



Safety Partnering on 3RS Projects

Presented By: Kevin Poole
Executive Director, Third Runway
Airport Authority Hong Kong



Aviation Safety Culture



- Safety is paramount for our aviation operators, airport workers & the travelling public – without compromise.
- Enlist all business partners to work towards the goal
- Aviation & Construction Safety are core values of HKIA

AAHK Vision & Policy



- Aim for incident-free environment
- Commitment to maintain and continuously improve safety standards
- AAHK Management accountable for safety
- Promulgation of safety awareness through safety communication and training
- Regular reviews of Safety Management System

Third Runway Division (TRD) Safety Strategy



- Ensure work can be carried out without risk to health and safety
- Articulated safety goals, targets and KPI's
- Visible Safety Leadership
- Empowerment of competent staff for proactive management of safety
- Safety promotion through recognition campaigns and awards to enhance safety awareness and inculcate a safety culture
- Independent safety audits on TRD and contractors' safety management systems

Safety Partnering on 3RS Projects

- Maximize effectiveness of all participants resources
- Work together in an open and trusting relationship towards mutually agreed objectives
- Actively search for continuous measurable improvement



* Based on "Trusting the Team, Bennett & Jayes, The Reading Construction Forum"

Safety Partnering on 3RS Projects



Essentially, Safety Partnering aims at:

- Collaborating to achieve a better safety performance through the involvement of all team members and stakeholders;
- Encouraging safety innovation and better long-term safety development;
- Improving communication and understanding;
- Encouraging reporting of near misses, incidents and accident cases;
- Establishing a long term commitment;
- Encouraging lessons learnt sharing.

Industry Challenges and Barriers to Improving Safety Performance

- A risk-taking attitude among some parties
- Accepting Safety breaches as industrial norm and trade practices
- Multi-layer Subcontracting System can lead to inadequate safety commitment and provisions across interfaces
- Highly competitive tendering environment can lead to reduced budgets allocated to site safety
- Time pressure on projects can jeopardise safety
- Enforcement approach may not help build the right safety culture and provides insufficient motivation to change unsafe behaviour and unsafe practices

Practical Measures to improve Construction Safety

- Top management commitment and visible safety leadership
- Practice Design for Safety and Health for both design and construction phases
- Allow sufficient time for safe construction of projects
- Previous safety performance forms a significant part of the Pre-qualification & Tender assessment
- Focus on preventing accidents which may be fatal or which may lead to permanent disability (particularly fall-from-height and electrical safety)
- Encourage DfMA and factory-condition pre-assembly and modularisation
- Share incidents and dangerous occurrences with Contractors through the airport-wide Safety Management Meetings and Construction Safety Benchmarking Group
- Continue to implement Pay for Safety and recognize good safety performance

Design Stage

Design Stage:

- Adopt Design for Safety and Health Approach
- Safety Partnering between AA TRD Team and Design Consultants to form Joint Risk study groups for early identification of possible construction risks and hazards
- Maintenance and Operations Departments fully engaged throughout the design process to ensure the end product can be accessed safely for maintenance and cleaning
- Risk Action Reports maintained throughout design phase to address risks.
- At the conclusion of design stage a Construction Risk Register is issued to all Contractors tendering for the work

