**BUILDING ENGINEERING GROUP**

**CHECKLIST FOR STRUCTURAL SUBMISSION (for Landed Properties only)**

This checklist aims to ensure that all administrative details have been attended to prior to the structural submissions for landed housing projects. This is to streamline the approval process in relation to administrative items.

**Project Reference:**  ST

**Project Title:**

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| **Common Documents to be Submitted**  (Please tick in the appropriate boxes)  Note: **⬛** implies that item is not applicable for that type of work | | | | **Demolition** | **Piling/Footing** | **ERSS/GBW** | **Super-structure** |
|
| **a)** | **BCA-BE-STAPPV01.XFD** (Application for Approval of Structural Plans) |  |  |  |  |  |  |
| **b)** | **URA PP/WP** (Provisional Permission or Written Permission) | | |  |  |  |  |
| **c)** | **BCA-LU-NAPPQP01 (**Notification of Appointment/Authorization of Qualified Person(s)/ Accredited Checker/Builder/Structural Engineer) | | |  |  |  |  |
| **d)** | **Plan Fee** (if applicable, correctly computed and paid) |  |  |  |  |  |  |
| **e)** | **BCA-BE-ENDPQP.XFD form** (Endorsement by the Qualified Person for Demolition Works) | | |  | **⬛** | **⬛** | **⬛** |
| **f)** | **BCA-BE-ENSPQP.XFD form** (Endorsement by the Qualified Person for Structural Works) | | |  |  |  |  |
| **g)** | **BCA-BE-ENSPPE.XFD form** (Endorsement by the Professional Engineer for Addition & Alteration Works) | | |  |  |  |  |
| **h)** | **BCA-BE-ENSPAC.XFD form** (Endorsement by the Accredited Checker) |  |  | **⬛** |  |  |  |
| **i)** | **BCA-BE-ENGBWQP.XFD form** (Endorsement by the Qualified Person for Geotechnical Building Works) | |  | **⬛** | **⬛** |  | **⬛** |
| **j)** | **BCA-BE-ENGBWAC.XFD form** (Endorsement by the Accredited Checker for Geotechnical Building Works) |  |  | **⬛** | **⬛** |  | **⬛** |
| **k)** | **Pre-Construction Survey** |  |  |  |  |  |  |
| **l)** | **Impact Assessment Report** (recommendations to be taken to prevent any settlement or movement which may impair the stability of or cause damage to any buildings/walls adjacent or in close proximity to the building works)   For piling, to include assessment on the feasibility of type of piling system adopted | | |  |  |  |  |
| **m)** | **Site Investigation Report** | | | **⬛** |  |  | **⬛** |
| **n)** | **Annex A1** (Summary for design and checking of structural elements) | | | **⬛** |  |  |  |
| **o)** | **Annex A2** (Summary for design and checking of structural elements) | | | **⬛** |  |  |  |
| **p)** | **ERSS\_Annex A** (Design considerations for ERSS) |  |  | **⬛** | **⬛** |  | **⬛** |
| **q)** | **Reference Structural Layout Plans** | | |  |  |  |  |
| **r)** | **Reference Architectural Plans** | | |  |  |  |  |

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| 1. **Drawings and Calculations to be Submitted for Demolition / A&A with Demolition**   (Please select the appropriate box for each of the item) | | | | | **N/A for this ST** | | | |
| **a)** | **Drawings** | |  |  |  | **Yes** | **No** | **N/A** |
|  | i) | Construction sequences | |  |  |  |  |  |
|  | ii) | Clear demarcation of structural members to be removed/retained | |  |  |  |  |  |
|  | iii) | Details of structural members including its connections | |  |  |  |  |  |
|  | iv) | Strutting/propping layout plan and details | |  |  |  |  |  |
|  | v) | Equipment used | |  |  |  |  |  |
|  | vi) | Instrumentation and monitoring plan | |  |  |  |  |  |
|  | vii) | Method of hacking to minimise vibration | |  |  |  |  |  |
|  | viii) | Details of hacking at the shared boundary wall, especially the treatment for removal of existing RC beam/slab and its reinforcement | |  |  |  |  |  |
|  | ix) | Hoarding plan and details | |  |  |  |  |  |
|  | x) | Precautionary measures to prevent water ingress at the exposed shared boundary wall/roof after demolition of the building | |  |  |  |  |  |
|  | xi) | Endorsed by QP with appropriate declarations (Section 10B or A&A) | |  |  |  |  |  |
| **b)** | **Calculations** | | | | | | | |
|  | i) | Design check on the structural stability & integrity of remaining adjacent property, due to the demolition, e.g. demolition of one unit of semi-detached house/terrace house | |  |  |  |  |  |
|  | ii) | Design of structural elements affected by the partial demolition work, e.g. double volume columns, removal of framing/supports that require redesigning | |  |  |  |  |  |
|  | iii) | Construction stages including removal stages | |  |  |  |  |  |
|  | iv) | Design for strengthening of existing structural elements | |  |  |  |  |  |
|  | v) | Endorsed by QP with appropriate declarations (Section 10B or A&A) | |  |  |  |  |  |

