The Construction Productivity Awards (CPA) recognise outstanding industry firms for going the extra mile to achieve construction productivity improvements and promote higher productivity in the industry.

The CPA – Projects is awarded to project teams that have demonstrated productivity in their projects from the design to the end of construction. The award aims to:

- Encourage designers to come up with labour-efficient designs;
- Encourage the adoption of labour-efficient construction methods; and
- Recognise project teams for their excellent project planning and coordination in enhancing productivity.

The award has nine sub-categories:

- Residential Landed Buildings
- Residential Non-landed Buildings (for projects with Gross Floor Area of less than 25,000m²)
- Residential Non-landed Buildings (for projects with Gross Floor Area of more than or equal to 25,000m²)
- Commercial and Office Buildings
- Institutional & Others Buildings
- Industrial Buildings
- Mixed Development Buildings
- Additions & Alterations / Upgrading Buildings
- Civil Engineering Projects
CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | PLATINUM

Design and Construction of East-West Transmission Cable Tunnel - Contract EW3

Civil Engineering Category

**KEY FEATURES**

- Two permanent circular shafts at Paya Lebar and Kallang and one temporary shaft at Airport Road, each 14m in diameter and up to 60m deep
- Lined with precast concrete lining segments at 40m to 50m below ground surface
- Tunnel drive was designed to accommodate two small turning radii of 75m (R75) and 80m (R80) by a tunnel boring machine (TBM) to keep the tunnel footprint within road reserve. The R75 and R80 curves were two of the tightest curvatures completed in Singapore
- To ease transportation and installation of the tunnel fit-outs, runway beams and cable brackets were prefabricated off-site, troughs were precast, and specially designed mechanised platforms and gantries were adopted
- Adopted clay-shock, a high viscosity plasticized fill material which ensured adequate liquidity of the backfill material. This was filled into the ground by pressurised injection to prevent any soil collapse around the TBM body
- Composite segments (steel segment with in-fill concrete and reinforcement bars) were used to withstand the large concentration of forces due to the non-uniform thrust forces from the tunneling
- Use of mini packers to stabilise the segments during tunnelling. The clay-shock, mini packers and composite segments were pioneered in the project at the tight curved areas

**Developer**
SP Power Assets Ltd.

**Architectural, Structural and M&E Consultant**
WSP Consultancy Pte. Ltd

**Design and Build Contractor**
Nishimatsu Construction Co., Ltd – KTC Civil Engineering & Construction Pte Ltd Joint Venture
CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | PLATINUM

THE VERANDAH @ MATILDA
Residential Non-Landed Buildings Category ≥ 25,000m²

KEY FEATURES

• Hybrid construction system with all columns in cast in-situ and the facades, ducts, planks and parapets constructed in precast

• Battery mould planks which were long and with 2.4m width were adopted at the carpark. This helped to reduce the number of hoists and increase productivity

• Full coverage of precast façade eliminated the use of external scaffold

• Deep Cement Mix (DCM) was used to replace Grouted Stone column for soil improvement works which resulted in shorter time and cost saving

Developer
Housing & Development Board

Architectural, Structural and M&E Consultant
Housing & Development Board
(Building & Research Institute)

Builder
Teambuild Engineering & Construction Pte Ltd
THE BROWNSTONE EXECUTIVE CONDOMINIUM

Residential Non-Landed Buildings Category ≥ 25,000m²

CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | PLATINUM

KEY FEATURES

• Built with Prefabricated Prefinished Volumetric Construction (PPVC) with each dwelling unit formed by an average of about 7 modules for living room, dining room, kitchen, bathroom units and bedrooms.

• DfMA balcony modules that were completed with waterproofing, tiled flooring and skirting, railing and painting were adopted.

• For ease of construction, all vertical and horizontal structural joints of the PPVC modules were designed to be completed within the units and using high strength grout to eliminate the need for horizontal formwork and concreting.

• Multi-storey carpark was constructed using precast slabs.

• Use of Building Information Modelling (BIM) to detect clashes during early design stage prior to production improved productivity during construction.

