

Our Ref : APPBCA-2016-11

1 Nov 2016

Building Engineering Group (#12-00)

Fax : 6334 2561

DID : 1800-3425-222

See **Distribution**

Dear Sir/Madam

NEW REQUIREMENTS FOR STRUCTURAL PLANS SUBMISSION

Objective

This circular is to inform the industry of changes to structural plan submissions, namely:

- a. Singapore Height Datum (SHD) to be included for piling plans submitted for approvals;
- b. provision of as-built pile records in a standardised Excel spreadsheet; and
- c. additional formats of plans required.

Background

2. On 11th May 2015, Singapore Land Authority (SLA) has issued a circular to require all survey plans submitted to Chief Surveyor to make reference to Singapore Height Datum (SHD), refer "Singapore Height Datum in Survey Plan" (see **Annex A**).
3. To facilitate planning and better optimise the use of underground space, information on the as-built locations of the underground structures and structural plans are needed to be made available in a usable format.

Effective Date of Implementation

4. The changes will take effect for projects with 1st set of structural plans submitted on or after **01 April 2017** regardless of GFA (the "**Implementation Date**").

Singapore Height Datum (SHD) required for plan approval

5. For submission of piling plans for approval, QPs are to make reference to the circular in **Annex A** issued by the Singapore Land Authority (SLA).
6. With effect from the Implementation Date, QPs are to ensure that the piling plans submitted for approval reflect SHD¹.

Submission of As-Built Pile Records in Standardised Excel Spreadsheet

7. With effect from the Implementation Date, the submission of record plans for piling works are to be accompanied with pile records tabulated and submitted in a standardised Excel spreadsheet to ease the extraction of information. In addition, the Excel spreadsheet submitted should have the SVY21 Plane Coordinates, for reference.
8. Sample of the format is shown in **Annex B** and a copy of the Excel spreadsheet can be found in **CORENET**.

¹ This requirement will be read together with BCA's circular dated 19 October 2016 (see **Annex D**).

Additional Formats of plans required

9. BCA's circulars dated 15 April 2015 (see **Annex C**) and 19 October 2016 (see **Annex D**) require certain projects to be submitted in BIM format.
10. For projects not requiring BIM e-submission, QPs can choose to continue to submit structural plans for approval in Adobe Portable Document Format (.pdf). With effect from the Implementation Date, QPs are to also attach original CAD Files, for reference, when making plan submissions.
11. For projects that require BIM e-submission, with effect from the Implementation Date, QPs are to attach the updated structural model in the original BIM format, for reference².
12. BCA would appreciate it if the contents of this circular are distributed to your members. Please contact Er. Brian Phua at (Tel: 1800-3425222) or email brian_phua@bca.gov.sg if you need any clarification. Thank you.

Yours faithfully



Er. Chang Bek Mei
DIRECTOR
BUILDING ENGINEERING GROUP
For COMMISSIONER OF BUILDING CONTROL

² This requirement does not apply to BIM submissions in native BIM format. Please refer to BCA's circular dated 19 October 2016 (see **Annex D**).

CIRCULAR DISTRIBUTION LIST

ASSOCIATIONS / SOCIETIES

PRESIDENT
INSTITUTION OF ENGINEERS, SINGAPORE (IES)
70, BUKIT TINGGI ROAD
SINGAPORE 289758
ies@iesnet.org.sg

PRESIDENT
ASSOCIATION OF CONSULTING ENGINEERS, SINGAPORE (ACES)
18 SIN MING LANE
#06-01 MIDVIEW CITY
SINGAPORE 573960
secretariat@aces.org.sg

PRESIDENT
SINGAPORE CONTRACTORS ASSOCIATION LIMITED (SCAL)
CONSTRUCTION HOUSE
1 BUKIT MERAH LANE 2
SINGAPORE 159760
enquiry@scal.com.sg

PRESIDENT
SINGAPORE INSTITUTE OF ARCHITECTS (SIA)
79 NEIL ROAD
SINGAPORE 088904
info@sia.org.sg

PRESIDENT
SOCIETY OF PROJECT MANAGERS (SPM)
MACPHERSON ROAD P.O.BOX 1083
SINGAPORE 913412
sprojm@yahoo.com

PRESIDENT
SINGAPORE INSTITUTE OF BUILDING LIMITED (SIBL)
70 PALMER ROAD,
#03-09C PALMER HOUSE
SINGAPORE 079427
josephine@sib.com.sg

