

Code of Practice for Site Supervision 2009



**CODE OF PRACTICE
FOR
SITE SUPERVISION
2009**

FOREWORD

The Supervision Plan System has been implemented since December 1997 with the issuance of the Technical Memorandum for Supervision Plans (the “Technical Memorandum”) and the Draft Code of Practice for Site Safety Supervision. The Draft Code was refined in November 2000 with some clarification on the principles and requirements and some simplification on the procedures.

Pursuant to the enactment of the Buildings (Amendment) Ordinance 2004, the second edition of the Technical Memorandum and Code of Practice for Site Supervision came into effect on 31 December 2005. The revisions covered inclusion of the requirements for quality supervision and the qualified supervision requirements for geotechnical works, deletion of the details on assessment of degree of complexity and class of supervision, and updating of the qualification and experience requirements for TCP and the additional supervision requirements for critical stages of building works.

With the introduction of the minor works control system and a new register of minor works contractors under the Buildings (Amendment) Ordinance 2008, a new regime to control the carrying out of building works that are designated as minor works is established. This revision covers supervision requirement for the carrying out of minor works and other minor refinements of the Supervision Plan System.

This Code of Practice gives guidance to authorized persons, registered structural engineers, registered geotechnical 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 supervision matters.

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1 *Scope*

1.1 Safety management of building works or street works addresses two types of supervision:

(a) *Quality Supervision*

This means ensuring that the building works or street works are carried out in general accordance with the provisions of the Buildings Ordinance and Regulations, and with the plans approved in respect of them by the Building Authority (BA) or the plans submitted to the BA in respect of minor works which are carried out in accordance with the simplified requirements (hereafter called “submitted plans for minor works”), and with any order made or condition imposed, pursuant to any provision of the Ordinance or regulations in that behalf, by the BA; and

(b) *Site Safety Supervision*

This means controlling hazards from building works or street works so as to minimize the risk to:

- (i) the workers on site;
- (ii) all persons around the site; and
- (iii) adjoining buildings, structures and land.

1.2 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 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 supervision.

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

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 supervision requirements for various types of building works or street works;
 - (b) the deployment of Technically Competent Persons (TCPs) and the combination of their duties;
 - (c) the principles of safety management structure within each functional stream (“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 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 supervision requirements relate to the type of building works or street works and the scale of the works involved.
- 3.3 Other than the supervision requirements in accordance with paragraph 3.2, additional site supervision requirements shall be provided during the critical stages of various types of building works or 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 *Safety Management and Responsibilities of Relevant Personnel*

Safety Management Structure

- 4.1 The Authorized Person (AP), Registered Structural Engineer (RSE), Registered Geotechnical Engineer (RGE) and Authorized Signatory (AS) of the Registered Contractor (RC) are the heads of the 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 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. Alternatively, the AP, RSE, RGE and AS may act as the respective representative themselves to carry out such safety management functions (subject to their inspection frequency be not less than that required of the highest grade TCP within their respective stream). A typical example of the safety management structure for a job site is illustrated in Figure 4.1.

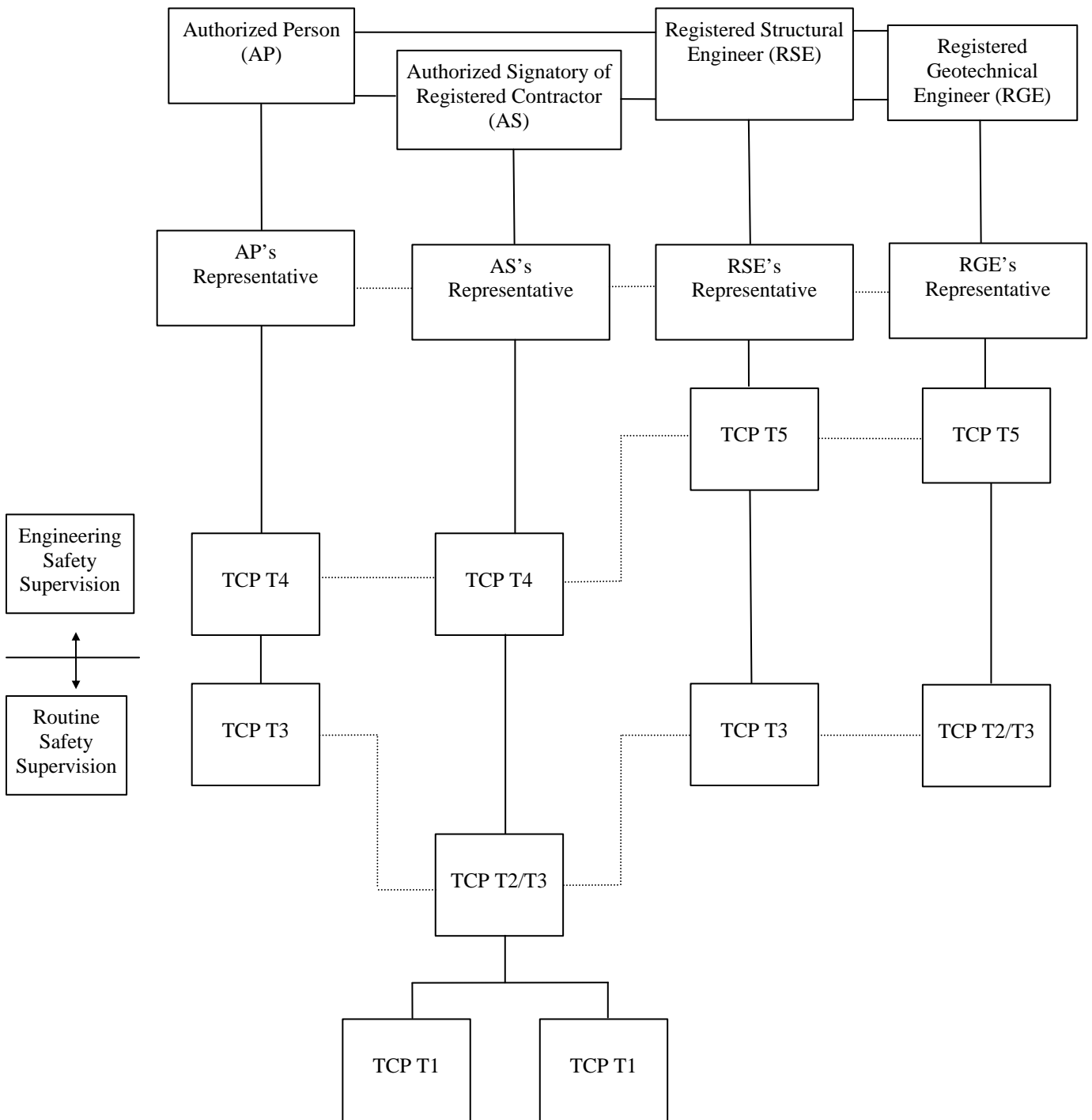
Responsibilities of Relevant Personnel

- 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, RGE or AS, as the case may be), whereas all other 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 4.4.
- 4.3 The supervision plan, if required to be submitted under the Technical Memorandum, shall be lodged with the BA by the AP prior to or at the same time as the application for the first consent for commencement of

building works or street works. For minor works carried out according to the simplified requirements, the supervision plans, if required to be submitted under the Technical Memorandum, shall be submitted to the BA not less than 7 days before commencement of the minor works. A standard form of Supervision Plan is set out in Appendix I.

- 4.4 The AP, RSE, RGE and AS shall also submit the confirmation of appointment of TCPs as at an Annex to Supervision Plan or within 7 days from the date of commencement of works as indicated in the Form BA10/ notice of commencement of minor works.
- 4.5 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 8.12 to 8.17.

Figure 4.1 Example of Safety Management Structure



..... Line of communication

_____ Line of Reporting

| Table 4.1 | |
|--|--|
| Responsibilities and Duties under AP's Stream | |
| | <i>Authorized Person</i> |
| Responsibilities | <ul style="list-style-type: none"> • 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 RC's stream. • Establishing an efficient and effective mechanism for dealing with non-conformities. |
| Duties | <ul style="list-style-type: none"> • Assessing 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 RC fails to rectify. • Carrying out site inspections as necessary. |
| | <i>AP's Representative</i> |
| Responsibilities | <ul style="list-style-type: none"> • Accountable to the AP for the implementation of the AP's supervision plan. • Representing the AP as the formal point of contact in communication with other functional streams. • Taking overall responsibility to check on site if the safety measures required under supervision plans are implemented. • Accountable to the AP 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. • Ensuring that the RC's safety management structure complies with the supervision plan. |

Table 4.1 Cont'd

| | |
|------------------|--|
| Duties | <ul style="list-style-type: none"> • Assisting the AP in carrying out safety management functions. • Coordinating and compiling reports on supervision activities including reports on non-conformity. • Dealing with non-conformities. |
| | <i>T4</i> |
| Responsibilities | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • Carrying out specific tasks as per checklist devised by the AP. • Checking that specified aspects of works comply with approved plans, 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. |
| | <i>T3</i> |
| Responsibilities | <ul style="list-style-type: none"> • Accountable to the AP through the AP's Representative. • Taking up relevant responsibilities as set down in the Technical Memorandum and this Code. |
| Duties | <ul style="list-style-type: none"> • Carrying out specific tasks as per checklist devised by the AP. • Checking that the works comply with the approved plans (or submitted plans for minor works), method statements, precautionary and protective measures. • Monitoring the work of the RC's TCPs. • Maintaining on site registers of all relevant site 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 | |
| | <i>Registered Structural Engineer</i> |
| Responsibilities | <ul style="list-style-type: none"> • 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 RC's stream. • Giving permission to the RC for carrying out temporary works categorized as Case 3 under paragraph 4.7 of this Code. |
| Duties | <ul style="list-style-type: none"> • 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 RC fails to rectify. • Carrying out site inspections as necessary. |
| | <i>RSE's Representative</i> |
| Responsibilities | <ul style="list-style-type: none"> • 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. • Checking and satisfying that the RC's safety management structure complies with the supervision plan. |
| Duties | <ul style="list-style-type: none"> • Assisting the RSE in carrying out safety management functions. • Coordinating and compiling reports on supervision activities including reports on non-conformity. • Dealing with non-conformities. |

Table 4.2 Cont'd

| | |
|------------------|---|
| | <i>T5</i> |
| Responsibilities | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 approved plans, design requirements including those of the method statements, precautionary and protective measures. • Validating conditions on site which relate to design assumptions for temporary or permanent structures. |
| | <i>T3</i> |
| Responsibilities | <ul style="list-style-type: none"> • Accountable to the RSE through the RSE's Representative. • Taking up relevant responsibilities as set down in the Technical Memorandum and this Code. |
| Duties | <ul style="list-style-type: none"> • Carrying out specific tasks as per checklist devised by the RSE. • Checking that the works comply with the approved plans (or submitted plans for minor works), method statements, precautionary and protective measures. • Monitoring the work of the RC's TCPs. • Dealing with non-conformities by making referral to the RSE's Representative and notifying TCPs in other streams. |

| Table 4.3 | |
|---|---|
| Responsibilities and Duties under RGE's Stream | |
| | <i>Registered Geotechnical Engineer</i> |
| Responsibilities | <ul style="list-style-type: none"> • 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 RC's stream. • Giving permission to the RC for carrying out temporary works categorized as Case 3 under paragraph 4.7 of this Code. |
| Duties | <ul style="list-style-type: none"> • 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 RC fails to rectify. • Carrying out site inspections as necessary. |
| | <i>RGE's Representative</i> |
| Responsibilities | <ul style="list-style-type: none"> • Accountable to the RGE for implementing the RGE's supervision plan. • Representing the RGE 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 RGE 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. • Checking and satisfying that the RC's safety management structure complies with the supervision plan. |
| Duties | <ul style="list-style-type: none"> • Assisting the RGE in carrying out safety management functions. • Coordinating and compiling reports on supervision activities including reports on non-conformity. • Dealing with non-conformities. |

Table 4.3 Cont'd

| | |
|------------------|--|
| | <i>T5</i> |
| Responsibilities | <ul style="list-style-type: none"> • Accountable to the RGE through the RGE's Representative, for the implementation of the supervision plan. • Taking up relevant responsibilities as set down in the Technical Memorandum and this Code. |
| Duties | <ul style="list-style-type: none"> • Carrying out specific tasks as per checklist devised by the RGE. • Dealing with non-conformities by making referral to the RGE's Representative and notifying TCPs in other streams. • Checking that site works comply with the approved plan, design requirements including those of the method statements, precautionary and protective measures. • Validating conditions on site which relate to design assumptions for temporary or permanent structures. |
| | <i>T2/T3</i> |
| Responsibilities | <ul style="list-style-type: none"> • Accountable to the RGE through the RGE's Representative. • Taking up relevant responsibilities as set down in the Technical Memorandum and this Code. |
| Duties | <ul style="list-style-type: none"> • Carrying out specific tasks as per checklist devised by the RGE. • Checking that the works comply with the approved plans (or submitted plans for minor works), method statements, precautionary and protective measures. • Monitoring the work of the RC's TCPs. • Dealing with non-conformities by making referral to the RGE's Representative and notifying TCPs in other streams. |

| Table 4.4 | |
|--|--|
| Responsibilities and Duties under RC's Stream | |
| | <i>Authorized Signatory</i> |
| Responsibilities | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 and protective measures for temporary works categorized as Case 2 and/or Case 3 under paragraph 4.7 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. |
| | <i>AS's Representative</i> |
| Responsibilities | <ul style="list-style-type: none"> • Accountable to the AS for the implementation of the RC's 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 | <ul style="list-style-type: none"> • Directing staff and sub-contractors on safety related matters. • Coordinating and compiling reports on supervision activities. • 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 4.4 Cont'd

