

HKIA / ARB Professional Assessment 2011
Paper 1 - Statutory Controls in Building Works

STRUCTURE OF PAPER

Paper 1 was a closed-book examination comprising multiple-choice and short-essay questions.

The MC section had 40 multiple-choice questions. Each MC question carried 2 marks. The passing mark was set at 65%.

Candidates needed to answer 1 compulsory short-essay question and 2 out of 3 other short-essay questions. The compulsory question carried 30 marks and the other two questions each carried 15 marks. The passing mark was set at 50%.

Questions on all topics, as detailed in the syllabus of PA Handbook, included:

- (a) Buildings Ordinance
- (b) Submission of plans to the Building Authority
- (c) Other related Ordinances and Codes of Practice

The questions were set to test candidates' knowledge, skills and maturity to handle their day-to-day work as an Architect.

ASSESSMENT OBSERVATIONS

FOR THE WHOLE PAPER

340 candidates took Paper 1 and 163 candidates (47.94%) passed.

FOR MULTIPLE CHOICE QUESTIONS

226 candidates (66.47%) passed the part of MC questions.

FOR SHORT-ESSAY QUESTIONS

96 candidates (28.24%) passed the part of short-essay questions. Performance of candidates in each of the short-essay questions is evaluated below.

Question 1 (Compulsory)

The question was based on a hypothetical, L-shaped site, abutting two streets, which was at present zoned R(A). The lease restricted its use to "industrial" and imposed a height limit (18 metres above principal datum).

Sub-question (A)

A majority of candidates correctly identified, and demonstrated by calculation, the site classification as *Class A*.

Sub-question (B)

A majority of candidates answered correctly that a composite building (commercial podium and residential tower) would be allowed without any further application to the Town Planning Board. They were also able to correctly identify the need for lease modification.

Sub-question (C)

Over half of the candidates correctly identified the need to submit application under Section 16 of the Town Planning Ordinance, for a wholly commercial building, but many missed out on the need for lease modification.

Sub-question (D)

- (a) Provision of service lane: less than half of the candidates gave the correct answer - "*not required.*"
- (b) Some candidates who gave wrong answer on service lane nevertheless supplied the right figure for usable site area, using the wrong argument. Some credit was given in such cases.
- (c) Maximum achievable domestic plot ratio for a composite building: none of the candidates gave the correct answer. Depending on the way their arguments were put forward, as proof of knowledge of the conversion formula, partial credits were given.
- (d) Surrender of corner for public passage: none of the candidates gave the correct answer. Again, partial credits were given, whenever the "5X" factor was explicitly mentioned. A common mistake was to divide the multiplied area by the original site area, which would render the dividend a pure number.
- (e) Car-parking provision: many candidates correctly identified one or more criteria for exemption from accountable floor area, but answers were generally incomplete and poorly presented.
- (f) Concession for balconies and utility platforms: most answers tended to be sketchy on this subject. Only a few candidates identified the environmental factors, and those who did were given due credits.

Question 2

156 candidates attempted this question and 28 (17.95%) passed.

The question tested the candidates' knowledge of the Sustainable Building Design (SBD) Guidelines. The first part of the question required directly quoting from the PNAP site parameters that required compliance with the SBD Guidelines. Performance was best in this part.

The second part asked for the types of building development and building design qualifying for exemption from the building separation requirement. Though there were more correct answers than the number required to obtain full marks, only a few candidates were able to cite more than three types of building development and design to score high marks in this part.

The last part required an explanation on the design options for complying with the building set back requirement for a commercial development on a site abutting on 2 narrow streets. It called for some analysis on the requirements given in the PNAP. Again, more options existed than the number required for full marks but only a few candidates scored high marks in this part.

The low performance in this question showed that candidates attempting this question were, in general, not familiar with the SBD Guidelines. The difference in performance in the three parts reflected that they did not know the SBD Guidelines in detail, and hence were not able to apply them to give design options.

Question 3

Question 3 tested the candidate's knowledge and understanding on relevant regulations under the Buildings Ordinance applicable to exempted works, minor works and unauthorized building works. The question listed five situations which required the candidates to analyse how relevant regulations were applicable or otherwise when such works as described were intended to be carried out.