Developer
Canvey Developments Pte Ltd (A Joint-Venture Company between City Developments Limited and TID Pte Ltd)

Architectural Consultant
ADDP Architects LLP

Structural Consultant
P&T Consultants Pte Ltd

M&E Consultant
United Project Consultants Pte Ltd

Design and Build Contractor
Teambuild Engineering & Construction Pte Ltd
CHANGI AIRPORT TERMINAL 4
Institutional & Other Buildings Category

CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | PLATINUM

KEY FEATURES

• Adopted precast system for the main departure hall which spanned 300m in length and 150m width to eliminate propping and formwork.
• Achieved 7-day cycle for each floor span of 70m length at main building.
• Adopted sloping top-chord pitched truss design instead of a flat roof design for 60m span truss to reduce steel tonnage.
• Used drywall for most of the partitions.
• Use of BIM to detect possible conflicts of services during early stage and to explore the possibility to incorporate structural and M&E components together.
• Adopted advanced precast beam shoe mechanical connectors for the connection between precast column corbel and precast beam.
• Adopted innovative hanging work platform ‘Magic Carpet’ for the skylight installation along the central galleria. In addition, implemented gantry truss with material hoist system to transport skylight and louver material.

Developer
Changi Airport Group (S) Pte Ltd

Architectural Consultant
SAA Architects Pte Ltd

Structural Consultant
RSP Architects Planners & Engineers Pte Ltd

M&E Consultant
Surbana Jurong Consultants Pte Ltd

Design and Build Contractor
Takenaka Corporation

Steel Truss Erection/Gangway Fabrication Specialist
Yongnam Engineering and Construction (Pte) Ltd

Skylight Galleria Glass/Façade Installation Specialist
YKK AP Singapore Pte. Ltd.
PUNGGOL LARGE CHILDCARE
Institutional & Other Buildings Category

CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | PLATINUM

KEY FEATURES

- Adopted high percentage of about 90% precast level for classroom block which used precast beams and power deck slab
- Use of Teflon roofing for the blocks to reduce steel truss members
- Use of BIM for co-ordination works, better visualisation of building details and detection of clashes to avoid abortive works

Developer
NTUC First Campus Co-operative Ltd

Architectural Consultant
LAUD Architects Pte Ltd

Structural Consultant
LSW Consulting Engineers Pte Ltd

M&E Consultant
HPX Consulting Engineers

Builder
Kwan Yong Construction Pte Ltd
TIONG SENG BUILDING

Industrial Buildings Category

CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | PLATINUM

KEY FEATURES

• Use of precast components such as precast walls, precast columns, precast slabs, precast service risers

• Adopted Prefabricated Bathroom Units (PBUs)

• Prefabricated staircase using “Dura” high strength concrete for 7th to 9th storey internal access staircases. Connections were made with simple bolting and epoxy

• Use of self-compacting concrete for the casting of slab and 750 ton crane to cater for precast components that weighed less than 50 tons

• Implemented BIM to check for clashes between M&E services, structural provision and architectural elements to improve coordination between disciplines which prevented rectification works.

Developer
Tiong Seng Contractors Pte Ltd

Architectural Consultant
LAUD Architects Pte Ltd

Structural Consultant
LSW Consulting Engineers Pte Ltd

M&E Consultant
Rankine & Hill (Singapore) Pte Ltd

Design and Build Contractor
Tiong Seng Contractors Pte Ltd
KAMPUNG ADMIRALTY
Mixed Development Category

CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | PLATINUM

KEY FEATURES

• Community-cum-residential mixed use development comprising Medical Centre Community Park with Senior Care Centre (SCC), Childcare Centre (CCC), Senior Activity Centre (SAC), Sky Terrace and Studio Apartments (SA) for seniors on the new upper ground

• First use of fully automated mechanical bicycle parking system (AMBPS) in Singapore

• Adopted semi top-down construction method using permanent slab as strutting for basement

• Cast in-situ columns for Annex building located near to MRT viaduct were converted to precast columns to eliminate erection of external scaffold and risk of flying objects

• Used BIM to visualise design concept through 3D models, identify technical issues by detecting the clashes and simulate construction sequence to fine-tune construction method and safety review

Developer
Housing & Development Board
Architectural Consultant
WOHA Architects Pte Ltd
Structural Consultant
Ronnie & Koh Consultants Pte Ltd
M&E Consultant
AECOM Singapore Pte Ltd
Builder
Lum Chang Building Contractors Pte Ltd
THE ORIENT

Residential Non-Landed Buildings Category < 25,000m²

CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | GOLD

KEY FEATURES

- Flat plate with perimeter beams was adopted to eliminate the need for internal beams
- Adopted drywall Prefabricated Bathroom Units (PBU) for 65% of the bathrooms which achieved manpower savings as compared to conventional bathrooms
- Façade has adopted off form concrete finish and vinyl tiles were used for the residential units to reduce manpower usage
- Architectural elements such as trellis and façade oriental frames were prefabricated in factory and installed on-site
- Use of BIM to detect clashes across structural, architectural and MEP disciplines and for construction sequencing

