

## COMPANY

Urban Renewal Authority

## PROJECT

Application of BIM concept to Building Rehabilitation Works

## LOCATION

Coral Court (Blk B &amp; C), No 51-67 Cloud View Road

## TYPE

Residential Building Rehabilitation Works under Smart Tender Scheme

## SCHEDULED TIME OF COMPLETION

In 4<sup>th</sup> quarter of 2019 (expected works completion)

# BIM Concepts Applied in Building Rehabilitation Works



## About Urban Renewal Authority

The URA was established in May 2001 under the Urban Renewal Authority Ordinance as the statutory body to undertake, encourage, promote and facilitate urban renewal of Hong Kong, with a view to addressing the problem of urban decay and improving the living conditions of residents in old districts.

The URA follows the guidelines set out in the Government's Urban Renewal Strategy in the implementation of its urban renewal initiatives under a "people first, district-based, public participatory" approach. The URA adopts a comprehensive and holistic approach by ways of its two core businesses i.e. redevelopment and rehabilitation, as well as heritage preservation and revitalisation, for creating a sustainable and quality living for the people of Hong Kong.

## BIM PARTNERS

Leica Geosystems Limited

MES Services Limited

The Hong Kong Institute of Building Information Modelling (HKIBIM)

The Hong Kong Polytechnic University – Department of Land Surveying and Geo-Informatics

## AUTODESK PRODUCTS USED

BIM 360

Collaboration for Revit

Recap Pro

Revit

## Project Description

Coral Court (Blocks B & C) is located at the mid-level of Fortress Hill, Hong Kong. In October 2016, the Owners' Incorporation (IO) initiated comprehensive building repairs in accordance with the "Smart Tender" Scheme (ST) implemented by the Building Rehabilitation Division, Urban Renewal Authority (URA).

Though BIM has been widely used in newly built or civil projects in Hong Kong for years, it is seldom adopted in the rehabilitation of residential buildings. In late 2017, the URA coordinated with several BIM partners to form a project team, and selected Coral Court as a pilot project to explore how BIM can be applied in building rehabilitation works.

## Project Challenges

BIM has been successfully adopted in the construction of new buildings. For some of these, the BIM model is integrated with the building management system to facilitate management. However, for existing buildings, building maintenance is still very traditional or even neglected. Without advanced technology and data analytic methods, traditional building repair works are severely challenged by problems with urban decay. Building consultants also face challenges arising through limited manpower, tight budgets, conflicting requests, and accelerated schedules.

## Solutions for challenges

BIM helps these professionals to detect issues in the early stages, and identify the exact locations of discrepancies. URA partnered with several experts in BIM modelling and Quantity Survey, and engaged Coral Court to conduct a pilot study on applying BIM in existing buildings for building rehabilitation. This will be a good case study on assessing the benefits, including ways BIM facilitates effective building maintenance, and can create additional value in the facility management stage. BIM allows an informative provision of scientific building inspection and updated drawings, and helps building owners to visualise consultants' outputs.

## How does BIM benefit the project?

By building the 3D model with a re-measurement exercise, BIM provides a holistic view of the building and facilitates building rehabilitation works, along with efficient communications.

The use of BIM in the building maintenance stages allows the owners and the consultant to review the design and make changes as early as the proposal stage. Through advanced scanning and inspection technologies, the model can provide contractors with updated building figures and information on the building's condition. More accurate cost estimations with detailed breakdowns can be provided for owners to consider and to make comparison. Also, updated digital drawings can be generated with BIM, which enhances accuracy and project implementation.

## Better with BIM

BIM is used to bridge any communication gaps between the owners and all consultants in this project, allowing all parties to communicate on the same page at all times. BIM is a tool to facilitate collaboration. With BIM support, it becomes much easier to reach consent regarding the repair calculation method, drawing and design, and division of work. The BIM model also allows the consultant to preview the design, to ensure that it provides the best service ability and meets statutory requirements.



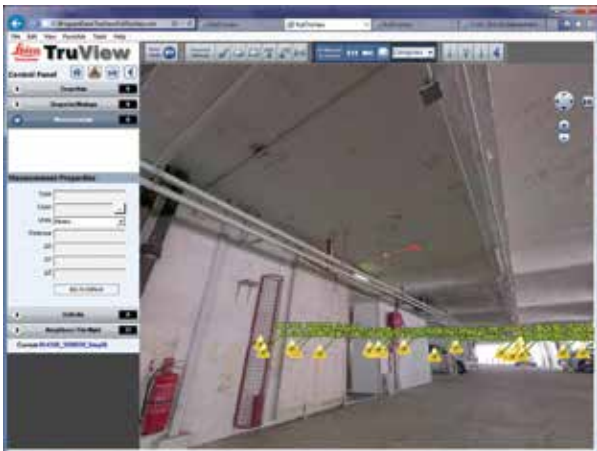
BIM 360 enables an efficient cross-platform collaboration and communication  
Image courtesy of Urban Renewal Authority



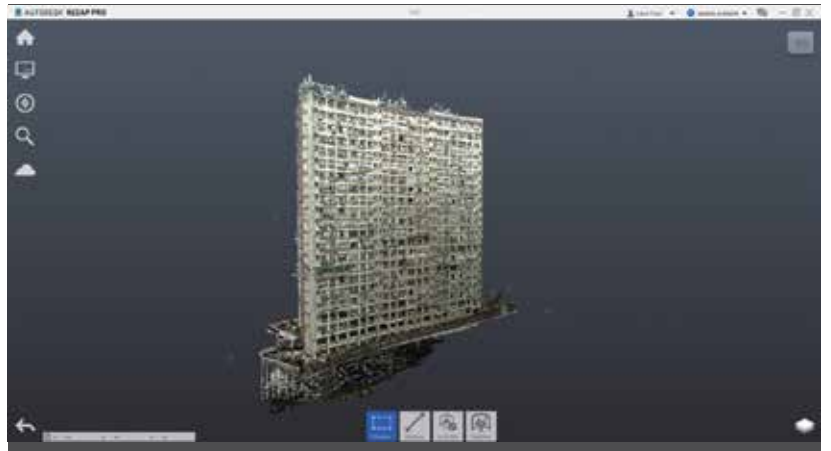
BIM 360 enables an efficient cross-platform collaboration and communication  
Image courtesy of Urban Renewal Authority



With BIM technology, 3D model can be created from existing drawings as a better way of visualization  
Image courtesy of Urban Renewal Authority



We use point cloud to fast check the building condition with existing structure and facilities  
Image courtesy of Urban Renewal Authority



We use point cloud to fast check the building condition with existing structure and facilities  
Image courtesy of Urban Renewal Authority



We use point cloud to fast check the building condition with existing structure and facilities  
Image courtesy of Urban Renewal Authority



With BIM technology, 3D model can be created from existing drawings as a better way of visualization  
Image courtesy of Urban Renewal Authority