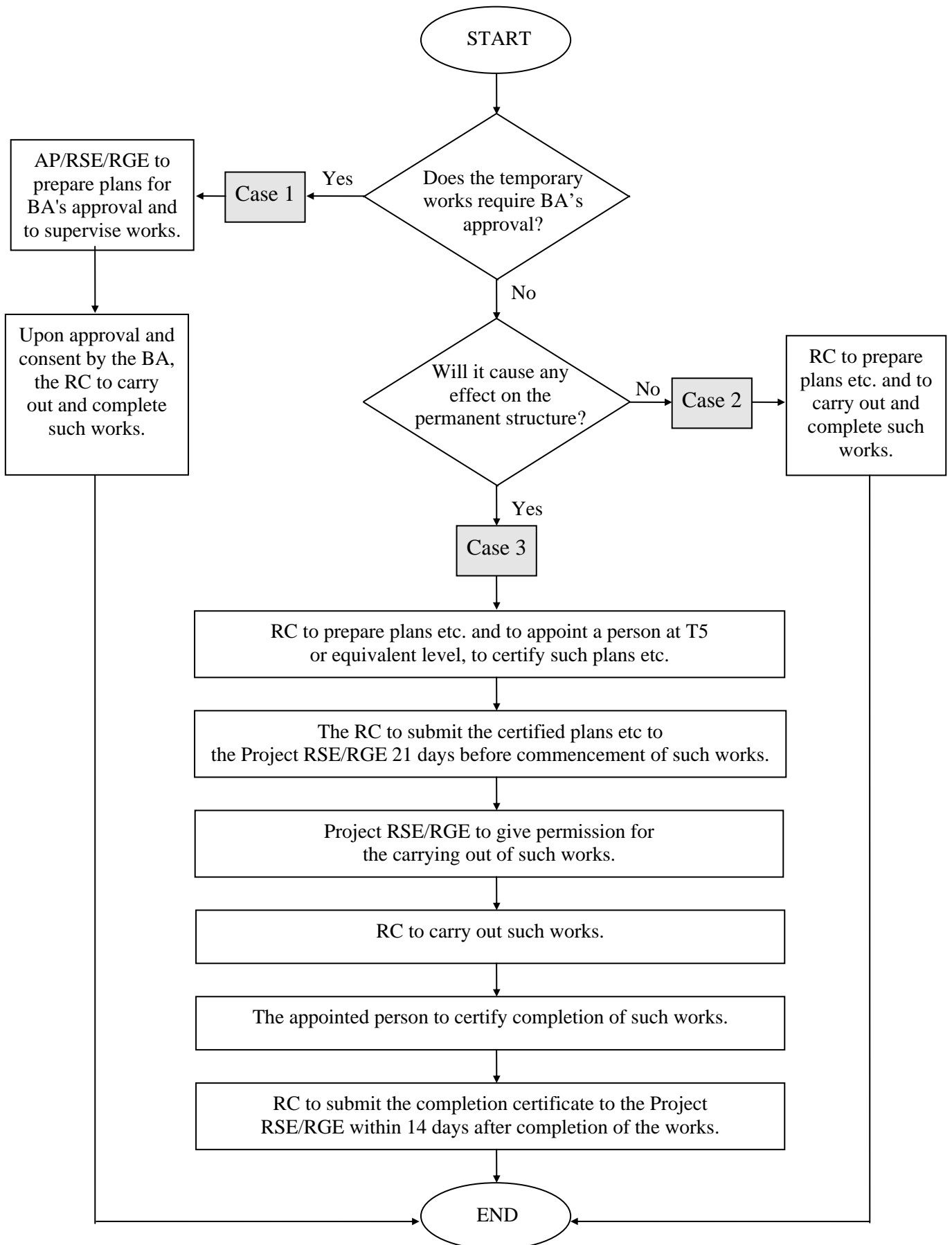
| | |
|------------------|---|
| | <i>T4/T5</i> |
| Responsibilities | <ul style="list-style-type: none"> • Accountable to the AS, through the AS's Representative, for the implementation of the supervision plan. • Taking up relevant responsibilities as set down in the Technical Memorandum and this Code. |
| Duties | <ul style="list-style-type: none"> • Checking that assumptions made in the design of temporary works and method statements are validated on site. • Checking that actual site conditions and works being carried out agree with the approved plans, design requirements, method statements and precautionary and protective measures. • 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. |
| | <i>T1-T3</i> |
| Responsibilities | <ul style="list-style-type: none"> • Accountable to the AS through the AS's Representative. • Taking up relevant responsibilities as set down in the Technical Memorandum and this Code. |
| Duties | <ul style="list-style-type: none"> • Checking on routine basis that site works comply with general site safety requirements. • Checking specialist aspects of work to see that they comply with the submitted supervision plans. (T2 & T3 only) • Checking that the works comply with the approved plans (or submitted plans for minor works), method statements, precautionary and protective measures. • Checking that subordinate TCPs have carried out routine checks at the correct frequency and that records are prepared and filed on site. (T2 & 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/RGE and RC for Temporary Works and Working Procedures

- 4.6 The AP/RSE/RGE/RC have the responsibility to ensure the integrity of the temporary structure itself and the associated fixing methods.
- 4.7 The division of responsibility between AP/RSE/RGE and RC 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/RGE and the RC have their own responsibilities to supervise the carrying out of the works in accordance with the approved/prescribed 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 RC 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 RC 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/RGE. The person so appointed should also certify the completion of such works. The RSE/RGE may require the RC 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



4.8 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 concrete 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 concrete 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
- (iv) Lifting operation of plant and machinery.

4.9 For all Cases 1, 2 and 3 above, the RC 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, which shall be listed out in a register on site.

Communication Procedures

4.10 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 *Typical Items for Specific Tasks by TCPs*

- 5.1 The AP, RSE, RGE and AS shall devise check lists for their TCPs by making reference to the typical items listed in Tables 5.1 to 5.4 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-conformities detected during the checking of typical items for specific tasks by the TCPs must be properly recorded in the Non-Conformity and Rectification Reports, Form B at Appendix III to this Code. Detailed procedures for dealing with non-conformities are specified in paragraph 10.3 of this Code.

| Table 5.1 | | |
|---|---|-------------------------------|
| Typical 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 BA. | |
| 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 RC does not comply with rectification instructions. | |
| A7 | Check that all lower grade TCPs and RC's 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 Supervision. | |
| A8 | Check and satisfy that copies of approved plans (or submitted plans for minor works), method statements, precautionary and protective measures proposals and all related drawings are kept on site; and that they are followed, including checking the video record for demolition works. | Routine and 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. | Engineering items |
| An | Any other items considered essential by the AP for the project, including those for quality supervision and other conditions imposed by the BA at approval and/or consent stage. | |

| Table 5.2 | | |
|--|---|-------------------------------|
| Typical 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 RC does not comply with rectification instructions. | |
| E5 | Check that all lower grade TCPs and RC's 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 Supervision. | |
| E6 | Check and satisfy that copies of approved plans (or submitted plans for minor works), method statements, precautionary and protective measures proposals and all related drawings are kept on site; and that they are followed, including checking the video record for demolition works. | |
| E7 | Check that there is no over-excavation and temporary cut slopes will not cause any instability to adjoining ground/structure/building. | Engineering items |
| 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, including those for quality supervision and other conditions imposed by the BA at approval and/or consent stage. | |

| Table 5.3 | | |
|--|--|-------------------------------|
| Typical Items for the Check List of Specific Tasks for RGE's TCPs | | |
| Item No. | Description | |
| G1 | Establish system for communicating with other TCPs. | Routine items |
| G2 | Check that all monitoring check points are installed and readings are being taken in time. | |
| G3 | Verify non-conformity and instruct rectification works immediately. Notify all relevant parties in respect of the non-conformity and monitor that rectification measures are properly carried out. | Routine and Engineering items |
| G4 | Report to the RGE immediately if the non-conformity is considered to pose an imminent danger, to be a significant risk or a source of danger or the RC does not comply with rectification instructions. | |
| G5 | Check that all lower grade TCPs and RC's 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 Supervision. | |
| G6 | Check and satisfy that copies of approved plans (or submitted plans for minor works), method statements, precautionary and protective measures proposals and all related drawings and geotechnical documentation are kept on site; and that they are followed, including checking the video record for demolition works. | |
| G7 | Check that there is no over-excavation/over-loading and temporary cut and fill slopes will not cause any inadequate margin of safety against instability to adjoining ground/buildings/structures/utility services or any harm to members of the public and workers on site. | Engineering items |
| G8 | Check and monitor that the sequence of work and necessary protection works and supports are installed in accordance with approved plans/agreed method statements/precautionary measures proposals and that the supports are not to be removed or loaded in advance of adequate propping or restraint. | |
| G9 | Check that there is no risk of hydraulic failure causing ground collapse or excessive deformation. | |
| G10 | Check that there is adequate margin of safety against instability and integrity/functionality of nearby ground/buildings/structures/utility services and members of public and workers on site are not adversely affected/harmed. | |
| G11 | Check that the ground and groundwater conditions, ground deformations/vibrations and geotechnical hazards/risks are consistent with the design of excavation and lateral support works. | |
| G12 | Check that the geotechnical assumptions (i.e. ground model, surface water regime, ground water regime, ground deformations/vibrations, geotechnical hazards/risks, etc) are consistent with the geotechnical assessment/study/works design, and to assess their compatibility/adequacy taking into account the actual geotechnical conditions encountered on site and the original method statement and precautionary and protective measures proposed, and update the method statement, precautionary and protective measures and advise the RGE accordingly. | |
| Gn | Any other items considered essential by the RGE for the project, including those for quality supervision and other conditions imposed by the BA at approval and/or consent stage. | |

| Table 5.4 | |
|---|---|
| Typical Items for the Check List of Specific Tasks for RC's TCPs | |
| Item No. | Description |
| C1 | Establish system for communicating with other TCPs. |
| C2 | Check that the erection of hoarding, covered walkway and catch platform has been erected to secure safety of the public in accordance with the hoarding plan agreed by the BA. |
| 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/RGE 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. |
| C12 | Check and satisfy that copies of approved plans (or submitted plans for minor works), method statements, precautionary and protective measures proposals and all related drawings are kept on site; and that they are 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. |

Routine items

Routine and Engineering items

Table 5.4 Cont'd

| Item No. | Description | | | |
|----------|---|-------------------------------|-------------------|--|
| C14 | Check that plant and machinery for lifting building material and equipment for construction is operating in accordance with method statement or safety procedures; that site constraint, proximity to hazards, space limitation and suitability of the support for plant and machinery have been considered and checked properly; that safety inspections, safety measures and appointment of competent persons as required by relevant Ordinances have been implemented/carried out. | Routine and Engineering Items | | |
| C15 | Check that permit to work has been obtained and safety measures implemented if public street is to be occupied/affected for lifting operation. | | | |
| C16 | Check that procedure for the excavation and lateral support works are carried out in accordance with the approved/submitted plans/agreed sequence. | | | |
| C17 | Check that falsework for elevated structure is erected in accordance with the design proposal. | | | |
| C18 | Check that during site formation works, existing nullahs and watercourses are properly diverted. | | | |
| C19 | 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, | | | |
| C20 | Check that protective measures for blasting operation are in place and maintained. | | | |
| C21 | Check that all lower grades TCPs are carrying out their duties in accordance with the Technical Memorandum and the Code of Practice for Site Supervision and records are properly kept on site. | | | |
| C22 | Set up procedures to ensure that safety measures and safety actions are checked and recorded by the TCPs. | | | |
| C23 | Instruct rectification of non-conformity and monitor rectification measures. | | | |
| C24 | Report to relevant parties when non-conformity is observed and rectified. | | | |
| C25 | Check that stability and integrity of nearby buildings and ground are not adversely affected. | | Engineering items | |
| C26 | Check that enclosing walls for top down construction show no signs of defect or lack of soundness. | | | |
| C27 | 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. | | | |
| C28 | Check that during excavation for top down construction, there is no unexpected deflection on the highest deck level and subsequent new floor levels. | | | |
| C29 | Check that the angle of cut slopes is within specified limits. | | | |

Table 5.4 Cont'd

| Item No. | Description | Engineering Items | |
|----------|---|-------------------|--|
| C30 | Liaise with AP's, RSE's and RGE's TCPs as applicable to check and satisfy that design assumptions are validated on site. | | |
| C31 | Check that the design and supports of formwork, shoring and temporary working platform are adequate to support all intended loads. | | |
| C32 | Check that the deck and formwork are adequate for all applied loads. | | |
| C33 | Investigate and identify causes for non-conformity and set up systems and procedures to avoid recurrence. | | |
| Cn | Any other items considered essential by the RC for the project, including those for quality supervision and other conditions imposed by the BA at approval and/or consent stage. | | |

6 *Quality Supervision Requirements*

Scope of Quality Supervision

- 6.1 Quality supervision is applicable for ground investigation field works, soil nailing works and foundation works.

Principles of Quality Supervision

- 6.2 For quality supervision, the principles described in paragraphs 6.3 to 6.6 below will be followed.
- 6.3 In accordance with Building (Administration) Regulation (B(A)R) 37(1) and (2), the RSE and RGE should each give such periodic supervision and make such inspections as may be necessary for building works. For such purpose, they should each have a team of TCPs to inspect the works at a specified frequency and supervise the carrying out of a specified percentage of the works. The RSE, RGE and their TCPs should all be respectively accountable under the BO for the quality of building works but in accordance with their respective responsibilities as specified.
- 6.4 As the RSE and/or RGE have overall responsibility for the works, they should personally inspect and supervise the works at such frequency and extent as they consider appropriate in the circumstances of each case.
- 6.5 The RC, represented by their AS, should have a similar system of supervision as that of the RSE and/or RGE above, but they should give continuous supervision in accordance with B(A)R 41(1). Even if some of the building works are carried out by their sub-contractors, it remains the responsibility of the RC to ensure that the building works and continuous supervision are properly done in accordance with the provisions of the BO and the system of supervision described above.

- 6.6 Inspection records should be kept for each member of the supervision team who should report any non-conformities to the RSE, RGE or AS, as the case may be.

Quality Supervision for Ground Investigation Field Works

- 6.7 All ground investigation field works, in both scheduled and non-scheduled areas, should be carried out by a Registered Specialist Contractor (Ground Investigation Field Works category) (RSC(GIFW)) under proper supervision. To ensure quality of the works, supervision for the different stages of pre-design ground investigation field works, such as drilling/coring, sampling, instrumentation and field testing, should comply with the requirements set out in Table 6.1.

| Table 6.1 Stages of Ground Investigation Field Works | | |
|---|-----------------|---|
| Item No. | Stage | Description |
| I1 | Drilling/coring | Check that drilling techniques/methods adopted are suitable for the ground conditions encountered. In Scheduled Areas, check that drilling techniques/methods comply with the approved plans. |
| I2 | Sampling | Check that the sampling techniques adopted are appropriate to the quality of samples required and ground conditions encountered; ensure that the samples are properly extruded, sealed and stored and that they are not contaminated and their natural moisture content is maintained; and properly record the depths and locations at which the samples are recovered. |
| I3 | Instrumentation | Check that the field instruments are installed in accordance with the standard of good practice or the manufacturer's recommendations. In Scheduled Areas, check that the field instruments are installed in accordance with the standard of good practice or the manufacturer's recommendations, and in accordance with the approved plans. |
| I4 | Field Testing | Check that the tests are carried out in accordance with the standard of good practice (excluding field density tests which are to be carried out by HOKLAS laboratories). |

Note: Extent of works inspected should be shown in the checklist by each member of the supervision team.

- 6.8 All ground investigation field works should be carried out in accordance with the guidelines in GEOGUIDE 2 published by the Geotechnical Engineering Office. The drilling works should be carried out by experienced drillers under proper supervision.
- 6.9 Accurate and detailed borehole logs should be prepared to describe properly the materials encountered so that checks of the logs can be made, and to allow comparison with materials revealed during construction. Logging of samples and preparation of borehole logs should be carried out by a competent person. All drillhole cores and samples obtained during ground investigation are to be kept in good conditions for testing or for the inspection by the BA, and if necessary Geotechnical Engineering Office, until acknowledgement of the satisfactory completion of the site formation, foundation or other related works has been given. The required qualifications of competent person for logging are defined in Appendix VII.
- 6.10 All ground investigation field works should comply with the administrative procedures set out in Appendix VIII. A supervision plan should be submitted specifying the name of the TCPs appointed and the frequency of inspections and/or extent of supervision as required.
- 6.11 A ground investigation report submitted in support of a plan for approval must contain a certificate by the RGE and RSC(GIFW) confirming the standards of ground investigation works (refer to details in item 6 of Appendix VIII).
- 6.12 The requirements specified above apply to ground investigation field works in both scheduled and non-scheduled areas.
- 6.13 Foundation plans, site formation plans, excavation and lateral support plans and general building plans accompanied by geotechnical assessment will be approved only when the BA is satisfied that the ground investigation field works have been undertaken by a RSC(GIFW) in compliance with the requirements specified and the results satisfy the design assumptions.

