

Plaintiff: See Tong Soon: 1st

IN THE STATE COURTS OF THE REPUBLIC OF SINGAPORE

Case No. MC/MC 7494/2020

BETWEEN

GIM TIAN LOGISTICS PTE LTD
(UEN No. 199400038D)

... Plaintiff

AND

1. LIM CHEOW FATT
(NRIC No. S0195176I)

2. TEO LAY HAR (ZHANG LIXIA)
(NRIC No. S8740675Z)

... Defendants

AFFIDAVIT OF EVIDENCE IN CHIEF

I, **See Tiong Soon** (NRIC No. S1220710G) of Block 178, Toa Payoh Central, #04-216, Singapore 310178 do solemnly and sincerely affirm and state as follows:

1. I am authorised by the Plaintiff to affirm this affidavit on its behalf. The facts stated in this affidavit are from my personal knowledge or taken from documents in the Plaintiff's possession. Where the facts are from my personal knowledge, they are true. Where the facts are taken from documents in the Plaintiff's possession, I believe them to be true.

2. I am the managing partner in a business firm named Eng Soon Huat Engineering Works ("**Eng Soon Huat**"). Eng Soon Huat occupies a terrace workshop unit at Block 1003, Eunus Avenue 8, #01-55, Singapore 409498 ("**the ESH workshop**").
3. To show that I have been a partner of Eng Soon Huat since 30 May 2001, I annex a copy of an instant information search document on ESH dated 7 December 2020 based on the records kept by the Accounting And Corporate Regulatory Authority to this affidavit. This copy of search document is marked as "**STS-1**".
4. Eng Soon Huat is in the mechanical engineering business. One of Eng Soon Huat's specialist businesses involved the installation and repairs of the "Scorpion" brand truck mounted attenuators known as the "*TraFFix Scorpion 10,000 TMA*". ("**the Scorpion TMA**" or "**the Scorpion TMAs**")
5. TraFFix Devices Inc., of California, United States of America is the manufacturer of the Scorpion TMAs. A Singapore registered company named TMA Systems Pte Ltd ("**TMA Systems**") is the sole distributor for the Scorpion TMAs in Singapore and Hong Kong.

6. In so far as Singapore is concerned, TMA Systems has appointed the following parties for its Scorpion TMAs business:
 - (1) Inopave Group Pte Ltd (“Inopave”) as the sole authorized dealer for the Scorpion TMAs; and
 - (2) Eng Soon Huat as the only workshop (the ESH workshop) to install or to replace the new units of Scorpion TMAs as well as to do repairs, including spare part replacements of any damaged Scorpion TMAs.
7. I attach copies of the following documents to show the business connection amongst the parties in dealing with the business for the Scorpion TMAs:
 - (1) A letter dated 21 August 2003 written by Traffix Devices Inc to certify the following:
 - (a) TMA Systems as the distributor of the Scorpion TMAs in Singapore and Hong Kong; and
 - (b) ESH as the authorised installer of the Scorpion TMAs.
 - (2) A letter dated 24 June 2011 written by TMA Systems to certify, amongst others, the following:

- (a) Inopave as the authorized dealer for the Scorpion TMAs in Singapore. Here, Inopave has to undertake all commercial matters in relation to the sales and after-sales services for the Scorpion TMAs; and
- (b) ESH as the approved workshop to undertake all installation, repair and replacement works for all the Scorpion TMAs.

These two copies of letters are collectively marked as “**STS- 2**”.

- 8. The ESH workshop has been audited and approved by an engineer from Traffix Devices Inc to do all the works involving the installation of new units of the Scorpion TMAs as well as for the repairs or replacements of all such units.
- 9. Any Scorpion TMA is actually a safety device, in the form of a very huge bumper, mounted at the rear of a heavy truck. The trucks, mounted with the Scorpion TMAs (“**the TMA lorries**”) are deployed along expressways or major roads in Singapore where road works are being carried out.

10. In practice, road works can be carried out in front of the deployed TMA lorries. The rear sides of the TMA lorries, fixed with the Scorpion TMAs, are facing on coming vehicles.
11. Should an accident involving any of the TMA lorries, the speeding vehicle would usually collide into the Scorpion TMA mounted at the rear of the TMA lorry. Thus, the speeding vehicle would not collide into the rear of any of the heavy vehicles being used to carry out the road works. The risk of injury to the driver or passenger in the speeding vehicle is therefore substantially reduced. At the same time, the risk of the speeding vehicle colliding directly into the people carrying out the road works is also substantially reduced.
12. For safety reasons, the Land Transport Authority (“**the LTA**”) does require the Scorpion TMAs to be installed in accordance with the manufacturer’s installation procedures and with sound engineering practice. The LTA also requires the Scorpion TMAs to be maintained for long term safety serviceability.
13. I attach copies of the following documents to show the LTA’s safety requirement and expectation of the Scorpion TMAs:

- (1) A letter dated 6 April 2001 written by the LTA to TMA Systems regarding the requirement of the Scorpion TMAs being installed in accordance with the manufacturer's procedures ; and
- (2) A faxed letter dated 22 May 2001 written by the LTA to TMA Systems regarding the safety and serviceability of the Scorpion TMAs in the long term.

These two copies of letters are collectively marked as “**STS- 3**”.

14. For safety reasons (as emphasized by the LTA) and in so far as the distributorship of the Scorpion TMAs in Singapore is concerned, TMA Systems has made the following arrangements:

- (1) All the Scorpion TMAs and all their replacement parts have to be sold only through Inopave; and
- (2) Inopave will not sell any Scorpion TMA and/or any of the replacement parts unless they are installed and/or replaced by Eng Soon Huat.

15. Locally and with the exception of Eng Soon Huat, it would be almost impossible for any workshop, intending to repair any damaged Scorpion TMA, to buy a new replacement Scorpion TMAs unit or buy any of its replacement parts.
16. By reason of safety, Eng Soon Huat does not get involved in the installation, assembly, the repairing or the replacement any damaged Scorpion TMA with any of the following:
 - (1) Any second-hand complete Scorpion TMA replacement unit imported from overseas; and
 - (2) Any second-hand replacement parts for any Scorpion TMAs imported from overseas.
17. Again, and for safety reasons, Eng Soon Huat, Inopave and TMA Systems do not import any second-hand Scorpion TMA or any second-hand spare parts or replacement parts for any Scorpion TMA in Singapore.
18. In the July 2019 edition of the LTA's Code of Practice for Traffic Control at Work Zone, the LTA provided guidelines for the use of truck mounted attenuators ("**All-TMAs**") for road works (collectively "**the Code of Practice**").

