CODE OF PRACTICE

FOR

SITE SAFETY SUPERVISION

November 2000

FOREWORD

The Supervision Plan System has been implemented since December 1997 with the issuance of the Technical Memorandum for Supervision Plans and the Draft Code of Practice for Site Safety Supervision.

Sufficient experience in operating the system has now been gained by the building industry as well as the Buildings Department. It is appropriate to make refinement to the system to enhance efficiency and effectiveness.

The said Draft Code of Practice has thus been refined and adopted as this Code of Practice. The refinement includes more concise interpretation of the principles and requirements of the said Technical Memorandum, condensing the Standard Forms for Supervision Plan, redefining the Specific Task Checklists for Technically Competent Persons (TCPs) by conceptualizing essential items, straightening out the division of responsibilities for temporary works and simplifying the procedures for dealing with non-conformity.

This Code of Practice gives guidance to authorized persons, registered structural engineers, registered contractors and other personnel in the building industry for the preparation of Supervision Plans, carrying out their respective supervision duties and other site safety supervision matters.

November 2000
Buildings Department

CONTENTS

1 *Scope*

1.1 The Technical Memorandum for Supervision Plans (the 'Technical Memorandum') sets out the principles, requirements and operation of supervision plans. This Code of Practice for Site Safety Supervision provides detailed guidance to the practitioners on the application of the Technical Memorandum in the preparation of supervision plans and in the adoption of good practices for site safety supervision.

1.2 Apart from the Technical Memorandum, reference should also be made to the Buildings Ordinance, Practice Notes for Authorized Persons and Registered Structural Engineers, Practice Notes for Registered Contractors and any other relevant documents issued by the Building Authority (BA).

1.3 Section 7.1 of the Technical Memorandum specifies the supervision plans required to be submitted and provides the standard forms of supervision plan in Appendix I thereto. A simplified form of the supervision plan is provided in Appendix I to this Code. This simplified form is acceptable for the purpose of section 7.1 of the Technical Memorandum and section 16(3)(bc) of the Buildings Ordinance.

2 *Interpretation*

2.1 Unless specified otherwise, the terms and expressions used in this Code shall have the same meaning assigned to them under the Buildings Ordinance and the Technical Memorandum. Any additional terms and expressions used are explained in the text of this Code.

3 *Objective and General Principles*

Objective

3.1 This Code sets out and explains :

(a) the procedures for establishing site safety supervision requirements for various types of building works and street works by assessing their complexities and scales;

(b) the deployment of Technically Competent Persons (TCPs) and the combination of their duties;

(c) the principles of site safety management structure within each functional stream and the responsibilities and duties of the head, representative and TCPs of each stream;

(d) the specific tasks of TCPs in carrying out site safety supervision;

(e) the division of responsibility for temporary works;

(f) the qualification and experience requirements for each grade of TCP; and

(g) the procedures for dealing with non-conformities.

Principles for Assessing Supervision Requirements

3.2 The site safety supervision requirements for a particular type of building works or street works depend on the complexity and scale of the works involved; the complexity is a combination of the difficulty and risk of the works.

3.3 Other than the supervision requirements in accordance with paragraph 3.2, additional safety supervision requirements shall be provided during the critical stages of various types of building works and street works.

3.4 The BA may review and adjust the supervision requirements, taking into consideration the prevailing state of technology and methods of construction.

3.5 The BA may also review and upgrade the qualifications and experience requirements for the TCPs and adjust their site inspection frequencies in order to further improve the standard of supervision, after taking into consideration their supply in the market.

4 *Site Safety Management and Responsibilities of Relevant Personnel*

Safety Management Structure

4.1 The Authorized Person (AP), Registered Structural Engineer (RSE) and Authorized Signatory (AS) of the Registered General Building Contractor (RGBC) or Registered Specialist Contractor (RSC) are the heads of the site safety management structure of the respective functional streams. Other than the head, each of the supervision streams shall consist of a Representative of the head, TCPs responsible for routine site safety supervision, i.e. T1 to T3 and TCPs responsible for engineering safety supervision, i.e. T4 to T5 as appropriate for a particular type of works. A Representative shall be the highest grade TCP within their respective stream and shall take the senior role in the management structure. A typical example of the site safety management structure for a job site is illustrated in Figure 4.1.

Responsibilities of Relevant Personnel

4.2 The head of the management structure shall have overall responsibility and accountability for their respective functional stream. The Representative is directly accountable to the head (i.e. AP, RSE or AS, as the case may be), whereas all other site safety management personnel are accountable to the head through the Representative. Responsibilities and duties of the heads, Representatives and TCPs regarding the preparation and execution of supervision plans are set out in Tables 4.1 to 4.3.

4.3 TCPs of higher grades may take up the responsibilities of those of lower grades and the duties of TCPs may be combined. For combination of the duties of TCPs, reference should be made to paragraphs 7.12 to 7.17.

Figure 4.1 Example of Site Safety Management Structure

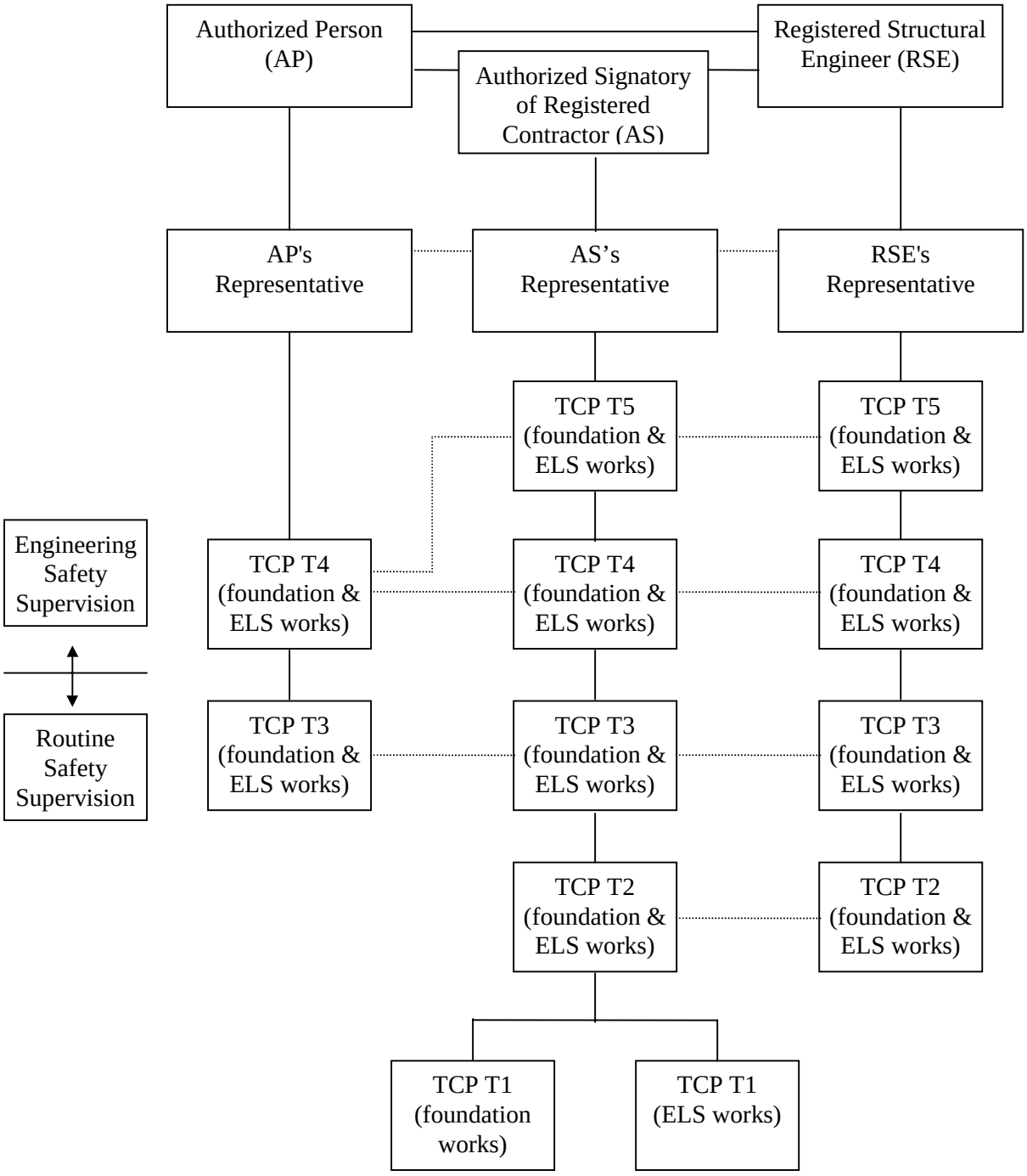


Table 4.1 **Responsibilities and Duties under AP's Stream**	
	Authorized Person
Responsibilities	• Assuming overall responsibilities in the appointment of his Representative and TCPs. • Ensuring the full implementation of the supervision plan regarding his own stream. • Overseeing the full implementation of the supervision plan regarding the Contractor's stream. • Establishing an efficient and effective mechanism for dealing with non-conformities.
Duties	• Assessing the class of supervision and the scale for each type of works relevant to the project. • Compiling his own part of the supervision plan. • Coordinating and submitting the supervision plan to the BA. • Devising checklists of specific tasks for his TCPs. • Supervising his Representative and TCPs. • Notifying the BA of any non-conformities which pose an imminent danger, or cause a material concern for safety and the contractor fails to rectify. • Carrying out site inspections as necessary.
	Representative
Responsibilities	• Accountable to the AP for the implementation of the supervision plan. • Representing the AP as the formal point of contact in communication with other functional streams. • Ensuring that the contractor's safety management structure complies with the supervision plan.
Duties	• Assisting the AP in carrying out site safety management functions. • Coordinating and compiling reports on supervision activities including reports on non-conformity. • Dealing with non-conformities.