Quality Supervision for Soil Nailing Works

- 6.14 Quality supervision of soil nailing works should be provided by the RGE and his TCP T5 and T3, as well as by the AS of the RSC (Site Formation) and his TCP T4 and T1.
- 6.15 For all soil nailing works, at least one TCP T3 of the RGE and one TCP T1 of the RSC are required to be resident full-time on site during every stage of the works for each soil nail. The RSC is required to notify the RGE's TCP T3 before the commencement of any stage of the works. The RSC is also required to prepare detailed inspection, measurement and testing records for each soil nail as per the approved plan requirements.

| Item No. | Stage | Description |
|-----------------|--|--|
| N1 | Pull-out test and any specified site trial | Check whether the test nails are being constructed and the test/site trial procedure is in accordance with the approved plans or as specified by the RGE, and the acceptance criteria for the test/site trial are met. |
| N2 | Setting out of soil nails | Check whether the positions of the soil nails agree with the approved plans. |
| N3 | Drilling of soil nail holes | Check whether the drillhole diameter, length, inclination and bearing are in accordance with the approved plans and any anomalies on ground and groundwater conditions and to report to the responsible person if necessary. |

Table 6.2 Cont'd

| | | |
|----|--|--|
| N4 | Assembly of soil nail reinforcement | Check whether the assembly is in accordance with the approved plans, in particular, the length, type and corrosion protection provisions of the reinforcement, adequacy and tightness of any couplers used, adequacy of centralizers to ensure minimum grout cover and the grout pipes are not twisted and free from blockage and are extended to the bottom of the soil nail holes in accordance with the approved plans. |
| N5 | Insertion of soil nail reinforcement | Check whether: <ul style="list-style-type: none"> - cleaning of the hole, e.g. by air flushing is needed to remove any blockage or collapse, or there is any groundwater, which may require a change in construction method, and - the assembly is sufficiently rigid and the correct assembly of soil nail reinforcement is inserted. |
| N6 | Grout and preparation of grout | Check whether the grout used, grout mix, preparation of grout and grout test results meet the requirements of the approved plans. |
| N7 | Grouting of soil nail hole | Check whether: <ul style="list-style-type: none"> - grouting of soil nails is carried out on the same day as insertion of the soil nail reinforcement assembly, - grout is injected into the drillhole through the grout pipe with sustained grout return of satisfactory cleanliness and viscosity from the top of the drillhole, - grouting operation is carried out according to the approved plans, and - excessive grouting time or excessive grout volume consumed in any drillhole to maintain sustained grout return of satisfactory cleanliness and viscosity, or other anomalies such as excessive 'settlement' of grout (as measured along the length of the nail) on cessation of grouting, are reported to the responsible person and recorded. |
| N8 | Construction of soil nail heads and structural supports between nail heads | Check whether the soil nail heads and structural supports are constructed in accordance with approved plans, including the dimensions, materials used, structural detailing and workmanship. |

- 6.16 Key records on supervision of soil nailing works (Appendix IX) should also be prepared and certified by the RGE's TCP T3 who carries out the inspection, measurement or check. A full set of all certified records should be kept on site for the inspection by the BA.
- 6.17 The RGE's TCP T5 personnel should verify the design assumptions and carry out design review during construction. He should check whether there are any anomalies that may invalidate the functional requirements of his design during his periodic site inspections and follow them up. He should also follow up any anomalies reported to him by the RGE's TCP T3. If necessary, the RGE should make amendment submissions for the approval of the BA.
- 6.18 The extent of supervision required for different stages of soil nailing works is shown in Table 6.2. Actual supervision requirements will be imposed at plan approval stage by the BA on a case-by-case basis depending on the scale and complexity of the slope and the soil nailing works, and the anticipated construction difficulties. The RGE should nominate to the BA, an adequate number of qualified supervision personnel with suitable experience, taking into account the site conditions and the number of soil nails proposed and their lengths. During the construction stage, the RGE should review the adequacy of the supervision team taking into account the likelihood of concurrent construction requiring close supervision under the construction programme.
- 6.19 The RGE's TCP T5 should provide supervision as necessary during all stages in Table 6.2. Moreover, he is required to provide the following supervision personally :
- (a) pull-out test and any specified site test – at least 1 nail each of pull-out test and site trial;
 - (b) insertion of soil nail reinforcement – at least 2 working nails at early stage of nail construction;
 - (c) grouting of soil nail hole – at least 2 working nails at early stage of nail construction; and

- (d) construction of soil nail heads and structural supports between nail heads – at least one soil nail head.
- 6.20 The RSC's TCP T4 should also provide supervision as necessary during all stages in Table 6.2. Moreover, he is required to provide the following supervision personally :
- (a) pull-out test and any specified site test – at least 1 nail each of pull-out test and site trial;
 - (b) insertion of soil nail reinforcement – at least 2 working nails at early stage of nail construction;
 - (c) grouting of soil nail hole – at least 2 working nails at early stage of nail construction; and
 - (d) construction of soil nail heads and structural supports between nail heads – at least one soil nail head.
- 6.21 On completion of installation of soil nails, the RGE shall submit to the BA key supervision records in the form of Appendix IX certified by his TCP T3. Upon review of the supervision records, if the BA considers that there is cause for concern in relation to the quality of soil nailing works, the BA will require the RGE to carry out non-destructive testing (NDT) of at least 1% of soil nails with a minimum of 2 nails per slope (including wall) to verify the length of the installed soil nails.
- 6.22 Several NDT methods for checking the length of installed soil nails are described in GEO Report No. 133 “Non-destructive Tests for Determining the Lengths of Installed Steel Soil Nails”. Alternatively, the RGE may propose other methods for BA's agreement at the design stage of the project. A test report with the test results and their interpretations together with re-assessment of the adequacy of the installed soil nails (if needed) shall be submitted to the BA for acceptance.

Quality Supervision for Foundation Works

6.23 Quality supervision of foundation works should be provided by the RSE and his TCP T5 and T3, as well as by the AS of the RSC and his TCP T4 and T2. Depending on the nature of the various stages of foundation works, TCPs should either be full-time on site or inspect certain percentage of the works as specified in this Code.

6.24 The stages of the various types of foundation works are shown in Table 6.3. Actual supervision requirements will be imposed by the BA at plan approval and consent stage on a case-by-case basis depending on the scale and extent of the foundation works.

| Table 6.3 | | |
|--|---|--|
| Stages of Various Types of Foundation Works | | |
| Item No. | Stage | Description |
| | (a) <u>Driven Piles</u> | |
| F1 | (i) Setting out of piles | Check that the locations of piles agree with approved plans. |
| F2 | (ii) Driving test | Check that design assumptions agree with actual site conditions during driving tests. |
| F3 | (iii) Driving of piles | Check that the accepted working procedures of pile driving are followed and anomalies rectified during pile driving. |
| F4 | (iv) Splicing of piles | Check the accuracy of design details during pile splicing. |
| F5 | (v) Final sets | Check that the required final set has been achieved and the capacity of each pile complied with approved plans. |
| F6 | (vi) Proof test (Verification on the performance of the as-constructed piles by the imposition of test load) | Check that the testing procedures and acceptance criteria of proof tests are in accordance with PNAP APP-18 (previously PNAP 66) and measurements are properly recorded during the test. |

Table 6.3 Cont'd

| | | |
|-----|--|--|
| | (b) <u>Large Diameter Bored Piles, Barrette Piles and the like</u> | |
| F7 | (i) Setting out of piles | Check that the locations of piles agree with approved plan. |
| F8 | (ii) Pre-drilling (To determine the proposed founding levels of piles) | Supervise the pre-drilling operation; the logging of soil/rock samples, and to measure the depth of drillholes. Ensure that the retrieved samples are not tampered. |
| F9 | (iii) Verification of founding stratum | Measure the depth of excavation and check the quality of retrieved materials at the founding stratum. |
| F10 | (iv) Installation of piles (Grouting operation when required) | Check that proper working procedures of pile installation are followed and anomalies rectified. Check the correct grout mix, grout pressure and grout volume are being used and the adjacent building structures are not adversely affected. |
| F11 | (v) Preparation of pile base | Ensure that pile base is clean. |
| F12 | (vi) Fabrication and installation of rebar cage and placing of concrete | Check that sufficient and correct amount of rebars are provided and proper concreting method is used. |
| F13 | (vii) Interface core-drilling | Check that the quality of concrete and foundation rock conforms with that specified in the approved plan and that concrete and rock are in good contact at the interface. |
| F14 | (viii) Proof test (Verification on the performance of the as-constructed piles) | Supervise the core drilling operation of the proof test and the logging of concrete/rock samples and measure the depth of drillhole. Ensure that retrieved samples are securely stored and delivered to laboratory for testing. |
| | (c) <u>Mini-piles, Socketted H-piles and the like</u> | |
| F15 | (i) Setting out of piles | Check that the locations of piles agree with approved plan. |

Table 6.3 Cont'd

| | | |
|-----|---|--|
| F16 | (ii) Pre-drilling (To determine the proposed founding levels of piles) | Supervise the pre-drilling operation; the logging of soil/rock samples, and to measure the depth of drillholes. Ensure that the retrieved samples are not tampered. |
| F17 | (iii) Verification of founding stratum | Measure the depth of excavation and check the quality of retrieved materials at the founding stratum. |
| F18 | (iv) Installation of piles (Grouting operation when required) | Check that proper working procedures of pile installation are followed and anomalies rectified. Check the correct grout mix, grout pressure and grout volume are being used and the adjacent building structures are not adversely affected. |
| F19 | (v) Installation of rebar and grouting | Check that sufficient and correct amount of rebars are provided and proper grouting method is used. |
| F20 | (vi) Proof test (Verification on the performance of the as-constructed piles by the imposition of test load) | Check that the testing procedure and acceptance criteria of the proof tests are in accordance with PNAP APP-18 (previously PNAP 66) and measurements are properly recorded during the test. |
| F21 | (vii) Post-installation borehole drilling | Verify the rockhead profile and socket length of piles during post-installation borehole drilling. |
| | (d) <u>Rafts and Spread Footings</u> | |
| F22 | (i) Setting out of rafts and spread footings | Check that the locations and sizes of rafts and spread footings agree with approved plan (or the submitted plans for minor works). |
| F23 | (ii) Inspection of bearing stratum | Check the compliance of ground bearing stratum with approved plans (or the submitted plans for minor works), site investigation reports and design assumptions. |
| F24 | (iii) Fixing of rebars and checking of concrete covers | Check that sufficient amount of rebars and good workmanship are provided. |
| F25 | (iv) Placing, compaction and curing of concrete | Ensure the quality and workmanship of concrete works. |
| F26 | (v) Plate loading test (where required) (To verify the adequacy of ground bearing stratum) | Check that the accepted testing procedures of plate loading test are followed and measurements are correctly recorded. |

Note : Foundation unit inspected should be shown in the checklist by each member of the supervision team.

- 6.25 The AP, RSE and RSC should jointly submit a supervision plan, specifying the name of the TCPs appointed and frequency of inspection and/or extent of supervision, and carry out inspections and supervisions in accordance with the plan. The plan should be submitted prior to or at the same time as consent application for the foundation works. However, no prior approval of the TCPs is required before commencement of the foundation works. The AP/RSE/RSC are responsible to ensure that their TCPs satisfy the qualification and experience requirements specified and should notify the BA of any subsequent changes of TCPs. The plan should be kept on site for the inspection of the BA when required.
- 6.26 The RSE should provide supervision as necessary during all stages in Table 6.3.
- 6.27 The AS of the RSC should provide supervision as necessary during all stages in Table 6.3.
- 6.28 Pre-drilling, interface core-drilling, post-installation drilling and proof test core-drilling for foundation works must be carried out by a Registered Specialist Contractor in the Ground Investigation Field Works category and be supervised by the site supervisors responsible for the quality supervision of foundation works. There is no need to submit a separate supervision plan for the pre-drilling and post-installation drilling works.

7 *Building Works with Significant Geotechnical Content*

- 7.1 Building works with significant geotechnical content include the following types of geotechnical works:
- (a) site formation
 - blasting
 - prestressed ground anchors
 - prestressed ground anchors in sensitive sites* (see para 7.3)
 - soil nails
 - cut slopes (in rock or soil) (height > 3 m)
 - stabilization works on rock slopes

- fill slopes (compaction and installation of such surface filter/drainage layers) greater than 5 m high, or less than 5 m high which pose a direct risk to life, i.e. Consequence-to-life Category 1 or 2 in PNAP APP-109 (previously PNAP 234)
- reinforced fill slopes
- (b) excavation and lateral support, and temporary retaining structures
 - depth > 4.5 m (depth > 7.5 m in sensitive sites* - see para 7.3)
- (c) permanent retaining structures
 - diaphragm walls and bored-pile walls
 - reinforced fill structures
 - cantilever / gravity retaining walls (height > 5 m) and screen/basement walls (height > 7.5m)
- (d) ground treatment
 - vertical drains, horizontal/raking drains
 - grouting and dewatering for cut and cover excavation and tunnel/shaft/cavern construction
 - ground water drainage works in Scheduled Area No. 1
- (e) demolition works affecting slopes and retaining walls
 - ground stabilization works using soil nails or anchors
- (f) foundation
 - foundation for buildings in Scheduled Area No. 1
 - deep foundation for buildings in Scheduled Areas Nos. 2 & 4 and in Designated Area of Northshore Lantau
 - foundation that could affect an existing tunnel/cavern or that could be affected by tunnel works
- (g) water wells
 - well yield test and the effect of proposed water extraction.
- (h) tunnel works* (tunnels/caverns/shafts/associated underground facilities - see para 7.3)
 - cut and cover construction methods
 - drill and blast methods
 - soft ground tunnel construction techniques

- tunnel boring machine, micro-tunnelling (including directional drilling) and pipe jacking methods
- associated ground support, ground treatment and groundwater control works

7.2 The list above is not intended to be exhaustive as it only contains the common types of geotechnical works encountered.

7.3 In normal circumstances, a TCP T3 and a TCP T5 are required to be provided by the RGE to supervise building works with significant geotechnical content. However, a Directorate Site Supervisor (DSS) may be required for geotechnically difficult or sensitive sites marked * in the above list or any other sites as considered appropriate by GEO and BD.

7.4 Sensitive sites are sites where the works could pose adverse impact to life and/or property. These include sites where works could affect old buildings with shallow foundations, old tunnels/caverns, major roads, railways, water mains, gas mains, slopes, retaining walls or sites with history of instability.

7.5 The requirements for the provision of a DSS, if considered necessary by GEO and BD, will be conveyed to the AP/RSE/RGE in the approval and consent letters. The name of the DSS should also be given in the supervision plan.

7.6 A DSS should be a Registered Professional Engineer in geotechnical discipline who holds the position of a partner/director in the firm which prepared the geotechnical content of the submission. The RGE who is responsible for the project can also be accepted as the DSS.

8 *Supervision Requirements*

Determining the required TCPs and their frequency level of site inspections

- 8.1 The grades of TCP and their minimum frequency level of site inspections required for each functional stream for various types of building works or street works are set out in Table 1 of the Technical Memorandum. More frequent supervision requirements during critical stages are specified in paragraph 9 of this Code.
- 8.2 For building works with significant geotechnical content, the RSE would only be required to provide a team of site supervisors where there was structural works.
- 8.3 For foundation works in Scheduled Areas Nos. 1, 2 and 4 and in Designated Area of Northshore Lantau, additional supervision from the RGE's stream is required on top of the supervision requirements for foundation works given in Table 1 of the Technical Memorandum. Note 5 to Table 1 of the Technical Memorandum refers.

