CONSTRUCTION SITE TRAFFIC MANAGEMENT GUIDE

新加坡建築商公會有限公司
THE SINGAPORE CONTRACTORS ASSOCIATION LTD
Building Our Nation Together

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This **Construction Site Traffic Management Guide** was approved by the Workplace Safety & Health Committee on behalf of The Singapore Contractors Association Limited (SCAL) on 14 November 2023.

The Workplace Safety & Health Committee, appointed by The Singapore Contractors Association Limited, consists of the following members:

	Name	**Capacity**
Chairman:	Mr Yong Jian Rong	Woh Hup (Pte) Ltd
Vice-Chairman:	Mr Ong Yong Seng	Shimizu Corporation Ltd
	Mr Loh Yeow Leng	SC2 Pte Ltd
Secretariat	Ms Louise Chua	The Singapore Construction Association Limited
	Ms Karen Ong	SCAL Academy
Members:	Mr Joseph Chua	BHCC Construction Pte Ltd
	Mr Howard How	Boustead Projects Ltd
	Mr Rong Jing Xiang	China Communications Construction Company Ltd
	Mr Jeffrey Yu	HSL Ground Engineering Pte Ltd
	Mr Lee Kay Chai	Lian Soon Construction Pte Ltd
	Mr Tay Ban Hong	Lum Chang Building Contractors Pte Ltd
	Mr Chia Keng Wah	Penta-Ocean Construction Co Ltd
	Dr Ho Nyok Yong	Samwoh Corporation Pte Ltd
	Mr Seah Kok Hua	Samwoh Corporation Pte Ltd
	Mr S T Moorthy	Sanchoon Builders Pte Ltd
	Mr Lee Yan Shyong	Sato Kogyo (S) Pte Ltd
	Mr Henry Ho Koon Tuang	Sembcorp Specialised Construction Pte Ltd
	Mr Don Wilson	Straits Construction Singapore Pte Ltd
	Mr P Muthukumar	Straits Construction Singapore Pte Ltd
	Mr Allan Low	Teambuild Engineering & Construction Pte Ltd
	Mr Lee Sai Yin	Vico Construction
	Mr Joe Phyo Wai Oo	Woh Hup (Pte) Ltd
	Mr Zulkarnain Bin Sapihe	Woh Hup (Pte) Ltd
	Mr Yeo Kim Hock	Individual capacity

The Construction Site Traffic Management Guide Working Group, appointed by the Workplace Safety & Health Committee, comprises the following:

	Name	**Capacity**
Leader:	Mr Seah Kok Hua	Samwoh Corporation Pte Ltd
Co-Lead:	Mr Henry Ho Koon Tuang	Sembcorp Specialised Construction Pte Ltd
Members:	Mr Rong Jing Xiang	China Communications Construction Company Ltd
	Mr P. Muthukumar	Straits Construction Singapore Pte Ltd
	Mr Joe Phyo Wai Oo	Woh Hup (Pte) Ltd

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Foreword

In construction sites, effective site traffic management will mean reduced risk of traffic-related accidents happening in the work sites. Traffic-related accidents can lead to loss of lives, human injuries, and property damage. They may also result in stop work orders leading to loss in productivity and reputation and business opportunities to the contractor. Therefore, it is crucial that contractors provide sufficient attention to site traffic management at their worksites.

This guidebook was prepared by the Construction Site Traffic Management Guide Working Group appointed by the Workplace Safety & Health Sub-committee under The Singapore Contractors Association Limited.

It highlighted some principles that can be adopted to create a safe traffic environment. Factors that can lead to traffic-related safety hazards are discussed. There are also examples of traffic-related hazards faced in construction sites and recommended control measures that can be taken to eliminate or mitigate the safety risks. An update on the available innovative tools to manage site traffic-related issues was also provided.

In preparing this guidebook, reference was also made to the following publications:

1. WSHC Workplace Safety and Health Guidelines – Workplace Traffic Safety Management (1st rev 2014);
2. Traffic Safety at LTA Worksites;
3. LTA Workplace Safety, Health and Environmental Good Practices Handbook (Rev 4 Dec 2020);
4. Contribution materials from WSH Sub-committee and members of SCAL; and
5. Any latest Regulatory updates at the period of publication.

Acknowledgement is made for the use of information from the above publications and contribution from members of SCAL.

Since the last publication, the construction industry noted that there have been a few traffic incidents involving lorries that were used in the course of fetching workers from their dormitories to the workplaces and vice versa. This revised edition has included new Requirements under the Road Traffic Act and WSH Act relating to Safe Transportation of Workers with Lorries. The new requirements were jointly announced by the Ministry of Manpower, Ministry of Transport, Land Transport Authority, Singapore Police Force and Building and Construction Authority.

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1. Scope

This Construction Site Traffic Management Guide is a reference guide for contractors to manage traffic at their construction sites through sharing some good practices from contractors in Singapore.

It acts as a learning and sharing tool for contractors in the area of managing traffic in construction sites.

This guide does not apply to areas outside the construction workplace where the contractor has no management control.

2. Definitions

In this guide, the following terms apply:

a. Traffic would mean either human or vehicular/ machinery flow in the site.
b. Human traffic would mean pedestrian flow in the site.
c. Vehicular/ machinery traffic would mean vehicular/ machinery flow in the site.

3. Principles in Traffic Safety

Traffic safety in a construction site can be effectively managed by abiding to the following principles, though they are not exhaustive:

a. Eliminate conflicts between pedestrian and vehicular/ machinery traffic flow.
b. Forward planning and developing specific traffic management plans.
c. Update traffic management plan to ensure it stays relevant to site changes.
d. Ensure that there are direct and continuous pedestrian flow routes.
e. Ensure vehicular/ machinery movements are guided.
f. Vehicles/ machinery to be well maintained and fit for use.
g. Goods on vehicles/ machinery to be well-secured.
h. Drivers/ operators of vehicles/ machinery to be competently trained on in-house safety and traffic rules.
i. Actively identify, remove, or warn users of blind spots.

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Factors to consider in managing construction site traffic

The principles in traffic safety are affected by many factors.

By effectively managing these factors, we can then eliminate or reduce safety risks from traffic-related issues at the workplaces.

These factors are:

Management	i. Management shall take ownership and be committed to provide a safe work environment for all stakeholders. ii. Management must ensure that a site traffic management system is set up and enforced.
Man	i. Ensure that only competent people are tasked to operate vehicle and machinery. ii. Ensure that people are not behaving rashly while operating the vehicle and machinery. iii. Ensure that all stakeholders exercise caution while carrying out any activities in the work site. iv. Ensure that all people are rested adequately and fit to operate vehicle and machinery safely.
Machine	i. Ensure that all vehicles and machinery have been properly maintained. ii. Ensure that each vehicle and machinery is being used in accordance with its designed usage.
Medium	i. Ensure that the environment is visible and adequately level without unreasonable obstruction. ii. Ensure that the environment is well-lit.
Mission	i. Ensure the driver/ operator is well-informed of the route of travel and be prepared for the conditions of the route.

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4. Planning

Plan and ensure that **active control measures** are taken to manage the hazards arising from traffic at the workplace.

The planning stage will result in a Traffic Management Plan to be used as reference by all stakeholders in the site:

a. Traffic Management Plan

A Workplace Traffic Management Plan helps to minimize risks and hazards.

The plan should be prepared by qualified WSH personnel and endorsed by senior management.

An effective Traffic Management Plan shall include the following elements (non-exhaustive):

i. Workplace Safety and Health (WSH) policy:
ii. Safety and Health objectives;
iii. Duties and Responsibilities;
iv. Traffic Rules and Regulations;
v. Risk Management;
vi. Safe Work Procedures;
vii. Training;
viii. Emergency Response Plan;
ix. Incident Investigation.

b. Tips: Areas to consider when preparing Traffic Management Plan:

i. Adequate setback of workplace from the main road
ii. Consider expected congestion of the workplace – alternative parking areasmay need to be considered.
iii. Consider access to and from the workplace - active traffic control measures may need to be considered.
iv. Designated travel paths within the workplace – pedestrian and traffic routes.
v. Designated delivery and loading/ unloading areas.

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5. Operations

With a Traffic Management Plan in place, control measures need to be implemented to eliminate / reduce the safety risk arising from the hazard identified.
Samples of the Risk Assessment and Management on traffic related hazards is provided in Annex B.

These hazards can also be classified under the following categories:

a. Manpower-related issues
b. Machine-related issues
c. Medium-related issues
d. Mission-related issues
e. Management-related issues

a. Control Measures to Manage Hazards Arising from Manpower-related issues
Ensure competency of manpower resource
a. Drivers to be competent, fit, and responsible to carry out their driving safely.
b. Drivers to be competently trained and assessed.
c. Drivers to be familiar with the models of vehicles they will be operating.
d. Drivers to perform safe driving: i. Driver to adhere to the stated speed indicated at site. ii. No using hand phone while driving. iii. Perform daily vehicle check. iv. Secure seat belts (if applicable) before driving/ operating. v. Driver to turn on head lights and hazard lights during the time when illumination is poor.
e. Workforce/ site personnel to be trained and made aware that they must: i. Abide by the in-house safety and traffic rules when moving within the site. ii. Putting up the required PPE to ensure their visibility especially when working at nights. iii. To only rest in the allocated rest areas at the workplace.
Define roles and responsibilities for clarity and build ownership in managing traffic related issues at the workplace
a. Clearly define the duties and responsibilities of personnel managing and implementing the Traffic Management Plan.
b. Consider the legal obligations such as WSH Act and its subsidiary regulations when assigning responsibilities and duties.