19. In relation to the use, inspections, maintenance and repairs of All-TMAs, I attach the following pages in the Code of Practice as exhibits to this affidavit:

- (1) The front cover page marked as July 2019 Edition;
- (2) The introductory page nos. 1 and 2 of the
- (3) Page 23 stating that the guidelines for the safe operation procedure for All-TMAs is detailed in Appendix III;
- (4) Page nos. 38 and 39 stating that truck mounted attenuators shall be used during short duration and mobile works to absorb the impact of an errant vehicle;
- (5) Page 42 showing the Flashing Arrow that is required to be fixed onto the lorries mounted with truck mounted attenuators; and
- (6) The Appendix III of the Code of Practice in pages 57 to 60.

I mark all the above pages of the Code of Practice as **"STS-4"**.

20. On the topic of inspections, maintenance and repairs of All-TMAs, I wish to refer to the exhibit marked as "STS-4". In

particular, I now quote paragraph 8 on page 59 of the Code of Practice as follows:

“TMA Inspections, Maintenance and Repairs

To maintain the crashworthiness of the TMA, User shall ensure regular maintenance and inspection, are carried out by TMA manufacturer’s authorised workshop.

User shall keep a copy of maintenance/inspection/and repair records issued by the manufacturer’s authorised workshop to ensure proper operation and the safety performance of the TMA Requirements for inspection, maintenance and repair to be carried out by the authorised workshop shall meet the requirements specified by the manufacturer.”

21. Thus, all the works involving the replacement/installation of any new Scorpion TMA unit, or involving new replacement parts for any Scorpion TMA, have to be repaired solely by Eng Soon Huat.
22. On 9 September 2011, Inopave issued a Letter of Certification to the Plaintiff stating that all Scorpion brand TMAs are/were installed by Eng Soon Huat. I attach a copy of this letter dated 9 September 2011 to this affidavit and mark it as **“STS-5”**.
23. On 19 August 2019, the Plaintiff sent a damaged Scorpion TMA that was mounted to the rear of a lorry no. XE 3025Z (**“the Plaintiff’s TMA** and **“the Plaintiff’s Lorry”** respectively) to the ESH workshop for repair.

24. Shortly after the Plaintiff's TMA, mounted to the Plaintiff's Lorry, was sent to ESH's workshop on 19 August 2019, I inspected the damaged TMA. Only the Energy Absorber Module "A: part of the Plaintiff's TMA was damaged. For safety reasons, the entire Energy Absorber Module "A" part of the Plaintiff's TMA had to be replaced.
25. What do I mean by "the Energy Absorber Module "A" part of the Plaintiff's TMA"? To explain this term, I attach copies of the following documents to this affidavit:
- (1) The front page of a manual entitled "*Installation, Maintenance, and Repair Manual For Scorpion 10,000 TMA*" to show the drawing of the Scorpion 10,000 TMA; and
 - (2) a coloured photograph of a complete Assembly of the Model C Scorpion 10,000 TMA to show the Module A part in a complete Assembly of the Model C of the Scorpion TMA.

These two pages of the documents depicting the Module "A" section part of the whole of the Scorpion 10,000 TMA are collectively marked as "**STS-6**".

26. I refer to the exhibits in this affidavit marked as "STS-6" and state that these documents were issued by the manufacturer of the Scorpion TMAs, Traffix Devices Inc.
27. After my said inspection of the Plaintiff's TMA on 19 August 2019, I prepared a "TMA Damages Report" noting down that the Plaintiff's TMA was partially damaged and could be repaired. A copy of this "TMA Damages Report" dated 19 August 2019 is annexed herewith and marked as "**STS- 7**".
28. The Plaintiff's solicitors have shown me two pages of copies of coloured photographs depicting the damage caused to the Plaintiff's TMA at the scene of the accident. These copies of coloured photographs are collectively marked as "**STS- 8**".
29. I wish to state that when I first inspected the Plaintiff's TMA on 19 August 2019, the extent of the damage caused to the Plaintiff's TMA was exactly the same as those depicted in the photographs exhibited as "STS-8" in this affidavit.
30. One Mr. Pillipp Yip Kai Sum ("**Mr. Yip**") is an Executive Director of Inopave. On 19 August 2019, I sent a photograph of the

"TMA Damages Report" on the Plaintiff's TMA via a WhatsApp message to Mr. Yip. This report was to enable Inopave to submit a quotation to the Plaintiff before repair works to the Plaintiff's TMA could be commenced.

31. As at 19 August 2019, Inopave and ESH did not have the replacement part for the Energy Absorber Module "A" part for the Plaintiff's damaged TMA in stock. Thus, Inopave and ESH had to wait for the replacement part to arrive before repairs to the Plaintiff's damaged TMA could begin.
32. One Mr. Liow Hang Loong ("**Mr. Liow**") was, and still is, an Operations Executive working for the Plaintiff.
33. On 19 August 2019, I telephoned Mr. Liow. I requested Mr. Liow to make arrangements to drive the Plaintiff's Lorry back to the Plaintiff's premises since Inopave and ESH did not have a new replacement Energy Absorber Module "A" part in stock to be used to repair the Plaintiff's TMA. The Plaintiff had to wait for TMA Systems and Inopave to send the new replacement Cartridge unit to ESH's workshop. Mr. Liow agreed. Thus, the Plaintiff lorry was driven away from ESH's workshop later in the day on 19 August 2019.

