres and dance halls. Although the Building Authority is not responsible for licensing for these matters, the Buildings Ordinance Office is called upon to advise the licensing authorities on the suitability of the structure and the effectiveness of means of escape in case of fire. This is done by the Special Duties Division, the end product being an assurance to the public that matters concerning safety have been properly taken care of.

The licensing of oil storage installations is considered necessary in order to protect the public from the effects of a possible major oil spill and the Building Authority is the actual Licensing Authority for the environmental consideration. All tanks must be inspected at regular intervals by a qualified engineer who certifies their condition. Strict adherence to all the requirements in the Building (Oil Storage Installations) Regulations means that the Hong Kong public is given the maximum protection.

Although not strictly a licensing matter, the Buildings Ordinance Office also deals with the subject of noise from construction sites. Normally no powered equipment, and in particular no piling, is permitted between 7.00 p.m. and 7.00 a.m. on weekdays and on Sundays.

However, there are occasions when it becomes necessary for works to be allowed at night and a relaxation of the restrictions may be given in certain circumstances upon application to the Building Authority. Limited mechanical equipment is therefore sometimes allowed under Permitted Works Permits which are based upon criteria laid down by the Environmental Protection Agency, the main aim being not to cause disturbance to the public. Permits are also issued in exceptional circumstances, such as where traffic problems occur during working hours or where work must be carried out according to the tides.

Emergency Organisation
Emergencies can occur at any time or day or night and in recognition of the importance of public safety the Buildings Ordinance Office maintains a 24-hour service by means of a radio paging system. In response to any emergency call (normally from the Police), an officer from the Buildings Ordinance Office will make an inspection to give advice and take all necessary action in respect of any dangerous situation involving buildings. In respect of dangerous slopes, the officer calls upon the services of the Geotechnical Control Office which also maintains a 24-hour emergency service.

During tropical cyclones and sometimes during other adverse weather conditions, there may be a large number of emergencies, and to cope with this situation the Buildings Ordinance Office sets up its own emergency organisation with teams of up to 14 staff, working six-hour shifts for the duration of the emergency. This Emergency Centre also liaises with the Geotechnical Control Office’s Emergency Centre.

To deal with any particularly dangerous situation, the Government Contractor is also on full alert duty, so that he can provide, for example, temporary shoring in order to alleviate the danger. After an emergency has passed, any further action is generally carried through by staff of the Dangerous Buildings Divisions, which may issue statutory orders or arrange for emergency works to be carried out.
Temporary Buildings
During the many festivals in Hong Kong all sorts of temporary structures, normally constructed of bamboo, are erected and the Buildings Ordinance Office gives advice on these structures to the Licensing Authority. This duty evolved from the disastrous fire in the stands at Happy Valley Race Course in 1911, and again is yet another instance where the Buildings Ordinance Office is protecting public safety.

Appeals and Prosecutions
Legislation, like buildings, may become out-dated or new problems may arise requiring new legislation, which means that all the laws must be kept under constant review. In the Buildings Ordinance Office this is done by the Litigation and Legislation Unit and changes in the law are sought whenever necessary.

All legislation is subject to challenge and the Buildings Ordinance is no exception. Any person who considers that he has been prejudiced by a decision of the Building Authority can put his case before an Appeal Tribunal which will listen carefully to the arguments of both sides before reaching a decision. Interpretation of the Ordinance can also be challenged in the courts, so overall the public is well protected.

On occasions it is necessary to prosecute members of the public on such matters as illegal building works. In other cases, where dangerous building practices are discovered, Authorised Persons or contractors might find themselves facing charges in the courts. Where prosecution is not appropriate there are disciplinary boards to deal with contractors or Authorised Persons who have been guilty of negligence or misconduct. In all these situations the Litigation Unit is the co-ordinator.

The Building Authority through the Buildings Ordinance Office offers a protective service rather than a product, but it is a service that helps to ensure that environmental standards (where they concern buildings) are maintained with the consequential benefits to the community at large.