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b. Control measures to manage Hazards Arising from Machine-related issues

Check condition and maintenance of vehicles and machinery

a. Ensure vehicles and machinery used are fit for use and regularly serviced.

b. Ensure prior operation daily checks by operator / driver using prepared checklist

c. Ensure vehicle is maintained in accordance to the prepared maintenance schedule.

Parking of Vehicle

a. To ensure vehicles and machinery are parked in areas that are authorised and do not pose hazards to other stakeholders in the workplace.

b. To ensure that vehicles and machinery are safely parked and do not move. On slope areas, wheel chocks to be put on.

c. Control Measures to Manage Hazards Arising from Medium-related issues

Ensure environment is safe for driving and operating machinery and vehicle

a. Ensure vehicles and machinery movement through the site are done in a safe manner, noting the following conditions:

i. Height limit restriction
ii. Poor ground condition
iii. Blind spot
iv. Inadequate lighting
v. Poor road condition

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d. Control Measures to Manage Hazards Arising from Mission-related issues

Ensure proper planning and documentation of resource
a. Plan and execute movement of vehicle and machinery to and through the work site.
b. Ensure vehicles and machinery movement through the site are done in a safe manner.
c. Submit proper documentation to Safety Dept for verification.
d. Plan and review Heavy/ Oversized vehicle/ plant/machinery access route.
e. Traffic controller to be briefed a day in advance of the mobilization schedule. Mobilization into the site to be escorted.
Forward planning – Driving over-sized vehicle
a. Oversized heavy vehicles which are used to carry large and heavy cargo slow down traffic. They may also affect road structures due to their large size and heavy weight. The movement of these vehicles is hence regulated for the safety and convenience of other road users.
b. You need to apply for an oversized vehicle movement (OVM) permit 3 days in advance via LTA.PROMPT for these vehicles.

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e. Control Measures to Manage Hazards Arising from Management-related issues

Ensure all stakeholders with commitment and responsibilities to site traffic management
a. Ensure all stakeholders have the commitment and ownership of taking up the responsibilities to ensure a safe environment in relations to site traffic matter
b. Ensure that a site traffic management system be set up and enforced.
Ensure workers are allocated dedicated and proper rest areas which are protected from safety hazards.
c. Management needs to allocate dedicated rest areas which are safe for workers to take their rest.

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6. Check, Review and Improve

a. Review effectiveness of implemented measures

i. Review regularly the adopted traffic management system at the site as the works in the construction worksite progress.

ii. This is to ensure that the traffic management system remains effective with the changes in the site environment.

b. Emergency preparedness and response

i. In any emergency, it is crucial that we can save lives and minimize losses. To meet this aim, it is necessary that an emergency response plan be established and effectively implemented.

ii. The emergency response plan may include the following:

- Procedure for raising alarm.
- Procedure for evacuating and rescue of victims.
- Provision of means of rescue and first aid.
- Provision of means of communication with relevant government and response agencies.
- Provision of an emergency response team, stipulating all their duties and responsibilities.
- Creation of an emergency contact list.

c. Incident investigation

i. Incident investigation is conducted to establish the root causes of an incident.

ii. This will lead to the recommendation and implementation of necessary preventive measures to create a safer and more productive workplace.

iii. Typically, the incident investigation is carried out under the following stages:

- <u>Information gathering</u>
  - Conduct interviews, check incident area and take photographs.
- <u>Analysis</u>
  - Analyze information and establish root cause(s).
- <u>Review and implement</u>
  - Review risk assessment
  - Implement changes
- <u>Communicate all relevant information to workers.</u>

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d. Audit

i. Regular audit serves to review the effectiveness of the established site traffic management plan and to identify the gaps observed from the audit. These gaps can then be addressed to improve the effectiveness of the site traffic management plan.

ii. The audit is done under the following guide:

- Monthly on-site inspection by WSH personnel to ensure proper implementation of the proposed mitigation and management measures.
- WSH Officer to review the monitoring checklist and correction form to ensure appropriate corrective actions are proposed and implementation is undertaken by the specified timescale.
- Monitoring checklists to be archived in an orderly manner for external auditing.
- All monitoring checklists to be maintained at the workplace.

e. Implement improvement solutions following review of findings from the check and review stage.

i. Use findings established from the check and review stage to propose improvements to the site traffic management plan.

ii. The proposed measures shall be planned and documented with follow up to be done by identified responsible person with the targeted implementation timeline.

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7. Innovative tools in traffic management

Many innovative tools to assist in traffic management are available in the market today. A summary of the available tools is provided in the below Table. Information on these innovative tools is available in the internet.

Available tools:	**Remarks:**
Safety videos	Training videos in multi-languages to train team from different nationalities.

Driving Safety Videos – Safe Driving Training | DuPont ...

https://www.youtube.com › watch ▾

Aug 15, 2014 - Uploaded by ConsultDSS

Preview the full "**Safe Driving**: Take Control" **training** program here: ...

Occupational Driving Safety Programs: The Driver - YouTube

https://www.youtube.com › watch

Oct 31, 2015 - Uploaded by NatlSafetyCouncil

Occupational Driving **Safety** Programs: The Driver .... **Defensive Driving - Safety Training Video** Course ...

Driving Safety - Employee Training To Stay Safe on the Road ...

https://www.youtube.com › watch

Mar 20, 2019 - Uploaded by SafetyVideos.com

Your browser does not currently recognize any of the **video** formats available. ...

Driving Safety - Employee ...

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Available tools:	**Remarks:**
VR tools	Tools to simulate actual work situations for work team to experience the impact as part of experiential learning.
	
SCAL Safety App	Brief and effective reminders on good practices in traffic management.
	

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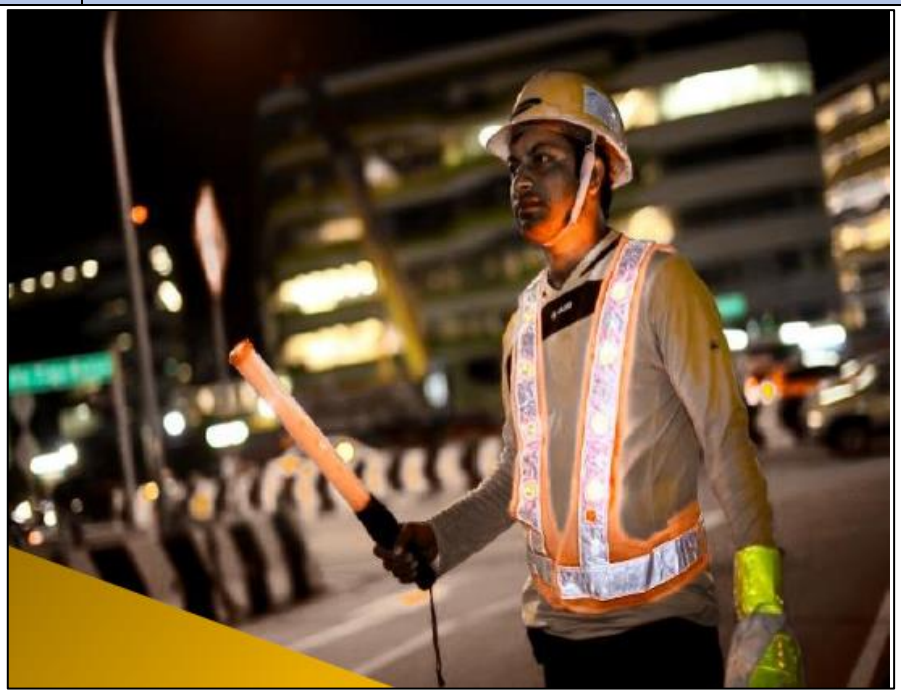
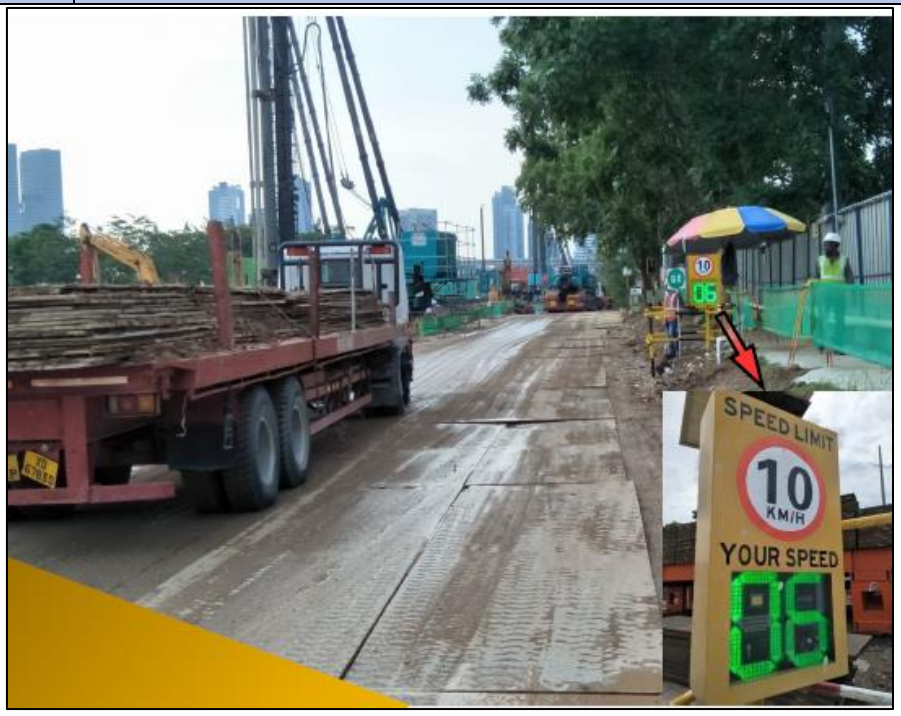
Available tools:	Remarks:
Reflective safety vest	Reflective safety vest filled with LED lights to increase visibility and ensure safetyof motorists and workers working in the nights.
	