Table 4.1 Cont'd

	T4
Responsibilities	• Accountable to the AP, through the AP's Representative, for the implementation of the supervision plan. • Taking up relevant responsibilities as set down in the Technical Memorandum and this Code.
Duties	• Carrying out specific tasks as per checklist devised by the AP. • Checking that specified aspects of works comply with design requirements and method statements, precautionary and protective measures are in place and followed. • Dealing with non-conformities by making referral to the AP's Representative and notifying TCPs in other streams.
	T3
Responsibilities	• Accountable to the AP through the AP's Representative. • Taking up relevant responsibilities as set down in the Technical Memorandum and this Code.
Duties	• Carrying out specific tasks as per checklist devised by the AP. • Monitoring the work of the Contractor's TCPs. • Maintaining on site registers of all relevant safety supervision plans together with all reports, documents and correspondence relating to the supervision plan. • Dealing with non-conformities by making referral to the AP's Representative and notifying TCPs in other streams.

Table 4.2 **Responsibilities and Duties under RSE's Stream**	
	Registered Structural Engineer
Responsibilities	• Assuming overall responsibilities in the appointment of his Representative and TCPs. • Ensuring the full implementation of the supervision plan regarding his own stream. • Overseeing the full implementation of the supervision plan regarding the Contractor's stream. • Giving permission to the Contractor for carrying out temporary works categorized as Case 3 under paragraph 4.5 of this Code.
Duties	• Compiling his own part of the supervision plan. • Devising checklists of specific tasks for his TCPs. • Supervising his Representative and TCPs. • Notifying the AP of any non-conformities which pose an imminent danger, or cause a material concern for safety and the contractor fails to rectify. • Carrying out site inspections as necessary.
	Representative
Responsibilities	• Accountable to the RSE for implementing the RSE's supervision plan. • Representing the RSE as the formal point of contact in communication with other functional streams. • Taking overall responsibility to check if the safety measures on site meet with the requirements of supervision plans. • Accountable to the RSE for the satisfactory execution of the specific tasks, and for the responsibilities of junior TCPs including checking of the essential items for specific tasks provided in this Code.
Duties	• Assisting the RSE in carrying out site safety management functions. • Coordinating and compiling reports on supervision activities including reports on non-conformity. • Dealing with non-conformities.

Table 4.2 Cont'd

	T4-T5
Responsibilities	• Accountable to the RSE through the RSE's Representative, for the implementation of the supervision plan. • Taking up relevant responsibilities as set down in the Technical Memorandum and this Code.
Duties	• Carrying out specific tasks as per checklist devised by the RSE. • Dealing with non-conformities by making referral to the RSE's Representative and notifying TCPs in other streams. • Checking that site works comply with the design requirements including those of the method statements, precautionary and protective measures. (For T4 only) • Validating conditions on site which relate to design assumptions for temporary or permanent structures. (For T5 only)
	T2-T3
Responsibilities	• Accountable to the RSE through the RSE's Representative. • Taking up relevant responsibilities as set down in the Technical Memorandum and this Code.
Duties	• Carrying out specific tasks as per checklist devised by the RSE. • Monitoring the work of the Contractor's TCPs. • Dealing with non-conformities by making referral to the RSE's Representative and notifying TCPs in other streams. • Checking that subordinate TCPs have carried out routine inspections at the correct frequency and that records are prepared and filed on site. (T3 only)

Table 4.3 **Responsibilities and Duties under Contractor's Stream**	
	Authorized Signatory
Responsibilities	• Assuming overall responsibilities in the appointment of his Representative and TCPs. • Ensuring the full implementation of the supervision plan regarding his own stream. • Ensuring that non-conformities are immediately acted on and that rectification is carried out forthwith.
Duties	• Compiling his own part of the supervision plan. • Devising checklists of specific tasks for his TCPs. • Supervising his Representative and TCPs. • Preparing plans, method statement and/or precautionary measures for temporary works categorized as Case 2 and/or Case 3 under paragraph 4.5 of this Code. • Notifying the AP of any non-conformities which pose an imminent danger, or cause a material concern for safety. • Carrying out site inspections as necessary.
	Representative
Responsibilities	• Accountable to the AS for the implementation of the supervision plan. • Representing the AS as the formal point of contact in communication with other functional streams. • Taking up overall responsibilities in carrying out site safety measures and actions in accordance with the supervision plan. • Ensuring that the line management, including sub-contractors, are conversant with the supervision plan, and that good coordination and communication exists between his TCPs.
Duties	• Directing staff and sub-contractors on safety related matters. • Dealing with non-conformities. • Assisting the AS in the investigation of the causes of each non-conformity and taking measures to prevent further occurrence.

Table 4.3 Cont'd

	T4-T5
Responsibilities	• Accountable to the AS, through the AS's Representative, for the implementation of the supervision plan. • Taking up relevant responsibilities as set down in the Technical Memorandum and this Code.
Duties	• Checking that assumptions made in the design of temporary works and method statements are validated on site. (T5 only) • Checking that actual site conditions and works being carried out agree with the design requirements, method statements and precautionary and protective measures. (T4 only) • Carrying out specific tasks as per checklist devised by AS. • Dealing with non-conformities by making referral to the AS's Representative and notifying TCPs in other streams.
	T1-T3
Responsibilities	• Accountable to the AS through the AS's Representative. • Taking up relevant responsibilities as set down in the Technical Memorandum and this Code.
Duties	• Checking on routine basis that site works comply with general site safety requirements. (T1 only) • Checking specialist aspects of work to see that they comply with the submitted supervision plans. (T2 only) • Checking that subordinate TCPs have carried out routine checks at the correct frequency and that records are prepared and filed on site. (T3 only) • Carrying out specific tasks as per checklist devised by AS. • Dealing with non-conformities by making referral to the AS's Representative and notifying TCPs in other streams.

Division of responsibility between AP/RSE and Contractor for Temporary Works and Working Procedures

4.4 The Contractor has the sole responsibility to ensure the integrity of the temporary structure itself and the associated fixing methods.

4.5 The division of responsibility between AP/RSE and Contractor for temporary works and working procedures is detailed below:

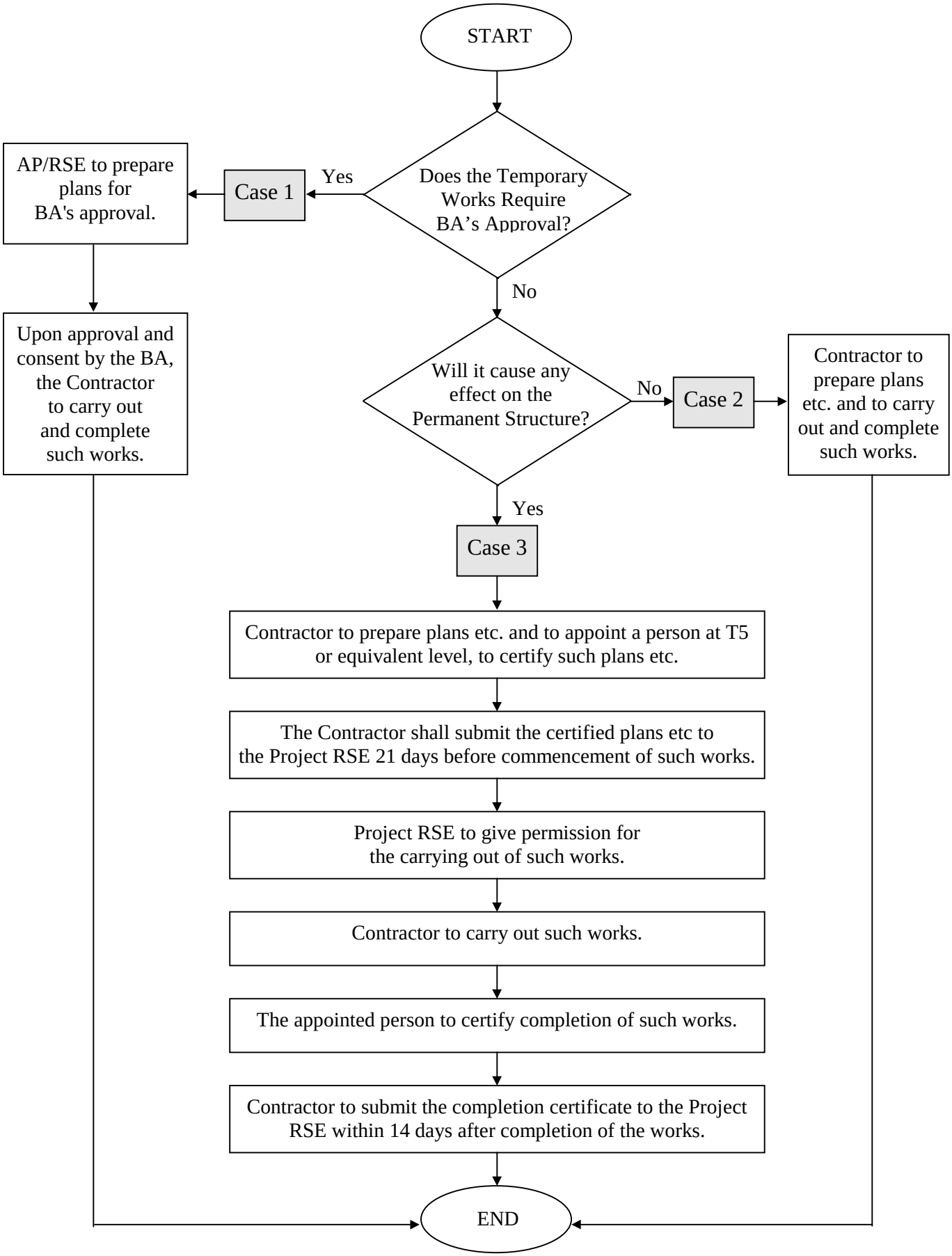
Case 1 When the prescribed plans stipulate the temporary works, and the sequence of construction or method statements are also shown on prescribed plans, both the AP/RSE and the Contractor have their own responsibilities to supervise the carrying out of the works in accordance with the approved plans and the Buildings Ordinance and Regulations.

Case 2 When the temporary works, the sequence of construction or method statements are not required to be shown on prescribed plans and have no effect on the permanent structure by way of overstressing or overloading, the Contractor has the sole responsibility of ensuring the integrity of temporary works and that the carrying out of temporary works should be safe and should not endanger the workers on site, the public and adjoining buildings.