PRESIDENT
REAL ESTATE DEVELOPERS' ASSOCIATION OF SINGAPORE (REDAS)
190 CLEMENCEAU AVENUE
#07-01 SINGAPORE SHOPPING CENTRE
SINGAPORE 239924
enquiry@redas.com

PRESIDENT
SINGAPORE INSTITUTE OF SURVEYORS & VALUERS (SISV)
110 MIDDLE ROAD #09-00
CHIAT HONG BUILDING
SINGAPORE 188968
sisv.info@sisv.org.sg

PRESIDENT
SINGAPORE STRUCTURAL STEEL SOCIETY (SSSS)
1 LIANG SEAH STREET
#02-11/12 LIANG SEAH PLACE
SINGAPORE 189022
secretariat@ssss.org.sg

PRESIDENT
GEOTECHNICAL SOCIETY OF SINGAPORE (GEOSS)
C/O CMA INTERNATIONAL CONSULTANTS PTE LTD
1 LIANG SEAH STREET
#02-11 LIANG SEAH PLACE
SINGAPORE 189022
geoss@cma.sg

PRESIDENT
PROFESSIONAL ENGINEERS BOARD, SINGAPORE (PEB)
52 JURONG GATEWAY ROAD, #07-03
SINGAPORE 608550
registrar@peb.gov.sg

PRESIDENT
BOARD OF ARCHITECTS (BOA)
5 MAXWELL ROAD
1ST STOREY TOWER BLOCK
MND COMPLEX
SINGAPORE 069110
boarch@singnet.com.sg

DIRECTOR
PROTECTIVE INFRASTRUCTURE & ESTATE
DEFENCE SCIENCE & TECHNOLOGY AGENCY
1 DEPOT ROAD #03-01J
SINGAPORE 109679
oyewhing@dsta.gov.sg

DEPUTY DIRECTOR
PROJECT DEVELOPMENT & MAINTENANCE BRANCH
MINISTRY OF EDUCATION
1 NORTH BUONA VISTA DRIVE
OFFICE TOWER LEVEL 9
SINGAPORE 138675
eng_wee_tong@moe.gov.sg

DIRECTOR
BEST SOURCING DEPARTMENT
PUBLIC UTILITIES BOARD
40 SCOTTS ROAD #18-01
ENVIRONMENT BUILDING
SINGAPORE 228231
koh_boon_aik@pub.gov.sg
lim_kim_tee@pub.gov.sg

DEPUTY CHIEF EXECUTIVE
INFRASTRUCTURE & DEVELOPMENT
LAND TRANSPORT AUTHORITY
1 HAMPSHIRE ROAD
BLOCK 8 LEVEL 1
SINGAPORE 219428
chong_kheng_chua@lta.gov.sg

DEPUTY DIRECTOR
PROJECT DEVT & MGT SECT 1 (C&S)
BUILDING QUALITY GROUP
HOUSING & DEVELOPMENT BOARD
HDB HUB
480 LORONG 6 TOA PAYOH
SINGAPORE 310480
low_kiang_heng@hdb.gov.sg

DIRECTOR
TECHNICAL SERVICES DIVISION
JTC CORPORATION
THE JTC SUMMIT
8 JURONG TOWN HALL ROAD
SINGAPORE 609434
chwee.koh@jtc.gov.sg

DIRECTOR
BUILDING
PEOPLE'S ASSOCIATION
9 STADIUM LINK
SINGAPORE 397750
foo_soon_leng@pa.gov.sg

PRESIDENT
THE TUNNELLING AND UNDERGROUND
CONSTRUCTION SOCIETY SINGAPORE (TUCSS)
C/O CMA INTERNATIONAL CONSULTANTS PTE LTD
1 LIANG SEAH STREET
#02-12 LIANG SEAH PLACE
SINGAPORE 189022
info@tucss.org.sg

PRESIDENT
SOCIETY OF ROCK MECHANICS AND ENGINEERING GEOLOGY
1 LIANG SEAH STREET
#02-12 LIANG SEAH PLACE
SINGAPORE 189022
srmeg@cma.sg