Speed limit sign board to warn approaching drivers	Alert approaching driver of his vehicle speed and to take appropriate action to reduce speed.
	

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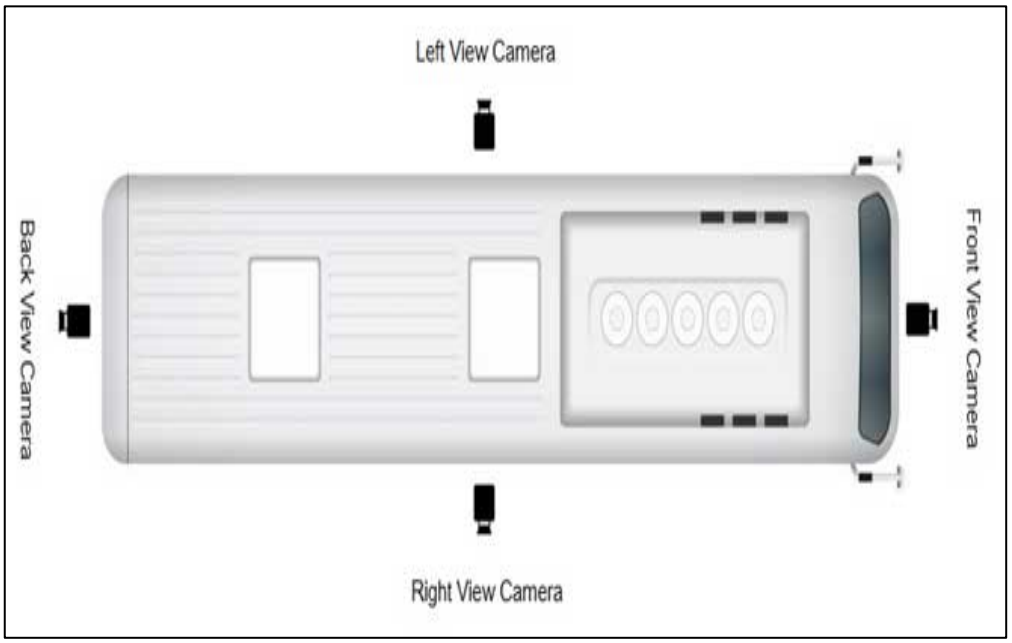
Available tools:	Remarks:
Blind spot sensor of vehicles	Alert driver on the blind spots of vehicles when reversing or moving into adjacent lanes.



Driver behaviour and fatigue management	Alert the driver when allowable speed has exceeded or when fatigue sets in. Providesfleet management through indicators such as speeding

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Available tools:	Remarks:
QR Code Checklist	Enables instantaneous retrieval of inspection checklists and other document and improve accountability of documents
	
Vicinity Alert Device	Prevents collision by: • Sending alert to machine operator to halt operations if banksman is located nearby. • Improves machine operator and banksman safety awareness
	

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Available tools:	Remarks:
Machinery LED Lights	• Accentuates the heavy machineries on site • Improves safety awareness on site

LED Balloon Light	• Provides additional lighting at work areas on the road • Increases visibility for workers

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Available tools:	Remarks:
AI Monitoring for safe distancing	• Ensures safe distancing measures are complied with
	
Additional Gantry Height Warning System	• Restricts height of vehicles • Prevents damages to site gate and vehicles over the height limit
	

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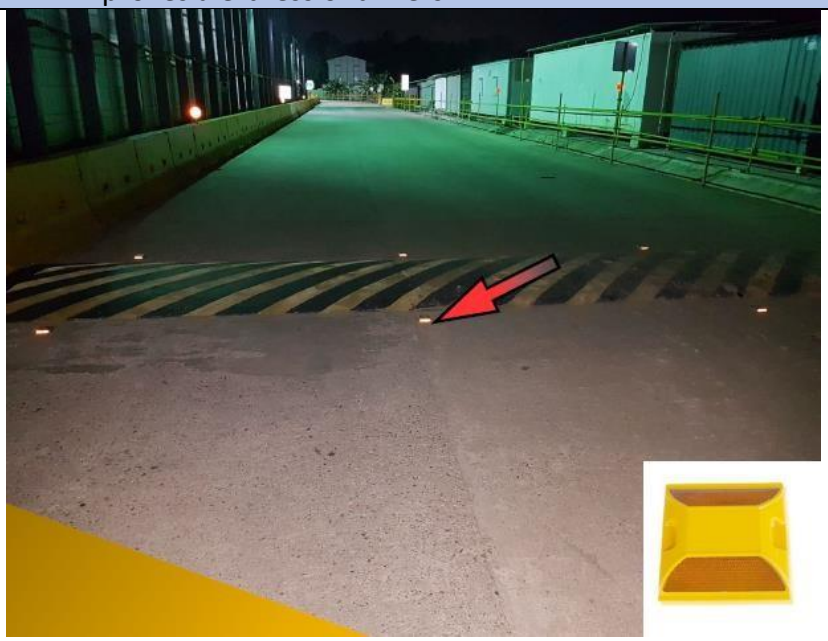
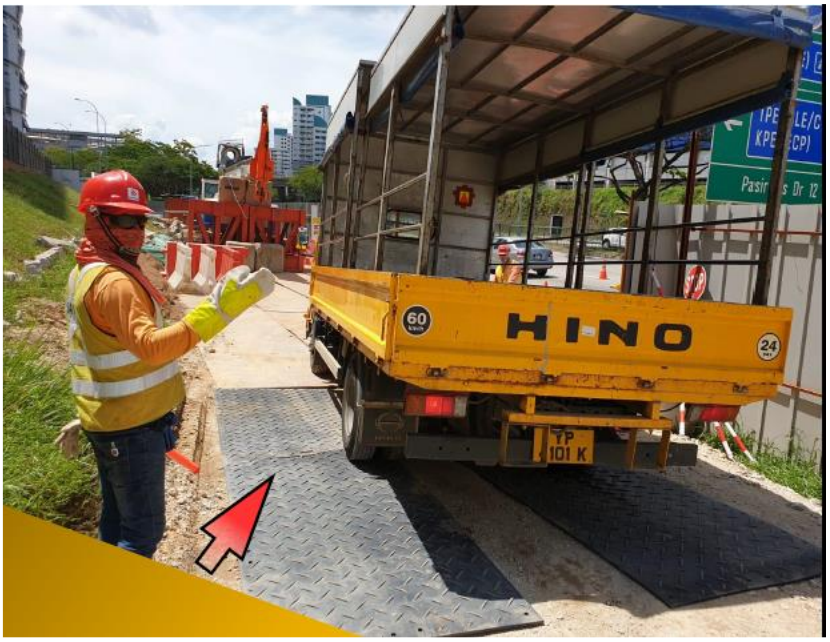
Available tools:	Remarks:
Road Reflectors	• Enhance visibility of speed reducing devices • Reduces tendency of speeding • Improves alertness of drivers
	
Ground Guard	• Reduces muscle strains caused by carrying heavy conventional decking material • Reduces labor required for installation
	

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8. References

a. WSHC Workplace Safety and Health Guidelines – Workplace Traffic Safety Management (1st rev 2014)
b. Traffic Safety at LTA Worksites
c. LTA Good Practices Handbook (2018 ed)
d. Contribution materials from the following SCAL members:
    i. Penta-Ocean Construction Co Ltd
    ii. Samwoh Corporation Pte Ltd
    iii. Sembcorp Specialised Construction Pte Ltd
    iv. Shimizu Corporation
    v. Teambuild Engineering & Construction Pte Ltd
    vi. Tiong Aik Construction Pte Ltd

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ANNEXES:

Annex A – Sample: Roles and Responsibilities

Annex 1: Roles and Responsibilities

To have an effective Traffic Management Plan, each stakeholder has to carry out their duties and responsibilities effectively. These duties and responsibilities include:

a. Responsibilities of Project Management Team (PMT)

- Project Management Team includes person-in-charge such as Project Manager, Construction Manager, Engineers, WSH personnel, supervisors, foremen.
- Their responsibilities include (non-exhaustive):
  i. Project manager shall develop and implement the workplace traffic safety management plan with the assistance of Construction Manager and WSH Officer;
  ii. Project Manager and WSH Officer shall ensure that the workplace traffic safety management plan is implemented effectively and communicated to all levels of workers;
  iii. Engineers and trade supervisors shall ensure that workplace traffic safety rules, training programmes and safe work procedures (SWPs) are followed by workers;
  iv. Engineers and trade supervisors shall provide the training and awareness amongst drivers to encourage systematic parking, following traffic rules, preventing unnecessary stoppages and overtaking;
  v. Engineers and trade supervisors shall provide all workers with the necessary information, instruction, training and supervision to ensure their safety and health at the workplace;
  vi. Engineers and trade supervisors shall provide and ensure proper use of personal protective equipment (PPE);
  vii. Engineers and trade supervisors shall ensure that there are safe means of access to and egress from any part of the workplace;
  viii. Engineers and trade supervisors shall ensure that all equipment (including vehicles) used are properly maintained in accordance with the manual;
  ix. Engineers and trade supervisors shall ensure that all workers under their charge have attended the relevant safety training course and possess the relevant certification for the work that is carried out;
  x. Engineers and trade supervisors shall provide all necessary emergency facilities required at a workplace such as first aid kits;
  xi. Engineers and trade supervisors shall ensure that workers are familiar with the contingency or emergency plan;
  xii. WSH Officer / or his designate shall keep records of reported accidents, incidents and diseases and take necessary action to prevent a recurrence;
  xiii. WSH Officers / or his designate shall undertake monthly monitoring to ensure proper implementation of the proposed mitigation and management measures in accordance with the requirements of the Traffic Safety Management Monitoring Checklist.