34. The replacement Energy Absorber Module "A" part for the Plaintiff's TMA arrived at the ESH's workshop on Saturday 7 December 2019. At that time, I telephoned Mr. Liow. I requested Mr. Liow to make arrangements to drive the Plaintiff's lorry back to the ESH workshop for the Module "A" replacement part works to be done. Mr. Liow agreed.
35. The Plaintiff's lorry was sent to the ESH workshop in the morning on Monday 9 December 2019. ESH completed the works to replace the damaged Module A unit in the Plaintiff's TMA with the new replacement Module A unit at about mid-day on 9 December 2019.
36. On that same day on 9 December 2019, I informed Mr. Yip of Inopave that the Module A replacement works on the Plaintiff's TMA had been completed. I also telephoned Mr. Liow to inform him of the completion of the replacement works and request him to make arrangement to drive the Plaintiff's lorry away from the ESH workshop.
37. On that same day on 9 December 2019, the Plaintiff's driver/representative came to the ESH workshop. This

representative then drove the Plaintiff's lorry (fitted with the newly replaced Energy Absorber Module "A" part in Plaintiff's TMA) away. I then telephoned Mr. Yip to tell Mr. Yip that the Plaintiff had taken delivery of the Plaintiff's lorry and the newly replaced Module "A" spare part in the Plaintiff's TMA.

38. I wish to stress that Eng Soon Huat did not issue any document to the Plaintiff for the repair works done on the Plaintiff's TMA at all. This is because of the arrangements that Inopave, as the sole authorized dealer for the Scorpion TMAs, had to bill the Plaintiff for repair works that Eng Soon Huat had carried out on the Plaintiff's TMA.

AFFIRMED by the abovenamed)
)
 SEE TIONG SOON through the)
)
 interpretation in the Mandarin)
)
 language by Mr. Charles Lin on this)
)
10th day of September 2021 in)
)
 the presence of:)




Before me,



A COMMISSIONER FOR OATHS




This is the Exhibit marked "STS- 1"

*referred to the Affidavit of Evidence in Chief
of*

SEE TIONG SOON

affirmed before me this 10 SEP 2021

Before Me


A Commissioner for Oaths



Business Profile (BPFBIZ)

ENG SOON HUAT ENGINEERING WORKS

Particulars	
Name	: ENG SOON HUAT ENGINEERING WORKS
Registration Number / UEN	: 20526900A
Registration Date	: 20-03-1975
Name Effective Date	: -
Commencement Date	: 14-03-1975
Date of Last Renewal	: 18-02-2020
Date of Expiry	: 20-03-2021
Constitution	: PARTNERSHIP
Registered Address	: 1003 EUNOS AVENUE 8 #01-55 EUNOS INDUSTRIAL ESTATE SINGAPORE 409498
Address Effective Date	: -
Status	: LIVE
Status Effective Date	: 22-02-2018
Principal Activity Code (I)	: 28300
Principal Activity Description (I)	: Installation of industrial machinery and equipment, mechanical engineering works
Principal Activity Code (II)	: -
Principal Activity Description (II)	: -

Former Name(s)

NIL

16

Business Owner(s)

No.	Name	ID	Nationality / Citizenship	Date of Appointment
1	SEE TIONG SOON	S1220710G	SINGAPORE CITIZEN	30-05-2001
	Address			Date of Change (Address)
	178 TOA PAYOH CENTRAL #04-216 SINGAPORE 310178			30-09-2008

No.	Name	ID	Nationality / Citizenship	Date of Appointment
2	SEE TIONG LIAN	S1387342I	SINGAPORE CITIZEN	06-06-2001
	Address			Date of Change (Address)
	740 PASIR RIS STREET 71 #14-53 SINGAPORE 510740			31-03-2010

Authorised Representative(s)

NIL

Nominee/Trustee(s)

NIL

Withdrawn Personnel

No.	Name	ID	Nationality / Citizenship	Date of Appointment	Date of Withdrawal
1	SEE CHENG KWEE	S0355262D	SINGAPORE CITIZEN	14-03-1975	30-05-2001
	Address			Date of Change (Address)	Position
	253 HOUGANG AVENUE 3#11-326 SINGAPORE 530253			26-01-1993	OWNER

No.	Name	ID	Nationality / Citizenship	Date of Appointment	Date of Withdrawal
2	SEE TIONG PENG	S6841805D	SINGAPORE CITIZEN	06-06-2001	23-10-2002
	Address			Date of Change (Address)	Position
	243 SERANGOON AVENUE 2 #13-83 SINGAPORE 550243			07-09-2017	OWNER

No.	Name	ID	Nationality / Citizenship	Date of Appointment	Date of Withdrawal
3	SEE CHENG KWEE	S0355262D	SINGAPORE CITIZEN	14-03-1975	30-05-2001
	Address			Date of Change (Address)	Position
	253 HOUGANG AVENUE 3#11-326 SINGAPORE 530253			26-01-1993	MANAGER

*With effect from 03 Jan 2016, under the Business Registration Act, if there is at least one owner of the business residing in Singapore, all active managers will be shown as withdrawn on 03 Jan 2016.

Disclaimer

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This is the Exhibit marked "STS- 2"

referred to the Affidavit of Evidence in Chief

of

SEE TIONG SOON

affirmed before me this 10 SEP 2021

Before Me


A Commissioner for Oaths



August 21, 2003

Certification

TraFFix Devices Scorpion 10,000 TMA

Gentleman:

This is to certify that TMA Systems PTE Ltd has passed the TraFFix Devices distributor audit and that their installer (Eng Soon Huat Engineering Works) in Singapore has also passed a review of their shop practices. In addition their dealer in Hong Kong (Tug Link Trading and Engineering Services Ltd.) has passed a similar review process.

This audit confirms that TMA systems PTE Ltd. has done an excellent job of installing, maintaining, and stocking the TraFFix Scorpion 10,000 TMA. This evaluation covers the time period of March 28, 2001 through August 20, 2003.

Sincerely,

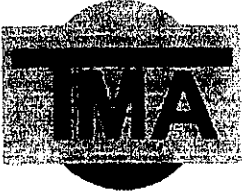
Dave Gertz
Director of Engineering

Signature:


Dave Gertz
Director of Engineering

220 Calle Pinareroo
San Clemente, California 92672
(949) 361-5563
FAX (949) 361-9205
www.traffixdevices.com


Inopave
GROUP PTE LTD

TMA SYSTEMS PTE LTD

Blk 1003 Eunos Avenue 8
#01-55
Eunos Industrial Estates
Singapore 409498

Tel : (65) 6278 8818
Fax : (65) 6274 6486
ROC No : 200002807D
GST Reg No : 200002807D

24 June 2011

TO WHOM IT MAY CONCERN

**Subj : Authorised Workshop for Installation, Repair and Replacement of
Traffix Devices Inc – "Scorpion" TMAs**

"Scorpion" TMA is a proprietary product developed and manufactured by Traffix Devices Inc in conformance to the NCHRP – Test Report 350 guidelines accepted by the Land Transport Authority.

