

Construction Safety Week 2020
Considerate Contractors Site Award Scheme

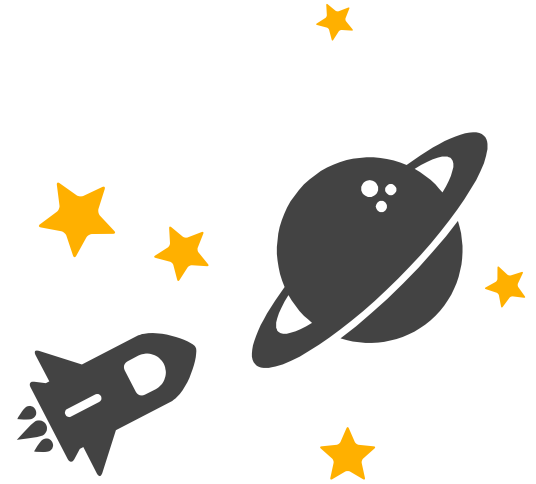
J3757- Medical Complex Extension at No. 21 Sassoon Road for The University of Hong Kong

Presented by
Cecilia KWOK (Project Manager)
November 2020

A Leading Example of Sustainable Alteration & Addition Works

- 1. Project Introduction**
- 2. Safety Performance**
- 3. Environmental Performance**
- 4. Caring of Workers & Neighbour**
- 5. Innovation & Creativity**

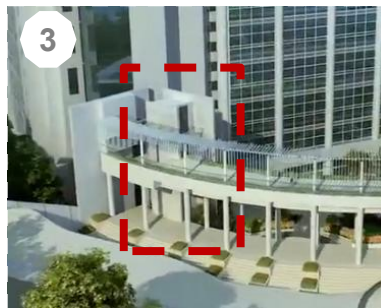
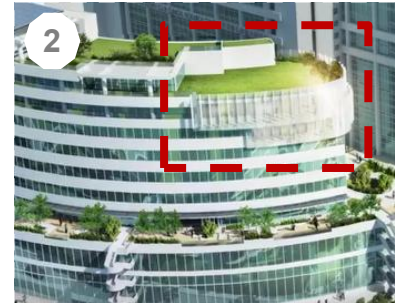