Scale of the Works

- 8.4 The effect of the scale of the works should be considered in determination of supervision requirements. It shall be assessed by a scale factor of the works.
- 8.5 A measurable item and a basic value of which are assigned for each type of building works or 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.
- 8.6 The measurable items and their basic values to be used for the assessment of the scale factor of various types of building works or street works are set out in Table 8.1. Unless otherwise specified, the measurable items represent the total cost, average cost per month, or quantity of the respective type of building works or street works to be carried out. The BA may review and amend the measurable items and their basic values from time to time.

| Table 8.1 | | |
|---|---|----------------------|
| 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 | 750 m ² |
| ground investigation field works | number of drilling rigs (irrespective of the number of trial pits, coreholes and slope surface strippings) | 6 |
| | number of trial pits, coreholes and slope surface strippings concurrently carried out on site (only applicable when no drillholes are proposed) | 20 |
| site formation | total cost | \$20M |
| slope/retaining wall/buried services repairs | total cost | \$6M |
| excavation & lateral support | average cost per month | \$4M |
| pile wall | average cost per month | \$4M |
| tunnel works | total cost | \$25M |
| large diameter bored piles and barrette piles | average cost per month | \$9M |
| driven piles, mini-piles and socketted H-piles | average cost per month | \$5M |
| cap/footing/basement | total cost | \$25M |
| superstructure | total construction floor area | 20000 m ² |
| curtain wall/cladding | total aggregated surface area | 10000 m ² |
| alteration & addition | total cost | \$8M |
| minor works | total cost | \$5M |
| street works | total cost | \$6M |

- 8.7 For the purpose of scale assessment, for a scale factor of one, a full day inspection by a TCP on each occasion is assumed. The TCP should have discharged all his duties in inspecting all essential items required for him on each occasion.
- 8.8 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.

8.9 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 heads and TCPs of grades T2 to T5 as specified in Table 1 of the Technical Memorandum for that type of works; and
- (b) to increase the number of TCP of grade T1, and grade T2/T3 in some cases, required to carry out full time supervision.

8.10 For the purpose of assessing the manpower input required for a specified frequency level of inspection, the minimum frequency levels of inspection, Levels 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 8.2. As there is a significant difference in input between levels 4 and 5, further subdivision of level 4 is given in Table 8.3 to take into account circumstances where more frequent inspections than weekly are required.

| Table 8.2 | | |
|--|----------------------|---|
| 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 | Weekly visits | 4 |
| Level 3 | Fortnightly visits | 2 |
| Level 2 | Monthly visit | 1 |
| Level 1 | As and when required | 0.5 |

Note: The notional supervision input of 0.5 is applicable when AP/RSE/RGE/AS also performs TCP's supervision duties.

| Table 8.3 | | |
|---|-------------------------|---|
| Table Showing Supervision Input for Works Requiring More Frequent Visits than Weekly | | |
| Frequency Level of Site Inspection | Description | Notional Supervision Input (Equivalent Man-days per Month) |
| Level 5 | Full time on site | 25 |
| Level 4.3 | Four visits every week | 16 |
| Level 4.2 | Three visits every week | 12 |
| Level 4.1 | Two visits every week | 8 |
| Level 4 | One visit every week | 4 |

8.11 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 type of works. The upgraded frequency level corresponding to the adjusted supervision input should then be found from Table 8.2 and 8.3. 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

8.12 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.

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

8.14 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 8.4 to 8.11 should be followed and Form C at Appendix IV should be used for the calculations. Form C should be appended to the supervision plan submitted to the BA.

8.15 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 5) corresponding to the Frequency Level of Site Inspection from Table 8.2.
- (iv) The Adjusted Supervision Input (Column 6) is the product of the Scale Factor (Column 2) and the Notional Supervision Input (Column 5).
- (v) List the grades of TCP that are to be combined in Column 7.

- (vi) List the grades of TCP with combined duties in Column 8.
- (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 9).
- (viii) Derive the number of TCP with combined duties (Column 10) and Frequency Level of Site Inspection required after the combination of TCPs (Column 11) using Tables 8.2 and 8.3. The derived frequency level of site inspection should not be less than the minimum inspection frequency as set down in Table 1 of the TM.

8.16 The AP, RSE and RGE, after calculating the supervision input in accordance with paragraph 8.15, may further combine TCPs of the three streams in accordance with the same principles.

8.17 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 6 and 11.

TCP qualifications and experience

8.18 The minimum qualifications and experience required for each grade of TCP are set out in Table 2 of the Technical Memorandum. Experience, wherever mentioned in this Code, means relevant working experience as defined in Note (1) in Table 2 of the Technical Memorandum.

8.19 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, RGE or RC 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 Accreditation of Academic and Vocational Qualifications (formerly 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, RGE or RC to the BA for acceptance before making proposals on appointments of TCPs with such qualifications.

8.20 Details of the professional and academic qualifications and the relevant disciplines that are acceptable for TCPs of grade T1 to T5 should be as set out in Tables 8.4 to 8.8 respectively.

8.21 TCP qualification and experience accepted during transitional period before 22 December 2005 or accepted pursuant to the corresponding recognition and requirements prescribed in this paragraph are recorded at Appendix X.

Table 8.4

Minimum Qualifications and Experience Required for TCP T1

| Type of Building Works or Street Works | AP's Stream | | RSE's Stream | | RGE's Stream | | RC's Stream | |
|--|---------------|---------------------|---------------|---------------------|---------------|---------------------|---|---------------------------------------|
| | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience |
| GIFW | N/A | | N/A | | N/A | | (a) Certificate in civil/geotechnical engineering; or (b) Degree in geology which covers the specified engineering related subjects (refer Item 2.0 of Appendix VII) or Degree in civil/geotechnical engineering; or (c) Geotechnical Field Technician already accepted under the Development Bureau's List of Approved Suppliers of Materials and Specialist Contractors for Public Works in the Category of Ground Investigation Field Works; or (d) Passed specified technically competent person T1 training course. | 2 years in G.I. 1 year in G.I. |

Table 8.4 Cont'd

| Type of Building Works or Street Works | AP's Stream | | RSE's Stream | | RGE's Stream | | RC's Stream | |
|--|---------------|---------------------|---------------|---------------------|---------------|---------------------|---|---------------------|
| | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience |
| Building Works with significant geotechnical content | N/A | | N/A | | N/A | | (a) Certificate or diploma in civil/ structural/geotechnical engineering; or Passed specified top-up courses / technically competent person T1 training course. | 2 years |
| | | | | | | | (b) Passed specified top-up courses / technically competent person T1 training course. | see Appendix X |
| Foundation Works | N/A | | N/A | | N/A | | (a) Certificate or diploma in civil/ structural/geotechnical engineering; or Certificate or diploma in building studies (except for piling works); or Passed specified top-up courses/ technically competent person T1 training course. | 2 years |
| | | | | | | | (b) Certificate or diploma in building studies (except for piling works); or Passed specified top-up courses/ technically competent person T1 training course. | 2 years |
| | | | | | | | (c) Passed specified top-up courses/ technically competent person T1 training course. | see Appendix X |
| Street Works or all Building Works (other than the above types of works and Minor Works) | N/A | | N/A | | N/A | | (a) Certificate or diploma in civil/ structural/geotechnical engineering, building studies, building surveying or architectural studies; or Passed specified top-up courses/ technically competent person T1 training course. | 2 years |
| | | | | | | | (b) Passed specified top-up courses/ technically competent person T1 training course. | see Appendix X |
| Class 1 Minor Works | N/A | | N/A | | N/A | | (a) Certificate or diploma in civil/ structural/geotechnical engineering, building studies, building surveying or architectural studies; or Passed specified top-up courses/ technically competent person T1 training course; or | 2 years |
| | | | | | | | (b) Passed specified top-up courses/ technically competent person T1 training course; or | see Appendix X |
| | | | | | | | (c) Passed specified technically competent person T1 (Minor Works) training course. | see Appendix X |

Table 8.5

Minimum Qualifications and Experience Required for TCP T2

| Type of Building Works or Street Works | AP's Stream | | RSE's Stream | | RGE's Stream | | RC's Stream | |
|--|---------------|---------------------|---------------|---------------------|---|---------------------|---|---------------------------|
| | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience |
| GFW | N/A | | N/A | | N/A | | N/A | |
| Building Works with significant geotechnical content | N/A | | N/A | | N/A | | (a) Higher certificate or higher diploma in civil/structural/geotechnical engineering; or (b) Passed specified top-up courses. | 3 years |
| Foundation Works | N/A | | N/A | | N/A | | (a) Higher certificate or higher diploma in civil/structural/geotechnical engineering; or (b) Higher certificate or higher diploma in building studies (except for piling works); or (c) Passed specified top-up courses. | see Appendix X 3 years |
| Street Works or all Building Works (other than the above types of works and Minor Works) | N/A | | N/A | | N/A | | N/A | |
| Class 1 Minor Works | N/A | | N/A | | (a) Higher certificate or higher diploma in civil/geotechnical engineering. | 3 years | N/A | |

Note : Holders of a degree in the relevant professional discipline with 2 years relevant working experience may also take up the duties of a TCP T2 for a certain type of building or street works under the RC's Stream.

Table 8.6

Minimum Qualifications and Experience Required for TCP T3

| Type of Building Works or Street Works | AP's Stream | | RSE's Stream | | RGE's Stream | | RC's Stream | |
|--|--|--|---------------|---------------------|--|--|---------------|---------------------|
| | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience |
| GFW | <p>(a) Higher certificate or higher diploma in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or</p> <p>(b) Degree in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or</p> <p>(c) Degree in geology which covers the specified engineering related subjects (refer Item 2.0 of Appendix VII); or</p> <p>(d) Degree in geology which covers the specified engineering related subjects (refer Item 2.0 of Appendix VII) or Degree in civil/geotechnical engineering, and has attended and passed specified geotechnical top-up course.</p> | <p>5 years</p> <p>2 years</p> <p>2 years in civil/geotechnical engineering</p> <p>1 year in civil/geotechnical engineering</p> | N/A | | <p>(a) Higher certificate or higher diploma in civil/geotechnical engineering; or</p> <p>(b) Degree in geology which covers the specified engineering related subjects (refer Item 2.0 of Appendix VII) or Degree in civil/geotechnical engineering; or</p> <p>(c) Degree in geology which covers the specified engineering related subjects (refer Item 2.0 of Appendix VII) or Degree in civil/geotechnical engineering, and has attended and passed specified geotechnical top-up course.</p> | <p>5 years (including 1 year in GI)</p> <p>2 years in civil/geotechnical engineering</p> <p>1 year in civil/geotechnical engineering</p> | N/A | |

Table 8.6 Cont'd

| Type of Building Works or Street Works | AP's Stream | | RSE's Stream | | RGE's Stream | | RC's Stream | |
|--|--|---------------------|---|---------------------|---|---------------------|---------------|---------------------|
| | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience |
| Building Works with significant geotechnical content | (a) Higher certificate or higher diploma in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or | 5 years | (a) Higher certificate or higher diploma in civil/structural/geotechnical engineering; or | 5 years | (a) Higher certificate or higher diploma in civil/structural/geotechnical engineering; or | 5 years | N/A | |
| | (b) Degree in civil/structural/geotechnical engineering, building studies; building surveying or architectural studies; or | 2 years | (b) Degree in civil/structural/geotechnical engineering; or | 2 years | (b) Degree in civil/structural/geotechnical engineering; or | 2 years | | |
| | (c) Degree in civil/structural/geotechnical engineering, and has attended and passed specified geotechnical top-up course. | 1 year | (c) Degree in civil/structural/geotechnical engineering and has attended and passed specified geotechnical top-up course. | 1 year | (c) Degree in geology which covers the specified engineering related subjects (refer to Item 2.0 of Appendix VII) or degree in civil/structural/geotechnical engineering, and has attended and passed specified geotechnical top-up course. | 1 year | | |

Table 8.6 Cont'd

| Type of Building Works or Street Works | AP's Stream | | RSE's Stream | | RGE's Stream | | RC's Stream | |
|--|---|--|--|--|---------------|--|--|---------------------|
| | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience |
| Foundation Works | (a) Higher certificate or higher diploma in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or (b) Degree in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or (c) Degree in civil/structural/geotechnical engineering and has attended and passed specified geotechnical top-up course. | 5 years 2 years 1 year | (a) Higher certificate or higher diploma in civil/structural/geotechnical engineering; or (b) Degree in civil/structural/geotechnical engineering and has attended and passed top-up course. (c) Degree in civil/structural/geotechnical engineering and has attended and passed specified geotechnical top-up course. | 5 years 2 years 1 year | N/A | N/A | N/A | |
| Street Works or all Building Works (other than the above types of works and Minor Works) | (a) Higher certificate or higher diploma in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or (b) Degree in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or (c) Passed specified top-up courses. | 5 years 2 years See Appendix X | (a) Higher certificate or higher diploma in civil/structural/geotechnical engineering; or (b) Degree in civil/structural/geotechnical engineering; or (c) Passed specified top-up courses. | 5 years 2 years See Appendix X | N/A | (a) Higher certificate or higher diploma in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or (b) Degree in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or (c) Passed specified top-up courses. | 5 years 2 years See Appendix X | |

Table 8.6 Cont'd

| Type of Building Works or Street Works | AP's Stream | | RSE's Stream | | RGE's Stream | | RC's Stream | |
|--|--|---------------------|---|---------------------|---------------|--|----------------|---------------------|
| | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience |
| Class I Minor Works | (a) Higher certificate or higher diploma in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or | 5 years | (a) Higher certificate or higher diploma in civil/structural/geotechnical engineering; or | 5 years | N/A | (a) Higher certificate or higher diploma in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or | 5 years | |
| | (b) Degree in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or | 2 years | (b) Degree in civil/structural/geotechnical engineering; or | 2 years | | (b) Degree in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or | 2 years | |
| | (c) Passed specified top-up courses. | See Appendix X | (c) Passed specified top-up courses. | See Appendix X | | (c) Passed specified top-up courses. | See Appendix X | |

Table 8.7

Minimum Qualifications and Experience Required for TCP T4

| Type of Building Works or Street Works | AP's Stream | | RSE's Stream | | RGE's Stream | | RC's Stream | |
|--|---|---------------------|---------------|---------------------|---------------|---------------------|--|---|
| | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience |
| GIFW | N/A | | N/A | | N/A | | (a) Degree in geology which covers the specified engineering related subjects (refer Item 2.0 of Appendix VII) or Degree in civil/geotechnical engineering; or (b) Registered Professional Engineer (Geotechnical). | 4 years in civil/geotechnical works (including 2 years in GI) |
| Building Works with significant geotechnical content | (a) Degree in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or Registered Professional Engineer (Civil, structural, geotechnical or building); or Registered Architect; | 4 years | N/A | | N/A | | (a) Degree in civil/geotechnical engineering; or Registered Professional Engineer (Civil or geotechnical). | 4 years |
| | (b) | - | | | | | (b) | - |
| | (c) | - | | | | | | |
| | (d) Registered Professional Surveyor (Building surveying). | - | | | | | | |

Table 8.7 Cont'd

| Table 8.7 | | | | | | | | | |
|--|---------------|---|---------------|---------------------|---------------|---------------------|---------------|---|---------------------|
| Minimum Qualifications and Experience Required for TCP T4 | | | | | | | | | |
| Type of Building Works or Street Works | AP's Stream | | RSE's Stream | | RGE's Stream | | RC's Stream | | Relevant Experience |
| | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience | |
| Foundation Works | (a) | Degree in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or Registered Professional Engineer (Civil, structural, geotechnical or building); or Registered Architect; or Registered Professional Surveyor (Building surveying). | 4 years | N/A | N/A | | (a) | Degree in civil/structural/geotechnical engineering; or Degree in building studies (except for piling works); or Registered Professional Engineer (Civil, structural or geotechnical). | 4 years |
| | (b) | | - | | | | (b) | | 4 years |
| | (c) | | - | | | | (c) | | - |
| | (d) | | - | | | | (d) | | - |
| Street Works or all Building Works (other than the above types of works and Minor Works) | (a) | Degree in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or Registered Professional Engineer (Civil, structural, geotechnical or building); or Registered Architect; or Registered Professional Surveyor (Building surveying). | 4 years | N/A | N/A | | (a) | Degree in civil/structural/geotechnical engineering, building studies, building surveying or architectural studies; or Registered Professional Engineer (Civil, structural, geotechnical or building); or Registered Architect; or Registered Professional Surveyor (Building surveying). | 4 years |
| | (b) | | - | | | | (b) | | - |
| | (c) | | - | | | | (c) | | - |
| | (d) | | - | | | | (d) | | - |
| Class I Minor Works | | N/A | | N/A | N/A | | | N/A | |

Table 8.8

Minimum Qualifications and Experience Required for TCP T5

| Type of Building Works or Street Works | AP's Stream | | RSE's Stream | | RGE's Stream | | RC's Stream | |
|--|---------------|---------------------|---|---------------------|---|---------------------|---|---------------------|
| | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience | Qualification | Relevant Experience |
| GIFW | N/A | | N/A | | (a) Registered Professional Engineer (Geotechnical) | 5 years | N/A | |
| Building Works with significant geotechnical content | N/A | | (a) Registered Professional Engineer (Civil/structural/geotechnical). | 5 years | (a) Registered Professional Engineer (Geotechnical) | 5 years | N/A | |
| Foundation Works | N/A | | (a) Registered Professional Engineer (Civil/structural/geotechnical) | 5 years | N/A | | N/A | |
| Demolition Works | N/A | | (a) Registered Professional Engineer (Civil/structural/building). | 5 years | N/A | | (a) Registered Professional Engineer (Civil/structural/building). | 5 years |
| Street Works or all Building Works (other than the above types of works and Minor Works) | N/A | | (a) Registered Professional Engineer (Civil/structural/geotechnical). | 5 years | N/A | | N/A | |
| Class I Minor Works | N/A | | N/A | | N/A | | N/A | |

8.22 Unless otherwise specified, 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 type of works concerned.
- (iii) for T3 - The relevant experience must have been gained within the previous 8 years and at least 1 year must be local experience.
- (iv) for T4 and T5 - The relevant experience must have been gained within the previous 8 years and at least 1 year must be local experience.