As part of the Distributor Agreement, Traffix Devices Inc requires their Distributor/Dealers to their Audit, for Approved/Authorised workshops to undertake the installation, repair and replacement of the "Scorpion" TMAs.

In Singapore, our Authorised Dealer – Inopave Group Pte Ltd - undertake all commercial matters in relation to the sales and after-sales services pertaining to "Scorpion" TMAs to their customers.

Our authorised workshop – Eng Soon Huat Engineering approved by Traffix Devices Inc undertake all installation, repair and replacement works pertaining to "Scorpion" TMAs (attached is copy of Traffix Devices Inc letter in reference to their audit accreditation for our authorised workshop).

We trust this statement letter explain and clarify the queries raised by to whom it may concerned.

Thank you for your kind attention and cooperation.

Yours faithfully
TMA SYSTEMS PTE LTD

Francis Fong
Director
AUTHORISED DISTRIBUTOR

cc. Mr Jack Kulp -Traffix Devices Inc



This is the Exhibit marked "STS- 3"

*referred to the Affidavit of Evidence in Chief
of*

SEE TIONG SOON

affirmed before me this 10 SEP 2021

Before Me


A Commissioner for Oaths



6 Apr 2001

Mr Ng Wee Kang
Director
TMA Systems Pte Ltd
Blk 1002 Eunos Ave 8
#02-54 Singapore 409497
(Fax: 8416087)

Our ref LTAVEN/30.017.000/15
Your ref
DID 5535267 Fax 5535329

Dear Mr Ng,

**APPLICATION FOR ATTACHMENT OF SCORPION C 10,000 TRUCK
MOUNTED ATTENUATOR (TMA) ON 3-AXLE GOODS VEHICLES**

Please refer to your letter dated 20 Mar 2001.

As the installation and use of the Truck Mounted Attenuator (TMA) can enhance road safety, we have no objection to your request to install the TMA on 3-axle goods vehicles, subject to the following conditions :

- a) You and your appointed distributor are required to ensure that all installation works are performed in accordance with the manufacturer's installation procedures and with sound engineering practice;
- b) You are to ensure that the registered Maximum Laden Weight of the 3-axle goods vehicle is able to accommodate the increase in the unladen weight caused by the installation of the TMA. This means that there will be a reduction in the payload of the vehicle and the owner should be informed of the payload reduction;
- c) The TMA shall be fitted with an integral trailer lighting system including brake lights, tail lights and signal lights, etc.; and conspicuously marked so that it is visible to other road users.

Please also inform the vehicle owner / operator that the TMA should be in its upright position (fully folded) during normal travelling on the roads, i.e. when moving to and from work deployment area. This is because the TMA, in a horizontal position, will increase the rear overhang of the vehicle substantially, which could affect the vehicle's manoeuvrability.

Yours sincerely



WONG YUEN KEAT
for MANAGER VEHICLE ENGINEERING
VEHICLE & TRANSIT LICENSING DIVISION

Facsimile

Land Transport Authority

No. 1 Hampshire Road
Block 3 Level 2 Singapore 219428
Tel: (65) 3962004 Fax: (65) 3961140

Your ref:

Our ref: RM34.4

Fax no 841 6087

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To TMA Systems Pte Ltd
Attn.: Mr Francis Fong
From Ho Tuck Kai

Fax no 396 1140

Date 22 May 2001

No of pages 1 (including this page)

RE: SCORPION TMA BY TRAFFIX DEVICES INC - REQUEST FOR APPROVAL

I refer to your letter dated 26 Mar 2001.

2. We are very pleased to note in the letter your commitment to provide a set up for training and inspection to ensure the long-term serviceability of the TMA supplied by you.
3. Together with the test report (NCHRP Report 350 Test Level 3) submitted earlier, we consider the Scorpion TMA 10,000 Model B & Model C to be acceptable for use on roads with speed limit of 70 km/hr or more and on expressways. This approval shall be withdrawn if subsequently you fail to comply with the requirements of LTA for the TMA.
4. A separate clearance from our Vehicle & Transit Licensing Division is necessary for installation of the TMA to the vehicle.

Regards.



Ho Tuck Kai
for Manager
Road Management

This is the Exhibit marked "STS- 4"