DEPUTY CHIEF EXECUTIVE OFFICER
SENTOSA DEVELOPMENT CORPORATION
33 ALLANBROOKE ROAD, SENTOSA
SINGAPORE 099981
agencies_circulars@sentosa.com.sg

HEAD (FIRE SAFETY AND BUILDING CONTROL)
BUILDING AND INFRASTRUCTURE
DEFENCE SCIENCE & TECHNOLOGY AGENCY
1 DEPOT ROAD
DEFENCE TECHNOLOGY TOWER A
SINGAPORE 109679
HOW AH MENG
EMAIL: HAHMENG@DSTA.GOV.SG

MANAGER (ARCHITECTURAL PLANS)
BUILDING AND INFRASTRUCTURE
DEFENCE SCIENCE & TECHNOLOGY AGENCY
1 DEPOT ROAD
DEFENCE TECHNOLOGY TOWER A
SINGAPORE 109679
SEBASTIAN LIM HAI KONG
EMAIL: LHAIKONG@DSTA.GOV.SG

ALL CORENET E-INFO SUBSCRIBERS

ANNEX A

Our Ref : SLA/SVY 251/72 Vol 7

Date: 11 May 2015

CS Circular No. 2/2015

To: All Registered Surveyors



**SINGAPORE
LAND AUTHORITY**

55 Newton Road
#12-01 Revenue House
Singapore 307987
Main: (65) 6323 9829
Fax: (65) 6323 9937
Website: www.sla.gov.sg

Singapore Height Datum in Survey Plans

Related amendments have been made to the Boundaries and Survey Maps Act (BSMA) as a result of the State Lands (Amendment) Act 2015.

2. The key changes include:
 - (a) Introduction of the term 'bench mark'
 - (b) Introduction of the term 'Singapore Height Datum (SHD)'
 - (c) Making it clear that a survey control mark includes a 'bench mark'
 - (d) Every bench mark placed under the supervision of the Chief Surveyor is conclusive evidence

3. The concept of SHD is not new. The vertical distance of a 'bench mark' (also known as Vertical Control Point) from the SHD is the "Reduced Level" indicated in the product purchased from INLIS.

4. With these changes, all Registered Surveyors shall use the Singapore Height Datum in survey plans submitted to the Chief Surveyor where measurement of vertical distance from the SHD is involved. The statement "Reduced Levels are based on Singapore Height Datum = 0.000m" shall be shown as such.

5. This will mean that Reduced Level values shall be based on the Singapore Height Datum (for example in the Cross Section Diagram of survey plans showing airspace/subterranean lots).

ANNEX A

6. Annex A provides a sample illustrating the new requirements in survey plans.
7. This new requirements will be take effect for job submitted from 15 June 2015.



Leong Kai Weng
for Chief Surveyor

DID: 64783583

Fax: 63239937

Email: leong_kai_weng@sla.gov.sg

ANNEX B

Title of Excel spreadsheet file should follow the naming: "As_Built_Pile_[Project ref]_[YYYYMMDD]".

Sample of the format

Project Title:										Date of completion of Piling Works:						
Project Reference:										Developer:						
PE Company:										Registered Surveyor Company:						
PE Name:										Registered Surveyor Name:						
PE No.:										Registered Surveyor No.:						
No.	Pile No	Pile Type	X-Easting (m)	Y-Northing (m)	As Built Length from COL (m)	Cut off Level (SHD)	Toe Level (SHD)	Diameter/ Longest Side (m)	Width (m)	Design Penetration Length from COL (m)	Percentage Difference	Design Socketing Length (m)	Actual Socketing Length (m)	X-Easting Eccentricity (mm)	Y-Northing Eccentricity (mm)	Remark
1	BP303	Precast	30118.210	29226.632	39.175	-11.254	-50.429	0.30	0.3	40.0	-2.1%	5.0	4.0	+15 (East)	+15 (North)	Test Pile
2	BP302	Bored Pile	30116.374	29223.782	39.164	-10.216	-49.380	1.10		38.0	3.1%	6.0	3.0	-15 (West)	-15 (South)	Abandon Pile
3	BP301	Timber	30111.499	29216.216	43.183	-15.123	-58.306	4.00	2.4	42.0	2.8%	3.0	7.0			PDA Pile
						0										
		See List A	As-built SVY21 coordinates of piles, to be surveyed													
								To be kept blank if pile is circular		From Approved Drawing		From Approved Drawing			"+" for East or North "-" for West or South	
<div style="font-size: 48px; opacity: 0.5; position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); pointer-events: none;"> Pile 1 </div> <p>Columns A to P cannot be changed.</p> <p>Column Q onwards can be customised according to a firm's needs by adding additional columns behind</p>																

