Dear Sir / Madam

GUIDELINES ON PRE-CONSTRUCTION SURVEY PRIOR TO CARRYING OUT CONSTRUCTION WORKS

Objective

This circular is to inform the industry of guidelines on carrying out pre-construction survey before commencing the prescribed types of construction works.

Background

2 Regulation 32(1) of the Building Control Regulations requires that where any demolition of any building, or any piling or foundation works, any tunnelling works, or any site formation works (including excavation works) are to be constructed or carried out, the builder shall, before commencing such works, carry out a pre-construction survey to establish the condition of existing buildings and structures adjacent or in otherwise close proximity to the building works.

3 A series of dialogue sessions with the Institution of Engineers Singapore and Association of Consulting Engineers Singapore were held to discuss and work out a set of guidelines on pre-construction survey when carrying out project developments. The objectives of the guidelines are to provide guidance on the extent of pre-construction surveys and good practices for the industry when carrying out pre-construction surveys.

Guidelines on pre-construction survey for project developments

4 The Guidelines contain five sections on good practices for pre-construction survey prior to carrying out the following construction works, namely:
   a)  Section A : Demolition works;
   b)  Section B : Piling works;
   c)  Section C : Excavation works;
   d)  Section D : What builder should do if entry for pre-construction survey is not possible
   e)  Section E : Areas of responsibility when there are more than one builder in the project.
5 A summary of the guidelines is in the Annex attached, and an illustrated copy can be obtained from BCA’s website at: http://www.bca.gov.sg/Professionals/BuildingControl/building_control.html

For Clarification

6 If you need any clarification, please contact me or Mr Lim Shiyi at Tel 1800-3425222 or email bca_enquiry@bca.gov.sg. Thank you.

Yours faithfully

ER: DR POH TEOH YAW
DEPUTY DIRECTOR, BUILDING ENGINEERING GROUP
for COMMISSIONER OF BUILDING CONTROL
ANNEX

Guidelines on Pre-construction Survey for Project Developments

1. These guidelines outline the minimum zones for pre-construction survey to be conducted for project developments where any demolition of any building, or piling or foundation works, tunnelling works, or site formation works (including excavation works) are to be constructed or carried out, and good practices when carrying out pre-construction surveys.

Section A: Guidelines for Demolition Works
- Demolition for landed development
- Demolition for building up to five storey height
- Demolition for building more than five storey height

Section B: Guidelines for Piling Works
- Non-displacement and small displacement piles for landed development
- Displacement piles for landed development
- Non-displacement and small displacement piles for non-landed development
- Displacement piles for non-landed development

Section C: Guidelines for Excavation Works
- Excavation for landed development
- Excavation for non-landed development with basement or underground space

Section D: Guidelines on what builder should do if entry for pre-construction survey is not possible

Section E: Areas of responsibility when there are more than one builder in the project

2. The builder should carry out the pre-construction survey and investigation in consultation with the Qualified Person (QP). The QP should determine adequacy of the extent and scope of survey, including consideration for the need to survey the pre-existing tilt of buildings. The QP should review the survey report and identify any pre-existing structural defect for all the buildings being surveyed. As part of the impact assessment report required under Regulation 33, the QP shall specify on plan the necessary preventive and protective measures to be taken to prevent damage to the adjacent buildings arising from the works.

Section A: Guidelines for Demolition Works

Demolition for landed development

3. The pre-construction survey shall be carried out for a zone of not less than 10 metres from the edge of the building to be demolished.
Demolition for building up to 5 storey height
4. The pre-construction survey shall be carried out for a zone of not less than 35 metres from the edge of the building to be demolished. Demolition of substructure below ground water level, if any, will be classified under ERSS works.

Demolition for building more than 5 storey height
5. The pre-construction survey shall be carried out for a zone of not less than 50 metres from the edge of the building to be demolished. Demolition of substructure below ground water level, if any, will be classified under ERSS works.

6. Table 1 summarises the guidelines for demolition works.

Table 1. Guidelines for Demolition Works

<table>
<thead>
<tr>
<th>Type of Development</th>
<th>Guidelines for Demolition Works</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum zone of pre-construction survey (from the edge of building to be demolished)</td>
</tr>
<tr>
<td>Demolition for landed development</td>
<td>10 m</td>
</tr>
<tr>
<td>Demolition for building up to 5 storey height</td>
<td>35 m</td>
</tr>
<tr>
<td>Demolition for building more than 5 storey height</td>
<td>50 m</td>
</tr>
</tbody>
</table>

Section B: Guidelines for Piling Works

Piling works for landed development
7. Piling works for landed development are classified into 2 categories as follows:

(a) Non-displacement and small displacement piles (E.g. Micro bored piles, steel H-piles)
The pre-construction survey shall be carried out for a zone of not less than 10 metres from the project site boundary for landed development.

(b) Displacement piles (E.g. RC piles, jacked-in steel pipe piles (closed ended))
The pre-construction survey shall be carried out for a zone of not less than 20 metres from the project site boundary for landed development.