*referred to the Affidavit of Evidence in Chief
of*

SEE TIONG SOON

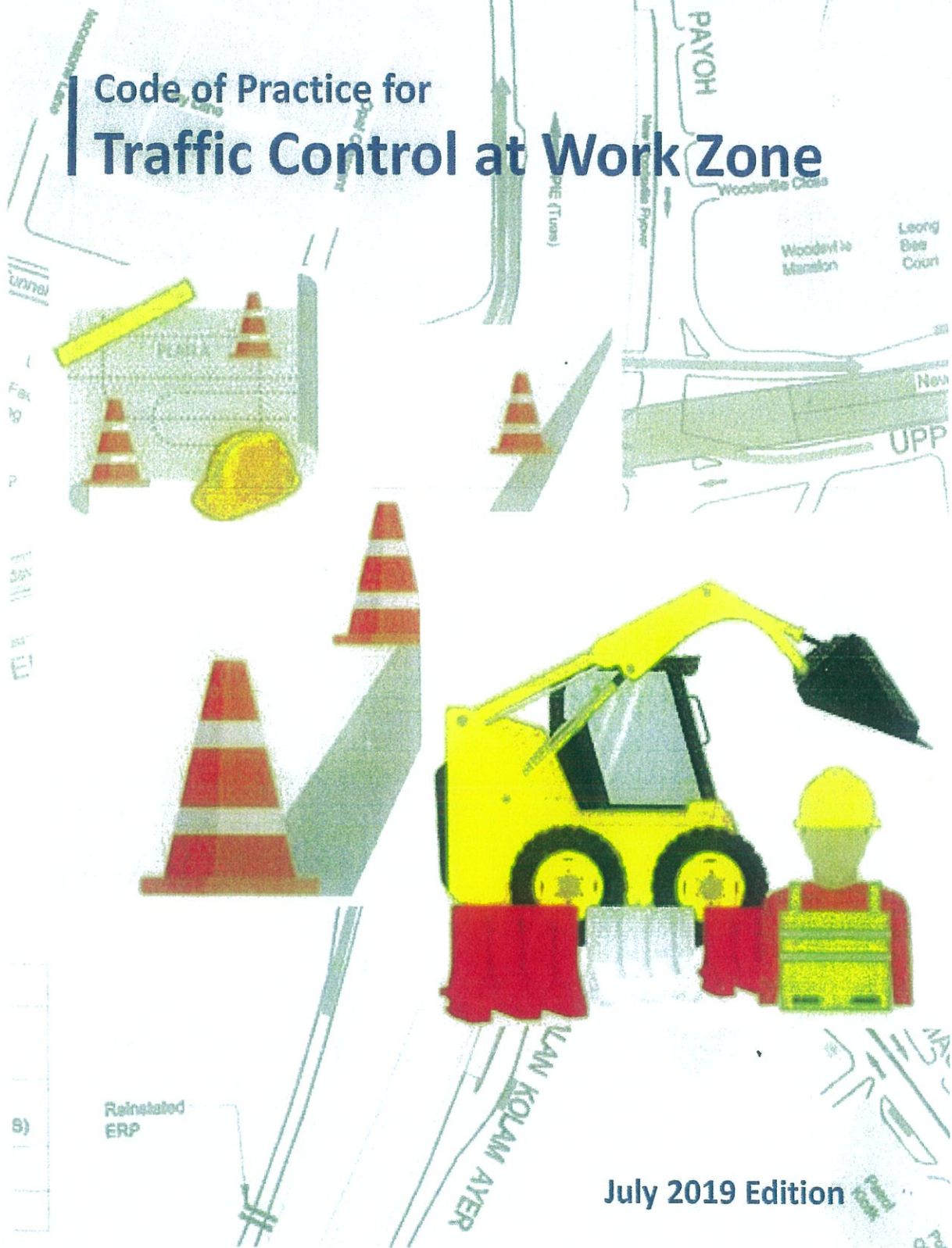
affirmed before me this ...10 SEP 2021.....

Before Me


A Commissioner for Oaths



Code of Practice for Traffic Control at Work Zone



July 2019 Edition

Code of Practice for Traffic Control at Work Zone

July 2019 Edition

The Code of Practice (COP) for Traffic Control at Work Zone was published by Land Transport Authority (LTA), Singapore, to provide those involved in construction activities within the public street a comprehensive guide to temporary traffic control. The COP explains the fundamental principles for the provision of good traffic control and also gives a detailed guide on planning and designing the traffic control plan for the safety of road users.

This July 2019 Edition comes into effect on 1 July 2019 and supersedes all previous editions.

Clarifications on any aspect of this COP may be made with the Road Asset Regulation & Licensing Division of LTA, Singapore.

Origin and Development of Code of Practice for Traffic Control at Work Zone

Conflicts between traffic and works on or next to the road are inevitable. It is important to reduce such conflicts to optimise work efficiency and traffic safety, and to minimise traffic congestion, delay and inconvenience to road users.

The first COP for **Temporary Traffic Control** was published in June 1998 and dealt with the specific work area in the carriageway and its corresponding traffic control arrangement. This proved to be useful in providing contractors with typical temporary traffic control arrangement but inadequate when major temporary traffic schemes are involved. In June 2001, the COP for **Traffic Control at Work Zone** was published to provide those involved in all forms of construction activities within the road reserve with a comprehensive guide to temporary traffic control. In June 2006, general improvements were made to COP for **Traffic Control at Work Zone** to enhance its user-friendliness. Following that, periodically updates were also made to reflect any change in requirements such as new traffic control devices that have been introduced into the industry.

Given the increase in construction activities within the road reserve due to rapid developments and more demands for bigger capacity utility services in recent years, a comprehensive review of the COP was necessary to ensure that it continues to remain user-friendly and relevant from the planning to operations of temporary traffic control in a work zone.

Under this July 2019 Edition, the content had been condensed from 5 Chapters into 4 Chapters with more pictorials for users to better appreciate the requirements of temporary traffic control at work zone to enhance overall safety of working on public streets. Other revisions include a flowchart to guide users on the necessary checks to be carried out and physical improvements to ensure safe deployment of Truck Mounted Attenuator (TMA) at work zones.

Although the COP does not cover every possible situation, the emphasis is nevertheless on *safety first* under any situation. The safety philosophy for carrying out works on public streets is aptly epitomised by the maxim: "It is the works that should adapt to the traffic conditions whenever and wherever possible and not for the traffic to adapt to the convenience of the works!"

It has been assumed that the execution of the provisions in this Code is entrusted to suitably qualified and experienced people, for whose guidance it was prepared. Always consult a qualified person about the provision of temporary traffic control. In situations where the qualified person needs clarifications, he shall seek advice from the Authority.

Compliance with this COP does not of itself confer immunity from legal obligations.

This Code of Practice on Traffic Control at Work Zone is issued by the Land Transport Authority under Regulation 12 of the Street Works (Works On Public Streets) Regulations 1995. It deals with the standards, procedures and other requirements pertaining in particular to paragraph 2(a) of Regulation 12 for carrying out works on public streets.

LAND TRANSPORT AUTHORITY

- (4) **After the workday (inclusive of weekends and holidays)**
- (a) Assign personnel to inspect and maintain the devices.
 - (b) Provide after-hours contact for replacing damaged and displaced devices.
 - (c) Record all damaged or displaced devices.

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3-10 Closing out Procedure

- 3-10.1 The following routine shall be followed when carrying out permanent reinstatement works: -
- (a) Reinststate all markings and make good all defects on road.
 - (b) Restore all permanent signs that were covered or removed.
 - (c) Clean up the site.
 - (d) Remove the temporary devices by following a safe procedure.
 - (e) Rectify all permanent devices before installation.
 - (f) Ensure that the permanent devices are in order of original positions before leaving the site.