Most candidates were able to list out a few points in response to the situations described, but were invariably inadequate and not comprehensive, revealing an insufficient depth of understanding on this subject on the whole.

As a result the overall scoring was extremely disappointing, with only 2 candidates scoring more than 7.5 marks over the total 15.

Simple statistics also revealed that more than half of the candidates who attempted this question came totally unprepared: 148 out of 269 candidates (i.e. about 55%) scored 3 marks or below with 9 scoring nil marks.

The unsatisfactory result might not necessarily reflect the general quality of the candidates across the board, but rather it could possibly be an indicator of the pressure and volume of information required of the candidates to assimilate before taking the PA, so much so that many would still treat their first attempt as a familiarization exercise only.

Question 4

235 candidates attempted this question and 139 candidates passed (59.15%).

Most candidates listed out and described the control mechanism of the three building works, i.e. S.I. in scheduled area, minor works and foundation works, but only a few really compared the control mechanism point by point.

It was believed that most candidates did not have actual working experience in connection with the three subject building works, in particular “minor works”, and therefore, they might have obtained the answers from the books.

From the answer scripts, the main reasons of failing the question were:

(a) Inadequate time allowed for this question

Perhaps most candidates spent more time in Q1 but did not allocate sufficient time for other short questions. The lower passing rate of Q4C might also be due to the same reason as candidates did not carefully allocate time for each section of the question.

(b) Candidates not knowing the answers well

The concept of some failing candidates towards control mechanism was not clear.

(c) Answers not sufficient enough to gain good marks

Some answers did not contain the main key points but it seemed the candidates knew the correct concept but failed to express it in the answer.

(d) Answers not corresponding to question

The failing candidates mis-interpreted the question and put down irrelevant answers.

RECOMMENDATIONS TO CANDIDATES

- (a) Attend the lecture series, seminars, conferences and workshops arranged by HKIA and other tertiary institutes or professional institutes. Be familiar with the materials and topics covered.
- (b) Get on-job experience in particular areas of interest.
- (c) If the candidates do not have on-job exposures as mentioned in (b) above, reading or discussion on what other colleagues have done would help.
- (d) Keep abreast of the times ---- through reading, and use of audio, video or internet resources.

Panel Chair: Anna Kwong; Deputy Chair: Franklin Yu

HKIA/ARB Professional Assessment 2011
Paper 3 - Building Structures

STRUCTURE OF PAPER

The paper consists of 60 multiple choice questions. The passing mark is set at 65%.

Questions covered various aspects of building structures, including general structural principles, different structural forms and systems, foundation systems, load paths and force diagrams, practice and construction, and a case study. Diagrams were included as appropriate for better understanding of the questions. About 50% of the questions were new questions, while the remaining 50% of the questions were re-modeled from past papers.

ASSESSMENT OBSERVATIONS

132 out of a total of 290 candidates passed the paper, at an overall passing rate of 45.52%, which had shown a slight improvement from the passing rate in PA2010, but still relatively low when compared with about 57% back in PA2007 and PA2008. This paper had similar structure and type of questions covering similar aspects for the past several years. Therefore, the lower passing rate in recent years may be seen as an indication of weakening in the abilities of the candidates.

From the statistics and analysis, it was observed that about 1/3 of the questions were relatively easy (with over 75% correct response), another 1/3 of average difficulty (with 50% to 75% correct response), and remaining 1/3 relatively difficult (with less than 50% correct response). There was a suitable mix of questions of different degrees of difficulty to test the abilities of the candidates.

The mean mark is 62.4%, which is slightly below the passing mark of 65%, with a “standard deviation” of 11.0%. This indicates that the average candidates’ performance was generally slightly below the required standard. However, a reasonable “standard deviation” indicates that the assessment had generated a broad range of marks, and was fair, and effective in differentiating the abilities and depths of knowledge of the candidates.