Case 3 When the temporary works, the sequence of construction or method statements are not required to be shown on the prescribed plans but may have effect on the permanent structure by way of overstressing or overloading, the Contractor shall appoint a person whose qualification and experience are not inferior to a TCP of grade T5 to certify the plans, design information and/or method statement of the temporary works which are to be submitted to the Project RSE. The person so appointed should also certify the completion of such works. The RSE may require the Contractor to submit further calculations to substantiate his design of the temporary works as necessary.

Figure 4.2 illustrates the procedures for dealing with temporary works.

Figure 4.2 Flow Chart Showing Procedures for Dealing with Temporary Works



4.6 For Case 2, method statements and drawings, precautionary and protective measures are required for, but not limited to, the following works :

(i) False work erected for the casting of
   (a) transfer plate and vehicular ramps
   (b) cantilevered slab exceeding 1.5m
   (c) beam with span exceeding 12m
   (d) deep beams with depth exceeding 3m
   (e) elevated water tank
   (f) space frame
   (g) vehicular bridge and footbridge
   (h) prestressed structure

(ii) Formwork and shoring for the casting of
   (a) columns and walls with height exceeding 6m
   (b) retaining wall higher than 4m

(iii) Temporary working platforms for the operation of plant and machinery.

4.7 For all Cases 1, 2 and 3 above, the Contractor shall maintain on site a set of plans showing the method statement and precautionary and protective measures for the reference of the TCPs and the inspection of the BA.

Communication Procedures

4.8 Successful implementation of the Supervision Plan System requires effective and efficient communication within and between each stream. Within streams, lines of communication should be established between the engineering safety supervision level and the routine safety supervision level whereas interstream communications should usually take place between stream counterparts. Typical lines of communication within stream and between streams are illustrated in Figure 4.1.

5 *Essential Items for Specific Tasks by TCPs*

5.1 The AP, RSE and AS shall devise check lists for their TCPs by making reference to the essential items listed in Tables 5.1 to 5.3 of this Code and to include any other particular items considered appropriate and necessary for their projects and surrounding conditions.

5.2 The TCPs shall carry out their duties as per the check lists devised by their own heads of stream and all the check lists and inspection records shall be kept on site for the inspection of the BA.

5.3 A typical checklist suggested for use, Form A, is shown in Appendix II to this Code.

5.4 All non-conformity detected during the checking of essential items for specific tasks by the TCPs must be properly recorded in the Report of Non-Conformity and Rectification Works, Form B at Appendix III to this Code. Detailed procedure for dealing with non-conformities are specified in paragraph 9.3 of this Code.

Table 5.1 Essential Items for the Check List of Specific Tasks for AP's TCPs		
Item No.	**Description**	
A1	Establish systems for co-ordinating, compiling and filing of reports, maintaining filing systems and forwarding reports to AP in case of non-conformity.	Routine items
A2	Check that the hoarding and/or covered walkways are erected to secure safety of the public in accordance with the hoarding plan agreed by the Building Authority.	
A3	Check that the provision and condition of scaffolding, catch fans, matscreens and heavy duty nylon mats, as appropriate, are satisfactory.	
A4	Check that monitoring check points are installed and readings are taken in time.	
A5	Register reports of non-conformity and inform relevant parties of non-conformity.	Routine and Engineering items
A6	Report to the AP if the non-conformity is considered to pose an imminent danger, to be a significant risk or a source of danger or the Contractor does not comply with instructions.	
A7	Check that all lower grade TCPs are making inspections no less than the required frequency and carrying out duties in accordance with the Technical Memorandum and the Code of Practice for Site Safety Supervision.	
A8	Check and satisfy that copies of approved plans, method statements, precautionary and protective measures proposals and all related drawings are kept on site; and that the approved/agreed method statement is followed.	Engineering items
A9	Check and monitor that lateral supports are installed in accordance with approved/agreed sequence and not to be removed in advance of adequate propping or restraint.	
A10	Check that temporary cut slopes will not cause any instability to adjoining ground/structure/building.	
An	**Any other items considered essential by the AP for the project.**	

Table 5.2 Essential Items for the Check List of Specific Tasks for RSE's TCPs		
Item No.	**Description**	
E1	Establish system for communicating with other TCPs.	Routine items
E2	Check that all monitoring check points are installed and readings are being taken in time.	
E3	Verify non-conformity and instruct rectification works. Notify all relevant parties in respect of the non-conformity and monitor that rectification measures are properly carried out.	Routine and Engineering items
E4	Report to the RSE if the non-conformity is considered to pose an imminent danger, to be a significant risk or a source of danger or the Contractor does not comply with instructions.	
E5	Check that all lower grade TCPs are making inspections no less than the required frequency and carrying out duties in accordance with the Technical Memorandum and the Code of Practice for Site Safety Supervision.	
E6	Check and satisfy that copies of approved plans, method statements, precautionary measures proposals and all related drawings are kept on site; and that the approved/agreed method statement is followed.	Engineering items
E7	Check that there is no over-excavation and temporary cut slopes will not cause any instability to adjoining ground/structure/building.	
E8	Check that enclosing walls for top down construction show no signs of defect or lack of soundness.	
E9	Check and monitor that lateral supports are installed in accordance with approved/agreed sequence and not to be removed in advance of adequate propping or restraint.	
E10	Check that the design and supports of formwork, shoring and temporary working platform are adequate to support all intended loads.	
E11	Check that there is no risk of artesian conditions for excavation and lateral support works.	
E12	Check that stability and integrity of nearby buildings and ground are not adversely affected.	
E13	Check that the groundwater table is consistent with design of excavation and lateral support works.	
E14	Check that before excavation takes place, the highest new deck level for top down construction is in place and has achieved sufficient strength to provide lateral support.	
En	**Any other items considered essential by the RSE for the project.**	

Table 5.3 Essential Items for the Check List of Specific Tasks for RGBC/RSC's TCPs		
Item No.	**Description**	
C1	Establish system for communicating with other TCPs.	Routine items
C2	Check that the erection of hoarding and/or covered walkways has been erected to secure safety of the public in accordance with the hoarding plan agreed by the Building Authority.	
C3	Check and ensure that there are arrangements for access and egress of vehicles which are satisfactory and do not endanger the public or other road users.	
C4	Check that scaffolding is adequately secured to the building to prevent collapse; catch fans, catch platforms and protection screens are adequately installed so as to secure safety against falling objects.	
C5	Check that restraining guy ropes and/or nets are provided before removal of external walls for demolition works.	
C6	Check that there is no excessive debris on floor slabs and against external walls for demolition works.	
C7	Check that refuse chute and refuse openings are properly located.	
C8	Check and ensure that all monitoring check points and other geotechnical instrumentation have been installed and are regularly monitored; the results are kept on site; and that abnormal readings are reported to AP/RSE and the BA.	
C9	Check that all monitoring check points are installed and the readings are taken in time.	
C10	Check that loose materials, boulders, construction plants or temporary stockpiles of materials are not present at the crest or intermediate benches of slopes.	
C11	Check that if excavation plant and piling rigs are operated on ground, the state of the ground is fit for use; and if the plants are operated on an elevated working platform, the platform is adequate to support the plant and all other imposed loads.	Routine and Engineering items
C12	Check and satisfy that copies of approved plans, method statements, precautionary measures proposals and all related drawings are kept on site; and that approved/agreed method statement is followed.	
C13	Check that mechanical plant is operating safely and in accordance with method statements and proppings are provided in accordance with approved demolition plans.	
C14	Check that procedure for the excavation and lateral support works are carried out in accordance with the approved plans.	
C15	Check that falsework for elevated structure is erected in accordance with the design proposal.	

Table 5.3 Cont'd

Item No.	Description	
C16	Check that during site formation works, existing nullahs and watercourses are properly diverted.	Routine and Engineering items
C17	Inspect slopes to check that temporary drainage is adequate and that unexpected channels or conduits do not develop prior to forecast heavy rainstorms and during rainfall events,	
C18	Check that protective measures for blasting operation are in place and maintained.	
C19	Check that all lower grades TCPs are carrying their duties in accordance with the Technical Memorandum and the Code of Practice for Site Safety Supervision and records are properly kept on site.	
C20	Set up procedures to ensure that safety measures and safety actions are checked and recorded by the TCPs.	
C21	Instruct rectification of non-conformity and monitor rectification measures.	
C22	Report to relevant parties when non-conformity is observed and rectified.	
C23	Check that stability and integrity of nearby buildings and ground are not adversely affected.	Engineering items
C24	Check that enclosing walls for top down construction show no signs of defect or lack of soundness.	
C25	Check that before excavation takes place, the highest new deck level for top down construction is in place and has achieved sufficient strength to provide lateral support.	
C26	Check that during excavation for top down construction, there is no unexpected deflection on the highest deck level and subsequent new floor levels.	
C27	Check that the angle of cut slopes is within specified limits.	
C28	Liaise with AP's and RSE's TCPs as applicable to check and satisfy that design assumptions are validated on site.	
C29	Check that the design and supports of formwork, shoring and temporary working platform are adequate to support all intended loads.	
C30	Check that the deck and/or formwork are adequate for all applied loads.	
C31	Investigate and identify causes for non-conformity and set up systems and procedures to avoid recurrence.	
Cn	**Any other items considered essential by the Contractor for the project.**	

6 *Assessment of Degree of Complexity*

Project Attributes Score Sheet

6.1 The complexity (i.e. difficulty and risk) of works shall be assessed in accordance with the project attributes and the corresponding scores set out in the Project Attributes Score Sheet (PASS) for each type of building works and street works as shown in Appendix IV.

6.2 Pile wall works for site formation or excavation and lateral support works normally require a separate consent for commencement. Therefore, a separate assessment of the degree of complexity for pile wall works is required.

6.3 The AP is responsible for completing the PASS. Where appropriate, the AP can seek advice from the RSE and other professionals such as his geotechnical consultant.

Difficulty

6.4 The attributes used to assess the level of difficulty associated with the works are set out in the relevant PASS. These attributes may be related to the particular form of the works, installation procedures, special building materials used or may be associated with the specific requirements for the site. When completing this section of the PASS, the AP is required to determine the attributes relevant to the works. The individual scores corresponding to each relevant attribute shall be added together to give a total score for the level of difficulty.