Developer
Aurum Land (Private) Limited

Architectural Consultant
Formwerkz Architects LLP

Structural Consultant
TEP Consultants Pte Ltd

M&E Consultant
Neam Solutions

Builder
Woh Hup (Private) Limited
BUANGKOK EDGEVIEW

Residential Non-Landed Buildings Category ≥ 25,000m²

CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | GOLD

KEY FEATURES

- Extensive use of precast components such as precast façade, precast column, precast household shelter, precast staircase, precast gable end wall.
- Use of self-compacting concrete and spray painting
- Adopted precast column/wall with precast skin and splice sleeve connections which helped to remove the need for external scaffold
- Use of drone to take progress photos and extended the capability of the drone to check safety hazard on site

Developer

Housing & Development Board

Architectural, Structural and M&E Consultant

Surbana Jurong Consultants Pte Ltd

Builder

Expand Construction Pte Ltd
MATILDA COURT

Residential Non-Landed Buildings Category ≥ 25,000m²

CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | GOLD

KEY FEATURES

• Use of drywall and precast staircase
• Converted hybrid gable end wall and cast in-situ staircase external walls to full precast system for higher productivity
• Use of self-compacting concrete and precast perimeter beam for the multi-storey carpark slabs
• Completed skimming and finishing works of the precast roof fascia on ground before installation, thus eliminating the need to work at height

Developer
Housing & Development Board

Architectural, Structural and M&E Consultant
Surbana Jurong Consultants Pte Ltd

Builder
Wee Hur Construction Pte Ltd
NEW FUTURA

Residential Non-Landed Buildings Category ≥ 25,000m²

CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | GOLD

KEY FEATURES

• Use of precast elements such as precast balcony, precast air-con ledge, precast staircase and precast bay windows. These elements were produced at the on-site precast yard to eliminate logistics issues

• Extensive use of drywall at dry and wet areas which reduced manpower usage

• Achieved 7-day floor cycle for typical storey despite the irregular curve shape of the building

• Adopted Prefabricated Bathroom Units (PBUs)

• Structural slabs were cast to finished level to eliminate conventional screeding works

Developer
City Sunshine Holdings Pte Ltd

Architectural Consultant
ADDP Architects LLP

Structural Consultant
KTP Consultants Pte Ltd

M&E Consultant
Squire Mech Pte Ltd

Design and Build Contractor
Dragages Singapore Pte Ltd
SIGNATURE AT YISHUN
Residential Non-Landed Buildings Category ≥ 25,000m²

CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | GOLD

KEY FEATURES

• Converted structural system from cast in-situ to precast for all elements except for slab which helped to enhance productivity

• Adopted twin and single type PBU's complete with finishes and fittings

• Adopted vertical mobile battery mould (MBM) for the project which directly produced the precast elements on-site, hence speeding up overall construction process. This saved logistics and planning in the delivery and transportation of the precast elements

• Use of BIM to detect and eliminate trades clashes and conflicts, thus minimising reworks which in turn saved cost and time. The adoption of Theory of Constraints (TOC) Buffer Management Model which is a project management system also helped the project team to surface out constraints and identify critical tasks for resource planning and management

• Adopted smart and semi-automated precast logistic management system for the hoisting of precast elements, which were tagged with RFID to allow information to be fed instantly into a digital database and integrated into a virtual BIM model with each piece hoisted in place

Developer
Gee-I Investments Pte Ltd

Architectural Consultant
Design Link Architects Pte Ltd

Structural Consultant
KCL Consultants Pte Ltd

M&E Consultant
Rankine & Hill (Singapore) Pte Ltd

Design and Build Contractor
Kimly Construction Pte Ltd
SOL ACRES

Residential Non-Landed Buildings Category ≥ 25,000m²

CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | GOLD

Developer
MCL Land (Brighton) Limited

Architectural Consultant
Consortium 168 Architects Pte Ltd

Structural Consultant
KCL Consultants Pte Ltd

M&E Consultant
Rankine & Hill (Singapore) Pte Ltd

Design and Build Contractor
Tiong Seng Contractors Pte Ltd

KEY FEATURES

• Adopted flat slab with cobiax system (void formers) for the multi-storey carpark which reduced manpower and concrete usage