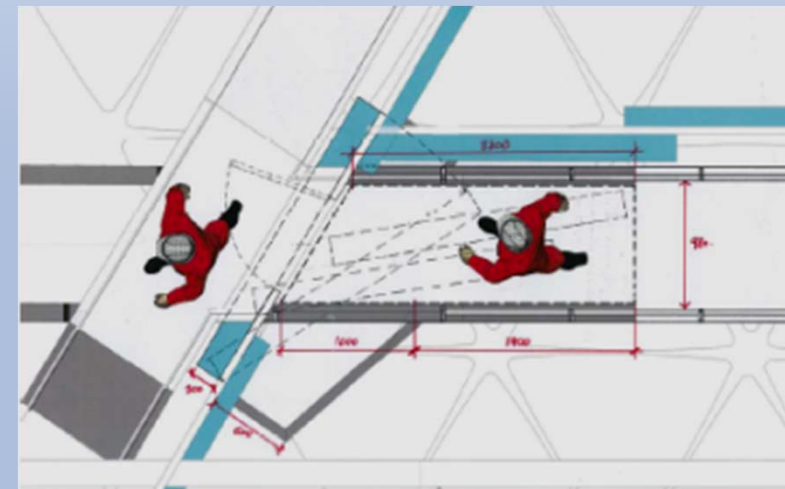
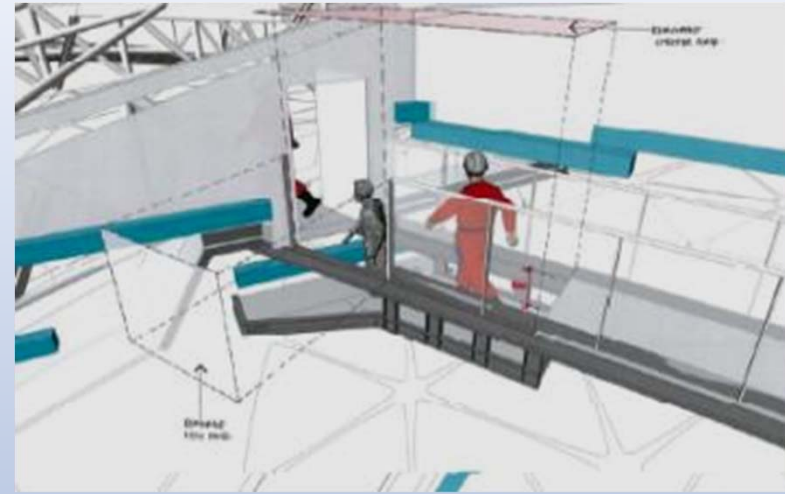
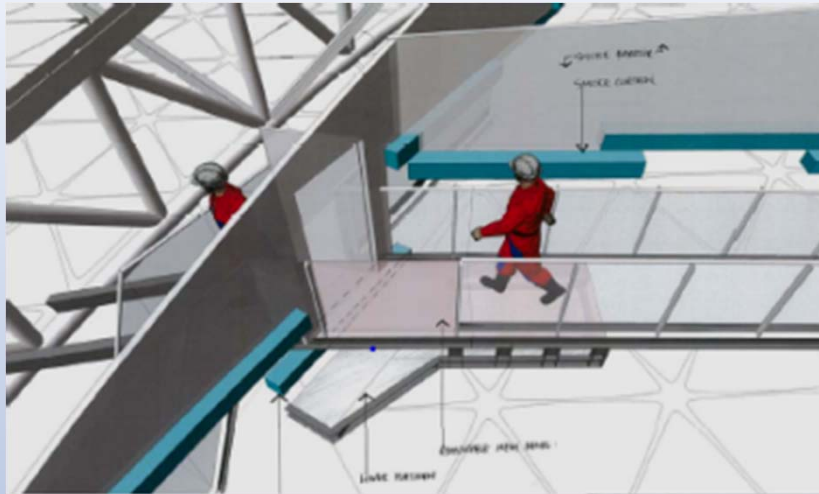
Successful Measures Adopted



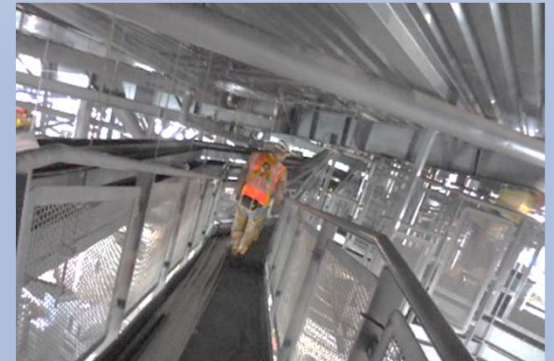
Design for Safety and Health

- Structured and coordinated Risk Management process
- Design a project that is safe to build, use and maintain
- AA in-house planning team use data from past projects to set achievable programmes
- Encourage DfMA via prefabrication, pre-assembly and modularisation to reduce the risk of working at height
- Adopt Construction, Design and Management (CDM) principles.
- Use Building Information Modelling (BIM) throughout the project life-cycle to assist visualization.