8.23 Unless otherwise specified, 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 8.22. However, for Registered Architects, Registered Professional Engineers and Registered Professional Surveyors, relevant working experience obtained before the Professional Qualification is acceptable.

8.24 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.

9 *More Frequent Supervision Requirements*

Critical Stages of the Works

- 9.1 Table 1 of the Technical Memorandum specifies that higher grade TCP and/or more frequent site inspections up to full time may be required at critical stages of the works. Such more frequent site inspections at critical stages are set out in Table 9.1.

- 9.2 The RC should notify the AP, RSE and RGE of the commencement date and estimated time for completion of the critical stages of works in sufficient time before commencing the critical stages to ensure that the respective TCPs would perform their supervision roles during the carrying out of the critical stage of works on site.

- 9.3 In addition, the AP, RSE, RGE, or RC 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.

Table 9.1

Supervision Requirements for Critical Stages of Building Works

| Type of Building Works | Critical Stages of Work | Inspection Frequency | |
|---|--|---|--|
| | | RC's T5 | RSE's T5 |
| Demolition; Addition and Alteration Works | Demolition of complex structures, such as flat slab, prestressed concrete, transfer plate, hanger, long span beam greater than 10 m, steel framed construction, and cantilevered structure over street with span greater than 1.2 m. | Full Time | Twice a week |
| | Demolition of buildings which also act as earth-retaining structures supporting adjacent ground with a ground level difference exceeding 1.5 m – additional inspection at twice a week by RGE's T5 is also required. | Full Time | Twice a week |
| Type of Building Works | Critical Stages of Work | Inspection Frequency | |
| | | RC's T4 | RSE's T5 |
| Foundation | (a) Driven Piles (i) Driving test (ii) Final sets (iii) Proof load test | First test pile 5% At least one proof load test | First test pile 5% At least one proof load test |
| | (b) Large Diameter Bored Piles, Barrette Piles and the like (i) Pre-drilling (ii) Verification of founding stratum (iii) Post Construction Proof Drilling (iv) Proof load test, if any | Twice a week 5% At least one post construction proof drilling At least one proof load test | N/A 5% At least one post construction proof drilling At least one proof load test |
| | (c) Mini-piles, Socketted H-piles and the like (i) Pre-drilling (ii) Verification of founding stratum (iii) Proof load test | Twice a week 5% At least one proof load test | N/A 3% At least one proof load test |
| | (d) Rafts and Spread Footings (i) Inspection of bearing stratum (ii) Plate loading test (where required) | 20% At least one plate loading test | First batch of footings with each value of bearing pressure At least one plate loading test |

Table 9.1 Cont'd

| Type of Building Works | Critical Stages of Work | Inspection Frequency | |
|--|---|--|--|
| | | RC's T4 | RSE's T5 |
| | (e) Other Cases (i) Piling near the crest of retaining wall within a zone contained by a 45° line from the toe of wall (ii) Piling works within 5 m of railway structure, highway structure or building completed more than 40 years ago | Twice a week Twice a week | Twice a week Twice a week |
| Excavation and lateral support; Site formation; Slope/retaining wall/buried services repair (not building works with significant geotechnical content) | Presence of a water main with diameter exceeding 200 mm, gas main, building on shallow footing or railway structure within a zone contained by a line measured at 60° to the horizontal from the base of excavation | Twice a week | Twice a week |
| | Construction of diaphragm wall/bored pile wall or installation of sheet pile/pipe pile/soldier pile wall within 5 m of railway structure, highway structure, water main larger than 200 mm diameter, gas main, building founded on shallow footings or slope/retaining wall | Twice a week | Twice a week |
| | Preloading of struts | During preloading of the first batch of struts and then every 2 days | During preloading of the first batch of struts |
| | All related works when movement of ground or building or groundwater drawdown has exceeded the allowable limit | Twice a week | Twice a week |
| Superstructure | Construction of cantilevered structure over street | Full Time | Twice a week |
| | Construction of elevated structure, like podium deck, over street | Full Time | Twice a week |

Table 9.1 Cont'd

| Type of Building Works | Critical Stages of Work | Inspection Frequency | |
|--|---|--|--|
| | | RC's T4 | RGE's T5 |
| Excavation and lateral support; Site formation; Slope/retaining wall/buried services repair; Tunnel works (building works with significant geotechnical content) | Works that could affect a water main with diameter exceeding 200 mm, gas main, building on shallow footing, tunnel, railway structure (e.g. within a zone contained by a line measured at 60° to the horizontal from the base of excavation/invert of tunnel) | Twice a week | Twice a week |
| | Construction of diaphragm wall/bored pile wall or installation of sheet pile/pipe pile/soldier pile wall within 5 m of railway structure, highway/drainage/sewerage structure, water main larger than 200 mm diameter, gas main, building founded on shallow footings, tunnel or slope/retaining wall | Twice a week | Twice a week |
| | Preloading of struts | During preloading of the first batch of struts and then every 2 days | During preloading of the first batch of struts |
| | All related works when movement of ground or building or groundwater drawdown has exceeded the allowable value | Twice a week | Twice a week |
| | Pumping test or other ground treatment performance testing or operation of recharging well | Daily for first 7 days and at least twice a week thereafter | Daily for first 7 days and at least twice a week thereafter |
| | Removal of structural support in the absence of permanent support | During the removal process | During the removal process |
| | Confirmation of founding level of retaining wall | First batch of retaining wall footings with each value of bearing pressure | First batch of retaining wall footings with each value of bearing pressure |
| Foundation | Blasting within sites which have been the subject of genuine blasting - related complaints or are in close proximity to land and properties which have to be protected | Every blast | Every blast |
| | Foundation works adversely affecting stability of adjoining sloping ground and in sensitive sites (critical stages to be defined in the approved plan) | Full Time | Weekly |

Notes to Table 9.1

- 1) The supervision requirements for various grades of TCPs for various types of building works or street works as specified in paragraph 8 of this Code shall also be complied with during critical stages of work.
- 2) If the frequencies of inspection for certain grades of TCPs during critical stages of work have been specified, these TCPs shall carry out inspections for the specific tasks at such frequencies as specified or at such frequencies as derived under paragraph 8 of this Code (which takes account of the scale of works and allows combination of supervision resources), whichever is higher.
- 3) The RSE, RGE or RC may require its respective TCP to carry out more frequent inspections to suit the site conditions.

10 *Communication and Reports*

Interstream Communication

- 10.1 Interstream communications are as important as within-stream communications in order to facilitate effective 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 Supervision Reports

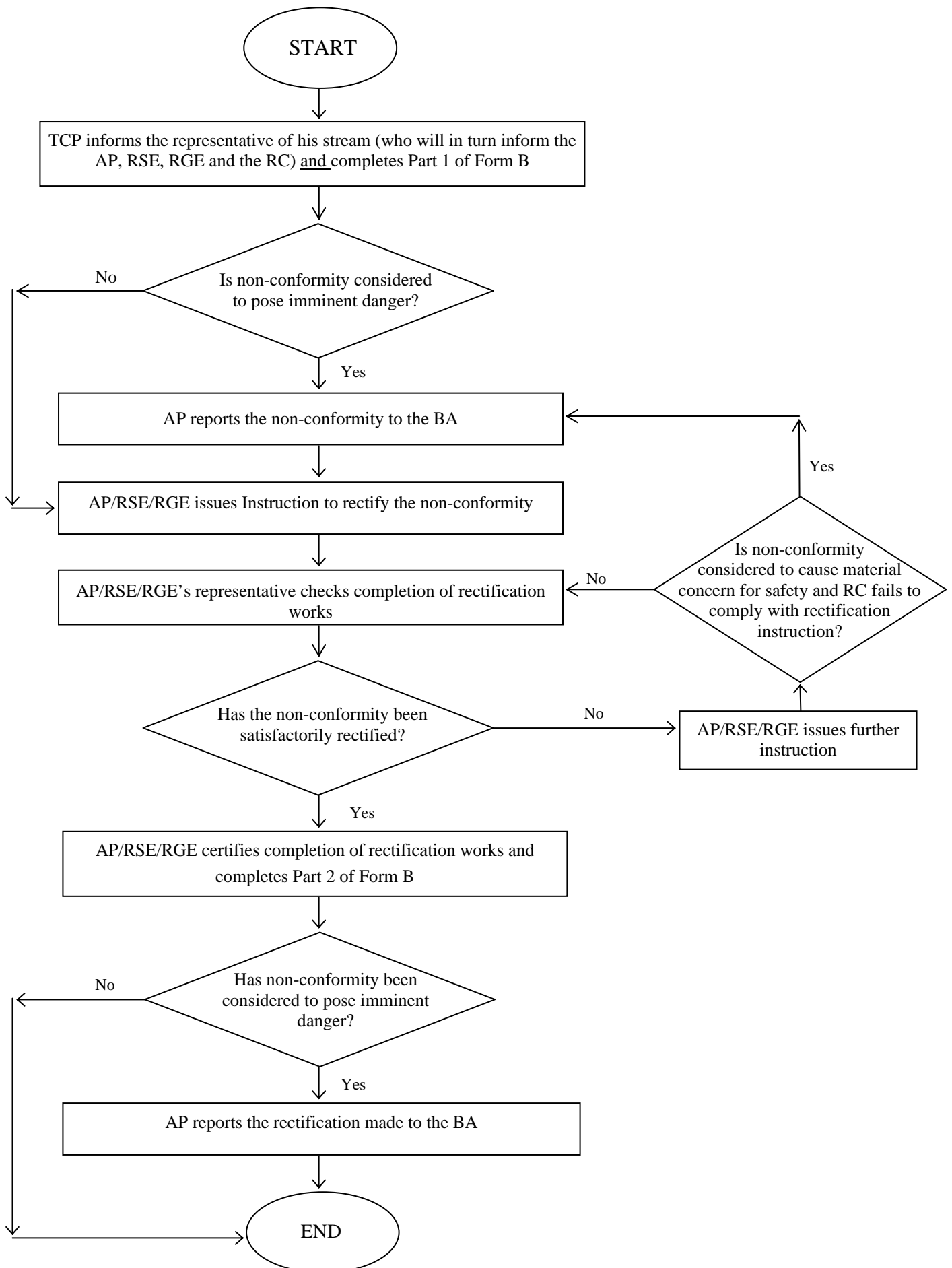
- 10.2 Site supervision reports are required to be completed by all TCPs whenever they carry out site safety supervision activities. These reports should be filed and maintained at the site office for the inspection of the BA. AP/RSE/RGE/AS are required to keep their inspection records at site such as notes/photo records and the works items inspected on site, particularly during the critical stages of works.

Non-conformity and Rectification Reports

- 10.3 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, RGE and the RC of the non-conformity) and completes 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/RGE issues Instruction to the RC to rectify the non-conformity;
 - (iv) AP/RSE/RGE's Representative will ensure that the rectification works are completed promptly and satisfactorily;
 - (v) If the non-conformity is considered to cause material concern for safety and the RC 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/RGE 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 10.1.

Figure 10.1 Flow Chart for Dealing with Non-Conformity



Appendix I

Standard Form of Supervision Plan

with

Annex:

Confirmation of Appointment of TCPs

BUILDINGS ORDINANCE
(Chapter 123)
Section 39A
TECHNICAL MEMORANDUM FOR SUPERVISION PLANS
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 Supervision Plan for the _____ works at the site located at (address of site) _____

 on (Lot No.) _____.

2. We have signed under Part I, II, III and IV respectively of this Supervision Plan. Our signatures indicate our undertaking that the supervision at this site will be carried out in accordance with this Supervision Plan, the Technical Memorandum and the Code of Practice for Site 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 works covered by this Supervision Plan are :

| Type of building works or street works | Date of Approval | Cost/Area/Quantity | Scale Factor |
|--|------------------|--------------------|--------------|
| | | | |

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

5. The Technically Competent Persons for site supervision under the Authorized Person’s stream required under the Code of Practice for the type of works identified are :

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

The CVs showing their relevant experience and academic qualifications are attached at Appendix 1B. If more than one supervisor is proposed for a TCP post, the demarcation of their responsibility should be provided.

6. The Technically Competent Persons for site supervision under the Authorized Person'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 1B if the TCP is different from those listed in paragraph 5 above.

7. I (name in full) _____ (Chinese) _____, Authorized Person, certify that Part I (paragraphs 3 to 6) 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. Confirmation for appointment of TCPs (Annex) is submitted with this Supervision Plan/shall be submitted within 7 days from the date of commencement of works as indicated in the Form BA10 or notice of commencement of minor works*.

Date _____

Signature _____

Certificate of Registration No. : _____

Date of expiry of registration : _____

Part II - Supervision Plan of the Registered Structural Engineer

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

9. The Technically Competent Persons for site supervision under the Registered Structural Engineer's stream required for the specified type of works are :

| | Name in English | Name in Chinese | I.D. No. | Frequency Level of Site Inspection |
|----------------|-----------------|-----------------|----------|------------------------------------|
| RSE | | | | |
| Representative | | | | |
| T5 | | | | |
| T3 | | | | |
| | | | | |

The CVs showing their relevant experience and academic qualifications are attached at Appendix 2B. If more than one supervisor is proposed for a TCP post, the demarcation of their responsibility should be provided.

10. The Technically Competent Persons for site 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 9 above.

11. I (name in full) _____ (Chinese) _____, Registered Structural Engineer, certify that Part II (paragraphs 8 to 10) 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. Confirmation for appointment of TCPs (Annex) is submitted with this Supervision Plan/shall be submitted within 7 days from the date of commencement of works as indicated in the Form BA10 or notice of commencement of minor works*.