3-11 Safe Operation Procedure for Truck Mounted Attenuator (TMA)

- 3-11.1 Only trained driver/operator is allowed to operate the TMA. The operator shall carry out daily routine checks on all items contained in the inspection checklist provided by the manufacturer and maintain the TMA in tip-top condition. The guidelines for use of TMA for road works is detailed in **Appendix III**.



Example of plastic barricade posts and double boards

- 4-16.2 **Application** — It shall be erected without gaps along pedestrian paths throughout the activity work zone for the control of pedestrian movement. Plastic barricades shall not be used on carriageway and/or if heavy pedestrian movement is expected.

They shall not be used next to deep excavations or steep falls and shall be placed such that a minimum distance of 500mm separates the plastic barricade and the excavated pit.

4-17 Impact Attenuator (Stationary & Truck Mounted)

- 4-17.1 **Design** — Impact attenuator is an energy-absorbing device. This product shall pass acceptable performance test (NCHRP 350 or the AASHTO Manual for Assessing Safety Hardware (MASH) standards TL-3) and be designed for each application to ensure performance.

- 4-17.2 **Application** — Stationary attenuators or crash cushions shall be used only if other suitable end treatments are not appropriate as the leading terminal of a safety barrier for works along expressways and other roads where the operating speed limit is $\geq 70\text{km/h}$. For other road environments, a crash cushion is also warranted at high risk locations such as at a road bifurcation. As crash cushions are proprietary products, they shall be designed and installed by the Manufacturer Certified Installer.



Example of a stationary attenuator system

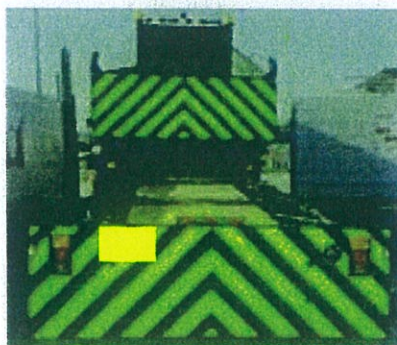


Use of crash cushion to shield the leading terminal of the w-beam VIG



Use of crash cushion to shield the leading terminal of the concrete safety barrier

- 4-17.3 Truck mounted attenuators attached to the rear of protective vehicle shall be used during short duration and mobile works to absorb the impact of the errant vehicle.



Example of a truck-mounted attenuator (TMA)

4-18 Visibility Enhancing Devices

- 4-18.1 They are mounted on supports, barricades, barriers or other channelling and delineation devices to warn road users/ worker/ motorists by enhancing the visibility of the temporary traffic control devices, and hazards within the work zone particularly at night.

4-19 Retro-reflective Disc

- 4-19.1 Design — It is a 200mm round disc fitted with Fluorescent Orange Wide Angle Microprismatic Retro-reflective sheeting on an aluminium plate or any other suitable mounting substrate. Sheeting specifications shall be in accordance to Type IX and above sheeting classification specified in the prevailing version of *ASTM D4956 Standard Specification for Retro-reflective Sheeting for Traffic Control*.



Example of retro-reflective disc

- 4-19.2 Application — Retro-reflective discs are to be spaced at regular intervals to provide a continuous line of sight. The interval shall be 6m c/c and 10m c/c for minor roads and expressways/ major roads respectively. It is an economical and effective visual enhancing device. It shall be mounted facing the direction of the traffic, at about 1m above the ground on the delineation devices. It shall not be used for pedestrian footpath and off-road areas.

4-20 Flashing Beacons

- 4-20.1 **Design** - It is a portable, lens-directed, and enclosed amber light device (200mm diameter). It shall be able to operate in STEADY mode or FLASHING mode comply with the prevailing version of *BS EN 12352*.
- 4-20.2 **Application** — Beacons should space at regular intervals to provide a continuous line of sight:
- (a) Minor road - 6m c/c
 - (b) Major road - 10m c/c
 - (c) Expressway - 10m c/c

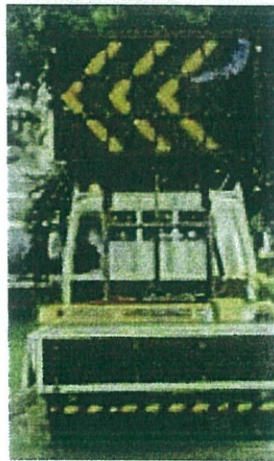


Example of a portable traffic light

- 4-24.2 Application — Portable traffic light to regulate traffic for shared right of way shall be used when traffic control is required.

4-25 Flashing Arrow

- 4-25.1 Design - Flashing arrows are lamps flashing sequentially to create a chevron pattern, indicating a move to the left or right. It is usually mounted on truck.



Example of a variable message sign (VMS) displaying flashing arrows

- 4-25.2 Application - They are used to warn motorists about lane closures ahead, the side where work is carried out and channel traffic to its intended traffic path. They shall be placed behind channelling or delineation devices.

4-26 Variable Message Sign

- 4-26.1 Design - This is a traffic sign which is capable of displaying real-time information and is generally mounted on vehicle or placed independently on the road side.

- 4-26.2 Application - It is displayed in advance to supplement other devices to provide additional advance information to the road user.

- 4-26.3 The sign can be used during one of the following scenarios:

- Construction or maintenance work zone.
- Incident management
- Advance notice of traffic scheme implementation.
- Notification of future construction or event.

- 4-26.4 The sign can provide a unique message that alerts the motorist and support signing for:

APPENDIX III - Truck Mounted Attenuator

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Guidelines for use Truck Mounted Attenuator (TMA) for Road Works

1. General

The primary objective of these guidelines is to provide a standard guidance for the application for TMA to be used on public roads. Refer to Figure A for the Process for Use of TMA for Roads Works.

2. Definitions

“TMA” used refers to truck-mounted attenuator.

“User” used hereinafter is defined as the contractor/agencies who are using the TMA (regardless of self-ownership or rental) on public roads of posted speed of 70 km/h or more.

“Operator” used hereinafter is defined as the person who has been trained and certified by TMA manufacturer authorised trainer/centre to correctly perform the TMA. He may also double up as the shadow vehicle driver.