Example of Design for Safety – Extensive Use of Roof Walkways in the Midfield Concourse for Maintenance Purposes



Example of Design for Safety – Roof Walkways built in the Midfield Concourse for Maintenance Purposes



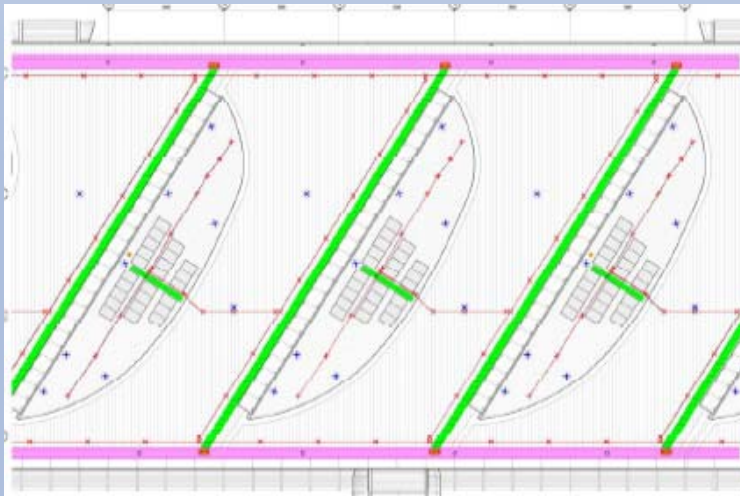
Example of Design for Safety for Roof Maintenance – Aluminium Roof Walkway System



Bilco Ladder

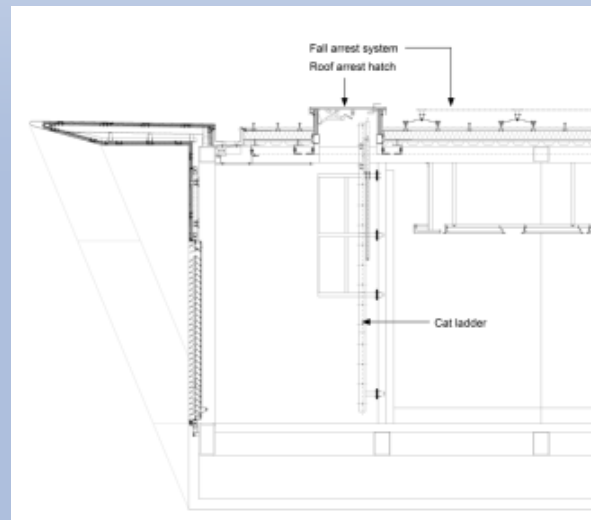
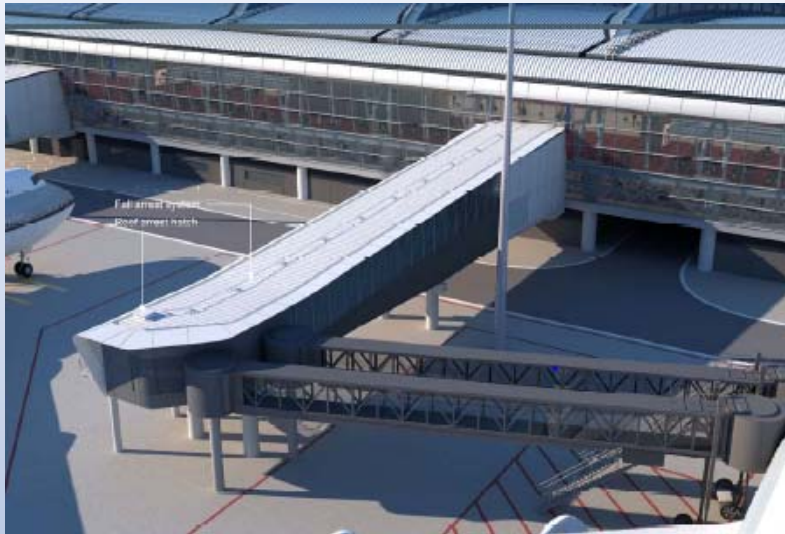