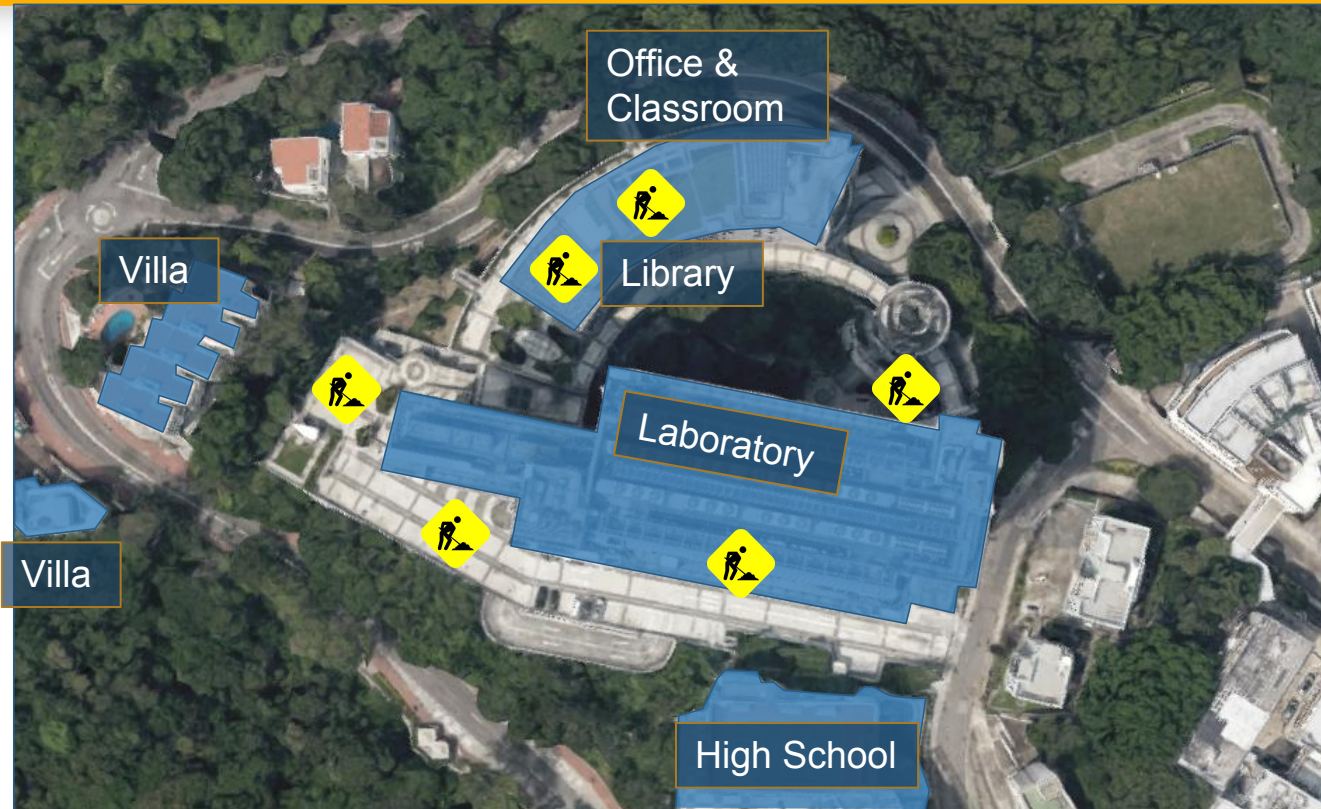
1.

Project Introduction

Project Scope



Work with Existing Operating Campus



Challenge

Public Safety

Noise

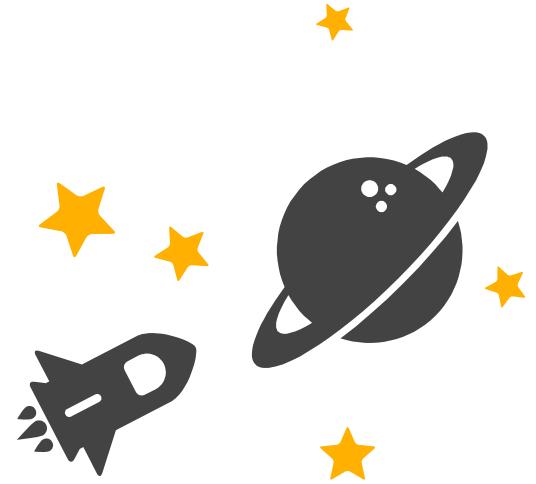
Vibration

Dust

Space

Site Layout





2.