Risk

6.5 The attributes used to assess the level of risk associated with the works are set out in the relevant PASS. These risk attributes may be related to special requirements associated with the execution of the works, the location of the works or presence of particular features on or close to the site. When completing this section of the PASS, the AP is required to determine the attributes relevant to the works. The individual scores corresponding to each relevant attribute shall be added together to give a total score for the level of risk.

Degree of Complexity of the Works

6.6 The scores for difficulty and risk shall be added together to give a total score for each type of works. The degree of complexity of the works corresponding to the total score shall then be obtained from Table 6.1.

Table 6.1

Degree of complexity of works corresponding to the total score of project attributes

Description of Complexity of Works	Degree of Complexity of Works	Total Score of Project Attributes
Straightforward	1	0-20
Moderately complex	2	21-40
Complex	3	41-60
Very complex	4	61-80
Extremely complex	5	81-100

7 *Supervision Requirements*

Class of Supervision Related to Degree of Complexity

7.1 Certain types of works are known to be more difficult and risk prone than others such that these works would require more stringent supervision input when compared with other types of works having the same degree of complexity.

7.2 The class of supervision required for various types of works corresponding to their degrees of complexity shall be obtained from Table 7.1.

Table 7.1

Class of Supervision corresponding to Degree of Complexity for Various Types of Building Works and Street Works

Type of Works	Degree of Complexity				
	1	2	3	4	5
demolition foundation site formation slope / retaining wall / buried services repairs pile wall excavation and lateral support	C	D	E	F	F
cap / footing / basement superstructure curtain wall / cladding addition and alteration	A	B	C	D	E
ground investigation street works	A	A	B	C	D

Determining the required TCPs and their frequency level of site inspections

7.3 The TCP deployment and minimum frequency level of site inspections required for each functional stream under different classes of supervision are set out in Table 1 of the Technical Memorandum. Additional safety supervision requirements during critical stages are specified in paragraph 8 of this Code.

Scale of the Works

7.4 The effect of the scale of the works should be considered separately from the complexity of the works. It shall be assessed by a scale factor of the works.

7.5 A measurable item and a basic value of which are assigned for each type of building works and street works. The scale factor of a type of works is the ratio of the estimated value of the measurable item of the works to the basic value. The scale factor is capped at 2.

7.6 The measurable items and their basic values to be used for the assessment of the scale factor of various types of building works and street works are set out in Table 7.2. The BA may review and amend the measurable items and their basic values from time to time.

Table 7.2

Measurable Items and Basic Values for Assessment of the Scale of Works

Type of Building Works/ Street Works	Measurable Item	Basic Value
demolition	maximum floor area of the building to be demolished per storey	500m^2
ground investigation	number of boreholes	50
site formation	cost	$10M
slope/retaining wall/buried services repairs	cost	$5M
excavation & lateral support	cost	$10M
pile wall	cost	$10M
foundation	cost	$20M
cap/footing/basement	cost	$20M
superstructure	construction floor area	20000m^2
curtain wall/cladding	aggregated surface area	10000m^2
alteration & addition	cost	$5M
street works	cost	$5M

7.7 For a scale factor of one, a full day should be spent on inspection on each occasion that the site is visited by a TCP.

7.8 A scale factor of less than one would allow visits of duration of less than one full day but at the same frequency level. The minimum frequency level of site inspections as set out in Table 1 of the Technical Memorandum should not be reduced. For full time TCPs, full time attendance is still required in providing continuous supervision.

7.9 A scale factor of more than one shall require extra supervision input. The scale factor should be applied to increase the level of supervision input over the minimum frequency level required in Table 1 of the Technical Memorandum in the following manner :

(a) to upgrade the frequency level of inspection of the TCPs of grades T2 to T5 as specified in Table 1 of the Technical Memorandum for that class of supervision; and

(b) to increase the number of TCP of grade T1, and grade T3 in some cases, required to carry out full time supervision for that class of supervision.

7.10 For the purpose of assessing the manpower input required for a specified frequency level of inspection, the minimum frequency levels of inspection, 1 to 5 as specified in Table 1 of the Technical Memorandum, are quantified in terms of man-days per month as shown in Table 7.3. As there is a significant difference in input between levels 4 and 5, further subdivision of level 4 is given in Table 7.4 to take into account circumstances where more frequent inspections than quarter-monthly are required.

Table 7.3

Table Showing Frequency Levels of Site Inspection in Terms of Man Days Per Month For Works of Scale Factor of One

Level	Description	Notional Supervision Input (Equivalent Man-days per Month)
Level 5	Full time	25
Level 4	Quarter-monthly visits	4
Level 3	Half-monthly visits	2
Level 2	Monthly visit	1
Level 1	As and when required	0.5

Table 7.4		
Table Showing Supervision Input for Works Requiring More Frequent Visits than Quarter-Monthly		
Frequency Level of Site Inspection	**Description**	**Notional Supervision Input (Equivalent Man-days per Month)**
5	Full time on site	25
4.3	Four visits every week	16
4.2	Three visits every week	12
4.1	Two visits every week	8
4	One visit every week	4

7.11 The adjusted supervision input for a scale factor exceeding one shall be calculated by multiplying the scale factor to the notional supervision input corresponding to the minimum frequency level of inspection required for the respective class of supervision. The upgraded frequency level corresponding to the adjusted supervision input should then be found from Table 7.3 and 7.4. For full time TCPs, the supervision input shall be increased by either increasing the number of TCPs or combining the required supervision input extra over that of one full time TCP with that of other higher grade TCPs.

Combination of Supervision Resources

7.12 To facilitate the deployment of TCPs under different resources situations, a higher grade TCP may take up the duties of a lower grade TCP in his stream provided that the requirements for relevant qualifications and experience of the lower grade are satisfied.

7.13 Combination of supervision resources is only permitted for those types of works that are to be carried out concurrently on site.

7.14 In order to combine the resources required for one or more types of building works, or to combine the duties of TCPs, the application of scale factors as specified in paragraphs 7.4 to 7.11 should be followed and Form C at Appendix V should be used for the calculations. Form C should be appended to the supervision plan submitted to the BA.

7.15 In using Form C to calculate the combination of TCPs, the following steps should be followed :

(i) List those types of building works or street works for which supervision resources are to be combined.

(ii) Group the types of works into concurrent and non-concurrent works (Column 1). Only TCPs under concurrent works may be combined.

(iii) Obtain the Notional Supervision Input (Column 6) corresponding to the Frequency Level of Site Inspection from Table 7.3.

(iv) The Adjusted Supervision Input (Column 7) is the product of the Scale Factor (Column 3) and the Notional Supervision Input (Column 6).

(v) List the grades of TCP that are to be combined in Column 8.

(vi) List the grades of TCP with combined duties in Column 9.

(vii) Sum up the Supervision Input required for those TCPs who are to be combined as the supervision input required for the TCP with combined duties (Column 10).

(viii) Derive the number of TCP with combined duties (Column 11) and Frequency Level of Site Inspection required after the combination of TCPs (Column 12) using Tables 7.3 and 7.4.

7.16 The AP and RSE, after calculating the supervision input in accordance with paragraph 7.15, may further combine TCPs of the two streams in accordance with the same principles.

7.17 If the different types of works are not to be grouped and that the duties of TCPs are not to be combined, the adjusted supervision input for different types of works with a scale factor of more than one should also be calculated in Form C by using columns 1 to 7 and 12.

TCP qualifications and experience

7.18 Academic qualifications required for each grade of TCP are recognised in accordance with the following principles :

(a) Diplomas and certificates must have been awarded by the Institutes of Vocational Education, or the previous Technical Institutes, operated under the Vocational Training Council;

(b) Higher diplomas and higher certificates must have been awarded by universities funded by the University Grants Committee, or the Institutes of Vocational Education or the previous Technical Institutes operated under the Vocational Training Council;

(c) Bachelor degrees and higher degrees must have been awarded by universities funded by the University Grants Committee or currently recognised by the Hong Kong Institute of Architects (HKIA), the Hong Kong Institution of Engineers (HKIE) or the Hong Kong Institute of Surveyors (HKIS);

(d) Degrees awarded by universities or institutes other than those mentioned in (c) above are classified as higher diplomas;

(e) Non-graduate vocational qualifications awarded by institutions other than those mentioned in (a) and (b) above are subject to the acceptance of the BA;

(f) Notwithstanding (d) above, other overseas degrees or higher degrees may be recognised by the HKIA, HKIE or HKIS and, if so, will be accepted under (c) above. Evidence of such recognition should be produced to the BA by the AP, RSE, RGBC or RSC when appointments of TCPs with such qualifications are proposed in the supervision plans; and

(g) Overseas or other local diplomas/certificates or higher diplomas/ higher certificates may be accredited by recognised accreditation bodies such as the Hong Kong Council for Academic Accreditation if their qualifications are equivalent to that conferred by institutes operated under the Vocational Training Council. Evidence of such accreditation should be produced by the AP, RSE, RGBC or RSC to the BA for acceptance before making proposals on appointments of TCPs with such qualifications.

7.19 The professional and academic qualifications that are acceptable for TCPs of grade T4 and T5, and that for grade T1 to T3, should be in the relevant disciplines as set out in Table 7.5 and Table 7.6 respectively.

Table 7.5

'Professional disciplines which are acceptable for qualifying as TCP of grades T4 and T5

Type of Works	TCP under AP	TCP under RSE	TCP under RGBC/RSC
ground investigation foundation cap / footing / basement pile wall excavation & lateral support works	RPE (Civil, Geotechnical or Structural)	RPE (Civil, Geotechnical or Structural)	RPE (Civil, Geotechnical or Structural)
site formation slope / retaining wall / buried services repairs	RPE (Civil or Geotechnical)	RPE (Civil, Geotechnical or Structural)	RPE (Civil or Geotechnical)
alteration & addition demolition superstructure curtain wall/cladding street works	RA RPS(Building Surveying) RPE (Civil, Building or Structural)	RPE (Civil or Structural)	RPE (Civil, Building or Structural)

Note :

1. For those works which, in the opinion of the BA, require specialized engineering input, he may specify such other additional requirements considered appropriate for qualifying as TCP.
2. RA means Registered Architect.
3. RPE (Civil) means Registered Professional Engineer in the civil discipline and similar for other engineering disciplines.
4. RPS (Building Surveying) means Registered Professional Surveyor in the building surveying discipline.