Example of Design for Safety for Roof Maintenance - Lifeline & Roof Walkway System



**Continuous Lifeline System
along Walkable Gutters
& Roof Walkways**

Example of Design for Safety for Fixed Link Bridge Maintenance – Fall Arrest System

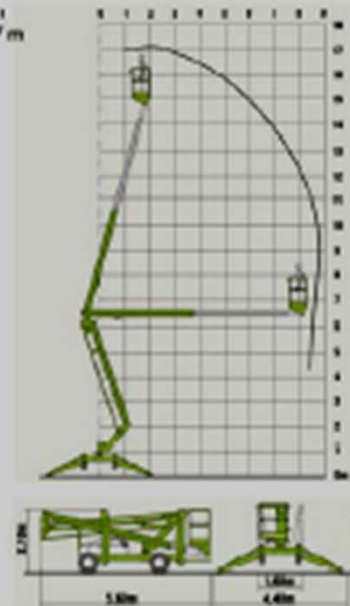


Example of Design for Safety for Façade Maintenance – Cherry Picker / Spider / Scissor Lift System



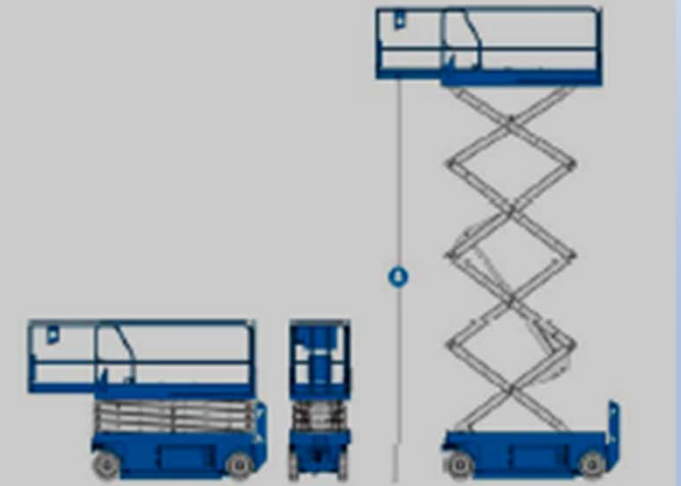
Internal articulating arm platform (SD 170)

MAX Height reach: 17.1 m
MAX Horizontal reach: 8.7 m
Served Floor: L6



Internal vertical working platform (GS 3232)

MAX Height reach: 11.70m
MAX Horizontal reach: 3.18 m
Served Floor: L6/L7 (L5/L4)



Fall Prevention – DfMA



- Prefabrication done on the ground to reduce risk of working at height
- Units pre-fitted with temporary guardrails before installation



Fall Prevention – Pre-casting of Floor Slabs



Supported Contractor's Use of Steel Beam Shutters

Reduced Quantity of Work at Height and pre-fitted with Guardrails Toe-boards



Supported Contractor's Use of Steel Column Moulds

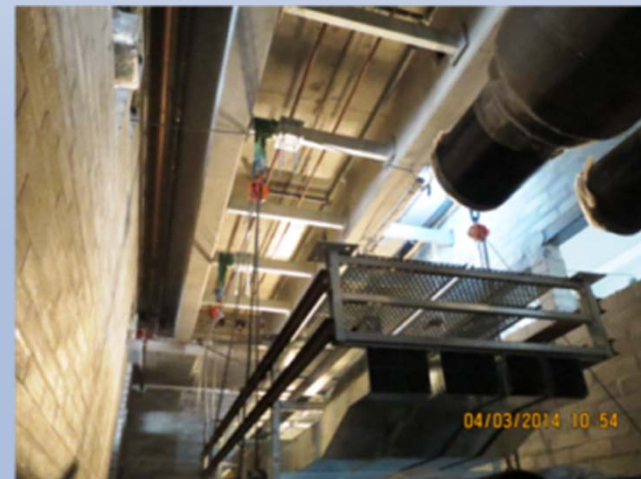
Reduced Risk of Falls with pre-fitted Guardrails & Toeboards