ANNEX C



We shape a **safe**, **high quality**, **sustainable** and **friendly** built environment.

Our Ref: APPBCA-2015-07
15 Apr 2015

See Distribution

Dear Sir/Madam

DEADLINES FOR PROJECTS REQUIRING MANDATORY BIM (BUILDING INFORMATION MODELLING) E-SUBMISSION FOR REGULATORY APPROVAL

Objective

This circular is to inform the industry of upcoming deadlines for projects requiring mandatory BIM e-submission for regulatory approvals by the relevant authorities.

Background

2 The use of BIM has been identified as a key driver under the construction productivity roadmap to improve the level of integration and collaboration across the various disciplines in the construction value chain. To kick-start BIM adoption early, CORENET started to accept architectural and engineering BIM e-submissions since January 2010 and April 2011 respectively.

3 Subsequently, we announced on 3 Jul 2012 the phased introduction of mandatory BIM e-Submission for certain types of projects.

Deadlines for projects requiring mandatory BIM e-submission for regulatory approval

4 Mandatory BIM e-submission has been introduced in phases since 2013, where architectural or engineering plans are required to be submitted in the BIM format for regulatory approval based on the following BIM e-submission guidelines:

	Gross Floor Area of New Developments		
	More than 20,000 m ²	More than 5,000 m ²	Less than or equal to 5,000m ²
Architecture	Require BIM e-submission if the first application for Planning Permission is made on or after 1 Jul 2013	Require BIM e-submission if the first application for Planning Permission is made on or after 1 Jul 2015	BIM e-submission is optional.
M&E Engineering	Require BIM e-submission if the first application for Planning Permission is made on or after 1 Jul 2014		
C&S Engineering			

5 New developments include:

- a) New building and infrastructure projects; and
- b) A&A projects involving reconstruction or addition of any new building or infrastructure.

ANNEX C

6 A list of Frequently Asked Questions on Mandatory BIM e-Submission is attached (please see **Annex A**).

7 To help the industry better understand Mandatory BIM e-Submission, BCA had been conducting free monthly briefing sessions to QPs since August 2012. For more details on BIM briefing session timings, BIM e-submission guidelines and software templates, please refer to the following link:

https://www.corenet.gov.sg/integrated_submission/bim/BIMe_submission.htm.

Clarification

8 We would appreciate if you could convey the contents of this circular to the members of your organization. For clarification, you may email to bca_enquiry@bca.gov.sg or contact the following officers:

Discipline	Contact Person	Contact Number / Email
Architecture	Mary Ann Samaniego	DID: 6730 4539 Email: Mary_Ann_SAMANIEGO@bca.gov.sg
C&S	Sonny Andalis	DID: 6730 4438 Email: Sonny_ANDALIS@bca.gov.sg
M&E	Liu Ziwen	DID: 6730 4527 Email: LIU_Ziwen@bca.gov.sg

Yours faithfully



TEO ORH HAI
DIRECTOR
BUILDING PLAN AND MANAGEMENT GROUP
For COMMISSIONER OF BUILDING CONTROL

ANNEX D



We shape a **safe**, **high quality**, **sustainable** and **friendly** built environment.

Our Ref: APPBCA-2016-10

Building Plan & Management Group

19 October 2016

See Distribution List

Dear Sir/Madam

CHANGES TO BUILDING INFORMATION MODELLING (BIM) E-SUBMISSION REQUIREMENTS FOR PLAN SUBMISSION TO BCA

Objective

This circular is to inform the industry on the following:

- A. The launch of the Code of Practice for BIM e-submission and voluntary submission of architectural and engineering plans in Native BIM format; and
- B. Preparations for mandatory submission of architectural and engineering plans in Native BIM format

Background

2 Currently, plans for new developments with Gross Floor Area (GFA) larger than 5,000 m² are submitted to BCA in BIM format. BIM e-submissions are done in Lightweight file formats so as to manage the file size. Lightweight file formats are compressed versions of Native BIM files which are created within their authoring software.