Table 7.6			
Appropriate Disciplines which are generally acceptable for qualifying as TCPs of grades T1 to T3			
Type of Works	**TCP under AP**	**TCP under RSE**	**TCP under RGBC/RSC**
ground investigation foundation cap / footing / basement excavation & lateral support works site formation slope / retaining wall / buried services repairs	Civil / Structural / Geotechnical Engineering Building Studies Building Surveying Architectural Studies	Civil / Structural/ Geotechnical Engineering	Civil / Structural / Geotechnical Engineering
alteration & addition demolition superstructure curtain wall/cladding street works	Civil / Structural Engineering Building Studies Building Surveying Architectural Studies	Civil / Structural Engineering	Civil / Structural Engineering Building Studies Building Surveying Architectural Studies

7.20 In accordance with Table 2 of the Technical Memorandum, TCP of grade T4 may be a degree holder in a recognised subject with total relevant working experience of not less than 4 years. The subjects recognised are civil, structural or geotechnical engineering or other disciplines as specified in Table 7.6 of this Code.

7.21 A person who is a corporate member of the Hong Kong Institute of Clerks of Works or the Chartered Institute of Building may be appointed as TCP of grade T3 provided that he has the required level of experience.

7.22 The total relevant working experience of different grades of TCP shall be aggregated as follows :

(i) for T1 - The relevant experience must have been gained within the previous 5 years and at least 1 year must be local site experience.

(ii) for T2 - Similar to T1 but the experience must be closely related to the category of specialist works concerned.

(iii) for T3 - The relevant experience must have been gained within the previous 5 years, 2 years of which must be local and 1 year must be on site.

(iv) for T4 and T5 - Similar to T1.

7.23 Relevant working experience of a TCP may be considered as the number of years of relevant working experience gained post-qualification plus half the number of years of relevant working experience gained pre-qualification but subject to the conditions in paragraph 7.22.

Phased Implementation

7.24 Table 2 of the Technical Memorandum sets out the minimum qualifications and experience required for each grade of TCPs for site safety supervision. These requirements are introduced progressively on an incremental basis over a transitional period of five years and in three stages from the initial implementation on 22 December 1997.

7.25 In the First Stage, the first two years from 22 December 1997, all existing site supervisory personnel who do not meet the required qualifications as specified in the Technical Memorandum but have sufficient years of relevant experience as specified in paragraph 7.28 of this Code are accepted for performing the tasks of the designated grades of TCP. During this stage, they are required to attend top-up training courses on construction site safety and obtain an Interim Certificate from a recognised training institute.

7.26 In the Second Stage, three years from 22 December 1999, site safety supervisory staff who are permitted to perform the tasks of the designated grades of TCP in the first stage must have obtained the Interim Certificate before they can be allowed to continue to perform the function of TCP. Within the Second Stage, they should attend extended top-up training courses to obtain an Equivalent Certificate from a recognised training institute, which is comparable to the minimum qualification requirements as specified in the Technical Memorandum.

7.27 In the Third (Final) Stage, that is from 22 December 2002 onwards, all site safety supervisory staff must acquire the required qualifications and experience as specified in the Technical Memorandum before they can perform the tasks of the respective grades of TCP. The Equivalent Certificate acquired in the extended top-up training courses in the Second Stage will be accepted as equivalent to the qualifications specified in the Technical Memorandum on a permanent basis.

7.28 During the first and second stage of the transitional period, for some grades of TCP without the specified qualifications or lack of sufficient experience may be compensated for by extra relevant experience or higher qualifications respectively as shown in Table 7.7 below :

Table 7.7

Qualifications and experience which satisfy requirements for each grade of TCP during transitional period

Grade of TCP	Without Formal Training	Academic Qualifications Achieved					Professional Qualifications Achieved
		Certificate	Diploma	Higher Certificate	Higher Diploma	Bachelor Degree	RA RPE RPS
	Equivalent Years of Experience						
T1	5	2	2	1	1	1	Q
T2	8	4	4	3	3	1	Q
T3	12	8	8	5	5	3	Q
T4	N/Q	N/Q	N/Q	N/Q	N/Q	4	Q
T5	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q	5*

* Relevant experience obtained before the Professional Qualification is acceptable

Note : Q means Qualified NQ means Not qualified

7.29 From time to time the BA may give guidance on top-up training which allow competent persons without the specified qualifications to become the designated grades of T1 to T3 TCPs on a permanent basis.

8 *Additional Safety Supervision Requirements*

Critical Stages of the Works

8.1 Table 1 of the Technical Memorandum specifies that in addition to the minimum frequency of site inspection required for each class of supervision, more frequent site inspections up to full time are required at critical stages of the works. The additional site inspections at critical stages are set out in Table 8.1.

8.2 The RGBC or RSC should notify the AP and RSE of the commencement date and estimated time for completion of the critical stages of works in sufficient time before commencing the critical stages.

8.3 In addition, the AP, RSE, RGBC or RSC, may determine that certain sections of the works are particularly difficult or risk prone or that the consequences of a non-conformity may be serious. In these cases any party may notify his counterparts that he considers the section of works to be a critical activity and be included in the supervision plan.

8.4 Any TCP designated for the supervision of a particular type of works may also carry out supervision of the works at critical stages provided that such additional supervision duty would not affect the normal inspection required of him. Otherwise, additional TCPs are required to carry out supervision of works at critical stages.

Table 8.1

Additional Supervision Requirements for Critical Stages of Building Works

Type of Building Works		Critical Stages of Works	Inspection Frequency		
			Contractor's	RSE's Stream	
			T3	T4	T2
Demolition; Addition and Alteration works	D1	Demolition of cantilever structure over street	Full Time	Bidaily	Full Time
	D2	Demolition of hanger structure	Full Time	Daily	N/A
	D3	Demolition of prestressed concrete member	Full Time	Daily	N/A
Foundation	F4	Piling near the crest of retaining wall within a zone contained by a 45° line from the toe of wall	Full Time	Bidaily	N/A
	F5	Piling works within 5m of MTR structure, highway/railway structure or building completed more than 40 years	Full Time	Bidaily	N/A
Excavation and lateral support; Site formation; Slope/retaining wall/buried services repairs	EL1	Presence of a watermain with diameter exceeding 200mm, gas main, building on shallow footing or MTR structure within a zone contained by a line measured at 60° to the horizontal from the base of excavation	Full Time	Bidaily	N/A
	EL2	Construction of diaphragm wall/bored pile wall or installation of sheet pile/pipe pile/soldier wall within 5m of MTR structure, highway / railway structure, watermain larger than 200mm diameter / gas main larger than 200mm diameter or building founded on shallow footings	Full Time	Bidaily	N/A
	EL3	Preloading of struts	Full Time	Bidaily	Full Time
	EL4	Operation of recharging well	Full Time	Daily	N/A
	EL5	All related work when monitoring indicates movement of ground or building or groundwater drawdown exceeding that allowable	Full Time	Bidaily	Full Time
Superstructure	S1	Construction of cantilever structure over street	Full Time	Daily	N/A
	S2	Construction of elevated structure, like podium deck, over street	Full Time	Daily	N/A

Notes:

1. One TCP of the appropriate grade as shown in the above table is required to supervise the critical stages of works.
2. For inspection frequency at Daily intervals the TCP is required to carry out site inspection at least once every working day.
3. For inspection frequency at Bidaily intervals, the TCP is required to carry out site inspection at least once every other working day.
4. N/A means not applicable.

9 *Communication and Reports*

Interstream Communication

9.1 Interstream communications are as important as within-stream communications in order to facilitate effective safety supervision. TCPs shall take all reasonable and practical steps to inform their counterparts of any aspects of the works which have concern or may cause concern on matters related to safety.

Site Safety Supervision Reports

9.2 Site safety supervision reports are required to be completed by all TCPs whenever they carry out site safety supervision activities. These reports should be filed and maintained at the site office for the inspection of the BA.

Non-conformity Reports

9.3 If a non-conformity arises and comes to the attention of a TCP, the following procedures should be initiated :

(i) The TCP informs the Representative of his own functional stream who will in turn inform the AP, RSE and the Contractor of the non-conformity and complete Part 1 of Form B;

(ii) If the non-conformity is considered to pose an imminent danger, the AP reports the non-conformity to the BA;

(iii) AP/RSE issues Instruction to the Contractor to rectify the non-conformity;

(iv) AP/RSE's Representative will ensure that the rectification works are completed promptly and satisfactorily;