Supported Contractor's Use of Modularization – (e.g. E&M Works)



Prefabrication of Pipe Modules



Installation of Modules

Construction Stage

TRD Construction Safety Targets

Target AFR for 2017/18 ≤ 6.5

Stretch Target AFR for 2017/18 $\leq \underline{3.5}$

Target AFR for 2018/19 ≤ 6.0

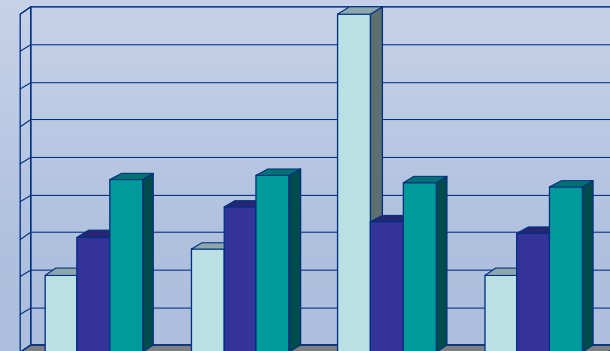
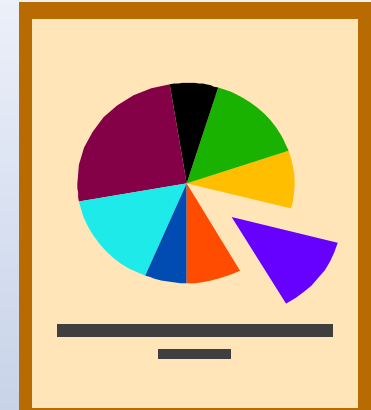
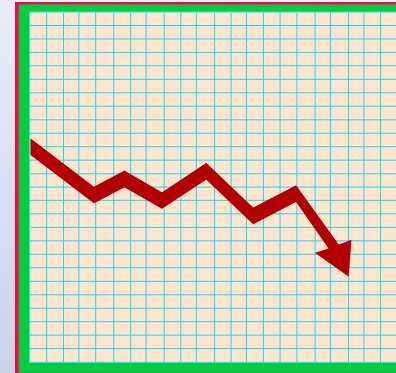
Stretch Target AFR for 2018/19 $\leq \underline{3.2}$

Goals

- Zero fatal accidents.
- Zero dangerous occurrences.

Remarks:

- Accident Frequency Rate (AFR) - Reportable accidents²⁴ per 1000 workers per year
- Target is reviewed and set every year



Implementation – *Top Management Commitment*

Safety Charter by Top Management from AA and Contractors:

Committing to the agreed safety objectives through:

- cooperation
- teamwork
- mutual trust



Signing of the Safety Charter on Reclamation Works

Implementation – *Visible Safety Leadership*

Joint Site Safety Inspections:

Regular joint inspections paid by top management of AA and Contractors to demonstrate good and visible safety leadership



Implementation –

Visible Safety Leadership (Cont'd)

Debriefing on site by Executive Director, TRD after a joint site safety inspection to a DCM Barge with Contractor's MD and Senior Management Staff



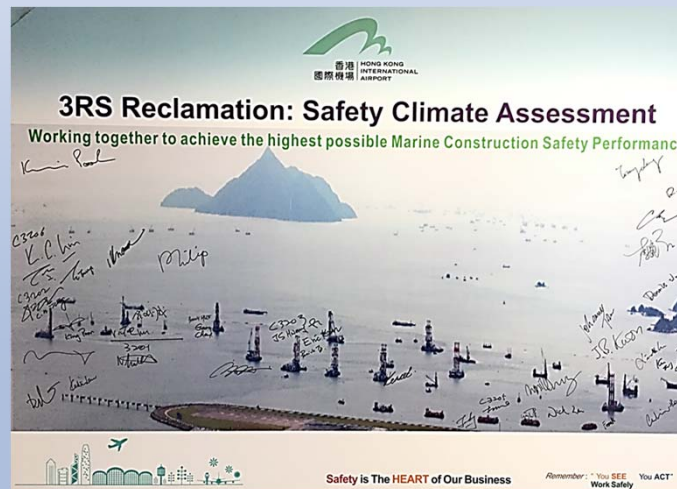
Implementation – *Dynamic Safety Performance Programme*



- AA engaged a psychologist to collect quantitative and qualitative data through interviews and questionnaires with site management and workforce
- Provide recommendations to improve safety leadership and communication to build trust between site management and workers.