It was observed from the results that the candidates were relatively weak in certain areas, including the less common and less conventional structural systems (such as shell and membrane structures, trusses, etc), and construction and practice (such as material properties, etc). It was also observed that the results and general performance on the questions on the basic structural principles and concepts (such as simple bending moment diagrams, structural beams and floors, etc) were also not satisfactory, which means the candidates’ understanding on the subject had generally fallen behind expectation.

RECOMMENDATIONS TO CANDIDATES

- (a) Candidates are recommended to attend the Professional Assessment Seminar / Lecture Series organized by HKIA.
- (b) Candidates are encouraged to get more on-job experience and learn through better communication / coordination with structural engineers at work.
- (c) Sharing of knowledge and experience with fellow colleagues and graduates is also encouraged, and should be helpful if job exposure is limited.

Panel Chair : Jerome Wong

HKIA / ARB Professional Assessment 2011
Paper 4 – Building Services and Environmental Controls

STRUCTURE OF PAPER

The paper consists of 60 multiple choice questions. The passing mark is set as 65%.

Questions were simple in wording and straightforward format, and questions with combination choices were avoided as far as practicable. Topics tested as detailed in the examination syllabus (viz. Basic Principles, Sustainable Design & Environmental Issues, HVAC & Heating, Fire Services, Plumbing & Drainage, Electrical, Acoustics and Miscellaneous aspects) were included with emphases as described below:-

- (a) Different disciplines for building services (both the fundamental and real-life applications that a practicing architect should know);
- (b) Issues concerning hygiene, human comfort and acoustics;
- (c) Greater emphases are put in recent years, on the non-services matters related to sustainable design and environmental issues.

Candidates were also tested on knowledge that spans across the building services disciplines and on the energy conservation and sustainable designs. All in all, the questions were set to test the candidates' knowledge, skills and maturity to handle day-to-day works as an Architect.

As in the previous year, quite a significant portion of the paper was based on re-used questions. The intention of including re-used questions is to encourage candidates to study more thoroughly similar topics that appeared in the past papers for better knowledge enrichment.

ASSESSMENT OBSERVATIONS

Both the "mean mark" and "standard deviation" in this year (56.9% & 10.5%) are respectively comparable with those of last year (56.4% and 10.1%), meaning that the papers are of comparable difficulty. As in previous years, particular focus on non-services matters related to environmental issues was made in the lecture series, and the recommended reading list was extended to include literature on the topics. However, similar to previous years the candidates' weakest part was still in the questions on the Environmental aspects. As before, candidates performed better on the academic-based questions (i.e. theory, fundamentals and basic knowledge that were taught at universities or found in literature) and were generally weaker on job-based questions (i.e. those practical knowledge gained from architectural practice and its real-life application).

RECOMMENDATIONS TO CANDIDATES

Broadening the candidates' exposure is the key to success. On top of the literatures and the recommended reading list, the following means would also assist in broadening the enhancing the candidates' knowledge in the area:-

- (a) Attend the Paper 4 lecture series and related seminars, conferences and workshops arranged by HKIA and other tertiary institutes or professional institutes.
- (b) Get on-job experience, closer coordination with Building and Environmental Consultants in the design development stage of projects.
- (c) Keep abreast of the times and have hands-on experience on OTTV, IAQ, BEAM Plus or other environmental assessment schemes.
- (d) If the candidates do not have on-job exposures as mentioned in (ii) and (iii) above, reading of documentation on the work done by other teammates would also help.

- (e) Take initiative to go through specifications, material and equipment submissions, shop drawings, method statements etc. even though they are typically within the scope of work of the Building Services Engineer.

Panel Chair : Kevin Ng

HKIA / ARB Professional Assessment 2011
Paper 5 - Building Materials and Technology

STRUCTURE OF PAPER

The paper consists of 60 multiple choice questions. The passing mark is set at 65%. The assessment was conducted in 29 November 2011, 9am to 10:30am.

Topics for the assessment include trades of building materials commonly used in Hong Kong : ranging from concrete, steel, waterproofing, carpentry, windows, curtain wall, cladding, stonework, painting, plastering etc., workmanship for various trades and working sequence, related building regulations and PNAP, construction works associated with preliminaries items and comprehension of detail drawings in construction stage.