Safety Performance

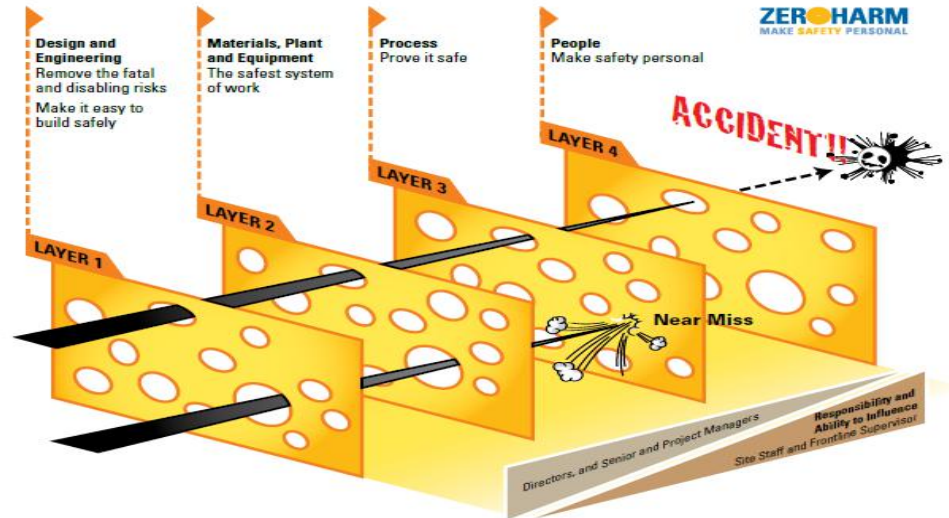
Safety Management System



Prior to the commencement of the Project, a Zero Harm Plan was derived from the fundamental concept of Four Layers of Protection.

Our 4 Layers of Protection

The Safety Management Process (Swiss Cheese Method)
We need several lines of defence when people make mistakes



Safety Management System



Gammon Safety Culture

- Mindful
- Inform
- Learning
- Fairness
- Respectful

Characteristics of the Gammon Safety Culture

Mindful – A state of constant unease about what could go wrong. The organisation is always on the look-out for hazards and risks.

- Mindful about errors that have already occurred to correct them before they worsen.
- Thinking about the unexpected and building in layers of protection to cope with surprises and errors.
- Hazard-aware and risk-intelligent.

Informed – A free flow of information and knowledge. Everyone knows what really goes on.

- Sensitive to operational performance and the frontline.
- Regularly visit the workplace and engage with workers, foremen, supervisors, managers and engineers.
- Approachable and encouraging of bad news.

Learning – Seek out learning opportunities turning accidents and incidents into opportunities to reinforce layers of protection across the organisation.

- Treating lessons learnt as a key management responsibility.
- Look for the root cause not the obvious cause.
- Debriefing teams to learn and improve.
- Finding opportunities for learning from events outside of the business.

Fairness – Not blaming people for honest mistakes or for practices condoned by management.

- Treating people how you would want to be treated.
- Giving people the opportunity to work safely through their competence and providing a safe environment.
- Consistent in advice and standards.
- Everyone is accountable – Pride in Responsibility.

Respectful – Listening to other people's ideas, showing respect for their knowledge, encouraging them to speak up.

- Involving people in planning and risk assessment.
- Giving feedback and following through on actions.



Specific Training for Lifting Operation



CIC Silver Card
A12 - Rigger



On-site Practical Training
By Experienced Rigger
Supervisor



Site Management

- Set up moveable pedestrian walkway for workers and public



Site Performance



Bar Bending Machine Guard



CPI Checking



Charging Station

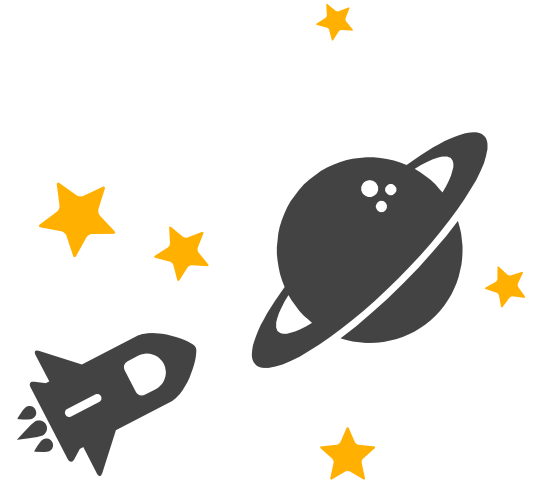


**Additional Checking
for LG**



3.