• Full precast system except for the slab and storey shelter helped to improve site productivity

• Adopted PBUs using ultra high performance concrete that resulted in only 12mm thick internal walls that made the PBUs light

• Introduced the use of mobile battery mould (MBM) to produce precast walls vertically in a sandwich manner instead of conventional horizontal mould bed casting. The casting process was expedited as workers could pour more concrete within a smaller area

• Use of precast balcony incorporated with prefinished railing eliminated unproductive work and work at height safety risk

• Delivery of large precast elements were done using inloader which is a specialised trailer
SOPHIA HILLS

Residential Non-Landed Buildings Category ≥ 25,000m²

CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | GOLD

KEY FEATURES

• Adopted flat plate with perimeter beams that enabled simple and efficient system formwork to be deployed
• Extensive use of precast elements such as precast walls, precast beams, precast air-con ledge cum trellis, precast balcony slabs and precast refuse chutes. To further increase productivity and reduce the hoisting of columns, precast two-tier columns were adopted
• Adopted PBUs for 65% of the bathrooms
• Use of spray painting for all painting works
• Extensive use of drywall and lightweight concrete panels helped to reduce manpower usage for plastering works
• Implemented BIM to detect clashes

Developer
Hoi Hup Sunway Mount Sophia Pte Ltd

Architectural Consultant
Consortium 168 Architects Pte Ltd

Structural Consultant
BC Koh & Partners LLP

M&E Consultant
Rankine & Hill (Singapore) Pte Ltd

Design and Build Contractor
Straits Construction Singapore Pte Ltd
THE PANORAMA

Residential Non-Landed Buildings Category ≥ 25,000m²

CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | GOLD

KEY FEATURES

• Extensive use of precast elements such as precast structural shear walls, precast columns, precast balcony, precast air-con ledge, precast façade wall, precast trellis, precast parapet walls and precast staircase flights

• Adopted PBUs for the development

• Use of drywall for bedrooms and corridors

• Used heavy hydraulic lifting to lift the 200 tonnes prefabricated sky bridges that connect the two blocks at level 13 and level 20

• Used BIM to check for clashes between M&E services, structural provisions and architectural elements

• Use of mobile devices that were paired with BIM system for more efficient coordination of works on site

Developer
Pinehill Investments Pte Ltd

Architectural Consultant
MKPL Architects Pte Ltd

Structural Consultant
Meinhardt (Singapore) Pte Ltd

M&E Consultant
United Project Consultants Pte Ltd

Design and Build Contractor
Tiong Seng Contractors Pte Ltd
ULU PANDAN BUS DEPOT

Institutional & Other Buildings Category

CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | GOLD

KEY FEATURES

- Use of hollow-core planks for about 95% of the floor area which eliminated the erection of shoring and dismantling of formworks
- Converted 95% of the walls to non-structural precast walls with skim coat and these were constructed with the structural components so that architectural works could commence early
- Use of 350 ton crawler crane to tilt up and install large precast panels (up to 12.5m in width, 6m height). This reduced the hoisting cycle and installation time
- Mechanical fixing were adopted for precast wall to wall/column joints
- Adopted BIM to detect clashes for the different disciplines, allow provision for M&E openings and also identify the critical panels required for installation
- Set up precast yard on-site to produce large precast panels to eliminate logistic issues

Developer
Land Transport Authority

Architectural Consultant
Ong&Ong Pte Ltd

Structural Consultant
LSW Consulting Engineers Pte Ltd

M&E Consultant
Rankine & Hill (Singapore) Pte Ltd

Design and Build Contractor
Tiong Seng Contractors Pte Ltd
CONSTRUCTION PRODUCTIVITY AWARD – PROJECTS | GOLD

CONINENTAL AUTOMOTIVE (PHASE 3)
Industrial Buildings Category

KEY FEATURES
• Installed Qbiss (sandwich infill with mineral wool composite panel) for the front façade to achieve better thermal insulation and higher productivity
• Adopted precast components such as precast 2-tier column, precast beam, hollow core slab, precast staircase, multi-tier columns
• Adopted flexible water pipe and flexible sprinkler dropper

Developer
BP-CA3 LLP

Architectural Consultant
HA Architects Pte Ltd

Structural Consultant
LSW Consulting Engineers Pte Ltd

M&E Consultant
Elead Associates Pte Ltd

Design and Build Contractor
Boustead Projects E&C Pte Ltd