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xiv. Construction Manager / WSH Officer shall review the monitoring checklist and corrective actions are proposed and implementation is undertaken by the timescale specified.

b. Responsibilities of Workers

- Workers include construction workers, machine operators, drivers, etc.
- Their responsibilities include:
  i. Following workplace traffic safety and health training or briefing sessions
  ii. Attending workplace traffic safety and health training or briefing sessions.
  iii. Only operate a plant or equipment if they hold valid licenses, possess the relevant safety certification and have been given the authorization to do so.
  iv. Understand where the blind spot of the operated machines.
  v. Observe emergency procedures, instructions and arrangements as established and instructed.
  vi. Operate equipment with care and do not use equipment (including vehicles) beyond their capacity or designated purpose;
  vii. Use all safety devices and PPE as provided.
  viii. Never misuse, interfere with or modify any of the devices or equipment
  ix. Report any damage, malfunction or suspected defect of plant, equipment, safety device or PPE to their supervisor
  x. Report accidents, incidents, diseases and any workplace hazards to the supervisor or person-in-charge
  xi. Suggest ways to improve traffic safety at the workplace if they identify any lapses during the course of work.

c. Responsibilities of Traffic Controllers / Banksmen

- Trained traffic controllers / banksmen shall be appointed to assist in directing transport vehicles at the workplace during difficult maneuvers such as unavoidable blind spots and tight bends.
- Where the driver has difficulty seeing a single traffic controller / banksman, two or more traffic controllers / banksmen, or other alternatives should be appointed.
- Traffic controllers / banksmen must be properly trained to direct traffic and are aware of the risks they are exposed to.
- Traffic controller / banksman shall wear the following standardized PPE:
  i. Safety helmet, safety boots and reflective vest with “Traffic Controller” / “Banksman” labelled behind the vest.
  ii. Reflective hand glove or baton
  iii. Whistle
- The following are some responsibilities (not exhaustive) of traffic controllers / banksmen:
  i. To control and direct traffic flow to ensure vehicles and personnel access in and around the Workplace boundary safely
  ii. Observe SWPs or safe traffic measures
  iii. Remain highly visible to the driver at all times
  iv. Use a clear or standard signaling system understood by the driver
  v. Stand at a safe position while guiding the transport vehicle
  vi. Wear highly visible reflective vests at all time

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d. Responsibilities of sub-contractors / Suppliers Person-In-Charge

- To provide direction and coordination related to the use of work access.
- To ensure traffic controllers is/are deployed at their area of work to control and direct traffic.
- To provide feedback on any of the project's traffic related issues to the project management team.
- To nominate trained and qualified personnel for authorization by the project management team to operate vehicles / mobile machinery on the project site.
- To ensure all faulty vehicles and mobile machinery are Locked Out and Tagged.
- To verify that the repaired vehicles / mobile machinery is repaired satisfactorily and in safe for use condition before removing the LOTO and informing authorised operators the repaired vehicles / mobile machinery is safe for use.

e. Responsibilities of Vehicle Driver / Mobile Machinery Operator

- To adhere to all project rules and regulations, risk assessments and safe work procedures while operating the vehicles and mobile machinery as per instructions.
- All vehicle drivers / mobile machinery operators shall conduct daily pre-operation inspection on their vehicle / mobile machinery prior to use. They shall give feedback to their immediate supervisor / project management team if they discover the vehicle / mobile machinery is faulty.
- Drivers and operators shall turn on the lights of their vehicles and mobile machinery when the visibility is low.
- To ensure all loads are secured and harnessed before commencing transportation.
- To ensure all unattended vehicles and mobile machinery are effectively immobilized to prevent rolling / sliding, etc. by ensuring the vehicle / mobile machinery is set in "Park" gear with handbrake applied. Wheel chocks shall be provided to chock the wheels from movement.
- To ensure wheels of vehicles and mobile machinery under repair are chock using wheel chocks.
- All drivers and operators must observe the safety of other personnel and ensure pedestrians always have the right of way.
- Sound the horn prior to reversing and whenever driving off from stationary position.
- To report all incidents and near-miss to their immediate supervisor / project management team.
- To assist in investigation of traffic related incidents.

f. Responsibilities of Pedestrians

- To adhere to all rules and regulations, whilst walking at the designated safe personnel walkway.
- To understand and follow all safety signs posted in all working areas.
- To be alert of the vehicles and mobile machinery around their walking area.

g. Responsibilities of Visitors

- All visitors must only enter through the designated personnel entry / exit access points and report to the project security post to register their details.
- Visitors who drive into the project premises must register their vehicle with the project security.
- Visitors are briefed on the project's HSE requirements before they are allowed to enter the project premises.
- All visitors, except ad-hoc suppliers and persons performing self-collection, shall be accompanied by the project personnel that they are visiting.

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Annex B – Samples of Risk Assessment for Site Traffic-related hazards

Sample No: 1

HSE Risk Assessment (HSE RA) - CONSTRUCTION SITE TRAFFIC MANAGEMENT GUIDE							
Project:	XXX Project	Company:	XYZ Pte Ltd	Reference No.:	SCAL/RA/ Annex A	Rev No.:	00
Title of HSERA:	Site Traffic-related hazards					Next Review Date:	DD MM YYYY
Work Process / Activity :	General Vehicular Traffic Management			Work Location(s):	Within Site		

HSE RA Conducted By:									
S/N	Name	Company	Designation	Signature / Date	S/N	Name	Company	Designation	Signature / Date
1		XYZ Pte Ltd			7				
2		ABC Pte Ltd			8				
3		XX Pte Ltd			9				
4					10				
5					11				
6					12				

HSE RA Approved By:					
S/N	Name	Company	Designation	Signature	Approval Date
1		XYX Pte Ltd	Project Manager		
2		XYZ Pte Ltd	Project Director		

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HSE Risk Matrix						
Severity \ **Likelihood**		**Rare (1)** Not expected to occur but still possible	**Remote (2)** No likely to occur under normal circumstances	**Occasional (3)** Possible or known to occur	**Frequent (4)** Common occurrence	**Almost Certain (5)** Continual or repeating experience
Catastrophic (5)	• Fatality, fatal diseases or multiple major injuries or permanent disability. • Effect on human community and resulting outrage is high with the possibility of civil legal action being taken against the company. • May result in Authority summon to court, stop work order & heavy penalty fines.	**Medium Risk (5)**	**Medium Risk (10)**	**High Risk (15)**	**High Risk (20)**	**High Risk (25)**
Major (4)	• Serious injuries or life-threatening occupational diseases, or injury requiring professional medical attention with 4 or more days of medical leave given or hospitalization for more than 24 hours. • Effect on human community and resulting outrage is high with possibility of civil legal action being taken against the company. • May result in Authority summon to court, stop work order or heavy penalty fines.	**Medium Risk (4)**	**Medium Risk (8)**	**Medium Risk (12)**	**High Risk (16)**	**High Risk (20)**
Moderate (3)	• Injury or ill-health leading to temporary disability (i.e., minor fractures, cuts, wounds that require stitches, etc.). • Require professional medical attention with less than 3 days of medical leave given or hospitalization for less than 24 hours. • Effect on human community and outrage caused is moderate / minimal. • May result in Authority warnings or minimal penalty fines.	**Low Risk (3)**	**Medium Risk (6)**	**Medium Risk (9)**	**Medium Risk (12)**	**High Risk (15)**
Minor (2)	• Injury or ill-health requiring only first-aid treatment (e.g., minor cuts & bruises, irritation, ill-health with temporary discomfort). • Little or no possibility of legal implications.	**Low Risk (2)**	**Medium Risk (4)**	**Medium Risk (6)**	**Medium Risk (8)**	**Medium Risk (10)**
Negligible (1)	• Not likely to cause injury or ill-health.	**Low Risk (1)**	**Low Risk (2)**	**Low Risk (3)**	**Medium Risk (4)**	**Medium Risk (5)**

Low Risk (1 to 3) = ACCEPTABLE	**Medium Risk (4 to 12) = TOLERABLE**	**High Risk (15 to 25) = NOT ACCEPTABLE**
• No additional risk control measures are required. • Frequent review is required to ensure that the risk / impact level assigned is accurate and does not increase over time.	• A careful evaluation of the hazards should be carried out to ensure that the risk level is reduced to as low as reasonably practicable (ALARP) within a defined timeframe. • Interim risk control measures such as administrative controls shall be implemented. • Management attention is required.	• High Risk Level must be reduced to at least Medium Risk Level before work can commence. • There should not be any interim risk control measures & control measures should not be overly dependent on administrative control or personal protective equipment. • If practicable, the hazard should be eliminated before work commencement. • Management review is required before work commencement.