Environmental Performance



Strategy, target Setting and checking



Zero Waste Plan



Zero waste to landfill

- BIM automation, DfMA
- 60 % demolition waste recycling



Zero wasted energy

- Power planning
- Smart energy control office



Zero wasted water

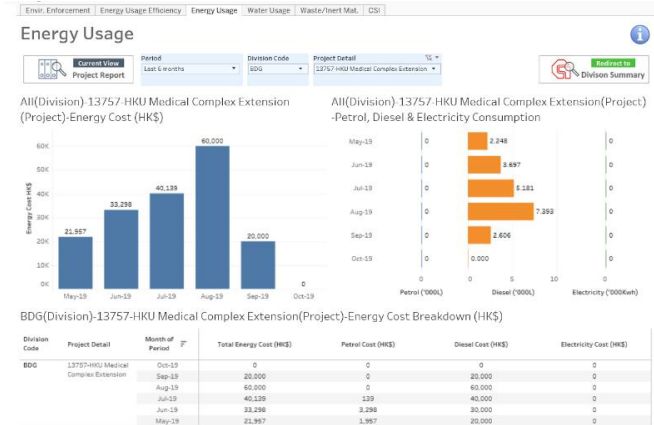
- Waste water recycling



Zero productivity loss

- Digital innovation

Online Dashboard






- Digital platform to track performance
- Benchmarking performance among projects

Power Planning



Liaise with HKU for the use of grid electricity to reduce diesel generators

-  Power from HKE or HKU
-  Power from generator

 Reduced carbon emissions and pollutants from diesel combustion

Waste Management



Recycle **600T** of broken concrete

Demolition waste recycling rate push up from 30% to **60%**



Slab cut from existing structure



Transport to pier in Tuen Mun



Concrete is broken down to aggregate



Sustainable Construction



Material Selection - Low Carbon Material



- **100%** concrete with CIC green product certification (carbon label)
- Material is produced with less environmental impact throughout its life cycle



CIC GREEN
PRODUCT CERTIFICATION
CARBON LABELLING SCHEME



CIC GREEN
PRODUCT CERTIFICATION
CARBON LABELLING SCHEME



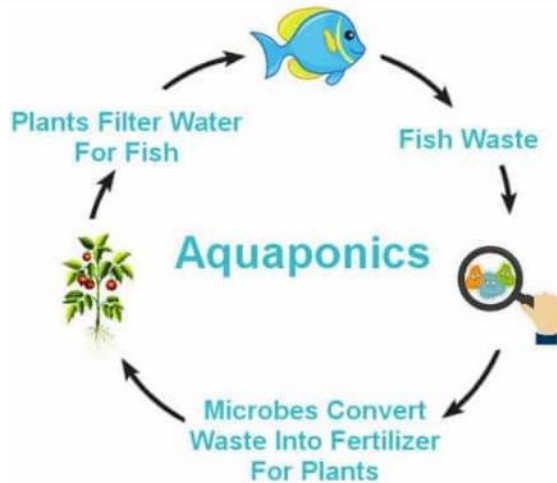
Material Selection - Timber use avoidance with Bondek

Bondek structure used as permanent formwork and integrated structure for concreting slab

- Avoids timber consumables and waste
- Avoids sawdust for site tidiness



Fish Preservation



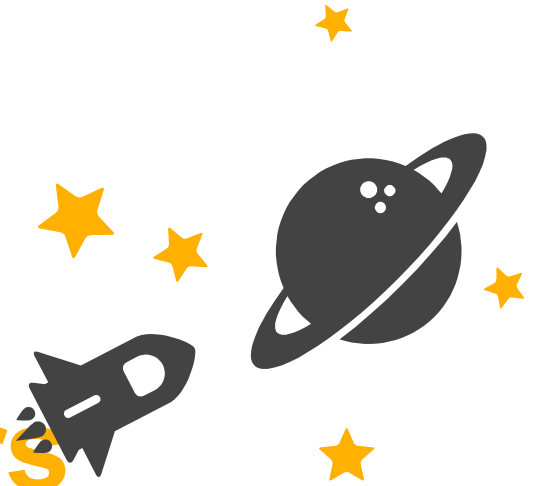
Preserve the fish in Fun Pui Garden fish pond before demolition.





4.

Caring of Workers & Neighbour



Caring of Existing Campus



Using vacuum cleaner during drilling works



Electric robot to reduce diesel combustion



Using saw cutting machine to cut the existing slab to minimize air, noise and vibration impact

Caring of Existing Campus



Additional Monitoring within Campus



Self-initiated noise measurement in library and theatre



Noise barrier for library.