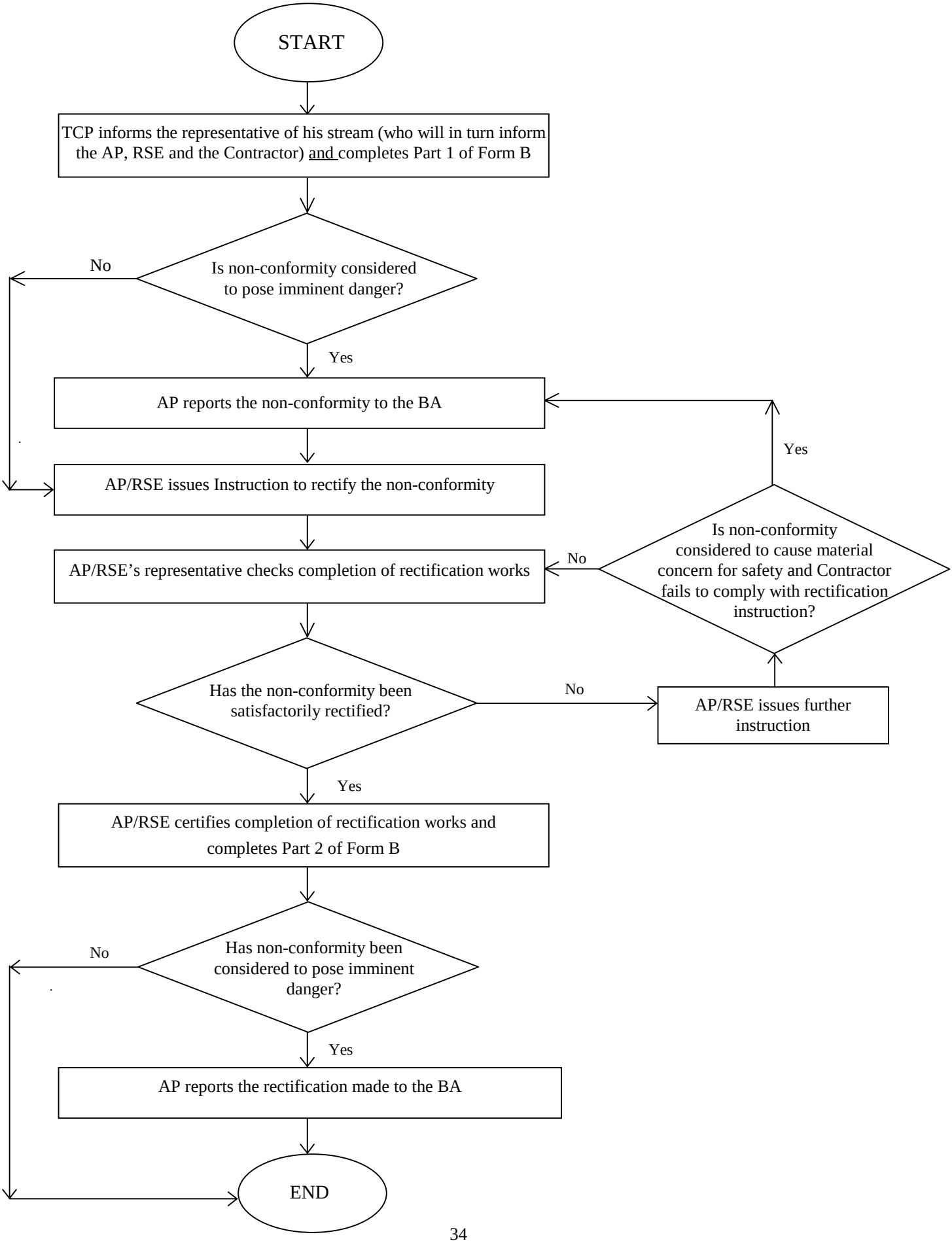
(v) If the non-conformity is considered to cause a material concern for safety and the contractor fails to comply with the rectification instruction, the AP will coordinate further action and report the non-conformity to the BA;

(vi) Otherwise, AP/RSE certifies the completion of the rectification works and complete Part 2 of Form B; and

(vii) If the non-conformity has been considered to pose an imminent danger, AP reports to the BA the rectifications made.

A flow chart showing the procedures for dealing with non-conformity is shown in Figure 9.1.

Figure 9.1 Flow Chart for Dealing With Non-Conformity



Appendix I

Simplified Form of Supervision Plan

BUILDINGS ORDINANCE
(Chapter 123)
Section 39A
TECHNICAL MEMORANDUM FOR SUPERVISION PLANS
Site Safety Supervision Plan

To the Building Authority,

Preamble

In accordance with the Technical Memorandum for Supervision Plans issued under section 39A of the Buildings Ordinance (the 'Technical Memorandum'), we submit this Site Safety Supervision Plan for the _____works at the site located at (address of site) _____

_____

on (Lot No.) _____.

2. We have signed under Part I, II and III respectively of this Supervision Plan. Our signatures indicate our undertaking that the safety supervision at this site will be carried out in accordance with this Supervision Plan, the Technical Memorandum and the Code of Practice for Site Safety Supervision (the 'Code of Practice'). We also undertake that the management and execution of both site safety and quality supervision of the works covered by this Supervision Plan will be carried out in the manner prescribed by the provisions of the Buildings Ordinance and Regulations.

Part I - Supervision Plan of the Authorized Person

3. The Degree of Complexity assessed and the corresponding Class of Supervision for site safety management, classified in accordance with the Technical Memorandum and the Code of Practice for the works covered by this Supervision Plan are :

Type of building works or street works	Date of Approval	Degree of Complexity	Class of Supervision

4. Details of assessment of the complexity (PASS) and adjustment/combination of supervision resources (Form C)* are attached at Appendix 1A.

5. The Technically Competent Persons for site safety supervision under the Authorized Person's stream required under the Code of Practice for the Class of Supervision identified are :

	Name in English	Name in Chinese	I.D. No.	Frequency Level of Site Inspection
Representative				
T4				
T3				

The CVs showing their relevant experience and academic qualifications are attached at Appendix 1B.

6. I (name in full) _____ (Chinese) _____, Authorized Person, certify that Part I (paragraphs 3 to 5) of this Supervision Plan is prepared by me and complied with the Technical Memorandum, the Code of Practice and the requirements of the Buildings Ordinance and Regulations. I have also read and hereby confirm paragraphs 1 and 2 in the Preamble of this Supervision Plan.

Date _____ _____

Signature

Certificate of Registration No. : _____

Date of expiry of registration : _____

Part II - Supervision Plan of the Registered Structural Engineer

7. In accordance with the Class of Supervision specified in Part I of this Supervision Plan, details of adjustment/combination of supervision resources (Form C) are attached at Appendix 2A.

8. The Technically Competent Persons for site safety supervision under the Registered Structural Engineer's stream required for the specified Class of Supervision are :-

	Name in English	Name in Chinese	I.D. No.	Frequency Level of Site Inspection
Representative				
T5				
T4				
T3				
T2				

The CVs showing their relevant experience and academic qualifications are attached at Appendix 2B.

9. The Technically Competent Persons for site safety supervision under the Registered Structural Engineer's stream during critical stages of the works are :

Critical Stages of Works	Grade of TCP	Name# (I.D. No.)	Inspection Frequency

CV showing relevant qualifications and experience need to be included in Appendix 2B if the TCP is different from those listed in paragraph 8 above.

10. I (name in full) _____ (Chinese) _____, Registered Structural Engineer, certify that Part II (paragraphs 7 to 9) of this Supervision Plan is prepared by me and complied with the Technical Memorandum, the Code of Practice and the requirements of the Buildings Ordinance and Regulations. I have also read and hereby confirm paragraphs 1 and 2 in the Preamble of this Supervision Plan.

Date _____ _____

Signature

Certificate of Registration No. : _____

Date of expiry of registration : _____

Part III - Supervision Plan of Registered General Building Contractor/Registered Specialist Contractor *

11. In accordance with the Class of Supervision specified in Part I of this Supervision Plan, details of adjustment/combination of supervision resources (Form C) are attached at Appendix 3A.

12. The Technically Competent Persons for site safety supervision under the Contractor's stream required for the specified Class of Supervision are :-

	Name in English	Name in Chinese	I.D. No.	Frequency Level of Site Inspection
Representative				
T5				
T4				
T3				
T2				
T1				

The CVs showing their relevant experience and academic qualifications are attached at Appendix 3B.

13. The Technically Competent Persons for site safety supervision under the Contractor's stream during critical stages of the works are :

Critical Stages of Works	Grade of TCP	Name# (I.D. No.)	Inspection Frequency

CV showing relevant qualifications and experience need to be included in Appendix 3B if the TCP is different from those listed in paragraph 12 above.

14. I (name in full) _____ (Chinese) _____, the person appointed to act for */the Registered General Building Contractor (RGBC)/Registered Specialist Contractor (RSC)* in the _____ category, certify that Part III (paragraphs 11 to 13) of this Supervision Plan is prepared by me and complied with the Technical Memorandum, the Code of Practice and the requirements of the Buildings Ordinance and Regulations. I have also read and hereby confirm paragraphs 1 and 2 in the Preamble of this Supervision Plan.

Date _____ _____

Signature

Name of RGBC/RSC : _____

(Chinese)_____

Certificate of Registration No.:_____

Date of expiry of registration : _____

* Delete if not applicable

Appendix II

Form A

Record of Specific Tasks Performed by TCP

Form A

Record of Specific Tasks Performed by TCP under AP/RSE/RGBC/RSC* Stream

BD Ref. _____

Project _____

Type of Works _____ **Class of Supervision** _____

Name _____

Grade of TCP _____ **Frequency of Inspection** _____

Date DD/MM/YY	(Mon)	(Tue)	(Wed)	(Thu)	(Fri)	(Sat)	(Sun)
Item No.#	S/NS	S/NS	S/NS	S/NS	S/NS	S/NS	S/NS
Signature							

Legend S - Satisfactory

NS - Not satisfactory (if not satisfactory, complete **Form B**)

* - Delete if inappropriate

- Descriptions of the items listed are attached in separate sheet(s)

Appendix III

Form B

Report of Non-conformity and Rectification Works

Report of Non-Conformity and Rectification Works

PART 1

Site Address : _____

Record of Non-Conformity

Date discovered : _____

Details : _____

_____

Signature : _____

Name of TCP : _____

Grade & Stream : _____

Date : _____

PART 2
Record of Rectification Works

Instruction for rectification given to : _____(name)

(Functional Stream : _____, Grade of TCP _____) on _____(date).

Details of Instruction : _____

_____

Rectification works certified completion on _____(date).

Signature : _____

Name of AP/RSE* : _____

Date : _____

c.c. Building Authority

* Delete if inapplicable

Appendix IV

Project Attribute Score Sheets

List of Project Attributes Score Sheets

PASS 1	Demolition Works
PASS 2	Ground Investigation Works
PASS 3	Pile Foundation / Pile Wall in Site Formation or Excavation & Lateral Support Works
PASS 4	Site Formation / Slope / Retaining Wall / Buried Services Repair (Excluding Pile Wall) Works
PASS 5	Excavation and Lateral Support (Excluding Pile Wall) / Cap / Footing / Basement Works
PASS 6	Superstructure Works
PASS 7	Curtain Wall / Cladding Works
PASS 8	Alteration and Addition Works
PASS 9	Street Works

Explanatory Notes

1. A score should be assigned to each attribute marked thus "❍" when the items listed under that attribute are relevant.

2. The selected scores for those relevant items should be circled.

3. For those attributes under which several items are relevant, only the item that attracts the highest score should be selected and the corresponding score assigned.