**Presentation by the Expert Psychologist
on the Safety Climate Assessment**



**Top Management of AAHK & Contractors
after signing the Safety Charter**

Implementation – *Safe Construction Methods*

Method Statements and Risk Assessments Workshops:

Working together with Contractors to discuss and agree on safe construction methods and risk assessments before formal submission to facilitate approval and effectiveness.



Implementation –

Monthly Safety Management Meetings with Contractors



- Chaired by TRD Executive Director or his General Managers with the Contractors' Top Management and Project Safety Managers.
- Forum for all Contractors (with Labour Dept. & Marine Dept.) to review safety targets; benchmark safety performance & training; and share Safety Issues, Highlights, Alerts and foreseeable High Risk Activities.
- Enable a clear, consistent, top level message on construction safety to be passed to all Contractors working at the airport.



Implementation – *Joint Hazard Identification*



Joint Site Safety Inspections:

Joint site safety inspections with AA TRD safety professionals, implementation engineers & inspectors together with Contractor's senior management and safety team to identify hazards and safety deficiencies on site and resolve the subsequent rectification / control measures.



Implementation –

TRD Unique Fall Protection & Electrical Safety Rating Systems



AA Fall Protection Rating System (FPR)

- Falls of person are the major cause of serious and even fatal accidents in the HK construction industry.
- Promote safe working at height and advocate full provisions for fall protection
- Benchmark contractors' standard to provide early warning

AA Electrical Safety Rating System (ESR)

- Enhance and ensure electrical safety during installation works and when using electrical tools on site
- Promulgate the use of cordless powered hand tools
- Ensure provision of Residual Current Device (RCD) for lighting circuits
- Ensure good cable management

Implementation - *Metal Scaffolding System* (No Bamboo Scaffolding in AA Projects)



Adequate Guardrails & Toeboards



Safe Access Route

Implementation – Safe Access



Implementation –

Mobile Elevating Working Platforms for Working at Height



Cherry Picker



Scissor Platform

Implementation –

Safe Platform Ladders for Working above Ground



Remark : A-ladders are prohibited in AA projects

Implementation –

Electrical Safety Inspection & Promulgation

- AA E&M staff work together with Contractors to improve electrical safety.



ESR Inspection

- Successful Promulgation of Use of Cordless Powered Hand Tools



Implementation – *Joint Risk Reviews*

Regular Risk Review Workshops with Contractors:

Reviews of the hazard identification and risk assessment processes:

- During introduction and deployment of new technologies
- When there are any significant changes to major equipment and systems
- In a situation with significant changes in operations and construction methods



Implementation – *Joint Selection of Subcontractors*



Subcontractors Safety Interviews

- Pre-approval interviews with Subcontractors of major trades chaired by AA's Project Manager with technical support from Safety Manager; attended by Main Contractor and proposed Subcontractor's management.
- Assess Subcontractor's past safety performance in the past 5 years.
- Ensure adequate competence to carry out works both technically and safely.
- Evaluate subcontractor's safety resources allocated for the works.
- Encourage visible safety leadership from contractor's safety.
- Advise on AA's clear and consistent goals on construction safety.

Implementation –

AA's Incentive for Safety



Pay for Safety Scheme

- Reference to CIC Guidelines
- Payment to the Contractors for safety related items and performance targets :
 - Provision of Safety Officers
 - Obtaining AA Quarterly Site Safety Awards
 - Submission of “near miss” reports & implementation of corrective action
 - Achievement of the minimum Site Safety Score
 - Achievement of specified Fall Protection Rating (FPR)
 - No reportable accidents in a month
 - Cumulative Accident Frequency Rate (AFR) below AAHK’s annual target for that month
 - No fatality during the whole contract period

Implementation – *Independent Safety Audits*

- In addition to Contractors statutory safety audits, AAHK also employs Independent Safety Auditors to examine the adequacy, effectiveness and reliability of the Safety Management Systems of the Contractors.