The composition of the 60 questions are :

4 on timberworks

4 on Building Code related items

2 on demolition and asbestos

2 on formwork and backfill

7 on concrete, tests and PFA

5 on brickwork, masonry, stone.

3 on tiles, epoxy, sealant

5 on windows, glazing

5 on curtain wall and cladding

6 on miscellaneous like specification, cantilever, asphalt, painting, flooring and durasteel

17 on 5 drawings of curtain wall, paving, staircase, prefabricated external wall, high-rise external wall.

Candidates are tested for their knowledge of building materials and technology as applied in the profession of Architecture in Hong Kong, with understanding of various trades of works, construction procedure, specification, legal restriction exercised by the Buildings Department and presentation of information in the architectural details.

ASSESSMENT OBSERVATIONS

220 candidates took the Paper. The passing rate for the Paper is 75%. The standard deviation of Paper 5 is 9.9%.

There are 23 questions that candidates score more than 80% correct. These cover areas of specification in general, cantilever, demolition, asbestos, backfill, concrete, brickwork, granite, glass, curtain wall, wood, door, painting and half of the questions with drawings. The candidates are better to look at drawings for answers.

There are 12 questions that candidates score less than 50% correct. These cover areas of BD related matter, concrete, brickwork, mortar, window, door and 3 out of the 17 questions with drawings. There is one question that candidates score 100% correct.

The difficulty of the questions does not belong to the topic but rather the complexity or knowledge of the question each self as the same topic can invite both easy and difficult answer. Candidates are quite thorough in their reading as shown in the overall results.

RECOMMENDATIONS TO CANDIDATES

Candidates are recommended to study the literature in the recommended reading list for the understanding of specified materials and workmanship, and associated building regulations and PNAP for the comprehension of legislative control on construction. Job experiences in construction such as

preparation of architectural details for tender and on-site experiences in supervision are valuable source of knowledge.

Some suggested actions in brief:

- (a) Attend the lecture series, seminars, conferences and workshops arranged by HKIA and other tertiary institutes or professional institutes.
- (b) Get on-job experience in specification, detailing, relevant building regulations and construction procedure.
- (c) Have hands-on experience on actual site construction works whenever possible.
- (d) If the candidates do not have on-job exposures as mentioned in (b) & (c) above, they can consult their seniors in the office and visit completed projects.
- (e) Keep abreast of the times ---- through reading, use of audio, video or internet resources to get to know the latest building technology.
- (f) Take initiative in going through specifications, material/ equipment submissions, shop drawings, method statements etc.

Panel Chair: Dr. Wong Wah Sang; Deputy Chair: Jerome Wong

STRUCTURE OF PAPER

The test case is a **College of Art and Music** in a virgin site in HK. The site is generally flat. It is bounded by an external road to its north and east. To its south is an open space, while to its west is an adjacent institutional development

The candidates are required to provide a site layout to accommodate around 3 blocks of 7 storey high student dormitory, a School of Art & Music, an Administration Block, and an Amenity & Canteen Block. In particular, the candidates are required to incorporate in the design the following features:

- an open space of 2000sm for the campus, and
- a sculpture to be placed at the Open Space as the focus and image of the campus;

2 options of typical floor plan of the Dormitory are given to the candidates for reference, who can make minor adjustments to suit their specific design.

The candidates are expected to demonstrate their competence in coming up with a sensible site arrangement that generally meets statutory requirements and the design brief.

Candidates were expected to demonstrate their competence in coming up with a sensible site arrangement, that would generally meet statutory requirements and the design brief.

The Answer Scripts

Given the relatively generous site area, a considerable number of layout options are possible. The panel considers the performance standard of this year's paper generally satisfactory. Similar to the 2009 & 2010 Papers, the solutions are relatively straightforward. The passing rate is maintained at a similar high level in these few years.