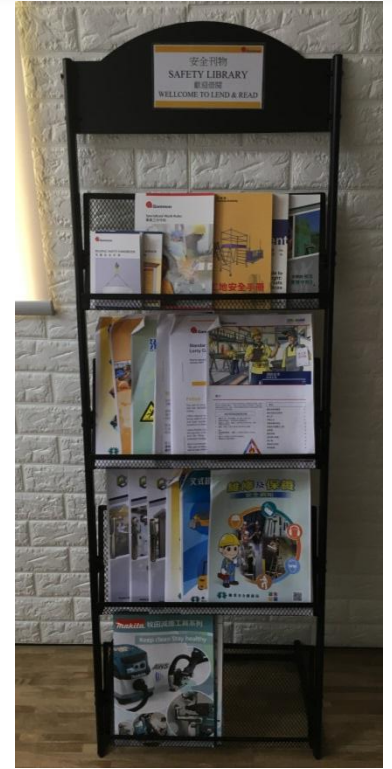
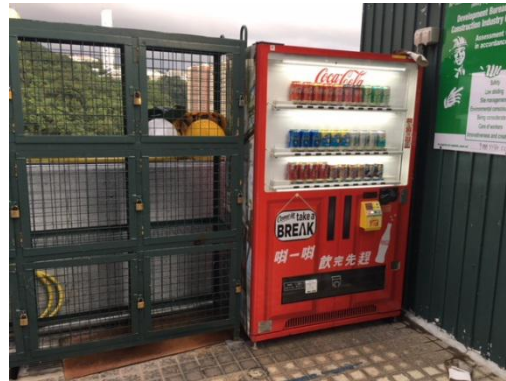
Real time air quality measurement before hand over

- TVOC
- PM2.5
- Temperature
- Relative Humidity

Health Check for workers



Welfare Facilities



Promotion Programme for Workers



Modification of Man Gate



Care for Others



Volunteer:

Home reburishment for elderly living alone in Island South before Chinese New Year

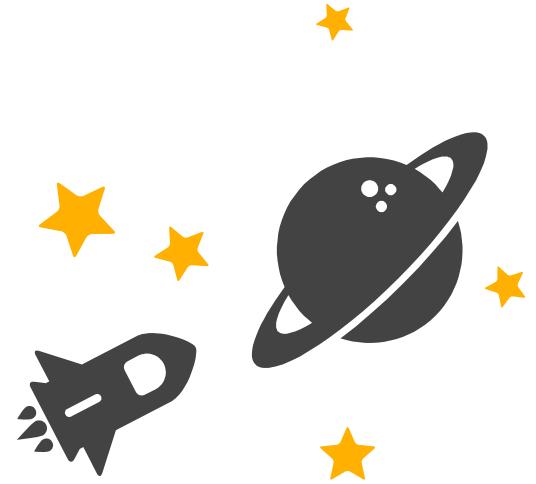


Tree Planting



5.