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HSE Risk Assessment (HSE RA)												
HSE Hazard & Risk Identification				Control Measures for Initial Risks	Initial Risk Index*			Control Measures for Residual Risks	Residual Risk Index*			Person In-Charge for Control Measures
S/N	Process / Work Activity	HSE Hazard	HSE Risk	Existing Control Measures	S	L	R	Additional Control Measures	S	L	R	Person In-Charge
1.0	Personnel and vehicles accessing into the work site from the access gates.	<u>HSE Hazard</u>: • No proper safe personnel access walkway provided at the gate access • Personnel and vehicle using the same access way to enter/exit the project.	<u>HSE Risk</u>: • Vehicle hitting personnel at the gate area while entering /exiting the worksite • Fatality or serious injury to personnel.	**ENGINEERING CONTROLS** • Provide physically separated personnel access gate from the vehicle access gate at the project's work access points. • Provide blinking/rotating warning lights, speed limit sign and convex mirror at teach vehicle access gate to alert driver and provide them with visual aids and information to drive in and out of the work site safely. • Provision of lighting at the personnel and vehicle entry/exit gates to illuminate the area for safe access **ADMIN CONTROLS** • Post information signs at the personnel access gate to indicate it is a designated personnel entry and exit point into the worksite. • Full time gate marshals provided at each gate to guide & ensure workers use the designated personnel access	5	2	10	**ADMIN CONTROLS** • Conduct in-house briefing of project's personnel access walkway entry/exit points to inform all workers. • Supervisors to brief workers during their daily Toolbox Meetings to remind them to only use designated safe personnel access entry / exit points to enter or exit the worksite. • Daily inspection and maintenance of personnel access entry / exit gates by designated person in-charge. • Vehicles entering the worksite must switch on their headlights and limit their speed to only 15-20km/hr. Personnel ALWAYS have the Right of	5	1	5	• Engineer In-charge • Supervisor In-charge

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S/N	Process / Work Activity	HSE Hazard	HSE Risk	Existing Control Measures	S	L	R	Additional Control Measures	S	L	R	Person In-Charge
				gates to enter/exit the work site. • Paint the portion of the ground crossing from one end of the gate to the other end with Red & White stripes to warn drivers to slow down and stop to look out for personnel/pedestrian who are crossing the access gate				Way and vehicles MUST stop to allow personnel to move off safely first before proceeding where necessary. • Conspicuous information signboards stating this requirement shall be posted at the entry of every vehicle access gates to inform drivers of the requirements. Stating this requirement shall be posted at the entry of every vehicle access gates to inform drivers of the requirements. **PPE** • All personnel must always wear their safety reflective vests before entering the work site and while they are in the worksite.				

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HSE Risk Assessment (HSE RA)												
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S/N	Process / Work Activity	HSE Hazard	HSE Risk	Existing Control Measures	S	L	R	Additional Control Measures	S	L	R	Person In-Charge
2.0	Personnel accessing to different work areas within the worksite	HSE Hazard: • No proper safe personnel access walkway provided for worker to access to different work areas within the work site. • Personnel and moving vehicles/ machinery using the same access way to move within the worksite	HSE Risk: • Vehicles /machinery hitting personnel when moving within the worksite. • Fatality or serious injury to personnel.	**ENGINEERING CONTROLS** • Provide personnel access walkway (of at least 900mm in width) that are physically separated from vehicle access way, using rigid barrier system such as water barriers, rigid barricade, etc. • Personnel and vehicle access walkway/driveway must be provided with adequate illumination. **ADMIN CONTROLS** • Install symbol directional signs and text-form informational signs to guide workers along the routes of the personnel access walkway. • At areas where it is designated for personnel to cross over a vehicle access driveway, the crossing shall be demarcated clearly by painting red and white stripes on the ground. Designated personnel crossing signs and STOP signs shall be provided facing the both directions to inform drivers to slow down and stop when	5	2	10	**ADMIN CONTROLS** • Conduct in-house briefing of project's personnel access walkway entry/exit points to inform all workers. • Supervisors to brief workers during their daily Toolbox Meetings to remind them to only use designated safe personnel access entry/exit points to enter or exit the worksite. • Daily inspection and maintenance of personnel access entry/exit gates by designated person in-charge. • Vehicles moving the worksite must switch on their headlights lights and limit their speed to only 15-	5	1	5	• Engineer In-charge • Supervisor In-charge

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HSE Risk Assessment (HSE RA)												
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S/N	Process / Work Activity	HSE Hazard	HSE Risk	Existing Control Measures	S	L	R	Additional Control Measures	S	L	R	Person In-Charge
				personnel are crossing the driveway. • Implement project requirement that all personnel must observe a safety distance away of at least 5 meters from all moving vehicles.				20km/hr. Personnel ALWAYS have the Right of Way and vehicles MUST stop to allow personnel to move off safely first before proceeding where necessary. Conspicuous information signboards stating this requirement shall be posted at the entry of every vehicle access gates to inform drivers of the requirements. **PPE** • All personnel must always wear their safety reflective vests before entering the work site and while they are in the worksite.				
3.0	Vehicles moving within the worksite.	HSE Hazard: • Vehicles reversing in the worksite	HSE Risk: • Vehicles hitting personnel,	**ADMIN CONTROLS** • Implement restrictions on the areas whereby vehicles may reverse. Areas whereby	5	2	10	**ADMIN CONTROLS** • Conduct in-house briefing of	5	1	5	• Engineer In-charge • Supervisor In-charge

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HSE Risk Assessment (HSE RA)												
HSE Hazard & Risk Identification				Control Measures for Initial Risks	Initial Risk Index*			Control Measures for Residual Risks	Residual Risk Index*			Person In-Charge for Control Measures
S/N	Process / Work Activity	HSE Hazard	HSE Risk	Existing Control Measures	S	L	R	Additional Control Measures	S	L	R	Person In-Charge
			structure, equipment, material, etc. when moving within the worksite.	vehicles may reverse shall be demarcated with signs. • Implement project requirement that vehicles may only reverse under the direction of a banksman or signaler. • Banksman/signaler must observe the safe distance of at least 5 meters from the vehicle and must always stand at the driver's side of the vehicle to ensure the driver **PPE** • Banksman/signaler must be attired in safety reflective vests and wearing the traffic signal gloves.				project's personnel and drivers on the safety requirements for driving on the worksite. • Supervisors to brief workers during their daily Toolbox Meetings to remind them to only use the designated safe personnel access walkways to move within the worksite and maintain a safety distance of at least 5 meters away from all vehicles.				• Vehicle Driver In-Charge
4.0	Vehicles moving on vehicle ramp areas	HSE Hazard: • Personnel accessing vehicle ramp areas illegally	HSE Risk: • Vehicles hitting personnel moving on the vehicle ramp.	**ADMIN CONTROLS** • No personnel are allowed to use the vehicle ramp as personnel access. Only vehicles are allowed to access the vehicle ramps. • Warning signs shall be provided at all entry/exit points leading to the vehicle ramp areas at every level to warn personnel from	5	2	10	**ADMIN CONTROLS** • Conduct in-house briefing of project's personnel and drivers on the risk controls for vehicle ramp areas. • Supervisors to brief workers	5	1	5	• Engineer In-charge • Supervisor In-charge

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HSE Risk Assessment (HSE RA)												
HSE Hazard & Risk Identification				Control Measures for Initial Risks	Initial Risk Index*			Control Measures for Residual Risks	Residual Risk Index*			Person In-Charge for Control Measures
S/N	Process / Work Activity	HSE Hazard	HSE Risk	Existing Control Measures	S	L	R	Additional Control Measures	S	L	R	Person In-Charge
				accessing the ramp as personnel access walkway. • No personnel are allowed to rest at the vehicle ramp area at ALL TIMES, including during breaks and after office hours. • The project shall include personnel performing work on vehicle ramp in their Permit To Work System to control all personnel and work at the ramp areas. • In cases of personnel having to access and perform work at the ramp area, the same physical provisions for personnel access walkway shall be implemented.				during their daily Toolbox Meetings to remind them on the restriction to access the vehicle ramp areas.				
		HSE Hazard: • Vehicle accessing the ramp area	HSE Risk: • Vehicles colliding or hitting structures/other vehicles when moving on the ramp	**ENGINEERING CONTROLS** • The ramp shall be separated by means of rigid barrier system at the center to separate and guide vehicles moving up and down the ramps with provision of direction signs. • Convex mirrors shall be provided at suitable locations as visual aids for drivers to see blind spots at turning points.	5	2	10	**ADMIN CONTROLS** • Conduct in-house briefing of project's personnel and drivers on the risk controls for vehicle ramp areas. • Supervisors to brief workers during their daily Toolbox Meetings to	5	1	5	• Engineer In-charge • Supervisor In-charge

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HSE Risk Assessment (HSE RA)												
HSE Hazard & Risk Identification				Control Measures for Initial Risks	Initial Risk Index*			Control Measures for Residual Risks	Residual Risk Index*			Person In-Charge for Control Measures
S/N	Process / Work Activity	HSE Hazard	HSE Risk	Existing Control Measures	S	L	R	Additional Control Measures	S	L	R	Person In-Charge
				• Speed limit of 5km/hr shall be imposed for all vehicles moving on the ramp areas. Speed humps may be provided at appropriate locations to slow vehicles down. • Adequate lighting shall be provided along the entire vehicle ramp area. **ADMIN CONTROLS** • One-way traffic lanes shall be marked with a no-entry sign on the exit. • Warning signs such as speed limits, STOP signs, SLOW DOWN signs, LOOK OUT FOR PEDESTRIANS signs, etc. to warn drivers. • Objects are not allowed to be placed or stored on the vehicle ramp areas • All obstructions on the ramp shall be brightly cordoned off and demarcated to warn the drivers. • No material, equipment, machinery, objects are allowed to be placed or stored on the vehicle ramp areas.				remind them on the restriction to access the vehicle ramp areas.				