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| 1. **Drawings and Calculations to be Submitted for Piling/Footing** (Please select the appropriate box for each of the item) | | | | | **N/A for this ST** | | | |
| **a)** | **Drawings** | |  |  |  | **Yes** | **No** | **N/A** |
|  | i) | Appropriate setback of footing/pile locations from existing building | |  |  |  |  |  |
|  | ii) | SI boreholes indicated | |  |  |  |  |  |
|  | iii) | Pile types, pile joints, installation method and material specification | |  |  |  |  |  |
|  | iv) | Summary of pile capacity, pile penetration depth, minimum embedded pile length into competent soil (where applicable), unit skin friction and end bearing, negative skin friction, number of piles | |  |  |  |  |  |
|  | v) | Pile design and penetration depth tally with calculations | |  |  |  |  |  |
|  | vi) | Pile set criteria | |  |  |  |  |  |
|  | vii) | Soil bearing capacity of footing | |  |  |  |  |  |
|  | viii) | Allowable footing/pile settlement | |  |  |  |  |  |
|  | ix) | Number and type of footing/pile load tests and test criteria (e.g. 2 x WL) | |  |  |  |  |  |
|  | x) | Instrumentation & monitoring of ground movement and vibration limits | |  |  |  |  |  |
|  | xi) | Piles in unfavourable soil conditions (soft marine clay) - adequate protective measures such as pre-boring, provision of relief wells | |  |  |  |  |  |
|  | xii) | Indicate existing foundation in drawings | |  |  |  |  |  |
| **b)** | **Calculations** | | | | | | | |
|  | i) | Column loading calculations (for analysis software used, it should include computer-generated floor layouts showing the column markings and loadings; Summary of salient output results and pile provision) | |  |  |  |  |  |
|  | ii) | Pile penetration length design | |  |  |  |  |  |
|  | iii) | Appropriate pile parameters used (skin friction, end bearing & NSF) | |  |  |  |  |  |
|  | iv) | Appropriate termination pile in competent soil (must be achievable for the type of piling system adopted) | |  |  |  |  |  |
|  | v) | Soil bearing pressure and capacity (for footing) | |  |  |  |  |  |
|  | vi) | Design of footing | |  |  |  |  |  |

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| **3. Drawings and Calculations to be Submitted for ERSS**  (Please select the appropriate box for each of the item) | | | **N/A for this ST** | | | |
| **a)** | **Drawings** | |  | **Yes** | **No** | **N/A** |
|  | i) | Construction sequences |  |  |  |  |
|  | ii) | Details of structural members including its connections |  |  |  |  |
|  | iii) | Strutting layout plan and details |  |  |  |  |
|  | iv) | Design sections, excavation level including neighbouring ground levels |  |  |  |  |
|  | v) | Instrumentation plans with alert/suspension levels |  |  |  |  |
|  | vi) | Slope protection |  |  |  |  |
|  | vii) | Endorsed by QP and AC (if applicable) with appropriate declarations |  |  |  |  |
|  | viii) | Indicate existing foundation in drawings |  |  |  |  |
| **b)** | **Calculations** | |  | | | |
|  | i) | Design for surcharge loads, including loading from existing higher ground behind site boundary |  |  |  |  |
|  | ii) | Design for water table |  |  |  |  |
|  | iii) | Construction stages including removal stages |  |  |  |  |
|  | iv) | Both drained and undrained conditions |  |  |  |  |
|  | v) | Embedment of pile for toe stability |  |  |  |  |
|  | vi) | Design for heave |  |  |  |  |
|  | vii) | Design for allowable maximum wall deflection limits (Advisory note on ERSS) |  |  |  |  |
|  | viii) | Design to resist slip circle failure |  |  |  |  |
|  | ix) | Design for structural capacity of members and related connections |  |  |  |  |

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| **4. Drawings and Calculations to be Submitted for Super-structure**  (Please select the appropriate box for each item) | | | **N/A for this ST** | | | | |
| **a)** | **Drawings** | | | | **Yes** | **No** | **N/A** |
|  | i) | Layout plans with clear marking of structural elements | | |  |  |  |
|  | ii) | Live loads indicated on the layout plans | | |  |  |  |
|  | iii) | Material specification indicated in the drawings | | |  |  |  |
|  | iv) | Endorsed by QP with appropriate declarations, including A&A if applicable | | |  |  |  |
|  | v) | Connection details between new and existing structure (for A&A works) | | |  |  |  |
|  | vi) | Appropriate setback of new building structure from existing common party wall - No part of the existing common party wall is hacked to embed any structural elements | | |  |  |  |
|  | vii) | RC load bearing walls/shelter wall beside the common party wall - Provide method of construction on the structural plan to show that no lateral forces will be imposed to the common brickwall during casting | | |  |  |  |
|  | viii) | Railing, top capping member fixed to side wall | | |  |  |  |
|  | ix) | Railing, connection details | | |  |  |  |
| **b)** | **Calculations** | | |  | | | |
|  | i) | Computer-generated floor layouts with loadings and column, beam and slab markings (if software is used) | | |  |  |  |
|  | ii) | Summary of output results, e.g. design envelopes of moment, shear and design of the structural elements | | |  |  |  |
|  | iii) | Structural element design tallies with drawing | | |  |  |  |
|  | iv) | Existing structure checks (for A&A works) | | |  |  |  |
|  | v) | Railing, top capping member design (for glass railing) | | |  |  |  |
|  | vi) | Railing, design of connections | | |  |  |  |