4. Some of the terms used in the Project Attributes Score Sheets are defined as follows:
   - "crest of cutting" is at the intersection between the cut slope and the natural slope.
   - "pile maximum linear dimension", denoted by d, is the maximum linear dimension along any direction measured on the pile horizontal cross section. For a circular pile, this is the diameter; for a rectangular pile, this is the diagonal; for a sheet pile, this is the width.
   - "depth of excavation", denoted by e, refers to the vertical distance measured from the highest ground level that abuts the pile wall to the proposed lowest bulk excavation level.

PASS 1

PROJECT ATTRIBUTE SCORE SHEET
for
Demolition Works

	Score	Assigned Score
1. Difficulty		
❍ Type of construction materials		
Reinforced concrete structure	*5*	
Timber flooring / roof or Masonry structure	*10*	
Precast / Composite / steel / Panel glass structure	*15*	
Prestressed concrete structure	*20*	
❍ Special structural elements		
Flat / Waffle slab or Beam span exceeding 12m	*5*	
Wall / column exceeding 6m in storey height or Jetty	*10*	
Hanging / Transfer / Cabled / Arch / Oil storage structure or alike	*15*	
❍ Demolition method		
By hand held tool	*5*	
By heavy mechanical plant on floor	*10*	
By hydraulic crusher / wrecking ball / implosion	*15*	
2. Risk		
❍ Nearest distance of demolition works from the site boundary, s		
1m ≤ s < 6m	*5*	
0m ≤ s < 1m	*10*	
Projection over street/footpath	*15*	
❍ Height of building to be demolished, hd		
10m < hd ≤ 50m	*5*	
50m < hd	*10*	
❍ Special element		
External fin / Cladding/curtain wall	*5*	
Bay window or Cantilever with span exceeding 1.5m	*10*	
❍ Near the site with presence of		
Slope with gradient greater than 30° and exceeding 7.5m in height within 5m of the site boundary	*5*	
Retaining wall greater than 6m in retained height within 5m of the site boundary	*5*	
Prewar buildings or building in poor conditions adjoining the site	*5*	
Party wall structures adjoining the site	*5*	
❍ Existing structure within the site and retaining a ground level difference, h		
3m ≤ h < 7.5m	*5*	
7.5m ≤ h	*10*	
Total Score		

3. Scale

Total floor area to be demolished per storey, Ad (m^2) :

Scale Factor = Ad / 500m^2

(rounded up to one decimal point and subject to a maximum of 2)

PASS 2

PROJECT ATTRIBUTE SCORE SHEET
for
Ground Investigation Works

	Score	Assigned Score
1. Difficulty		
❍ Sinking borehole with foam as flushing media behind retaining wall within a horizontal distance equal to the wall height.	*10*	
❍ Sinking borehole on slope at average gradient, θ and the borehole located at more than 5m above slope toe :		
$15° < \theta \leq 30°$	*10*	
$30° < \theta \leq 45°$	*25*	
$45° < \theta \leq 60°$	*30*	
$60° < \theta$	*40*	
2. Risk		
❍ Sinking borehole within 5m of an existing building	*5*	
❍ Sinking borehole within 5m of MTR structure	*15*	
❍ Sinking borehole at the top of an existing retaining wall and within a distance equal to the retained height, hw:		
$3m < hw \leq 6m$	*10*	
$6m < hw$	*20*	
❍ Sinking borehole at the uphill side of slope crest and within a horizontal distance from the crest equal to the vertical height of slope with average gradient θ :		
$30° < \theta \leq 45°$	*5*	
$45° < \theta$	*10*	
Total Score		

3. Scale

Number of boreholes, N :

Scale Factor = N / 50

(rounded up to one decimal point and subject to a maximum of 2)

PASS 3

PROJECT ATTRIBUTE SCORE SHEET
for
Pile Foundation Works
Or
Pile Wall In Site Formation / Excavation And Lateral Support Works

	Score	Assigned Score

1. Difficulty

❍ Size of pile with maximum linear dimension d,

400mm < d ≤ 750mm	*5*
750mm < d ≤ 2000mm	*10*
2000mm < d	*15*

❍ Method of installation

Percussive without predrilling/Non-percussive with casing	*5*
Percussive with predrilling	*10*
Non-percussive without casing	*15*

❍ Pile foundation works at more than 5m above slope toe with maximum linear dimension, d, on slope at an average gradient, θ,

d ≤ 400mm & 15° < θ ≤ 30°	*5*
d ≤ 400mm & 30° < θ ≤ 45° or d > 400mm & 15° < θ ≤ 30°	*10*
d ≤ 400mm & 45° < θ or d > 400mm & 30° < θ ≤ 45°	*15*
d > 400mm & 45° < θ	*20*

2. Risk

❍ Presence of vulnerable features within 5m of the pile foundation works

high voltage cable / gas main / footpath / structure on piles	*5*
carriageway / watermain with diameter exceeding 75 mm	*10*
structure on footing / MTR underground structure	*20*

❍ Pile wall works with pile maximum linear dimension, d,

(i) At the uphill side of slope crest and within a horizontal distance from the crest equal to the vertical height of slope and/or

(ii) At the top of retaining wall and within a horizontal distance from the wall equal to the retained height

d ≤ 400mm	*15*
d > 400mm	*30*

Total Score

3. Scale

Cost of the works, C : $

Scale Factor = C / $20M for Foundation Works

Scale Factor = C / $10M for Pile Wall Works

(rounded up to one decimal point and subject to a maximum of 2)

PASS 4

PROJECT ATTRIBUTE SCORE SHEET
for
Site Formation Works (Excluding Pile Wall)
Or
Repair Works For Slope / Retaining Wall / Buried Services

	Score	Assigned Score
1. Difficulty		
❍ 1) Cutting in soil greater than 30° and height exceeding 7.5m but not greater than 15m	*5*	
2) Cutting in soil greater than 30° and height exceeding 15m	*10*	
❍ Cutting in Rock		
Without blasting	*5*	
With blasting	*10*	
❍ 1) Soil/Rock fill slope greater than 30° and height exceeding 7.5m but not greater than 15m	*5*	
2) Soil/Rock fill slope greater than 30° and height exceeding 15m	*10*	
❍ Tie back/rock dowel in slope and/or retaining wall		
Without prestress	*10*	
With prestress	*20*	
2. Risk		
❍ Presence of vulnerable features at the crest or the toe of a proposed cutting and within a horizontal distance from the crest or from the toe equal to the vertical height of cutting		
gas main / footpath or street / sewage tunnel / structure on piles	*10*	
carriageway / slope greater than 30° and higher than 7.5 m	*20*	
watermain with diameter exceeding 75mm / retaining wall higher than 3m	*30*	
building / elevated structure on shallow footing	*40*	
MTR underground structure	*50*	
Total Score		

3. Scale

Cost of the works, C : $

Scale Factor = C / $10M for Site Formation Works

Scale Factor = C / $5M for others

(rounded up to one decimal point and subject to a maximum of 2)

PASS 5

PROJECT ATTRIBUTE SCORE SHEET
for
Excavation And Lateral Support Works (Excluding Pile Wall)
Or
Cap / Footing / Basement Works

	Score	Assigned Score
1. Difficulty		
❍ Depth of excavation, e		
4.5m < e ≤ 7.5m	*5*	
7.5m < e ≤ 12m	*10*	
12m < e ≤ 18m	*20*	
18m < e	*30*	
❍ Special features		
Requirement for installation of lagging or assumed water table above lowest bulk excavation level	*10*	
Requirement for pressure grouting	*15*	
Requirement for tie back or Preloading of strut	*20*	
2. Risk		
❍ Presence of vulnerable features at the crest or the toe of a proposed cutting and within a horizontal distance from the crest or from the toe equal to the vertical height of cutting		
gas main / footpath / sewage tunnel / structure on piles	*10*	
carriageway / slope greater than 30° and higher than 7.5m	*20*	
watermain exceeding 75mm diameter / retaining wall higher than 3m	*30*	
structure on footing	*40*	
MTR underground structure	*50*	
Total Score		

3. Scale

Cost of the works, C : $

Scale Factor = C / $10M for Excavation And Lateral Support Works (Excluding Pile Wall)

Scale Factor = C / $20M for Cap/Footing/Basement Works

(rounded up to one decimal point and subject to a maximum of 2)

PASS 6

PROJECT ATTRIBUTE SCORE SHEET
for
Superstructure Works

	Score	Assigned Score
1. Difficulty		
❍ Limit state design method	*5*	
❍ Construction Materials		
Structural steel / composite construction or Concrete grade > 45D	*10*	
Prestressed concrete / Timber	*15*	
❍ Structural Elements		
Flat slab	*5*	
Waffle slab, ribbed or hollow block slab	*10*	
Cantilever structure exceeding 1.5m span	*15*	
Transfer structure	*20*	
❍ Span of beam, L		
12m < L ≤ 18m	*5*	
18m < L	*10*	
2. Risk		
❍ Maximum building height, h_b		
30m < h_b ≤ 100m	*5*	
100m < h_b ≤ 200m	*10*	
200m < h_b	*20*	
❍ Topography with presence of		
slope greater than 30° and higher than 7.5m within site	*15*	
retaining wall greater than 6m in retained height within site	*15*	
❍ Presence of vulnerable features		
Presence of building within 5m of the works	*15*	
Presence of public road adjoining the works	*15*	
Total Score		

3. Scale

Construction floor Area, Ac (m^2) :

Scale Factor = Ac / 20000m^2

(rounded up to one decimal point and subject to a maximum of 2)

PASS 7

PROJECT ATTRIBUTE SCORE SHEET
for
Curtain Wall / Cladding Works

	Score	Assigned Score
1. Difficulty		
❍ Method of fixing by		
cast-in anchor	*5*	
welding to a structural steel member	*10*	
drill-in anchor	*15*	
structural sealant on all sides	*50*	
2. Risk		
❍ Nearest distance of curtain wall / cladding works from the site boundary, s		
6m ≤ s < 12m	*5*	
1m ≤ s < 6m	*10*	
0m ≤ s < 1m	*15*	
Projection over street / footpath	*20*	
❍ Maximum installation height, hi		
5m < hi ≤ 15m	*5*	
15m < hi ≤ 50m	*15*	
50m < hi ≤ 100m	*20*	
hi > 100m	*30*	
Total Score		

3. Scale

Aggregate Surface Area, As (m^2) :

Scale Factor = As / 10000m^2

(rounded up to one decimal point and subject to a maximum of 2)

PASS 8

PROJECT ATTRIBUTE SCORE SHEET
for
Alteration And Addition Works

	Score	Assigned Score
1. Difficulty		
❍ Type of construction		
Recasting of concrete element / Use of welding	*5*	
Use of anchor bolt	*10*	
Use of structural steel or other structural metal	*20*	
❍ Construction of special structural element		
Hanging Structure	*10*	
Transfer Structure	*15*	
Cantilever Structure	*30*	
2. Risk		
❍ Nearest distance of A & A works from the public area, s		
6m ≤ s < 12m	*5*	
1m ≤ s < 6m	*10*	
0m ≤ s< 1m	*15*	
Projection over street/footpath	*20*	
❍ Demolition of Structural element		
Slab of continuous span	*5*	
Continuous beam	*10*	
Column	*20*	
Structural wall	*30*	
Total Score		

3. Scale

Cost of the works, C : $

Scale Factor = C / $5M

(rounded up to one decimal point and subject to a maximum of 2)

For Alteration and Addition works which are structurally independent from the existing building, the score sheet to be used will be the corresponding sheet for the appropriate type of works.