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HSE Risk Assessment (HSE RA)													
HSE Hazard & Risk Identification				Control Measures for Initial Risks	Initial Risk Index*			Control Measures for Residual Risks	Residual Risk Index*			Person In-Charge for Control Measures
S/N	Process / Work Activity	HSE Hazard	HSE Risk	Existing Control Measures	S	L	R	Additional Control Measures	S	L	R	Person In-Charge

*** S =** Severity; **L =** Likelihood; **R =** Risk Rating

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Sample No: 2

Hazard Identification			Risk Evaluation									Risk Control		
Ref	Work Activity	Hazard	Possible Accident or Injury & Ill health	Existing Risk Controls	S	L	RPN	Additional Controls	S	L	RPN	Implementation Person	Due Date	Remarks
1	Drivers credential	Unauthorized driving	Fatal	- **Elimination -** **-Substitution -** **-Engineering Controls-** -**Administrative Controls**- - Only drivers with the qualified class of license to drive the vehicles (Class 3 & above) -Statutory safety training and in-house safety training -Drivers to adhere to road traffic Act and LTA requirements **-PPE-**	5	1	5	NIL	5	1	5	Site Supervisor WSHC Traffic Controller	21/09/19	
2	Entry/Exit of vehicles via site gate	Knockdown or run over by the vehicles.	- Serious Injury to body -Fatal - Damage to property	- **Elimination -** **-Substitution -** **-Engineering Controls** -Ensure sufficient width for vehicles to ingress/egress - Regularly maintain the vehicles. - Blind spot mirrors to install **Administrative Controls**-	5	2	10	NIL	5	1	5	Site Supervisor WSHC Traffic Controller	21/09/19	

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Hazard Identification			Risk Evaluation									Risk Control		
Ref	Work Activity	Hazard	Possible Accident or Injury & Ill health	Existing Risk Controls	S	L	RPN	Additional Controls	S	L	RPN	Implementation Person	Due Date	Remarks
				- Workers at washing bay are trained and alert. -Drivers are inducted to follow the speed limit in site (15 kph) -Use baton, illuminous vest and gloves. - Provide proper signages at the entry /exit point **-PPE** Helmet, Safety shoes, reflective vest, reflective hand gloves and other PPE.										
3	Driving within site and reversing	Knockdown or run over by the vehicles.	- Serious Injury to body -Fatal - Damage to property	**-Elimination -** **-Substitution -** **-Engineering Controls** **-**Regular maintenance of vehicle -No illegal modification -Clear demarcation of the entry /exit point **-Administrative Controls**- - Workers at washing bay are trained and alert.	5	2	10	NIL	5	1	5	Site Supervisor WSHC Traffic Controller	21/09/19	

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Hazard Identification			Risk Evaluation									Risk Control		
Ref	Work Activity	Hazard	Possible Accident or Injury & Ill health	Existing Risk Controls	S	L	RPN	Additional Controls	S	L	RPN	Implementation Person	Due Date	Remarks
				-Drivers are inducted to follow the speed limit in site (15 kph) -Use baton, illuminous vest and gloves. - Provide proper signages at the entry /exit point -No works during adverse weather -Adequate illumination during night. -Effective supervision -**PPE** Helmet, Safety shoes, reflective vest, reflective hand gloves and other PPE.										
4	Maintenance works and regular services	Stuck by machinery/ Maintenance staff suffered electrical shock/Body parts caught in between/Slips, trips and falls	Serious injuries ,cuts, fatal , amputation	**-Elimination –** Major repairs should be done at the workshops **-Substitution -** **-Engineering Controls** -Park the vehicle at stable position **-Administration** -Trained and authorised person to carry out - Using proper tools	5	2	10	NIL	5	1	5	Site Supervisor WSHC Traffic Controller	21/09/19	

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Hazard Identification			Risk Evaluation									Risk Control		
Ref	Work Activity	Hazard	Possible Accident or Injury & Ill health	Existing Risk Controls	S	L	RPN	Additional Controls	S	L	RPN	Implementation Person	Due Date	Remarks
				-Buddy system to follow -Good housekeeping -Effective supervision -**PPE** Helmet, safety shoe/full body harness, goggle, gloves & Etc.										
5	Adverse weathers	High humidity/Hot/Heavy rain/Lightning	Heat cramps, Stress, Electrocution & slip and fall	**-Elimination -** **-Substitution -** **-Engineering Controls** **-**Regular service of air cons -Provision of good rest area -Provision of cool drinking waters - Standby fire extinguishers **-Administrative Controls**- -Train to identify the adverse weather -Heat stress programs -Maintain lightning system -Regular supervision -**PPE**	5	1	5	NIL	5	1	5	Site Supervisor WSHS Traffic Controller	21/09/19	

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Hazard Identification			Risk Evaluation									Risk Control		
Ref	Work Activity	Hazard	Possible Accident or Injury & Ill health	Existing Risk Controls	S	L	RPN	Additional Controls	S	L	RPN	Implementation Person	Due Date	Remarks
				Helmet, safety shoe/full body harness, goggle, gloves & Etc.										
6	Health hazards	-Noise, Heat, Dust, Ergonomics related factor, Fatigue, Wrong decision making & taking short cuts	NID, Heat stress, Allergies, Cancers, Fatal, Lung disease	**-Elimination -** **-Substitution -** **-Engineering Controls** -Proper ventilation -Off the engine when not in use -Regular servicing of engines Localized noise barriers, hoardings, screen walls -Fire extinguishers **Administrative Controls**- - Only trained personnel are allowed -Subdue the dust , damp the ground -Correct body posture -Job rotation -No smoking / naked lights -SDS briefing -Regular intake of water to cool the body -Sufficient rest	5	1	5	NIL	5	1	5	Site Supervisor WSHC Traffic Controller	21/09/19	

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Hazard Identification			Risk Evaluation									Risk Control		
Ref	Work Activity	Hazard	Possible Accident or Injury & Ill health	Existing Risk Controls	S	L	RPN	Additional Controls	S	L	RPN	Implementation Person	Due Date	Remarks
				-Follow RA/SWP -**PPE** Helmet, safety shoe/full body harness, goggle, gloves & etc.										
7	Housekeeping	Loose materials, Debris	Cut, laceration, Body injuries	**-Elimination -** **-Substitution -** **-Engineering controls** Cordon off the area **Administrative Controls** - Daily housekeeping - Regular reminders on housekeeping -Clearing of grease and oils immediately after spilling **PPE** Helmet, safety shoe/full body harness, goggle, gloves & etc.	5	2	10	NIL	5	1	5	Site Supervisor WSHC	21/09/19	
8	Emergency Situation	Vehicle ram into the structure, topple, Fire	Serious injury or fatality	**Elimination –** **Substitution** **Engineering Controls** - Regular maintenance, Inspection -Stable access	5	1	5	NIL	5	1	5	Site Supervisor WSHC Traffic Controller	21/09/19	

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Hazard Identification			Risk Evaluation									Risk Control		
Ref	Work Activity	Hazard	Possible Accident or Injury & Ill health	Existing Risk Controls	S	L	RPN	Additional Controls	S	L	RPN	Implementation Person	Due Date	Remarks
				Administrative Controls - Pre checks of limit switches, brakes, access, latches and other devices -No overloading -No damaged materials used -No horseplay -Regular housekeeping -Flammable liquids stored in proper manner -No refueling of fuel while engine on -No smoking on site - RA&SWP briefed and followed -Effective supervision **PPE-** Helmet, safety shoe/full body harness, goggle, gloves & etc.										

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Hazard Identification			Risk Evaluation									Risk Control		
Ref	Work Activity	Hazard	Possible Accident or Injury & Ill health	Existing Risk Controls	S	L	RPN	Additional Controls	S	L	RPN	Implementation Person	Due Date	Remarks
9	Human factor	Operators/ workers not following SWP, In-house rules and regulation, Personnel hygiene, Alcohol consumption.	Injuries, fatal , Property damage	**Elimination** **Substitution** **Engineering Controls** **Administrative Controls** -Safety induction course for all workers and drivers. -Regular reminders -Periodical refresher training -Daily tool box meeting - Proper supervision	5	1	5	NIL	5	1	5	Site Supervisor WSHC Traffic Controller	21/09/19	

Severity

Level	Severity
5	Catastrophic
4	Major
3	Moderate
2	Minor
1	Negligible

Likelihood

Level	Classification
1	Rare
2	Remote
3	Occasional
4	Frequent
5	Almost certain

Risk / Impact Level

	Rare (1)	Remotee (2)	Occasional (3)	Frequent (4)	Almost Certain (5)
Catastrophic (5)	**5**	**10**	**15**	**20**	**25**
Major (4)	**4**	**8**	**12**	**16**	**20**
Moderate (3)	**3**	**6**	**9**	**12**	**15**
Minor (2)	**2**	**4**	**6**	**8**	**10**
Negligible (1)	**1**	**2**	**3**	**4**	**5**

1 to 3 – Low Risk ***4 to 12 – Medium Risk*** ***15 to 25 – High Risk***

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Annex C – Common Site Traffic-related Hazards and Control Measures

Hazard	Risk Control Measures
Workers unaware or have reduced awareness of traffic safety.	Supervisor to conduct daily toolbox meeting to the drivers/ operators

Hazard	Risk Control Measures
No dedicated personnel to manage traffic flow especially with many stakeholders.	Establish a traffic control team with PPEs.