Date _____

Signature

Certificate of Registration No. : _____

Date of expiry of registration : _____

Part III - Supervision Plan of the Registered Geotechnical Engineer

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

13. The Technically Competent Persons for site supervision under the Registered Geotechnical Engineer's stream required for the specified type of works are :-

| | Name in English | Name in Chinese | I.D. No. | Frequency Level of Site Inspection |
|----------------|-----------------|-----------------|----------|------------------------------------|
| RGE | | | | |
| Representative | | | | |
| T5 | | | | |
| T3 | | | | |
| | | | | |
| DSS* | | | | |

The CVs showing their relevant experience and academic qualifications are attached at Appendix 3B. If more than one supervisor is proposed for a TCP post, the demarcation of their responsibility should be provided.

14. The Technically Competent Persons for site supervision under the Registered Geotechnical 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 3B if the TCP is different from those listed in paragraph 13 above.

15. I (name in full) _____ (Chinese) _____, Registered Geotechnical Engineer, certify that Part III (paragraphs 12 to 14) 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. Confirmation for appointment of TCPs (Annex) is submitted with this Supervision Plan/shall be submitted within 7 days from the date of commencement of works as indicated in the Form BA10 or notice of commencement of minor works*.

Date _____ Signature _____

Certificate of Registration No. : _____

Date of expiry of registration : _____

Part IV - Supervision Plan of Registered Contractor

16. In accordance with the type of works specified in Part I of this Supervision Plan, details of adjustment/combination of supervision resources (Form C) are attached at Appendix 4A.*

17. The Technically Competent Persons for site supervision under the Registered Contractor's stream required for the specified type of works are :

| | Name in English | Name in Chinese | I.D. No. | Frequency Level of Site Inspection |
|----------------|-----------------|-----------------|----------|------------------------------------|
| AS | | | | |
| Representative | | | | |
| T5 | | | | |
| T4 | | | | |
| T3/T2* | | | | |
| T1 | | | | |
| | | | | |
| CP (Logging)* | | | | |

The CVs showing their relevant experience and academic qualifications are attached at Appendix 4B. If more than one supervisor is proposed for a TCP post, the demarcation of their responsibility should be provided.

18. The Technically Competent Persons for site supervision under the Registered 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 4B if the TCP is different from those listed in paragraph 17 above.

19. I (name in full) _____ (Chinese) _____, the person appointed to act for the Registered General Building Contractor (RGBC)/Registered Specialist Contractor (RSC) in the _____ category/Registered Minor Works Contractor (RMWC)*, certify that Part IV (paragraphs 16 to 18) 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. Confirmation for appointment of TCPs (Annex) is submitted with this Supervision Plan/shall be submitted within 7 days from the date of commencement of works as indicated in the Form BA10 or notice of commencement of minor works*.

Date _____

Signature _____

Name of RGBC/RSC/RMWC*: _____

(Chinese) _____

Certificate of Registration No.: _____

Date of expiry of registration : _____

Enclosures: Appendix 1A, 1B, 2A, 2B, 3A, 3B, 4A and 4B*
Annex to Supervision Plan*

* Delete if not applicable

Annex to Supervision Plan

Confirmation of Appointment of TCPs under AP/RSE/RGE/RC stream*

(submitted by the Heads of respective streams to BA with the Supervision Plan or within 7 days from the date of commencement of works as indicated in the Form BA10/notice of commencement of minor works*)

BD Ref. _____ **Project** _____

Type of Works _____ **Date of Commencement of Works** _____

| <u>Name in English/Chinese¹</u> | <u>Head & Grade of TCP</u> | <u>Frequency Level of Inspection¹</u> | <u>Signature by Representative/TCP²</u> |
|--|--------------------------------|--|--|
| | AP/RSE/RGE/RC* | | / |
| | Representative | | |
| | TCP - T | | |
| | TCP - T | | |
| | TCP - T | | |
| | TCP - T | | |
| | | | |
| | | | |

Remarks

- ¹ The Heads of respective streams should ensure that the name of the TCP and the frequency level of inspection are the same as that shown on the SP submitted to the BA. TCP for critical stage, if any, should be included. If there is a change of TCP in future, the Heads of respective streams shall submit the revised SP, with new TCP's confirmation, to the BA within 7 days as per section 8.3 of the TM.
- ² Signature of TCP in this confirmation indicates the TCP's acknowledgement of appointment and availability for the job. If there is any change subsequently, he should notify his Head of stream and the BA.

Date

Name of AP/RSE/RGE/AS*

Signature

* Delete if inappropriate

Appendix II

Form A

Record of Specific Tasks Performed by TCP

**Record of Specific Tasks Performed by
TCP under AP/RSE/RGE/RC* Stream**

BD Ref. _____

Project _____

Type of Works _____

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 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| 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

Non-conformity and Rectification Reports

Non-Conformity and Rectification Reports

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/RGE* : _____
Date : _____

c.c. Building Authority

* Delete if inapplicable

Appendix IV

Form C

Calculation Sheet for Combination of TCPs

**CoP for Site Supervision
Form C**

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/RGE/RC *

| Building Works / Street Works | | Supervision Input Before Combination | | | | Combined Supervision Input | | | | |
|---|------------------|--------------------------------------|------------------------------------|--|--|------------------------------|-------------------------------|---|---------------------|--|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| Types of Building works / Street works to be combined | Scale Factor (S) | TCP Grade | Frequency Level of Site Inspection | Notional Supervision Input (man-day/month) | Adjusted supervision input (2) x (5) (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 V

Examples of

Calculation Sheet for Combination of TCPs

Sample 1

**CoP for Site Supervision
Form C**

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/RGE/RC* (where AP also acts as T4)

| Building Works / Street Works | | Supervision Input Before Combination | | | | | Combined Supervision Input | | | | |
|---|------------------|--------------------------------------|------------------------------------|--|--|------------------------------|-------------------------------|---|---------------------|--|--|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | |
| Types of Building works / Street works to be combined | Scale Factor (S) | TCP Grade | Frequency Level of Site Inspection | Notional Supervision Input (man-day/month) | Adjusted supervision input (2) x (5) (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 | |
| (Concurrent works) Spread Footings | 0.5 | T3 T4 AP | 4 2 1 | 4 1 0.5 | 2 0.5 0.25 | T3 T4 AP | T3 T4 & AP | 3.6 1.35 | 1 1 | 4 3 | |
| | 0.4 | T3 T4 AP | 4 2 1 | 4 1 0.5 | 1.6 0.4 0.2 | | | | | | |

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.

Sample 2

**CoP for Site Supervision
Form C**

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/RGE/RC *

| Building Works / Street Works | | Supervision Input Before Combination | | | | Combined Supervision Input | | | | |
|---|------------------|--------------------------------------|------------------------------------|--|--|------------------------------|-------------------------------|---|---------------------|--|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| Types of Building works / Street works to be combined | Scale Factor (S) | TCP Grade | Frequency Level of Site Inspection | Notional Supervision Input (man-day/month) | Adjusted supervision input (2) x (5) (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 |
| (Concurrent works) Spread Footings | 0.5 | T3 T5 | 5 4 | 25 4 | 12.5 2 | T3 T5 | T3 T5 | 14.1 2.8 | 1 1 | 5 4 |
| | 0.4 | T3 T5 | 4 3 | 4 2 | 1.6 0.8 | | | | | |

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.

Sample 3

**CoP for Site Supervision
Form C**

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/RGE/RC *

| Building Works / Street Works | | Supervision Input Before Combination | | | | Combined Supervision Input | | | | |
|---|------------------|--------------------------------------|------------------------------------|--|--|------------------------------|-------------------------------|---|---------------------|--|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| Types of Building works / Street works to be combined | Scale Factor (S) | TCP Grade | Frequency Level of Site Inspection | Notional Supervision Input (man-day/month) | Adjusted supervision input (2) x (5) (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 |
| ((Concurrent works) Spread Footings | 0.5 | T1 T2 T4 | 5 5 4 | 25 25 4 | 12.5 12.5 2 | T1 T2 T4 | T1 T2 T4 | 22.5 14.1 3.6 | 1 1 1 | 5 5 4 |
| | 0.4 | T1 T2 T4 | 5 4 4 | 25 4 4 | 10 1.6 1.6 | | | | | |

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.

Sample 4

**CoP for Site Supervision
Form C**

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/RGE/RC *

| Building Works / Street Works | | Supervision Input Before Combination | | | | Combined Supervision Input | | | | |
|---|------------------|--------------------------------------|------------------------------------|--|--|------------------------------|-------------------------------|---|---------------------|--|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| Types of Building works / Street works to be combined | Scale Factor (S) | TCP Grade | Frequency Level of Site Inspection | Notional Supervision Input (man-day/month) | Adjusted supervision input (2) x (5) (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 |
| (Concurrent works) Spread Footings E & L S (with significant Geotechnical Content) | 1.0 | T3 T4 | 4 2 | 4 1 | 4 1 | T3 T4 | T3 T4 | 8 2 | 1 1 | 4.1 3 |

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.

Sample 5

**CoP for Site Supervision
Form C**

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/RGE/RC *

| Building Works / Street Works | | Supervision Input Before Combination | | | | Combined Supervision Input | | | | |
|---|------------------|--------------------------------------|------------------------------------|--|--|------------------------------|-------------------------------|---|---------------------|--|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| Types of Building works / Street works to be combined | Scale Factor (S) | TCP Grade | Frequency Level of Site Inspection | Notional Supervision Input (man-day/month) | Adjusted supervision input (2) x (5) (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 |
| (Concurrent works) Spread Footings | 1.0 | T1 | 5 | 25 | 25 | T1 | T1 | 50 | 2 | 5 |
| | | T2 | 5 | 25 | 25 | T2 | T2 | 25 | 1 | 5 |
| | | T4 | 4 | 4 | 4 | T2 | T4 | 12 | 1 | 4.2 |
| | | | | | | | | | | |
| E & L S (with significant Geotechnical Content) | 1.0 | T1 | 5 | 25 | 25 | T1 | T1 | 25 | | |
| | | T2 | 4 | 4 | 4 | T2 | T2 | 4 | | |
| | | T4 | 4 | 4 | 4 | T4 | T4 | 4 | | |

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 Typical Items Checklist
P.2 Form A

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

P.1 Typical Items Checklist
P.2 Form A

Sample 3 Checklist and Record of Specific Tasks Performed by
TCP T3 under RGE stream

P.1 Typical Items Checklist
P.2 Form A

Sample 4 Checklist and Record of Specific Tasks Performed by
TCP T1 under RC stream

P.1 Typical Items Checklist
P.2 Form A

Sample 5 Checklist and Record of Specific Tasks Performed by
TCP T5 under RSE stream

P.1 Typical Items Checklist
P.2 Form A

Sample 6 Checklist and Record of Specific Tasks Performed by
TCP T3 under RSE stream

P.1 Typical Items Checklist
P.2 Form A

Sample 7 Checklist and Record of Specific Tasks Performed by
TCP T1 under RC stream

P.1 Typical Items Checklist
P.2 Form A

Sample 1

P.1 of Sample 1

BD Ref. SM/0000/11
Project ABC Centre
Type of Works Excavation & Lateral Support Works

Typical 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 RC does not comply with rectification instructions. |
| A7 | Check that all lower grade TCPs and RC's 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 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 they are 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. |
| An | <i>Any other items considered essential by the AP for the project, including those for quality supervision and other conditions imposed by the BA at approval and/or consent stage.</i> |

Sample 1

P.2 of Sample 1

Form A

**Record of Specific Tasks Performed by
TCP under AP/RSE/RGE/RC* stream**

BD Ref. SM/0000/11

Project ABC Centre

Type of Works Excavation & Lateral Support Works

Name Mr Chan Tai-man

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

| Date DD/MM/YY | 17/1/00 (Mon) | 17/2/00 (Thu) | 17/3/00 (Fri) | 17/4/00 (Mon) | | | |
|------------------|------------------|------------------|------------------|------------------|------|------|------|
| 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 | | | | | |
| An | 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

P.1 of Sample 2

BD Ref. SM/0000/11

Project ABC Centre

Type of Works Excavation & Lateral Support Works

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

| Item No. | Description |
|-----------|---|
| E5 | Check that all lower grade TCPs and RC's 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 Supervision. |
| E6 | 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 they are followed. |
| 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. |
| <i>En</i> | <i>Any other items considered essential by the RSE for the project, including those for quality supervision and other conditions imposed by the BA at approval and/or consent stage.</i> |

Sample 2

P.2 of Sample 2

Form A

**Record of Specific Tasks Performed by
TCP under ~~AP/RSE/RGE/RC~~* stream**

BD Ref. SM/0000/11

Project ABC Centre

Type of Works Excavation & Lateral Support Works

Name Mr X X Lee

Grade of TCP T5 **Frequency of Inspection** fortnightly

| Date DD/MM/YY | 17/1/00 (Mon) | 31/1/00 (Mon) | 14/2/00 (Mon) | 28/2/00 (Mon) | 13/3/00 (Mon) | 27/3/00 (Mon) | 10/4/00 (Mon) |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Item No. # | S/NS | S/NS | S/NS | S/NS | S/NS | S/NS | S/NS |
| E5 | S | S | | | | | |
| E6 | S | S | | | | | |
| E7 | S | S | | | | | |
| E9 | S | S | | | | | |
| E11 | S | S | | | | | |
| E12 | S | S | | | | | |
| E13 | S | S | | | | | |
| E15 | S | S | | | | | |
| <i>En</i> | 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

P.1 of Sample 3

BD Ref. SM/0000/11

Project ABC Centre

Type of Works Excavation & Lateral Support Works

Typical Items for the Checklist of Specific Tasks for RGE's TCP T3

| Item No. | Description |
|-----------------|---|
| G1 | Establish system for communicating with other TCPs. |
| G2 | Check that all monitoring check points are installed and readings are being taken in time. |
| G3 | Verify non-conformity and instruct rectification works immediately. Notify all relevant parties in respect of the non-conformity and monitor that rectification measures are properly carried out. |
| G4 | Report to the RGE immediately if the non-conformity is considered to pose an imminent danger, to be a significant risk or a source of danger or the RC does not comply with rectification instructions. |
| G5 | Check that all lower grade TCPs and RC's 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 Supervision. |
| G6 | Check and satisfy that copies of approved plans, method statements, precautionary and protective measures proposals and all related drawings and geotechnical documentation are kept on site; and that they are followed. |
| Gn | <i>Any other items considered essential by the RGE for the project, including those for quality supervision and other conditions imposed by the BA at approval and/or consent stage.</i> |

Sample 3

P.2 of Sample 3

Form A

**Record of Specific Tasks Performed by
TCP under ~~AP/RSE/RGE/RC~~ * stream**

BD Ref. SM/0000/11

Project ABC Centre

Type of Works Excavation & Lateral Support Works

Name Mr Leung Tai-man

Grade of TCP T3 **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) | | | |
|-------------------------|------------------|------------------|------------------|------------------|------|------|------|
| Item No.# | S/NS | S/NS | S/NS | S/NS | S/NS | S/NS | S/NS |
| G1 | S | S | | | | | |
| G2 | S | S | | | | | |
| G3 | S | S | | | | | |
| G4 | S | S | | | | | |
| G5 | S | S | | | | | |
| G6 | S | S | | | | | |
| Gn | 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 4