**Independent Safety Audit
on a Reclamation Project**

**Auditor's Debriefing with
Observations & Recommendations
on Audits to Reclamation Projects
to TRD Senior Management**



Implementation – *Marine Safety Experts to conduct Safety Audits & Training*

- Singaporean Independent Safety experts with vast marine works experience have been engaged to conduct:
 - safety audits to all the 6 DCM & Reclamation projects
 - tailor-made marine safety training to AA staff.
 - Safety Awareness Training and Train-the-Trainers



Marine Safety Training

Implementation –

Emergency Preparedness in joint Rescue Drill for Marine Works



Marine Department



*Jointly attended by
AAHK, CAD, MD, FSD, HKPF
& 6 Project Contractors*



Marine Police



Fire Services Department



Implementation – *Construction Safety Benchmarking Group*



Safety Partnering with major client organizations in forming the Construction Safety Benchmarking Group (CSBG)

- A platform made up of most of the major client organizations in HK including AA, MTR, HK Electric, CLP, Towngas, DevB, CIC and major developers
- Regular meetings to benchmark and share safety practices and initiatives

Safety Performance of Third Runway Division (TRD) with Safety Partnering Approach

TRD Construction Safety Targets

Target AFR for 2017/18 ≤ 6.5

Stretch Target AFR for 2017/18 $\leq \underline{3.5}$

Target AFR for 2018/19 ≤ 6.0

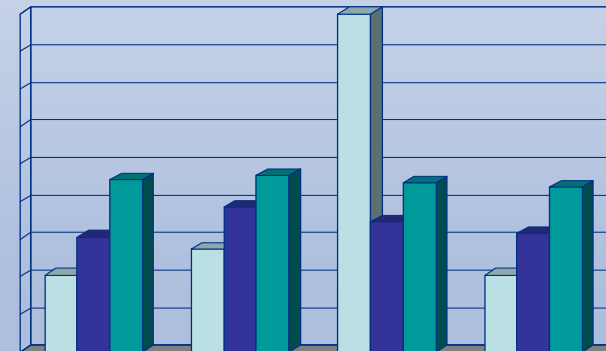
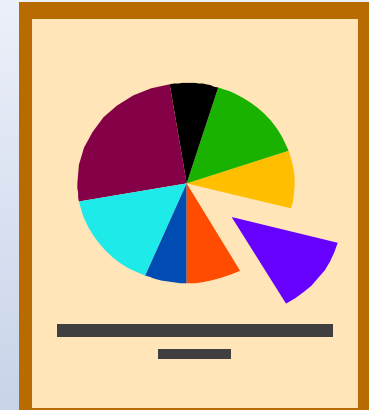
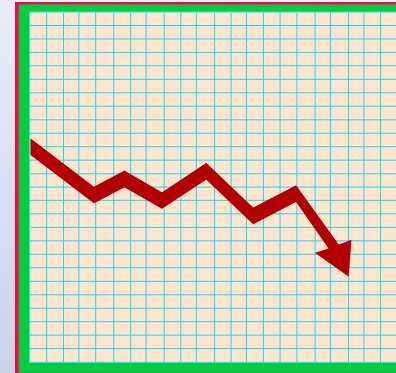
Stretch Target AFR for 2018/19 $\leq \underline{3.2}$