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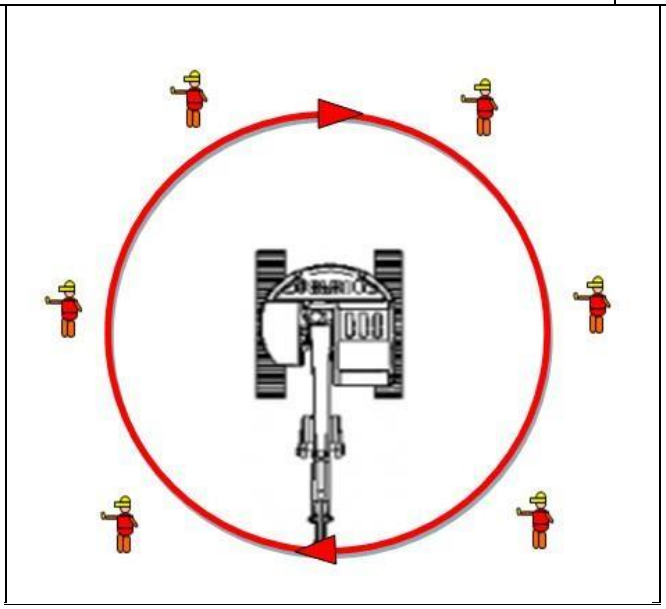
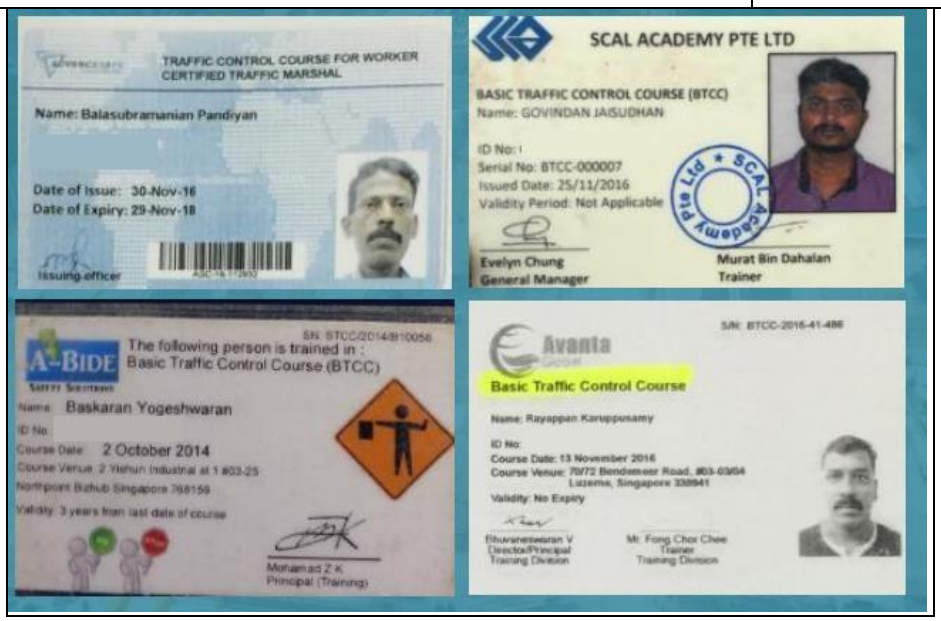
Hazard	Risk Control Measures
Work teams working in the vicinity of each other.	Sample: Traffic control teamensures that adequate clearance distance is maintained as the machinery travels within the site.



Hazard	Risk Control Measures
Untrained and incompetent traffic controller.	Sample: Competent traffic controller trained by Approved Training Provider such as SCAL Academy



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Hazard	Risk Control Measures
Untrained and competent drivers.	Sample: Drivers to be competently trained and assessed.

Hazard	Risk Control Measures
Vehicle not properly maintained.	Ensure vehicles go through regular maintenance regime as prescribed in the servicing manuals. Ensure that daily pre-operational checks be done prior to usage of the vehicle using prepared checklist such as the one shown in the belowsample.
Refer to Sample Daily Pre-Operational Checklist below	

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Vehicle plate number : _____

Vehicle model : _____

Date of inspection : _____

Driver's name : _____

Description	Yes	No
Fluid level within manufacturers' specifications		
Engine oil level		
Brake fluid level		
Radiator fluid level		
Battery water level		
Window washer water level		
Fuel level		
Windscreen washer level		
Lights are in working condition		
Headlights (high beam)		
Headlights (low beam)		
Licence plate		
Reverse		
Cabin interior		
Brake indicator		
Hazard		
Indicator turn signals		
Ensure the following are adjusted to suit driver's view		
Driver seat		
Rear view mirror		
Side mirrors		
Pedals		
Foot brake holds, stops vehicle smoothly		
Parking brake holds against slight acceleration		
Clutch and gearshift shift smoothly without jerking		

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Description	Yes	No
Tyres		
Inflated and free of excessive wear or damage.		
Nuts are tight.		
Adequate thread.		
Check spare tyre (i.e., inflated and no visible cracks).		
Ensure the following are in working condition (others):		
Seat belts are working and free of damage.		
Mirrors are clean and no visible damages.		
Doors and door locks operate correctly.		
Dash control panel are fully operational (i.e., all lights and dashes).		
Steering wheel moves smoothly.		
Horn is loud and clear.		
Vehicle reverse alarm (if fitted) is working.		
Hydraulic systems are operating smoothly (i.e., no visible leaks and systems).		
All loads (if any) are secured.		
Reverse warning buzzer is working.		

If you answer **No** to any of the above, state the condition(s) and its respective corrective actions.

_____

_____

_____

Driver's signature/ Date:

Supervisor's signature/ Date:

_____

_____

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Hazard	Risk Control Measures
Using hand phone while driving	Ensure no usage of hand phone while driving.

Hazard	Risk Control Measures
Not buckling up the seat belt during driving/ operating vehicle/ machinery	Secure seat belts (if applicable) before driving/operating.

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Hazard	Risk Control Measures
Vehicle running down on slope due to inadequate parking.	Wheel chocks should be used in pair and placed centrally and squared with the tire. On a downhill grade, position the chocks in front ofthe front wheels. On an uphill grade, position the chocks behind therear wheels. On a level grade, position the chocks on the front andback of a single wheel.

Hazard	Risk Control Measures
Tall vehicle travelling in places with height obstructions.	Sample: Additional Gantry Height Warning System

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Hazard	Risk Control Measures
Blind spots.	Place convex mirrors at identified blind spot areas to improve visibility of drivers.
	

Hazard	Risk Control Measures
Inadequate lighting.	Provide adequate lighting resources to improve visibility
	

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Hazard	Risk Control Measures
Inadequate illumination.	Driver to turn on head lights and hazard lights during the time when illumination is poor

Hazard	Risk Control Measures
Speeding by drivers.	Driver to adhere to the stated speed indicated at site.

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Hazard	Risk Control Measures
No provision of dedicated and proper worker rest areas.	To provide dedicated, safe and proper rest areas for workers to ensure movement of workers are contained.

Annex D – Sample Safety Time Out Checklist for Workplace Traffic Management

This checklist provides the basic requirements for workplace traffic management. Should a "No" be recorded for any of the below checklist items, state the condition(s) and its respective corrective actions in the "Remarks" column. This checklist is non- exhaustive, and users are recommended to make the necessary customization to suit your work processes and conditions at the workplace.

S/N	Items	Circle whichever applicable	Remarks
A. Workplace, traffic layout, traffic routes and pedestrian walkways			
1	Are roads and walkways suitable for the types of vehicular traffic and pedestrian traffic?	Yes No	
2	Are surfaces of roads and walkways slip-resistant?	Yes No	
3	Are transport vehicles and pedestrians kept safely apart?	Yes No	

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4	Are roads, walkways and parking areas marked properly according to the traffic management plan?	Yes	No	
5	Are lighting levels sufficient in the pedestrian areas and for vehicle activity?	Yes	No	
6	Do transport vehicles traffic routes have firm and even surfaces?	Yes	No	
7	Are traffic routes for transport vehicles and pedestrian walkways free from obstruction and other hazards?	Yes	No	
8	Are traffic routes marked properly?	Yes	No	
9	Are standard traffic signs installed at necessary locations?	Yes	No	
10	Are convex mirrors (to provide greater vision at blind bends), road humps (to reduce transport vehicles speeds), or barriers (to keep transport vehicles and pedestrians apart) provided where necessary?	Yes	No	
11	Are traffic routes wide enough?	Yes	No	
12	Is the width of the passageways wide enough?	Yes	No	
B. Training				
13	Has the driver or employee gone through the company's safety induction course?	Yes	No	
14	Has the driver or employee gone through the company refresher training for drivers (if applicable)?	Yes	No	
15	Does the driver have a valid license and experience to operate the powered vehicle?	Yes	No	
16	Has the signalman or banksman been trained to guide the maneuvering transport vehicles?	Yes	No	
C. Traffic or operation				
17	Are suitable transport vehicles and attachments chosen for the tasks to be carried out?	Yes	No	
18	Have any observations been made of drivers who do not obey the traffic rules (e.g., use the correct routes or drive within the speed limit) and operate their transport vehicles safely?	Yes	No	
19	Do managers/ supervisors/ drivers/ signalmen/ banksmen/ employees wear the PPE provided (e.g., visibility vests)?	Yes	No	

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20	Do drivers carry out pre-operation checks before actual operation?	Yes No	
21	Are personnel cleared of the areas before reversing the powered vehicle?	Yes No	
22	Is there a signalman or banksman provided to guide the maneuvering transport vehicles (if applicable)?	Yes No	
23	Does the signalman or banksman position themselves at a safe position?	Yes No	
24	Are transport vehicles parked on level ground (wheels chocked, if applicable) with their parking brakes on and the ignition key removed?	Yes No	
D. Loading and unloading			
25	Are loading or unloading operations carried out in an area away from passing traffic and pedestrians?	Yes No	
26	Are the appropriate vehicle(s) used for loading or unloading?	Yes No	
27	Are loading or unloading activities carried out on ground that is flat, firm and free from potholes?	Yes No	
28	Are parking brakes used to prevent unwanted movement (e.g., when coupling transport vehicles)?	Yes No	
29	Are the transport vehicle's brakes and/or stabilizer used to prevent unsafe movements during loading and unloading operations?	Yes No	
30	Do the lifting equipment, appliance or gears used for (un)loading transport vehicles possess valid statutory inspection certificate(s)?	Yes No	
31	Is loading or unloading carried out such that the load is spread evenly to avoid the powered vehicle or trailer from becoming unstable?	Yes No	
32	Are checks made to ensure that the load is adequately secured and not over-loaded before the powered vehicle leaves the workplace?	Yes No	
33	Are there any unsafe act observed during loading or unloading?	Yes No	
34	Do employees follow safe work procedures when (un)coupling, (un)loading and securing loads, and so on?	Yes No	
E. Management and Supervision			
35	Are workplace traffic rules documented and distributed?	Yes No	
36	Are managers/ supervisors/ drivers/ signalmen/ banksmen/ employees and others, including	Yes No	