“Shadow Vehicle” is defined as the LTA-approved truck where the TMA is mounted on.

“NCHRP” refers to National Co-operative for Highway Research Program commissioned by American Association of State Highway and Transportation Officials and US Federal Highway Administration.

“MASH” refers to Manual for Assessing Safety Hardware. The rewrite of NCHRP 350 and was review by the ASSHTO Technical Committee on Roadside Safety (TCRS).

3. Compliance

Truck mounted attenuator unit mounted on the shadow vehicle shall meet both the mandatory and optional requirements as stated in the NCHRP 350 Report TL-3 or the AASHTO Manual for Assessing Safety Hardware TL-3 (MASH).

The TMA shall have documentary evidence to prove that it has been successfully crash tested following the procedures set forth in the NCHRP Report 350 or MASH.

To allow the use of collision attenuator or TMA on the public roads, User shall ensure the following report/letter to Road Asset Regulation & Licensing (RARL) of LTA to show the compliance of the above-mentioned standards:

1. A copy of crash summary report, together with sequential photos from ISO certified test centre qualified to conduct NCHRP Report 350/MASH impact tests; or
2. A copy of acceptance letter/report from United States of America Federal Highway Administration (FHWA)

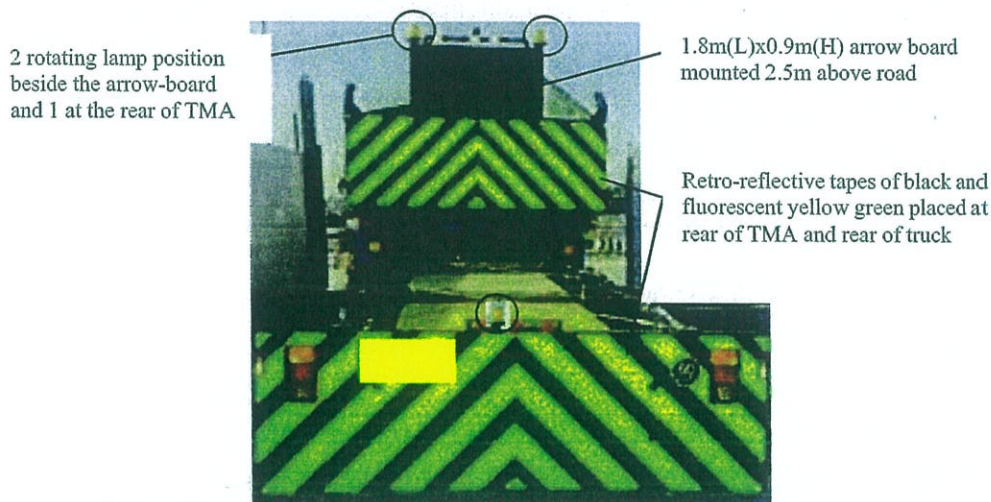
4. Installation

The TMA shall be installed by a workshop authorised by the TMA manufacturer in accordance with the Drawings approved by Vehicle Approval & Control (VAC) of LTA.

5. Warning Devices and Retro-reflective Sheeting

TMA warning devices and retro-reflective sheeting shall meet the following requirements:

- 1) 2 rotating lamps positioned beside the arrow-board and 1 rotating lamp at the rear of TMA. Rotating lamps installed on TMA shall comply with the latest prevailing version of United Nations Economic Commission for Europe (UNECE) Regulation 65 on Special Warning Lamps;
- 2) Retro-reflective sheeting of black and florescent yellow green affixed at rear of TMA and rear of shadow vehicle. The retro-reflective sheeting specifications shall meet Type IX and above of the prevailing version of *ASTM D4956*.
- 3) The flashing arrow board shall be mounted 2.5m above the road surface. The arrow board shall conform with the following specifications:
 - a. Arrow board shall be a minimum of 1.8m (L) x 0.9m (H);
 - b. Flashing lamps shall flash at a minimum rate of 65 flashes per minute during operations;
 - c. Comprise a minimum of 15 flashing lamps with 140mm in diameter.
 - d. Flashing arrow shall be clearly visible and legible from a minimum distance of 700m during day and night operations.



Truck Mounted Attenuator Warning Devices and Retro-reflective Sheeting

6. Longitudinal Buffer Distance

For mobile operations, the driver of the shadow vehicle shall remain in the vehicle at all times. The shadow vehicle shall be properly spaced behind the working vehicle. The shadow vehicle shall maintain a minimum longitudinal buffer distance of 30⁽¹⁾ m behind the working vehicle. This distance shall remain constant as the work progresses down the road / expressway.

For stationary operations, the shadow vehicle shall be properly spaced behind the work crew and maintain a minimum longitudinal buffer of 15⁽¹⁾ m behind the start of work area.

Types of TMA operation	Minimum Longitudinal buffer distance (m)
Mobile TMA	30 ⁽¹⁾
Stationary TMA	15 ⁽¹⁾

Note:

- (1) Cross-check with TMA manufacturer's recommended longitudinal buffer distance and adopt the longer buffer distance to be implemented on site.

Longitudinal Buffer Distance for TMA

7. TMA Manufacturer Trainer/Centre

The authorised training centre shall keep records and issue certificates to TMA operators. The certificate shall contain following details:

- Name of the operator
- NRIC /FIN
- Date of training
- Model and serial number of TMA

TMA Operator shall produce the certificate for inspection, whenever is required by the Authority during their routine audit checks.

8. TMA Inspections, Maintenance and Repairs

To maintain the crashworthiness of the TMA, User shall ensure regular maintenance and inspection, are carried out by TMA manufacturer's authorised workshop.

User shall keep a copy of maintenance/inspection/and repair records issued by the manufacturer's authorised workshop to ensure proper operation and the safety performance of the TMA. Requirements for inspection, maintenance and repair to be carried out by authorised workshop shall meet the requirements specified by the manufacturer.

Process for the use of TMA for Road Works



Truck mounted attenuator unit mounted on the shadow vehicle shall meet both the mandatory and optional requirements as stated in the NCHRP 350 Report TL-3 level or the AASHTO Manual for Assessing Safety Hardware TL-3 (MASH).