Key Indicators

The detailed layout of each paper was carefully scrutinized by the assessment panel, who was not looking for perfect answers and absolute compliance with regulations, but a **sensible approach** and **reasonable execution** of site planning with **general understanding** of statutory requirements. The following key indicators are specific for the Paper this year which can reveal the competence of the candidates in their sensibility, level of technical knowledge, understanding of statutory control, and skill of implementation:

- (a) General compliance with development parameters – compliance with design brief (full development of the brief), permitted site coverage and building height;
- (b) General compliance with major statutory requirements – including prescribed windows, EVA, ingress/egress points;
- (c) Sensibility in disposition of blocking to exploit views and to avoid major overlooking;
- (d) Sensibility in the arrangement of vehicular and pedestrian circulation, demonstrated by internal roads and pedestrian paths, car park, drop off, loading/unloading provisions and access to each components;
- (e) Specific to the Paper of 2011, sensibility in the provision of the open space, which could be conveniently enjoyed by the students and visitors, and the positioning of the sculpture as the focus.

ASSESSMENT OBSERVATIONS

Principal weaknesses

(a) Non-compliance with Design Brief

In a number of scripts, the total areas of the dormitory are considerably below the requirement by a considerable margin. This is considered a major deviation and not acceptable.

(b) The inadequate provision of EVA for each building components, over provision of ingress-egress points, and/or beyond the permitted location are also considered major non-conformances.

(c) Insensible array of building blocks, which result in major overlooking despite the generous site area available. The positioning of the blocks abutting the adjoining lot boundary may render non-compliance with prescribed widow requirements.

(d) The provision of internal roads should be optimal. The grossly over provision would result in fragmented open space and numerous pedestrian crossings and are considered not sensible. On the other hand, it is particularly noted in the Paper this year that there are **under provision of internal roads, resulting in inadequate provision of drop off and loading/unloading provisions** for each building components. Such lack of servicing consideration is also considered unreasonable planning;

(e) The provision of open space specially required in the 2011 Paper is fragmented in some scripts, sometimes it is composed of left-over spaces, and is not user friendly. The arrangement of sculpture sometimes has no relation with the open space and fails to form the focus of the development.

Panel Chair : S S Yim ; Deputy Chair : Raphael Ying

HKIA/ARB Professional Assessment 2011
Paper 7 - BUILDING DESIGN

STRUCTURE OF PAPER

The Paper composes of two sections, Paper 7a (Construction Details and Documentation) was examined as a 2 hour paper, while Paper 7b (Building Design) was examined as an 8 hour paper.

Paper 7a Construction Details and Documentation (20%)

The candidates are expected to demonstrate their competence in the organization and development of simple construction drawing package. This year, they are required to provide a tender drawing schedule of a private house, two details including (a) a steel balustrade and (b) aluminium door with glass panel.

The Answer Scripts

As the question is relatively simple and direct, the performance is generally satisfactory. However inadequacies in technical details were still observed.

ASSESSMENT OBSERVATIONS

General Weakness

The following general weakness were observed:

- (a) Wrong scale in detail;
- (b) Not aware of the need of hoarding plan/ details for construction;
- (c) Dimensions were not well integrated; and
- (d) Poor draftsmanship in line drawing.

Paper 7b Building Design (80%)

This year's Paper aims to examine the candidates' competence in the design of a School of Music. The site is an urban site with flat topography within a university campus.

The design brief mainly includes an academic block with a theatre cum multi-purpose hall and classrooms. Associated facilities include practice rooms, library, café and kitchen.

Specific requirements also include the provision of an outdoor performance piazza at street level of specified size

Provision of loading/unloading space and ambulance parking are also required.

The Answer Scripts

The Subject Panel agrees that the design brief and the site constraints are relatively straightforward as compared to previous years. Therefore it is noted that the performance of the candidates are better than that of previous years.

Key Indicators

The detailed layout of each paper was scrutinized carefully jointly by the assessment panel. The Panel was not looking for brilliant architectural design, but a sensible design solution that could meet the design brief, respect the site constraints and in general compliance with the buildings regulations.