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	contractors and visitors, aware of the workplace traffic rules?		
37	Has risk assessment been conducted for work activities and communicated to all concerned personnel prior to operation?	Yes No	
38	Has action been taken when the workplace's traffic rules (if any) are violated?	Yes No	
F. Maintenance			
39	Are roads and walkways suitable for the types and volumes of vehicular traffic and pedestrian traffic?	Yes No	
40	Are transport vehicles and pedestrians kept safely apart?	Yes No	
41	Are there adequate parking places for all parking needs?	Yes No	
42	Is the level of lighting sufficient for vehicular and pedestrian traffic?	Yes No	
43	Do powered vehicle traffic routes have firm and even surfaces?	Yes No	
44	Are vehicular and pedestrian traffic free from obstructions and other hazards?	Yes No	
45	Are traffic routes arranged to avoid sharp or blind turns?	Yes No	
46	Are traffic routes marked properly according to the traffic management plan?	Yes No	
47	Are standard traffic signs installed at necessary locations?	Yes No	
48	Are convex mirrors (to provide greater vision at blind bends), road humps (to reduce powered vehicle speeds), or barriers (to keep transport vehicles and pedestrians apart) provided where necessary?	Yes No	
49	Are the passageways wide enough?	Yes No	

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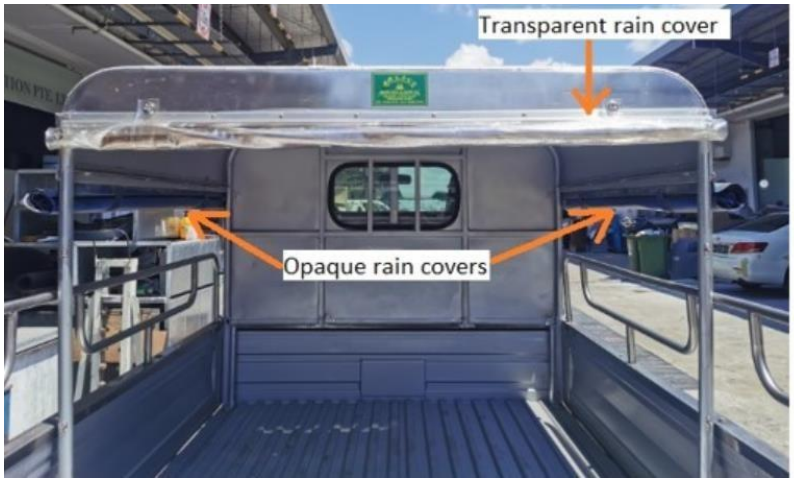
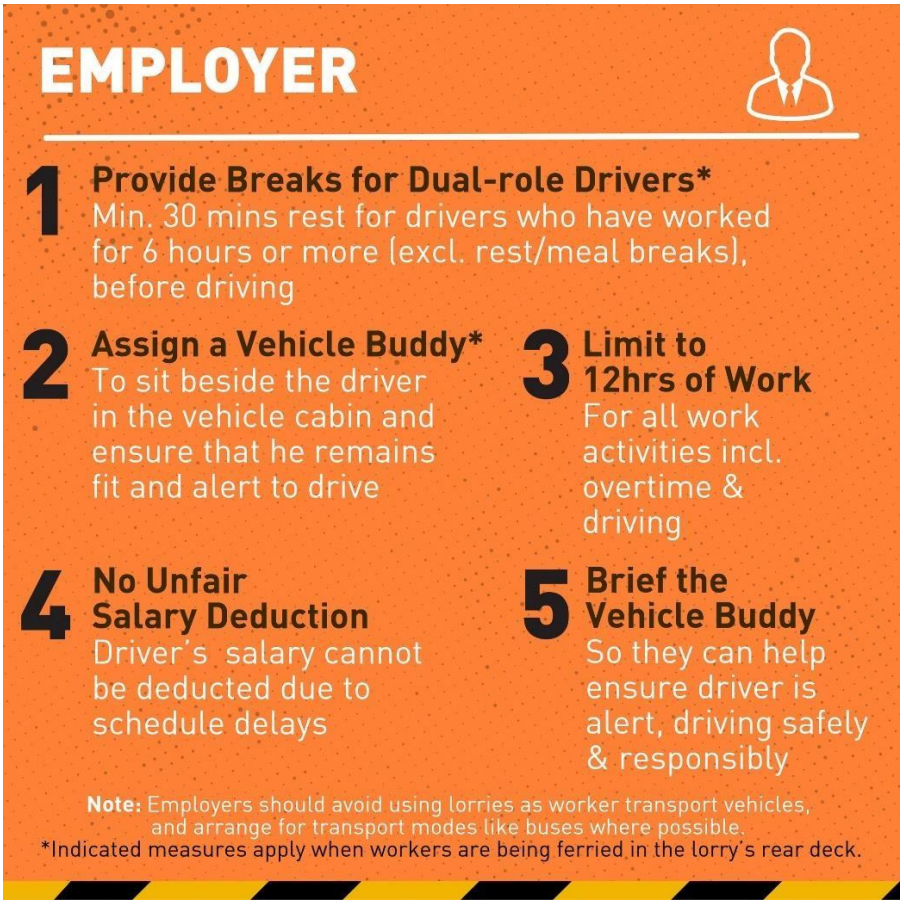
Annex E – Transportation of Workers with Lorries



Source of Image – Annex A of Inter-agency Advisory on Safe Transportation of Workers – 31 Dec 2022



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Annex F – Updated Requirements on Safe Transportation of Workers

New Requirements under the Road Traffic Act

From 1 January 2023, newly registered lorries are required to be fitted with rain covers on all non-enclosed sides of the canopy, with at least one side being transparent. Requirement of rain covers will apply to in-use light lorries[1] from 1 July 2023 and to in-use heavy lorries[2] from 1 January 2024.

1. Light lorries refer to lorries with maximum laden weight not exceeding 3,500kg
2. Heavy lorries refer to lorries with maximum laden weight exceeding 3,500kg

Existing requirements under the Road Traffic Act

i. All front passenger seat(s) in the lorry's cabin must be occupied before workers can be transported in the rear deck.
ii. Lorries must not transport an excess number of workers in the rear deck based on the minimum space requirement of 0.372m2or 4 ft2 per seated worker.
iii. A Maximum Passenger Capacity (MPC) label with white characters on a black background must be displayed on the right side of the rear tailboard indicating the maximum number of workers that can be transported.
iv. Any loads being transported must be properly secured, including lashing to prevent side lateral movement or when vehicle is braking, and should not pose any danger to the workers in the rear deck or other road users.
v. Lorries used to transport workers must be fitted with canopies and protective side railings of at least 700mm from the rear deck and at least 300mm from the top of the sideboards.

New Requirements under the Workplace Safety and Health (WSH) Act

Employers of dual role drivers (defined as a person required or authorised by the employer of that person to drive a lorry with workers in the rear deck, where driving such a lorry is not the primary work that the person is required to perform) must:

i. Provide at least a 30-minute rest period for dual role drivers who have worked for at least 6 hours in their work shift immediately prior to driving workers in lorry rear decks.

Employers of lorry drivers who drive workers in the rear deck must:

ii. Designate a person as a "vehicle buddy" to sit in the cabin beside the driver at all times while the driver is driving workers in lorry rear decks.
iii. Brief the "vehicle buddy" of his/her role to take reasonable measures to ensure that the driver is alert and able to drive in a safe manner at all times (e.g., check that the driver is fit to drive before driving off and that driver remains alert while driving).

Existing requirements for employers under the Employment Act

i. Employers should not require drivers of lorries with workers in rear decks to work for more than 12 hours a day including overtime, driving or any other work activities.
ii. Employers are not allowed to deduct salary of drivers for being behind schedule and employers should not make workers consent to such deductions.

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New Requirements on Speed Limiter installation for Lorries

To improve road safety, the Traffic Police (TP) will require lorries with a Maximum Laden Weight (MLW) of between 3,501kg and 12,000kg (inclusive) to be installed with speed limiters, which will ensure that these lorries do not go beyond the speed limit of 60km/h.

This will be implemented in phases. Lorries in this category can begin installation from 1 January 2024.

Under Singapore's laws, it is mandatory for speed limiters to be installed in the following categories of vehicles:

i. every goods vehicle having a MLW exceeding 12,000kg and which has, or if a speed limiter is not fitted to it would have, a maximum speed exceeding 60km/h; and
ii. every public service vehicle having a MLW exceeding 10,000kg and which has, or if a speed limiter is not fitted to it would have, a maximum speed exceeding 60km/h.

Currently, lorries with a MLW between 3,501kg and 12,000kg (inclusive) are not required by law to have any speed management devices, or speed limiters. The law to have speed limiters will be expanded to all lorries in this weight category progressively over 1 January 2026 to 1 July 2027.

Source of Table – SPF News Release – 3 Nov 2023

Category	MLW (kg)	Date from which requirement applies
Older models of lorries (Registered before 1 January 2018)	5,001 - 12,000	1 January 2026
	3,501 - 5,001	1 July 2026
Newer models of lorries (Registered on or after 1 January 2018)	5,001 - 12,000	1 January 2027
	3,501 - 5,000	1 July 2027

The speed limiters can only be installed by companies that are authorised by TP ("Authorised Agents"). All lorries will be subjected to a compliance check at the point of installation by an Authorised Agent, to ensure that the speed limiter installed is functioning properly. The list of authorised agents will be made available at SPF's website https://www.police.gov.sg/Advisories/Traffic/Traffic-Matters/Speed-Limiter-Authorised-Agents from 1 January 2024 onwards. Lorry owners should approach an Authorised Agent early to arrange for the installation of a speed limiter.

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