Innovation and Creativity

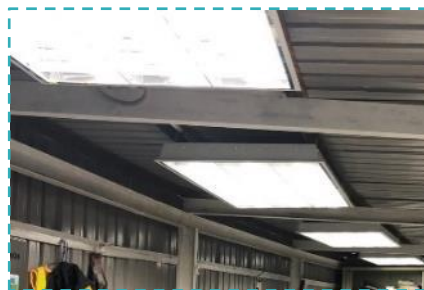


Smart Energy Control



- Centralize control by smart device
- Timer control to reduce energy wastage

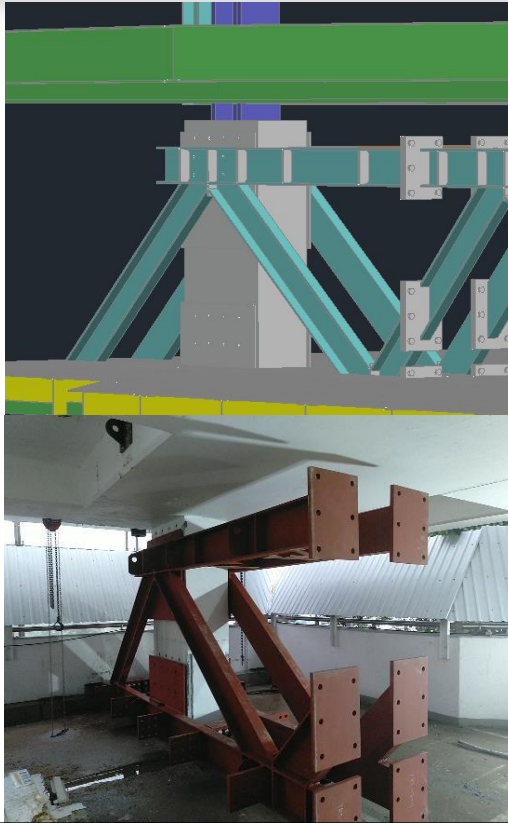
Office lighting



Air conditioner



Design for Manufacturing & Assembly (DfMA)



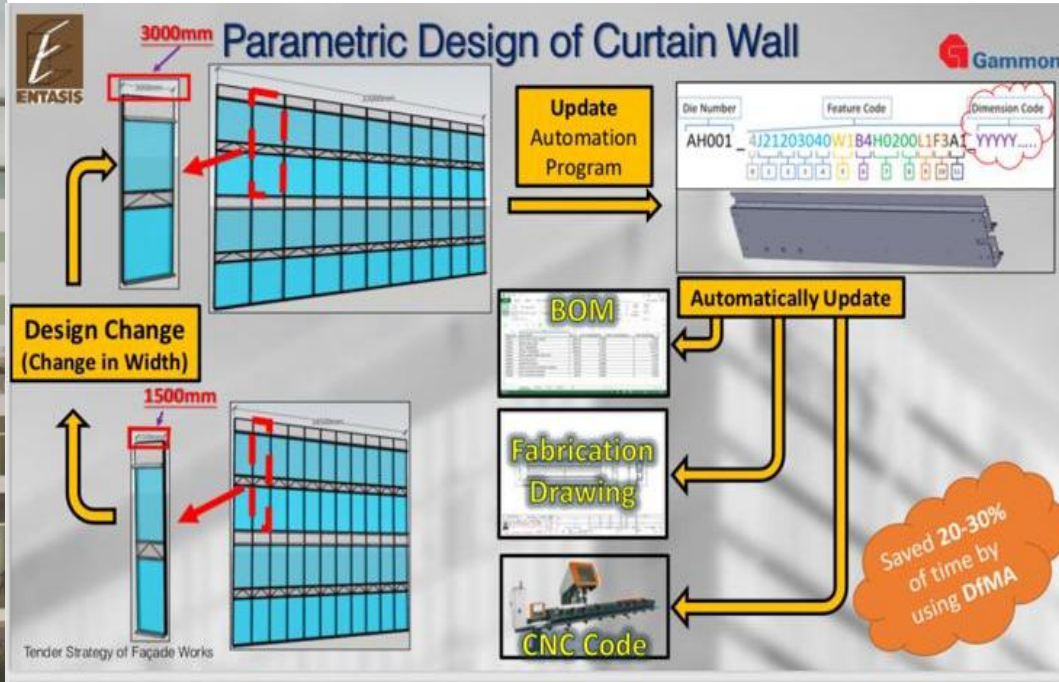
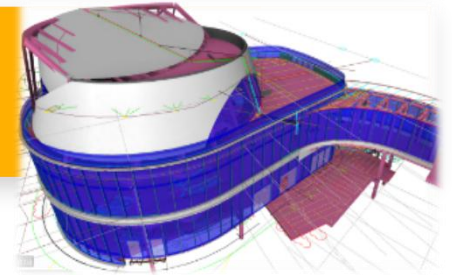
- **100%** off-site fabrication
↓
Waste generation
Transportation of components
- **100%** bolt and nut connection
↓
Energy use
Toxic gas emission from welding
- ↑
Speed up progress by 1 month