3 We have received feedback from the industry about the extra efforts required to reinstate annotations that are lost during the compression of the Native BIM file to lightweight file format. The annotations are necessary to ensure that the submission contains sufficient information necessary for regulatory approval.

ANNEX D

A) Launch of Code of Practice

4 To address the industry's feedback, BCA has been working with various industry stakeholders to study the feasibility of regulatory submissions in Native BIM format to **reduce the efforts needed for BIM e-submissions**. To facilitate BIM e-submissions in Native BIM, BCA recently launched the Code of Practice (CoP) for BIM e-Submission. The CoP sets out the minimum modelling standards and regulatory information required to be provided in the BIM model, moving away from lightweight file format submissions.

B) Preparations for Mandatory Requirements

5 With effect from 19 October 2016 (for architectural plans) and 01 October 2017 (for C&S/MEP Engineering plans), BCA will accept voluntary BIM e-submissions in Native BIM format. Such submissions **should be prepared in accordance with the prevailing CoP**. The CoP for Architecture, C&S and MEP may be downloaded from [http://www.corenet.gov.sg/general/building-information-modeling-\(bim\)-e-submission.aspx](http://www.corenet.gov.sg/general/building-information-modeling-(bim)-e-submission.aspx). The voluntary submission phase is a good opportunity for Industry to practise submissions in Native BIM in preparation for the proposed mandatory submission requirements.

6 BCA is working towards mandating BIM e-submissions in Native BIM format in the second half of 2017 (for architectural plans) and second half of 2018 (for C&S and MEP Engineering Plans). The Native BIM e-submissions **should be prepared in accordance with the prevailing CoP**.

Submission to BCA for new developments with GFA more than 5,000 sqm	Voluntary submission in Native BIM	Proposed mandatory submission in Native BIM
Architecture	19 October 2016	Second half of 2017
C&S Engineering	01 October 2017	Second half of 2018
MEP Engineering		

7 New developments include:
a) New building and infrastructure projects; and
b) A&A projects involving reconstruction or addition of any new building or infrastructure.

A list of Frequently Asked Questions on BIM e-submissions requirements are provided in Annex A.

ANNEX D

8 BCA will be conducting complimentary monthly briefing sessions to explain the details of the BIM e-submission requirements. The scheduled dates of these briefing sessions are as follow:

Architectural E-submission Briefing		
Dates	Venues	Times
24 October 2016	BCA Academy, Block H, Level 2 Auditorium	3:30pm – 5:00pm
14 November 2016		
12 December 2016		

C&S Engineering E-submission Briefing		
Dates	Venues	Times
14 November 2016	BCA Academy, Block H, Level 2 Auditorium	1:00pm – 3:00pm
12 December 2016		10:00am – 12:00pm

MEP Engineering E-submission Briefing		
Dates	Venues	Times
14 November 2016	BCA Academy, Block H, Level 2 Auditorium	10:00am – 11:30am

Clarification

9 We would appreciate it if you could convey the contents of this circular to the members of your organisation. Should you need further clarifications relating to Native BIM e-submissions, please email bca_enquiry@bca.gov.sg. For matters relating to the CoP, you may contact the following officers:

Discipline	Contact Person	Contact Number / Email
Architecture - CoP	Mary Ann Samaniego	DID: 6730 4539 Email: Mary_Ann_SAMANIEGO@bca.gov.sg
C&S - CoP	Sonny Andalis	DID: 6730 4438 Email: Sonny_ANDALIS@bca.gov.sg
MEP - CoP	Liu Ziwen	DID: 6730 4527 Email: LIU_Ziwen@bca.gov.sg

Yours faithfully,



TAN JWU YIH
ACTING DIRECTOR
BUILDING PLAN AND MANAGEMENT GROUP
for COMMISSIONER OF BUILDING CONTROL