The Panel looked into the following key indicators that can reveal the competence of the candidates in their design sensibility, level of technical knowledge and skill of implementation:

- (a) General compliance with development parameters – including permitted site coverage and building height;

- (b) General compliance with major statutory requirements – including prescribed windows, fire escape and EVA.
- (c) General compliance with specific site constraints – including provision of open space, vehicular and pedestrian entrances;
- (d) Workability of the Theatre cum multi-purpose hall – including configuration, circulation and relationship with supporting back stage facilities'
- (e) Sensibility in arrangement of main entrance, horizontal and vertical circulation, access to major functional spaces; and Sensibility in the design of structural grid, floor-to-floor height and disposition of building services spaces.

ASSESSMENT OBSERVATIONS

Principal Weaknesses

The major weaknesses observed this year includes:

- (a) Sensitivity in site constraints –
 - Non-provision of open space adjacent to Main Entrance;
- (b) Building Structure -
 - Inappropriate structural design and structural span;
 - Inadequate floor to floor height;
- (c) Design and Planning
 - Poor design for vehicular maneuvering;
 - Poor definition of entrance;
 - Poor integration of different functions;
 - Poor sense of scale – lifts, stairs, corridors are often grossly oversized or undersized;
 - Poor lift arrangement;
 - Poor location of mechanical rooms;
 - Lack of environmental concern in design layout;
- (d) Theatre Layout
 - Poor relationship with back of house facilities;
 - Poor sense of scale;
 - Poor accessibility;
- (e) Statutory Compliance
 - Non-compliance of means of escape.

Panel Chair : Vincent Ng ; Deputy Chair : Phiyona AuYeung

HKIA / ARB Professional Assessment 2011
Papers 8 - Case Study

STRUCTURE OF PAPER

Candidate has to provide a one-page synopsis and go on to complete a 20-page report. The Professional Assessment Handbook details the topics requirement and report format. The passing mark is set at 50%.

ASSESSMENT OBSERVATIONS

165 out of 199 candidates passed the Paper. The passing rate for the Paper is 82.91%. The main issue with this paper is for the increasing numbers of candidates to find suitable projects. This year, a requirement to write a special topic is introduced. Consequently marking scheme is adjusted. It is generally agreed that the case study remains a useful tool through which graduates can learn about the essential elements of contract administration, even as the projects they are handling in the office do not give them sufficient exposure to the entire range of practical issues. Passing rates are usually high and it is not seen as a major source of anxiety for candidates.

RECOMMENDATIONS TO CANDIDATES

Carefully study and analyze available information on the project and talk to the project team to get a thorough understanding, then write the report to cover what has been learned. High emphasis is put on candidate's own appraisal of the various issues and problems relating to the project. Special topic study gives candidates opportunity to research in depth a topic of interest.

Panel Chair : Gidget Lun ; Deputy Chair : James Lee Hang Wing

STRUCTURE OF PAPER

This paper is a 30-minute interview conducted in English and each candidate is interviewed by a panel consists of three interviewers.

Candidates' professional maturity and adequacy of the practical experience as recorded in the Logbook are assessed by the interviewers. Questions may cover topics related to Buildings Ordinance, Building Regulations, other related ordinances and Codes of Practice, construction knowledge, Building Contract and Contract Administration and Professional Ethics. Candidates' confidence in answering questions is also looked for by interviewers.

ASSESSMENT OBSERVATIONS

132 out of a total of 165 candidates (80%) passed the paper in the March attempt, which had shown an improvement when compared with the corresponding passing rate in PA2010.

From the report of Interviewers on failed candidates, most candidates were lack in knowledge on Building Contract and Building Ordinance. The weaknesses may be attributed to their lack of practical experience on local projects.

RECOMMENDATIONS TO CANDIDATES

In view of the reduction of the number of local projects and most of local projects become more extensive, it is anticipated that candidates will not obtain all-round knowledge in local projects and will result in a drop in the passing rate. To achieve a better result in this paper, the Panel has following recommendations to candidates.

- (a) Candidates are recommended to get more on-job experience on local projects, including inception, feasibility study, outline schematic proposal, project design, contract document and building construction. They should ask their employers to give them a well-balanced share of work in all aspects.
- (b) Sharing of knowledge and experience with fellow colleagues and graduates is also encouraged, and should be helpful if job exposure is limited.

Panel Chair : Wailee Chow