Piling works for non-landed development
8. Piling works for non-landed development are classified into 2 categories as follows:

(a) Non-displacement and small displacement piles (E.g. Micro bored piles, steel H-piles)
The pre-construction survey shall be carried out for a zone of not less than 40 metres from the project site boundary for non-landed development.
(b) Displacement piles (E.g. RC piles, jacked-in steel pipe piles (closed ended))
The pre-construction survey shall be carried out for a zone of not less than 60 metres from the project site boundary for non-landed development.

9. Table 2 and Table 3 summarise the guidelines for piling works for landed development and non-landed development.

### Table 2. Guidelines for Piling Works – Landed Development

<table>
<thead>
<tr>
<th>Type of Piles</th>
<th>Guidelines for Piling Works for Landed Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum zone of pre-construction survey</td>
<td></td>
</tr>
<tr>
<td>Non-displacement piles and small displacement piles such as micro bored pile, steel H-piles</td>
<td>10 m</td>
</tr>
<tr>
<td>Displacement piles such as RC piles, jacked-in steel pipe piles (closed ended)</td>
<td>20 m</td>
</tr>
</tbody>
</table>

### Table 3. Guidelines for Piling Works – Non-Landed Development

<table>
<thead>
<tr>
<th>Type of Piles</th>
<th>Guidelines for Piling Works for Non-Landed Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum zone of pre-construction survey</td>
<td></td>
</tr>
<tr>
<td>Non-displacement piles and small displacement piles such as bored pile, steel H-piles</td>
<td>40 m</td>
</tr>
<tr>
<td>Displacement piles such as RC piles, spun piles, jacked-in steel pipe piles (closed ended)</td>
<td>60 m</td>
</tr>
</tbody>
</table>

### Section C: Guidelines for Excavation Works

10. In carrying out detailed impact assessment to define the extent of the pre-construction survey in conjunction with the builder, QP(Design) may carry out detailed assessment to define the extent of preconstruction survey on a case-by-case basis. The QP shall consider the following as a minimum unless substantiated with appropriate justification.

#### Excavation for landed development

11. The pre-construction survey shall be carried out for a zone of not less than 15 metres from the project site boundary surrounding the site.
Excavation for non-landed development with basement or underground space

12. For development founded on good soils (i.e. medium dense to very dense sand and gravel, and firm to hard silt and clay), the pre-construction survey shall be carried out for a zone of not less than 30 metres from the project site boundary, or 3 times the maximum excavation depth (including localise pits), whichever is the larger of the 2 values.

13. For development founded on soft soils (e.g. marine clay) without fluvial sand / peat / peaty clay, the pre-construction survey shall be carried out for a zone of not less than 60 metres from the project site boundary, or 6 times the maximum excavation depth (including localise pits), whichever is the larger of the 2 values.

14. For development founded on soft soils with fluvial sand / peat / peaty clay, the pre-construction survey shall be carried out for a zone of not less than 90 metres from the project site boundary, or 9 times the maximum excavation depth (including localise pits), whichever is the larger of the 2 values.

15. Table 4 summarises the guidelines for excavation works for landed development and other development with basement or underground space.

<table>
<thead>
<tr>
<th>Table 4. Guidelines for Excavation Works</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Development</td>
</tr>
<tr>
<td>Minimum zone of pre-construction survey^</td>
</tr>
<tr>
<td>Landed development</td>
</tr>
<tr>
<td>Non-landed development with basement or underground space</td>
</tr>
<tr>
<td>Types of Soils</td>
</tr>
<tr>
<td>Good soils*</td>
</tr>
<tr>
<td>Soft soils† (e.g. marine clay) without fluvial sand/peat/peaty clay</td>
</tr>
<tr>
<td>Soft soils† with fluvial sand/peat/peaty clay</td>
</tr>
</tbody>
</table>

Note:
1. Maximum excavation depth include localise pits;
2. ^For cases with two values, the larger of the two values should be adopted.
3. *Good soils refer to medium dense to very dense sand and gravel, and firm to hard silt and clay.
4. †Soft soils refer to very loose to loose sand and gravel, and very soft to soft silt and clay.
5. * H is defined as the maximum excavation depth.
Section D: Guidelines on what builder should do if entry for pre-construction survey is not possible

16. In the event that the builder is unable to gain entry to the properties in the zone of pre-construction survey, the builder shall –
   a) survey the exterior face of the property;
   b) keep records of attempts to contact relevant owners for permission to conduct preconstruction survey (e.g. records of registered mail);
   c) keep record of refusal by owner to allow access to conduct survey.

Section E: Areas of responsibility when there are more than one builder in the project

17. For projects with main Qualified Person (QP) and main Builder appointed for all 3 types of works (i.e. demolition, piling and excavation works), main builder to conduct pre-construction survey covering the largest of the minimum zones for the proposed 3 types of works

18. For projects with main Qualified Person appointed, but different QP and Builder are appointed for demolition, piling and excavation works, the main QP is to instruct the first appointed builder for the site to carry out pre-construction survey covering the largest of the minimum zones for the proposed 3 types of works. Each builder will be responsible for distributing the reports to the owners of the surrounding properties according to their respective zone of pre-construction survey for their works.

19. In the event that there are any damage to properties within the respective builder’s zone of pre-construction, developer/Qualified Person should facilitate the rectification works before the next type of works commence.
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