

ACCREDITED CHECKER (AC) VALUE ARTICULATION FRAMEWORK

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1 The Accredited Checker System in Singapore's Built Environment

Since its establishment in 1989 following the collapse of Hotel New World, the Accredited Checker (AC) system has been a cornerstone of Singapore's Building Control framework. Accredited Checkers and Accredited Checking Organisations (ACs/ACOs) provide an independent professional check on structural designs prepared by Qualified Persons (QPs), serving as an important safeguard against design errors, and contributing to the structural safety of Singapore's built environment.

The effectiveness of the AC system depends not only on the professional competence and independence of the AC, but also on the quality and rigour of the checking work undertaken. A robust structural check requires sufficient professional time, experienced personnel and appropriate technical and organisational resources. These requirements have become increasingly important as building works grow in scale and complexity, and as structural systems, design methodologies and construction technologies continue to evolve. The resources required for an effective check will vary from project to project, depending on factors such as its scale, structural complexity, risk, design and construction programme, and the nature and extent of the checking required.

ACES therefore considers it important for AC/ACOs to carefully assess the demands of each project when establishing their fees. The fee proposed should enable the AC/ACO to commit the appropriate level of professional effort, expertise and resources necessary to undertake an effective independent check throughout the project.

Developers also have an important role in supporting a robust AC system through the way AC services are procured. When evaluating AC/ACO proposals, developers are encouraged to consider not only the fee, but also the proposed checking approach, relevant experience, professional effort and resources to be committed to the project. The fee should therefore be considered in the context of what is required and proposed to deliver an effective check, rather than viewed in isolation. The effort required for structural checking is also influenced by the quality and completeness of the QP's design and submissions. Developers should therefore give due consideration to the experience and resources of their QPs when appointing their professional teams.

The importance of quality and technical capability in AC services has already been reflected in BCA's Quality Fee Method for Accredited Checkers (QFM(AC)) in April 2018 and May 2020 to place greater emphasis on checking quality and technical capability in public sector procurement. BCA is also looking to make further enhancements to the AC system through additional conditions for ACs and ACOS undertaking high-value checking works. These conditions seek to better align the scale of checking works undertaken with an AC/ACO's technical capability, track record and organisational resources, including recent AC experience, recent QP design experience and satisfactory S-point

performance. The enhancements reinforce the importance of larger and more complex projects being subject to robust review by professionals and organisations with capabilities commensurate with the work.

2 Purpose of the AC Value Articulation Framework

The Value Articulation Framework (VAF) has been developed by ACES as a practical guide to facilitate more informed and transparent discussions between AC/ACOs and developers on the scope, resources and fees associated with the structural checking services.

For ACs/ACOs, the VAF provides a structured approach to consider the characteristics and demands of a project, determine the appropriate checking strategy and resources required, and establish a fee that supports the professional effort necessary to deliver a robust check.

For Developers, the VAF provides greater visibility into the factors that influence the professional effort and resources required for structural checking. It is intended to assist developers in evaluating AC/ACO proposals holistically, considering the scope of service, proposed checking approach, capability, resources and professional effort alongside the fee.

The VAF is not a fee schedule and does not prescribe what an AC/ACO should charge a particular project. Neither is it intended to replace professional or commercial judgement. Rather, it provides a common framework through which ACs/ACOs can better articulate the basis of their proposals and developers can better understand and evaluate the value and resources represented by those proposals.

Safeguarding the structural safety of our built environment is a shared responsibility. Developers, QPs, ACs/ACOs and other stakeholders each have an important and complementary part to play in ensuring that structural checking is carried out with the appropriate level of expertise, rigour and resources. The VAF is intended to facilitate this partnership by providing a common basis for ACs/ACOs to articulate the professional effort and resources required for effective checking, and for developers to better understand and evaluate the services proposed. Through open and informed discussions, and a shared commitment to quality, all parties can work together to sustain a robust AC system and safeguard the safety and resilience of Singapore's built environment.

3 How to Use the AC Value Articulation Framework

3.1 Approach

The approach of this framework focuses on the duties of Accredited Checkers (AC) which are clearly defined by the submission checklist for ACs. The effort required by ACs and the team to deliver the project as peer reviewer stands to be guided by this checklist and consequently the resources to be committed. With the clearly defined effort to be conducted by ACs, the correct tasks to be assigned shall be transparent to the client who would appreciate the correct resources being committed by the ACs. The latter will also need to understand the project nature in order to estimate the manhours needed to deliver the project on time.

3.2 Methodology

The framework will look at the project complexity as another dimension to evaluate the effort of ACs in delivering their works. While the checklist outlines the scopes to be covered by AC during their review, the nature of projects will also influence the amount of time and resources needed. Thus we have classified projects into 3 categories, namely:

- a) Low Complexity
- b) Medium Complexity
- c) High Complexity

A Complexity Matrix is also developed to provide the classification of each complexity category based on different attributes adhering to each group.

Once the complexity is determined, this will guide the user of VAF on estimating the resources and time needed for each task, together with the experience required on the staff to be deployed. User of the VAF can use the rates in the latest Standard Consultancy Agreement (SCA) and resources for public sector construction-related consultancy services – civil and structural engineering as a reference to compute the corresponding fee.

3.3 Examples

The examples on VAF are also presented as a guide to use the framework. These examples are developed based on typical projects in Singapore such as HDB Residential Development. The complexity of the projects will hinge on the nature of development and in this case study, we will consider no of storeys, no of blocks as well as presence of basement for the classifications.

4 AC Value Articulation Framework Complexity Matrix

Complexity	Scope & Scale	Technicality	Regulatory Compliance	Uniqueness of Project	Resourcing	Documentation	Innovation & Complexity
Low	1. Single Discipline 2. Straight forward solution 3. Less than \$25million	Standard engineering methods and modelling	Meet standard codes and guides	Standard structural design and approach	Normal resourcing of up to 1500 manhours or 5 people	Standard expectation of reports and/or drawings as review deliverables	Standard structural systems and construction methods, as well as materials
Medium	1. Multiple engineering inputs 2. Advance engineering solution 3. Less than \$150million	Advance engineering tools deployed and modelling with multiple interfaces	Require cross referencing of codes and guides	Advance engineering approach required due to unique nature of project	Expected resourcing of 2500 manhours or a team of 10 to 20 people to support the project	Reports and/or drawings covering higher level of details in the review	Customised design methods and use of advance materials
High	1. Large integrated programme with multiple tiered services 2. Expert advice required 3. More than \$150million	First of its kind solution with complex modelling technique including complex design integration	Design based on new research base for design verification	State of the art projects with little local expertise	Multiple team support required and manhour could reach beyond 10000	Reports and drawings developed for different components of the projects	Bespoke design /construction methodology and modelling, and use of new materials

5 AC Value Articulation Framework Excel Spreadsheet

Please download the excel spreadsheet in from the link below.

https://aces.org.sg/wp-content/pdf/ACES BPP AC Value Articulation Framework_v2.xlsx