P.1 of Sample 4

BD Ref. SM/0000/11

Project ABC Centre

Type of Works Excavation & Lateral Support Works

Typical Items for the Checklist of Specific Tasks for RC's TCP T1

| Item No. | Description |
|-----------|---|
| C1 | Establish system for communicating with other TCPs. |
| C2 | Check that the erection of hoarding, covered walkways and catch platform has been erected to secure safety of the public in accordance with the hoarding plan agreed by the BA. |
| 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/RGE 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. |
| C12 | 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 they are followed. |
| C16 | Check that procedure for the excavation and lateral support works are carried out in accordance with the approved/submitted plans/agreed sequence. |
| <i>Cn</i> | <i>Any other items considered essential by the RC for the project, including those for quality supervision and other conditions imposed by the BA at approval and/or consent stage.</i> |

Sample 4

P.2 of Sample 4

Form A

**Record of Specific Tasks Performed by
TCP under AP/RSE/RGE/RC * stream**

BD Ref. SM/0000/11

Project ABC Centre

Type of Works Excavation & Lateral Support Works

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 |
| C12 | S | S | S | S | S | S | S |
| C16 | S | S | S | S | S | S | S |
| Cn | 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)

BD Ref. SM/0000/11

Project ABC Centre

Type of Works Driven Steel H-Pile Works

Typical Items for the Checklist of Specific Tasks for RSE’s TCP T5

| Item No. | Description |
|-----------|---|
| E5 | Check that all lower grade TCPs and RC’s 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 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 they are followed. |
| E12 | Check that stability and integrity of nearby buildings and ground are not adversely affected. |
| <i>En</i> | <i>Any other items considered essential by the RSE for the project, including those for quality supervision and other conditions imposed by the BA at approval and/or consent stage.</i> |
| F1 | Check that the locations of piles agree with approved plan. |
| F2 | Check that design assumptions agreed with actual site conditions during driving tests. |
| F3 | Check that the accepted working procedures of pile driving are followed and anomalies rectified during pile driving. |
| F4 | Check the accuracy of design details during pile splicing. |
| F5 | Check that the required final set has been achieved and the capacity of each pile complied with approved plans. |
| F6 | Check that the testing procedures and acceptance criteria of proof tests are in accordance with PNAP APP-18 (previously PNAP 66) and measurements are properly recorded during the test. |

Sample 5

P.2 of Sample 5

Form A

**Record of Specific Tasks Performed by
TCP under ~~AP/RSE/RGE/RC~~* stream**

BD Ref. SM/0000/11

Project ABC Centre

Type of Works Driven Steel H-Pile Works

Name Mr X X Lee

Grade of TCP T5 **Frequency of Inspection** weekly

| Date DD/MM/YY | 5/6/02 (Wed) | 12/6/02 (Wed) | 19/6/02 (Wed) | 26/6/02 (Wed) | 3/7/02 (Wed) | 10/7/02 (Wed) | 17/7/02 (Wed) |
|------------------|---------------------|------------------|------------------|------------------|-----------------|------------------|------------------|
| Item No.# | S/NS | S/NS | S/NS | S/NS | S/NS | S/NS | S/NS |
| E5 | S | S | | | | | |
| E6 | S | S | | | | | |
| E9 | S | S | | | | | |
| E12 | S | S | | | | | |
| En | S | S | | | | | |
| F1 | S | S | | | | | |
| F2 | ^S P12 | --- | | | | | |
| F3 | S | S | | | | | |
| F4 | S | S | | | | | |
| F5 | ^S P12 | --- | | | | | |
| F6 | --- | --- | | | | | |
| 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 6

P.1 of Sample 6

BD Ref. SM/0000/11

Project XYZ Centre

Type of Works Class I Minor Works – Item 1.1 (Erection of Internal Staircase)

Typical Items for the Checklist of Specific Tasks for RSE’s TCP T3

| Item No. | Description |
|-----------|---|
| E1 | Establish system for communicating with other TCPs. |
| 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. |
| 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 RC does not comply with rectification instructions. |
| E5 | Check that all RC’s 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 Supervision. |
| E6 | Check and satisfy that copies of approved plans (or submitted plans for minor works), method statements, precautionary and protective measures proposals and all related drawings are kept on site; and that they are followed. |
| <i>En</i> | <i>Any other items considered essential by the RSE for the project.</i> |

Sample 6

P.2 of Sample 6

Form A

**Record of Specific Tasks Performed by
TCP under ~~AP/RSE/RGE/RC~~* stream**

BD Ref. SM/0000/11

Project XYZ Centre

Type of Works Class I Minor Works – Item 1.1 (Erection of Internal Staircase)

Name Mr X X Chan

Grade of TCP T3 **Frequency of Inspection** weekly

| Date DD/MM/YY | 7/6/10 (Mon) | 14/6/10 (Mon) | 21/6/10 (Mon) | 28/6/10 (Mon) | 5/7/10 (Mon) | 12/7/10 (Mon) | 19/7/10 (Mon) |
|-------------------------|-----------------|------------------|------------------|------------------|-----------------|------------------|------------------|
| Item No.# | S/NS | S/NS | S/NS | S/NS | S/NS | S/NS | S/NS |
| E1 | S | S | S | S | S | S | |
| E3 | S | S | S | S | S | S | |
| E4 | S | S | S | S | S | S | |
| E5 | S | S | S | S | S | S | |
| E6 | S | S | S | S | S | S | |
| <i>En</i> | S | S | S | S | S | S | |
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| 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)

BD Ref. SM/0000/11

Project XYZ Centre

Type of Works Class I Minor Works – Item 1 (Erection of Internal Staircase)

Typical Items for the Checklist of Specific Tasks for RC’s TCP T1

| Item No. | Description |
|-----------|---|
| C1 | Establish system for communicating with other TCPs. |
| 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. |
| C6 | Check that there is no excessive debris on floor slabs and against external walls for demolition works. |
| C12 | Check and satisfy that copies of approved plans (or submitted plans for minor works), method statements, precautionary and protective measures proposals and all related drawings are kept on site; and that they are followed. |
| C23 | Instruct rectification of non-conformity and monitor rectification measures. |
| C24 | Report to relevant parties when non-conformity is observed and rectified. |
| <i>Cn</i> | <i>Any other items considered essential by the RC for the project.</i> |

Sample 7

P.2 of Sample 7

Form A

**Record of Specific Tasks Performed by
TCP under ~~AP/RSE/RGE/RC~~ * stream**

BD Ref. SM/0000/11

Project XYZ Centre

Type of Works Class I Minor Works – Item 1 (Erection of Internal Staircase)

Name Mr X X Lee

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

| Date DD/MM/YY | 7/6/10 (Mon) | 8/6/10 (Tue) | 9/6/10 (Wed) | 10/6/10 (Thu) | 11/6/10 (Fri) | 12/6/10 (Sat) | 13/6/10 (Sun) |
|------------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|------------------|
| Item No. # | S/NS | S/NS | S/NS | S/NS | S/NS | S/NS | S/NS |
| C1 | S | S | S | S | S | S | |
| C4 | S | S | S | S | S | S | |
| C6 | S | S | S | S | S | S | |
| C12 | S | S | S | S | S | S | |
| C23 | S | S | S | S | S | S | |
| C24 | S | S | S | S | S | S | |
| Cn | 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)

Appendix VII

Qualifications of Competent Person (Logging) and TCPs (GIFW)

Qualifications of Competent Person (Logging) and TCPs (GIFW)

- 1.0 (i) The Competent Person (Logging) shall either be (a) a degree holder in geology (see Note 1) or a cognate subject (see Note 2) in which at least 50% of the course content comprises geological based subjects (see Note 3) with not less than 3 years of post-qualification experience in ground investigation which must include logging of samples; or (b) a degree holder in geology or a cognate subject in which at least 25% of the course content comprises geological based subjects with not less than 5 years of post-qualification experience in ground investigation which must include logging of samples.

New applicants for Competent Person (Logging) will be required to submit documentary evidence in support of their core logging experience (e.g. submission of logs that the applicant has produced, including a brief statement of 2-3 pages explaining the technical aspects in preparing such logs and the reasons for choosing the submitted logs to support his/her application).

Note 1 Examples of degree in geology are applied geology, earth science, engineering geology, geological sciences, geology, mining geology and petroleum geology. The degree should be awarded by universities funded by the University Grants Committee. Otherwise the academic qualification should be assessed by the Hong Kong Council for Accreditation of Academic and Vocational Qualifications (formerly Hong Kong Council for Academic Accreditation) as up to a local degree level.

Note 2 Examples of cognate subjects are environmental science, geography, geomorphology, geotechnical engineering, mining and soil science.

Note 3 Examples of geological based subjects are applied geology, earth dynamics, earth systems, economic/mining geology, engineering geology, environmental geology, field camp/field school/field mapping, geochemistry, geomorphology, earth/surficial processes, landform/quatarnary geology, geophysics, historical geology,

hydrogeology, mineralogy, palaeontology, petroleum geology, petrology (igneous, metamorphic and sedimentary), physical geology, physics of the Earth, plate tectonics, regional geology, rock mechanics, sedimentology/principles of sedimentation, stratigraphy, soil mechanics and structural geology. An applicant who holds a degree in geology or a cognate subject in which at least 25% but less than 50% of the course content comprises geological based subjects is considered to have topped up the geological based subjects in his or her degree to at least 50% if he or she has obtained a recognized relevant post-degree qualification (e.g. Post-graduate Diploma in Earth Sciences at the University of Hong Kong or equivalent).

- (ii) A person who has already been accepted as a Logging Geologist under the Development Bureau's List of Approved Suppliers of Materials and Specialist Contractors for Public Works in the Category of Ground Investigation Field Works may also be a competent person for logging of samples and preparation of borehole logs.

Definition of Degree in geology which covers the specified engineering related subjects

- 2.0 A degree in geology which covers the specified engineering related subjects shall mean a degree in geology which should have at least three of its modules covering any three or more of the following subjects: soil mechanics, rock mechanics, engineering geology, hydrogeology, applied geoscience and foundation engineering.

Appendix VIII

Administrative Procedures for Ground Investigation Field Works

| Administrative Procedures for Ground Investigation Field Works | | |
|---|---|---|
| Item | Procedure | Detailed Requirements |
| 1. | Appointment of AP/RSE/RGE | AP is required to be appointed as the co-ordinator of the works by the submission of specified Form BA 4. RSE/RGE may also be appointed as necessary. The geotechnical consultant responsible for preparation of the geotechnical content of the future submission of foundation, site formation, excavation or other plans or geotechnical assessments should be involved at this stage and work under the direction of the AP and/or RSE/RGE. |
| 2. | Submission of ground investigation plans for approval and consent | Ground investigation plans, indicating the extent of works to be carried out, are required to be submitted in all cases. In the case within scheduled areas, approval and consent under the Buildings Ordinance will be followed whereas in the non-scheduled areas, approval and consent is not required by virtue of s.41(3) of the BO. Nevertheless the ground investigation plan will be useful for BA's record and for the assessment of level of supervision required. |
| 3. | Submission of Form BA 10 notifying the commencement of work | The RSC(GIFW) is required to submit Form BA 10 which has been signed by the RSC(GIFW) and endorsed by the AP. Form BA 11 and a new Form BA 10 are required if there is a change of contractor during the course of the work. |
| 4. | Submission of Site Supervision Plan | <p><u>For Scheduled Areas</u></p> <p>A supervision plan is required to be submitted prior to or at the time of consent application for commencement of ground investigation field works. The plan should specify the name of TCPs and CP(Logging) appointed and the frequency of inspection and/or extent of supervision for GIFW.</p> <p><u>For Non-Scheduled Areas</u></p> <p>Prior to or at the same time of submission of Form BA 10, a supervision plan is required to be submitted, specifying the name of TCPs and CP(Logging) appointed and the frequency of inspection and/or extent of supervision for ground investigation field works. No prior approval of the supervision plan is required before the works are commenced. The AP/RGE/RSC should ensure that their TCPs satisfy the qualification and experience requirements specified, and should notify the BA of any subsequent changes of supervisors.</p> |

| Item | Procedure | Detailed Requirements |
|------|--|--|
| 5. | Submission of Form BA 14 notifying the completion of work | Form BA 14 is required to be submitted by the RSC(GIFW), AP and RGE upon completion of the ground investigation field works. |
| 6. | Submission of ground investigation reports in support of the approval of foundation, site formation, excavation or other proposals or geotechnical assessments | <p>The ground investigation report shall include the following:</p> <ul style="list-style-type: none"> (a) a certificate from the authorized signatory of the RSC (GIFW) confirming that: <ul style="list-style-type: none"> (i) the RSC(GIFW) is responsible for the works stated in the report and that the works have been conducted according to GEOGUIDE 2 and 3; (ii) the works have been carried out under supervision in accordance with the requirements stipulated and the supervision plan submitted; (iii) the logging of samples and preparation of borehole logs in accordance with GEOGUIDE 3 have been carried out by a Competent Person; and (iv) the field density tests and other tests of samples have been conducted by a HOKLAS accredited laboratory. (b) a certificate from the RGE that he has provided supervision in accordance with the requirements stipulated and the supervision plan submitted. (c) copies of the Form BA 10 and BA 14 previously submitted for BD's information in view of possible time lapse between the completion of ground investigation and the submission of foundation plans etc. for approval; and (d) a proper surveyed record of the boreholes. <p>The relevant foundation, site formation, excavation or other plans may be disapproved if the ground investigation report is found not acceptable or not including the above information.</p> |

Certificate of Compliance/Certificate of Supervision

(for inclusion in ground investigation report)

Project name & No. :
Contract name & No.:
Works Order No. :
Client :

Part 1 : Certificate of Compliance *(to be completed by Authorized Signatory)*

I, the person appointed to act for the registered specialist contractor (ground investigation field works category) (name in full) _____ (Chinese) _____, certify that :-

- (i) we are responsible for the works stated in the report and that the works have been conducted according to GEOGUIDE 2 and 3;
- (ii) the works have been carried out under our supervision in accordance with the requirements stipulated and the Supervision Plan for Ground Investigation Field Works submitted to the Building Authority;
- (iii) the logging of samples and preparation of borehole logs in accordance with GEOGUIDE 3 have been carried out by a Competent Person; and
- (iv) the field density tests and other tests of samples have been conducted by a HOKLAS accredited laboratory. (*)

Name of the RSC (GIFW) :
Certificate of Registration No. :
Date of expiry of registration :
Signature (date) :

Part 2 : Certificate of Supervision *(to be completed by Registered Geotechnical Engineer)*

I, the Registered Geotechnical Engineer (name in full) _____ (Chinese) _____, certify that I have provided supervision in accordance with the requirement stipulated in the Supervision Plan for Ground Investigation Field Works submitted to the Building Authority.

Certificate of Registration No. :
Date of expiry of registration :
Signature (date) :

* Delete where appropriate

Appendix IX

Key Records on Quality Supervision of Soil Nailing Works

Key Records on Quality Supervision of Soil Nailing Works

| | |
|--------------|--------------------|
| BD File Ref. | Slope No./Ref. |
| Location | |
| Name of RGE | Name of Contractor |

| Nail No. | Total Length of Reinforcement (m) | | Actual Diameter at Mouth of Hole (mm) | Date & Signature | Grout Volume (litre) | | | Anomalies Observed During Nail Installation and Action Taken. (All observed anomalies must be reported to RGE or TCP T5 immediately.) (Please use separate sheet to give details) |
|----------|-----------------------------------|--------|---------------------------------------|------------------|----------------------|--------|------------------|---|
| | Design | Actual | | | Design | Actual | Date & Signature | |
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Note : Prior to installation of the soil nail head, photographic records of the condition of the grout at the top of the soil nail should be taken; a scale or measuring tape should be included to show the as-built diameter of the installed nail.