Goals

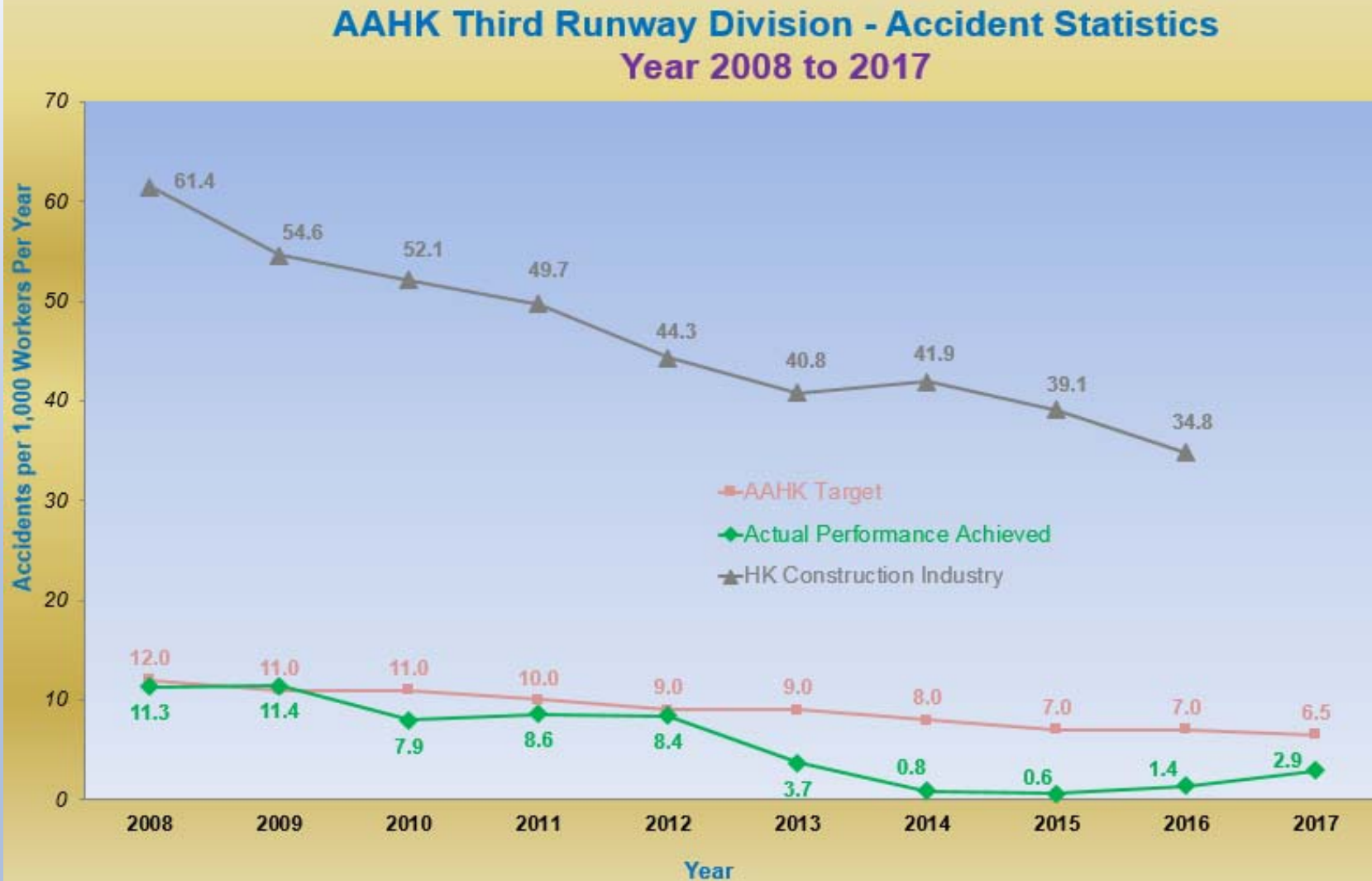
- Zero fatal accidents.
- Zero dangerous occurrences.

Remarks:

- Accident Frequency Rate (AFR) - Reportable accidents⁴⁶ per 1000 workers per year
- Target is reviewed and set every year



Historical AFR Record



Lighthouse Club Safety Leadership Awards

AAHK's efforts in adhering to the highest construction safety has been recognized by the Lighthouse Club, which awarded Gold Awards to AAHK for the Safety Leadership Awards 2015 and 2018 (Client-Developer Category)



Safety is The **HEART** of Our Business



Accident Prevention – **HEART**

H	How	How safe is the activity or area?
E	Evaluate	What is the risk of an accident?
A	Alert	Alert others immediately of the hazard!
R	Report	Report the hazard!
T	Tell	Tell others of your experience!

Hazard Report System

Remember : “ You SEE You ACT ”

49

Work Safely



Thank you