Fabrication scope:

Temporary works : 280 ton

Permanent works : 1220 ton

BIM Automation



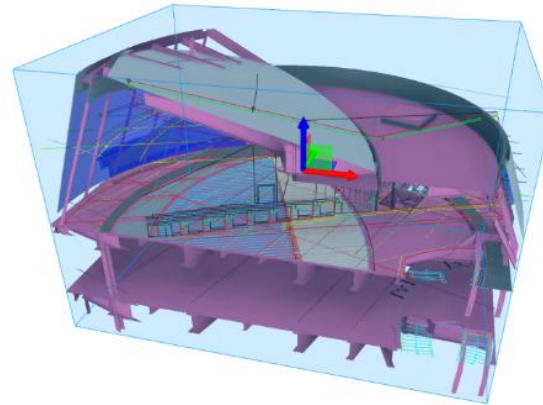
- BIM design feeds into manufacturing
- 100% off-site fabrication
- Increased accuracy

Controlled wastage
< 2%

Technology – BIM Monitoring with AR



- BIM for on-site monitoring
- Increase accuracy
- Easy to use



Technology – CCTV & Drone Monitoring

- Real-time recording and high resolution
- Effective for monitoring different area



Technology – Training by VR Tools

- Good for new comers for experiencing construction activities



Technology - Inspecto



Gammon J3757 - Medical Complex Extension
At No. 21 Sassoon Road for The University of Hong Kong
REQUEST FOR INSPECTION FORM

Subcontract: Gammon Construction Limited (GCL) Inspection No.: J3757-46-S-000698

Floor: New Annex Block Grid: New annex

The following work(s) are ready for your inspection on 09/09/2019 at 11:00
Subsequent works to be carried out after approval of inspection: Rebar fixing
at 12:00 hrs. on 09/09/2019
Description of Works (part plan attached):
Inspection of drill in rebar details - Rebar pull out test

Signed By: Stanley yung for Gammon Construction Limited on 09/09/2019 at 09:28
(Full Name)

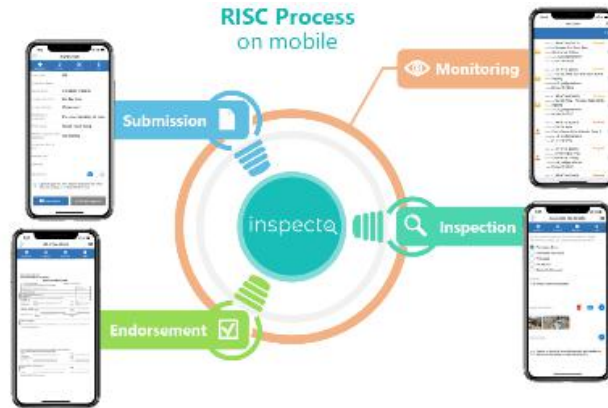
Issue To:	For Information	For Inspection	Received By
RA (Architectural)			
RSE (Structure)		✓	Yu Kung Pong
BSI (BSI)			

The works were inspected on: 09/09/2019 11:00 and the subsequent works will be proceeded:
 Immediately Satisfactory with comment
 Immediately after rectification Not satisfactory / Re-inspection is required
 Only after test result are satisfactory Rejected / Not ready for inspection

Defects / Outstanding Works Comments:
Subject to test results.

The permission to carry out works shall not be deemed to waiver of any statutory or contractual provision, nor of any actual or implied warranty.

Approved By: Yu Kung Pong
Date: 09/09/2019 11:00
Signed (GCL):
Date:



Inspecto

- Paperless inspection used by Contractor, Consultant and Client
- All parties can respond to latest comments timely
- Blockchain technology for verification



Thank you