Name of TCP T3 nominated by RGE: _____

Specimen Signature: _____

Appendix X

**TCP Qualifications and Experience
Accepted during Transitional Period
before 22 December 2005**

or

**Accepted pursuant to the Corresponding
Recognition and Requirements
Prescribed in Paragraph 8 of this Code**

Qualifications and experience for TCP accepted during transitional period before 22 December 2005 or accepted pursuant to the corresponding recognition and requirements prescribed in paragraph 8 of this Code are listed as follows:

1. A person who is a corporate member of the Hong Kong Institute of Clerks of Works (HKICW) or the Chartered Institute of Building (CIOB) may be appointed as TCP of grade T3 to T1 in accordance with Tables 1 and 2 (with Notes) below, provided that he has the required relevant working experience.

| Table 1 | | | | |
|---|------------------------------|-------------------------------|-------------------------------|------------------------------------|
| Eligibility of Corporate Member of HKICW or CIOB as TCP T3 to T1 (with academic background in building surveying, building or architectural studies) | | | | |
| Type of Building Works or Street Works | TCP T3 in AP's Stream | TCP T3 in RSE's Stream | TCP T3 in RGE's Stream | TCP T3 to T1 in RC's Stream |
| GIFW | Yes | N/A | No | No |
| Building Works with significant geotechnical content | Yes | No | No | No |
| Foundation Works | Yes | No | No | No |
| Street Works or all Building Works, (other than the above types of works and Minor Works) | Yes | No | No | Yes |
| Class I Minor Works | Yes | No | No | Yes |

| Table 2 | | | | |
|---|------------------------------|-------------------------------|-------------------------------------|------------------------------------|
| Eligibility of Corporate Member of HKICW or CIOB as TCP T3 to T1 (with academic background in civil/structural/geotechnical engineering) | | | | |
| Type of Building Works or Street Works | TCP T3 in AP's Stream | TCP T3 in RSE's Stream | TCP T3 to T2 in RGE's Stream | TCP T3 to T1 in RC's Stream |
| GIFW | Yes | N/A | No | No |
| Building Works with significant geotechnical content | Yes | Yes | Yes | Yes |
| Foundation Works | Yes | Yes | Yes | Yes |
| Street Works or all Building Works, (other than the above types of works and Minor Works) | Yes | Yes | Yes | Yes |
| Class I Minor Works | Yes | Yes | Yes | Yes |

Note: For eligibility of a corporate member of HKICW or CIOB as T4, please refer to TCP qualifications and experience in paragraph 8 of this Code.

- 2(a) A person who is an associate member of the Hong Kong Institution of Engineers of a relevant discipline for not less than two years may be appointed as TCP of grade T3 to T1 for street works or building works.
- 2(b) A person who is an associate member of the Chartered Institute of Building (ACIOB) with a duly recognized higher certificate or higher diploma of the relevant prescribed qualification in Table 8.6 of this Code, and with not less than five years relevant experience, may be appointed as TCP of grade T3 in the RC's stream to perform the corresponding work types specified in that table.
- 3(a) During the early implementation stage of the Supervision Plan System before 22 December 2005, site supervisory personnel who did not meet the required academic qualifications as specified in the Technical Memorandum, but had sufficient years of relevant experience as per part (a) of Table 3 (with Notes) below, attended top-up training courses organized by Vocational Training Council (VTC) or the Construction Industry Council Training Academy (CICTA) (formerly the Construction Industry Training Authority (CITA)) and acquired an Equivalent Certificate would be accepted to possess equivalent qualifications as specified in the Technical Memorandum on a permanent basis. He can be appointed as TCP of grade T3 to T1 in the respective streams in accordance with part (a) of Table 4 below.
- 3(b)(i) As the industry has raised that there is shortage in the supply of TCP T1, there is a need for organizing a "Technically Competent Person T1 Training Course", similar to previous top-up courses, to enhance the technical ability of site supervisory personnel working in the industry but do not meet the required academic qualifications as specified in the Technical Memorandum, so that they can perform the duties of TCP T1. A person who has relevant prior experience of not less than 5 years is eligible to attend the "Technically Competent Person T1 Training Course" offered by the HK Institute of Vocational Education (HKIVE) or the Construction Industry Council Training Academy (CICTA) and upon acquiring the "TCP T1 Certificate" will be accepted to possess equivalent qualifications required for a TCP T1 on a permanent basis. He may be appointed as TCP of grade T1 in accordance with part (b) of Table 3 (with Notes) and Table 4 below.
- 3(b)(ii) With the introduction of minor works as a type of building works different from the major works in the Technical Memorandum, to facilitate site supervisory personnel working in the industry who do not meet the required

academic qualifications as specified in the Technical Memorandum but would like to continue their current role to supervise minor works only, if they have relevant prior experience of not less than 5 years, they would be eligible to attend the “Technically Competent Person T1 (Minor Works) Training Course” offered by the HKIVE or the CICTA and upon acquiring the “TCP T1 (Minor Works) Certificate” will be accepted to possess equivalent qualifications required for a TCP T1 for supervision of minor works only on a permanent basis. Any such person may be appointed as TCP of grade T1 for supervision of minor works only in accordance with part (b) of Table 3 (with Notes) and Table 4 below.

| Table 3 | | | | |
|--|--|----------------------------------|--|--|
| (a) The Equivalent Certificate acquired in the top-up training course organized by VTC or CITA for TCP T3 to T1 | | | | |
| Topping-up Training Courses to be completed | | Certificates Awarded | Relevant Working Experience (counted in full) | Grades of TCP for types of works in Table 4 |
| Module No. | Subject | | | |
| Module 3 | Construction Supervision (I) | Equivalent Certificate (1) | 5 ¹ | T1 |
| Module 4 | Construction Supervision (II) | | | |
| Module 3 | Construction Supervision (I) | Equivalent Certificate (2) | 8 ² | T2 ⁴ |
| Module 4 | Construction Supervision (II) | | | |
| Module 5.1 | Specialist Works (Demolition) ⁴ | | | |
| Module 5.2 | Specialist Works (Foundation) ⁴ | | | |
| Module 5.3 | Specialist Works (Site Formation & Slope Repairs) ⁴ | Equivalent Certificate (3) | 12 ³ | T3 ⁵ |
| Module 3 | Construction Supervision (I) | | | |
| Module 4 | Construction Supervision (II) | | | |
| Module 6.1 | Introduction to Specialist Works | | | |
| Module 6.2 | Administration and Management | | | |
| (b) The certificate acquired in the TCP T1 or TCP T1 (Minor Works) Training Course organized by HKIVE or CICTA | | | | |
| (i) | Technically Competent Person T1 Training Course | TCP T1 Certificate | 5 ⁶ | T1 |
| (ii) | Technically Competent Person T1 (Minor Works) Training Course | TCP T1 (Minor Works) Certificate | 5 ⁶ | T1 (Minor Works) |

Notes: ¹ 5 years relevant working experience must have been gained within the previous 8 years and at least 1 year must be local site experience.

² 8 years relevant working experience must have been gained within the previous 11 years and at least 1 year must be local site experience.

³ 12 years relevant working experience must have been gained within the previous 15 years and at least 1 year must be local site experience.

⁴ A TCP T2 can only supervise the type of specialist works (Demolition works, Foundation works, or Site Formation & Slope Repair Works) when he has duly completed the training module in the Module 5 series corresponding to the specialist works and obtained the relevant certificate.

- 5 If a TCP T3 wishes to take up duties of any of the T2 specialist works mentioned in Note 4, he must also complete the training module corresponding to the specialist works and obtain the Equivalent Certificate (2).
- 6 5 years relevant working experience must have been gained within the previous 8 years and at least 1 year must be local site experience. For GIFW, relevant experience shall be confined to GI works only.

| Table 4 | | | | | | | |
|---|------------------------------|-------------------------------|-------------------------------|------------------------------|------------------------------------|--|--|
| (a) Eligibility of site supervisory personnel as TCP T3 to T1, with Equivalent Certificate in top-up training course, organized by VTC or CITA | | | | | | (b) Eligibility of site supervisory personnel as TCP T1 or TCP T1 (Minor Works), with certificate in the training course, organized by HKIVE or CICTA | |
| | | | | | | (i) TCP T1 Certificate | (ii) TCP T1 (Minor Works) Certificate |
| Type of Building Works or Street Works | TCP T3 in AP's Stream | TCP T3 in RSE's Stream | TCP T3 in RGE's Stream | TCP T3 in RC's Stream | TCP T2 to T1 in RC's Stream | TCP T1 in RC's Stream | TCP T1 (Minor Works) in RC's Stream |
| GIFW | No | N/A | No | N/A | No | Yes | No |
| Building Works with significant geotechnical content | No | No | No | N/A | Yes | Yes | No |
| Foundation Works | No | No | N/A | N/A | Yes | Yes | No |
| Street Works or all Building Works (other than the above types of works and Minor Works) | Yes | Yes | N/A | Yes | Yes | Yes | No |
| Class I Minor Works | Yes | Yes | N/A | Yes | Yes | Yes | Yes |

4. A person who is an Affiliate (Site Supervision) of the Hong Kong Institute of Architects (HKIA) may be appointed as TCP of grade T3 in accordance with Table 5 below, provided that he has the required relevant working experience.

| Table 5 | | |
|--|------------------------------|------------------------------|
| Eligibility of HKIA Affiliate (Site Supervision) as TCP T3 with 2 years of post Affiliate experience (with academic background in architectural or building construction related studies) | | |
| Type of Building Works or Street Works | TCP T3 in AP's Stream | TCP T3 in RC's Stream |
| GIFW | Yes | N/A |
| Building Works with significant geotechnical content | Yes | N/A |
| Foundation Works | Yes | N/A |
| Street Works or all Building Works (other than the above types of works and Minor Works) | Yes | Yes |
| Class I Minor Works | Yes | Yes |

5. A person who is a member in the building or civil engineering disciplines of the Hong Kong Institute of Construction Managers (HKICM) may be appointed as TCP of grades T4 to T1 in accordance with Table 6 (with Notes) below, provided that he has the required relevant working experience.

| Table 6 | | | | |
|---|---|---|---------------------|---|
| Eligibility of Member of HKICM as TCP T4 to T1 (with academic background in building or civil engineering) | | | | |
| Type of Building Works or Street Works | RC's Stream | | | |
| | Construction Supervisor Member as TCP T1 | Associate as TCP T2 | Associate as TCP T3 | Corporate Member as TCP T4 |
| GIFW | No | N/A | N/A | No |
| Building Works with significant geotechnical content | Civil | Civil | N/A | Civil |
| Foundation Works | Building (except for piling works) or Civil | Building (except for piling works) or Civil | N/A | Building (except for piling works) or Civil |
| Street Works or all Building Works, (other than the above types of works and Minor Works) | Building or Civil | N/A | Building or Civil | Building or Civil |
| Class I Minor Works | Building or Civil | N/A | Building or Civil | N/A |

Notes: The above recognition is based on the following entrance requirements for the various classes of membership of HKICM:

- (i) Construction Supervisor Members, who have attained the academic and working experience requirements as stipulated in section 2.4.2 and 6.4 of HKICM's Membership Handbook (June 2005);
- (ii) Associates, who have attained the academic and working experience requirements as stipulated in section 2.3.2, 6.1.3, 6.1.4, 6.2.3 and 6.2.4 of HKICM's Membership Handbook (June 2005); and
- (iii) Corporate Members, who have fulfilled the academic requirements and have had post qualification professional experience as stipulated in section 2.2.2.1, 6.1.1, 6.1.2, 6.2.1 and 6.2.2 of HKICM's Membership Handbook (June 2005).
(Only the degree programmes listed in section 6.1.2 and 6.2.2 of HKICM's Membership Handbook (June 2005) tally with the academic requirements in paragraph 8.19(c) and Table 8.7 of this Code.)

6. A person who is a corporate member or fellow of the Institute of Clerks of Works and Construction Inspectorate (Hong Kong) (formerly Institute of Clerks of Works of Great Britain Incorporated (Hong Kong Branch)) in the civil/structural engineering or building/architectural studies disciplines may be appointed as TCP of grade T3 in accordance with Table 7 and

Table 8 (with Notes) below, provided that he has the required relevant working experience.

| Table 7 | | |
|---|------------------------------|------------------------------|
| Eligibility of Corporate Member or Fellow of the Institute of Clerks of Works and Construction Inspectorate (Hong Kong) as TCP T3 with 3 years of post-qualification experience (with academic background in civil/structural engineering or building/architectural studies) | | |
| Type of Building Works or Street Works | TCP T3 in AP's Stream | TCP T3 in RC's Stream |
| GIFW | Yes | N/A |
| Building Works with significant geotechnical content | Yes | N/A |
| Foundation Works | Yes | N/A |
| Street Works or all Building Works (other than the above types of works and Minor Works) | Yes | Yes |
| Class 1 Minor Works | Yes | Yes |

| Table 8 | |
|---|-------------------------------|
| Eligibility of Corporate Member or Fellow of the Institute of Clerks of Works and Construction Inspectorate (Hong Kong) as TCP T3 with 3 years of post-qualification experience (with academic background in civil/structural engineering) | |
| Type of Building Works or Street Works | TCP T3 in RSE's Stream |
| GIFW | N/A |
| Building Works with significant geotechnical content | Yes |
| Foundation Works | Yes |
| Street Works or all Building Works (other than the above types of works and Minor Works) | Yes |
| Class 1 Minor Works | Yes |

Notes: The above recognition is based on the admission of corporate member or fellow of the Institute of Clerks of Works and Construction Inspectorate (Hong Kong) in the civil/structural or building/architectural studies disciplines by exemption through associated professional institutes which is limited to the following qualifications:

- (i) Associate Member of the Chartered Institute of Building in the construction management disciplines;
- (ii) Corporate Member of the Institution of Civil Engineers;
- (iii) Corporate Member of the Institution of Structural Engineers;

- (iv) Corporate Member of the Royal Institute of British Architects; and
 - (v) Corporate Member of the Royal Institution of Chartered Surveyors in the building surveying discipline.
7. The course of “Higher Diploma in Construction Engineering and Management”, offered by Department of Construction in HK Institute of Vocational Education (HKIVE), is recognised to be an acceptable academic qualification equivalent to a higher diploma in building studies under the Supervision Plan System in accordance with the Code.
8. A person who is a Technical Associate in the building surveying division of the Hong Kong Institute of Surveyors (HKIS) may be appointed as TCP of grade T3 in accordance with Table 9 below, provided that he has the required relevant working experience.

| Table 9 | | |
|--|------------------------------|------------------------------|
| Eligibility of Technical Associate in Building Surveying Division of HKIS as TCP T3 with 3 years of post-qualification experience | | |
| Type of Building Works or Street Works | TCP T3 in AP’s Stream | TCP T3 in RC’s Stream |
| GIFW | Yes | N/A |
| Building Works with significant geotechnical content | Yes | N/A |
| Foundation Works | Yes | N/A |
| Street Works or all Building Works (other than the above types of works and Minor Works) | Yes | Yes |
| Class I Minor Works | Yes | Yes |

9. The course of “Higher Diploma in Urban Renewal, Building Inspection and Maintenance” and “Higher Diploma in Architectural Design and Technology”, offered by Department of Construction in HK Institute of Vocational Education (HKIVE), are considered to be equivalent to a higher diploma in building studies and architectural studies disciplines respectively; and can be recognised as an acceptable academic qualification fulfilling the minimum qualifications for TCP T3 for site supervision, only for the streams of AP and RC, as stipulated in the Technical Memorandum and under paragraph 8.20 of the Code.