PASS 9

PROJECT ATTRIBUTE SCORE SHEET
for
Street Works

	Score	Assigned Score
1. Difficulty		
❍ Type of construction		
Rigid pavement	*5*	
Flexible pavement	*20*	
❍ Requirement for traffic diversion	*20*	
❍ Requirement for drainage works with pipe size, p		
300mm < p ≤ 525mm	*5*	
p > 525mm	*10*	
2. Risk		
❍ Presence of vulnerable features within 5m of the street works		
watermain with diameter exceeding 75mm	*10*	
gas main / building on shallow footing	*20*	
pre-war building	*30*	
MTR structure	*50*	
Total Score		

3. Scale

Cost of the works, C : $

Scale Factor = C / $5M

(rounded up to one decimal point and subject to a maximum of 2)

Appendix V

Form C

Calculation Sheet for Combination of TCPs

Calculation sheet for combination of TCPs for one or more types of buildings works or street works under one supervision plan prepared by AP/RSE/RGBC/RSC *

Building Works / Street Works			Supervision Input Before Combination				Combined Supervision Input				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Types of Building works / Street works to be combined	Class of Supervision	Scale Factor (*S*)	TCP Grade	Frequency Level of Site Inspection	Notional Supervision Input (man-day/month)	Adjusted supervision input (3) x (6) (man-day/month)	TCP grades under combination	TCP post with combined duties	Summation of supervision input under the combined TCP	No. of combined TCP	Required Frequency Level of Site Supervision

Note: 1. Delete if inapplicable as marked *.
2. All types of building works or street works covered by the supervision plan should be listed under column (1). They should be grouped in such a way that any portion of works under one group will not be carried out concurrently with any works under other groups.

Appendix VI

Samples of
Checklist and Record of Specific Tasks
Performed by TCP

Sample 1 Checklist and Record of Specific Tasks Performed by TCP T4 under AP stream

P.1 Essential Items Checklist

P.2 Form A

Sample 2 Checklist and Record of Specific Tasks Performed by TCP T5 under RSE stream

P.1 Essential Items Checklist

P.2 Form A

Sample 3 Checklist and Record of Specific Tasks Performed by TCP T1 under RGBC stream

P.1 Essential Items Checklist

P.2 Form A

Sample 1

BD Ref. *SM/0000/11*

Project *ABC Centre*

Type of Works *Excavation & Lateral Support Works*

Essential Items for the Checklist of Specific Tasks for AP's TCP T4

Item No.	Description
A4	Check that monitoring check points are installed and readings are taken in time.
A5	Register reports of non-conformity and inform relevant parties of non-conformity.
A6	Report to the AP if the non-conformity is considered to pose an imminent danger, to be a significant risk or a source of danger or the Contractor does not comply with instructions.
A7	Check that all lower grade TCPs are making inspections no less than the required frequency and carrying out duties in accordance with the Technical Memorandum and the Code of Practice for Site Safety Supervision.
A8	Check and satisfy that copies of approved plans, method statements, precautionary and protective measures proposals and all related drawings are kept on site; and that the approved/agreed method statement is followed.
A9	Check and monitor that lateral supports are installed in accordance with approved/agreed sequence and not to be removed in advance of adequate propping or restraint.
A10	Check that temporary cut slopes will not cause any instability to adjoining ground/structure/building.
A11	Check that pre-loading of struts is properly carried out.

Sample 1

Form A

Record of Specific Tasks Performed by TCP under AP/~~RSE/RGBC/RSC~~* stream

BD Ref. *SM/0000/11*

Project *ABC Centre*

Type of Works *Excavation &Lateral Support Works* **Class of Supervision** *F*

Name *Mr Chan Tai-man*

Grade of TCP *T4* **Frequency of Inspection** *monthly*

Date DD/MM/YY	*17/1/00* (Mon)	*17/2/00* (Tue)	*17/3/00* (Wed)	*17/4/00* (Thu)			
Item No.#	S/NS	S/NS	S/NS	S/NS	S/NS	S/NS	S/NS
A4	*S*	*S*					
A5	*S*	*S*					
A6	*S*	*S*					
A7	*S*	*S*					
A8	*S*	*S*					
A9	*S*	*S*					
A10	*S*	*S*					
A11	*S*	*S*					
Signature							

Legend S - Satisfactory
NS - Not satisfactory (if not satisfactory, complete **Form B**)

* - Delete if inappropriate
# - Descriptions of the items listed are attached in separate sheet(s)

Sample 2

BD Ref. *SM/0000/11*

Project *ABC Centre*

Type of Works *Excavation &Lateral Support Works*

Essential Items for the Checklist of Specific Tasks for RSE's TCP T5

Item No.	Description
E5	Check that all lower grade TCPs are making inspections no less than the required frequency and carrying out duties in accordance with the Technical Memorandum and the Code of Practice for Site Safety Supervision.
E7	Check that there is no over-excavation and temporary cut slopes will not cause any instability to adjoining ground/structure/building.
E9	Check and monitor that lateral supports are installed in accordance with approved/agreed sequence and not to be removed in advance of adequate propping or restraint.
E11	Check that there is no risk of artesian conditions for excavation and lateral support works.
E12	Check that stability and integrity of nearby buildings and ground are not adversely affected.
E13	Check that the groundwater table is consistent with design of excavation and lateral support works.
E15	Check that pre-loading of struts is properly carried out.

Sample 2

Form A

Record of Specific Tasks Performed by TCP under ~~AP/~~RSE~~/RGBC/RSC~~* stream

BD Ref. *SM/0000/11*

Project *ABC Centre*

Type of Works *Excavation &Lateral Support Works* **Class of Supervision** *F*

Name *Mr X X Lee*

Grade of TCP *T5* **Frequency of Inspection** *half-monthly*

Date DD/MM/YY	*17/1/00* (Mon)	*31/1/00* (Tue)	*14/2/00* (Wed)	*28/2/00* (Thu)	*13/3/00* (Fri)	*27/3/00* (Sat)	*10/4/00* (Sun)
Item No.#	S/NS	S/NS	S/NS	S/NS	S/NS	S/NS	S/NS
E5	*S*	*S*					
E7	*S*	*S*					
E9	*S*	*S*					
E11	*S*	*S*					
E12	*S*	*S*					
E13	*S*	*S*					
E15	*S*	*S*					
Signature							

Legend S - Satisfactory
NS - Not satisfactory (if not satisfactory, complete **Form B**)

* - Delete if inappropriate
# - Descriptions of the items listed are attached in separate sheet(s)

Sample 3

BD Ref. *SM/0000/11*

Project *ABC Centre*

Type of Works *Excavation &Lateral Support Works*

Essential Items for the Checklist of Specific Tasks for RGBC's TCP T1

Item No.	Description
C1	Establish system for communicating with other TCPs.
C2	Check that the erection of hoarding and/or covered walkways has been erected to secure safety of the public in accordance with the hoarding plan agreed by the Building Authority.
C3	Check and ensure that there are arrangements for access and egress of vehicles which are satisfactory and do not endanger the public or other road users.
C8	Check and ensure that all monitoring check points and other geotechnical instrumentation have been installed and are regularly monitored; the results are kept on site; and that abnormal readings are reported to AP/RSE and the BA.
C9	Check that all monitoring check points are installed and the readings are taken in time.
C10	Check that loose materials, boulders, construction plants or temporary stockpiles of materials are not present at the crest of intermediate benches of slopes.

Sample 3

Form A

Record of Specific Tasks Performed by TCP under ~~AP/RSE/~~RGBC/~~RSC~~* stream

BD Ref. *SM/0000/11*

Project *ABC Centre*

Type of Works *Excavation &Lateral Support Works* **Class of Supervision** *F*

Name *Mr X X Lo*

Grade of TCP *T1* **Frequency of Inspection** *full time*

Date DD/MM/YY	*17/1/00* (Mon)	*18/1/00* (Tue)	*19/1/00* (Wed)	*20/1/00* (Thu)	*21/1/00* (Fri)	*22/1/00* (Sat)	*23/1/00* (Sun)
Item No.#	S/NS	S/NS	S/NS	S/NS	S/NS	S/NS	S/NS
C1	*S*	*S*	*S*	*S*	*S*	*S*	*S*
C2	*S*	*S*	*S*	*S*	*S*	*S*	*S*
C3	*S*	*S*	*S*	*S*	*S*	*S*	*S*
C8	*S*	*S*	*S*	*S*	*S*	*S*	*S*
C9	*S*	*S*	*S*	*S*	*S*	*S*	*S*
C10	*S*	*S*	*S*	*S*	*S*	*S*	*S*
Signature							

Legend S - Satisfactory
NS - Not satisfactory (if not satisfactory, complete **Form B**)

* - Delete if inappropriate
# - Descriptions of the items listed are attached in separate sheet(s)