To allow the use of collision attenuator or TMA on the public roads, User shall ensure the following report/letter to Road Asset Regulation & Licensing (RRL) of LTA to show the compliance of the above-mentioned standards:

- 1) A copy of crash summary report, together with sequential photos from ISO certified test centre qualified to conduct NCHRP Report 350/MASH impact tests; or
- 2) A copy of acceptance letter/report from United States of America Federal Highway Administration (FHWA)

Prior to deployment of TMA on the public roads, the User shall ensure that the TMA manufacturer had appointed an authorised workshop and certified product trainer/training centre in Singapore.

User shall ensure the following documents via the VITAS under the Drawing Approval application to Vehicle Approval & Control (VAC) of LTA for approval:

- (1) An A3-sized technical drawing, endorsed by a Professional Engineer (Mechanical) showing the:
 - a) Plan view – with stowed and deployed state of the TMA;
 - b) Side view - with stowed and deployed state of the TMA;
 - c) Front view;
 - d) Rear view - with stowed and deployed state of the TMA; and
 - e) Details such as - Weight Summary, Dimensions, Component's Annotation, Travelling Condition and etc.
- (2) Weight distribution and Stability calculations - endorsed by the same PE.
- (3) Certificate of endorsement for the drawing approval application by the same PE.
- (4) Technical specifications of the shadow vehicle and TMA, as well as compliant certification of the TMA.

Issuance of the Notice of Drawing Approval with approval code.

User shall ensure the TMA is installed by a workshop authorised by the TMA manufacturer in accordance with the Drawing approved by VAC.

The certificate of installation issued by the workshop shall contain the following details:

- a) Shadow vehicle registration plate number;
- b) Date of TMA installation;
- c) Model and serial number of TMA;
- d) Approval code.

User shall ensure TMA operators are trained and certified by TMA manufacturer authorised trainer/centre.

The authorised training centre shall keep records and issue certificates to TMA operators. The certificate shall contain following details:

- a) Name of the operator,
- b) NRIC /FIN,
- c) Date of training,
- d) Model and serial number of TMA.

User shall ensure the certifications for TMA installation and TMA operator training are available for inspection, whenever is required by the Authority during their routine audit checks.

Figure A - Process for the use of TMA for Road Works

This is the Exhibit marked "STS- 5"

referred to the Affidavit of Evidence in Chief
of

SEE TIONG SOON

affirmed before me this 10 SEP 2021

Before Me


A Commissioner for Oaths



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09th Sep 2011

GIM TIAN LOGISTICS PTE LTD

6001, Beach Road, #B1-10
Golden Mile Tower.
Singapore 199589
Tel : 6291 2396 , Fax: 6299 3566
Attention: Mr. Ang / Mr. Toh :

RE: LETTER OF CERTIFICATION

Dear sir,

This letter is to certify all Scorpion TMA are installed by our authorized workshop's
ENG SOON HUAT ENGINEERING WORKS .

Please do not hesitate to contact us for any further clarification.

Yours truly,




Sam Chow
Regional Manager

This is the Exhibit marked "STS- 6"

referred to the Affidavit of Evidence in Chief
of

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affirmed before me this 10 SEP 2021

Before Me

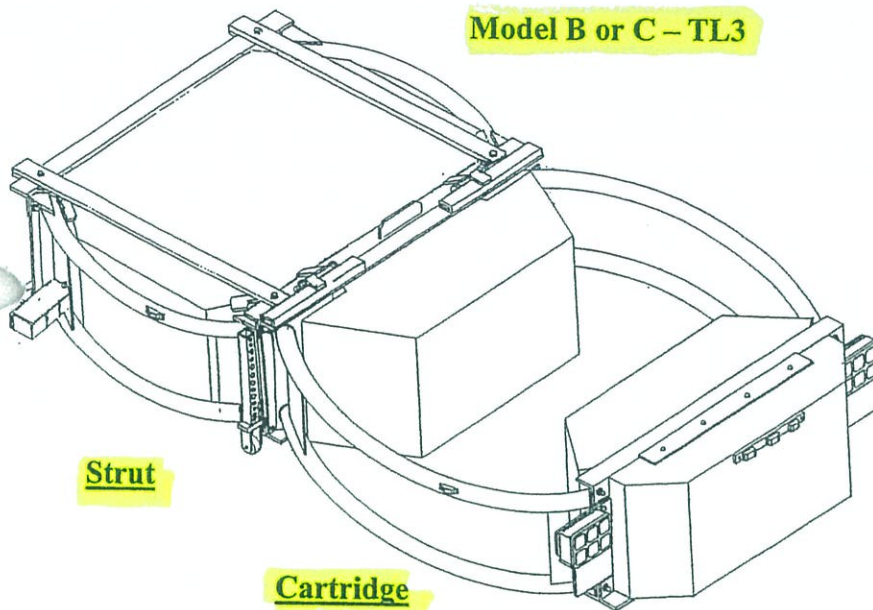
CLLL
A Commissioner for Oaths



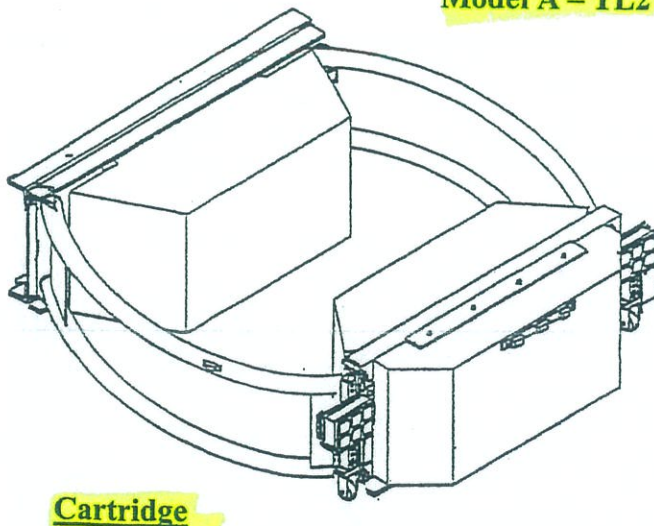
Installation, Maintenance, and Repair Manual

For Scorpion 10,000 TMA

Model B or C – TL3



Model A – TL2



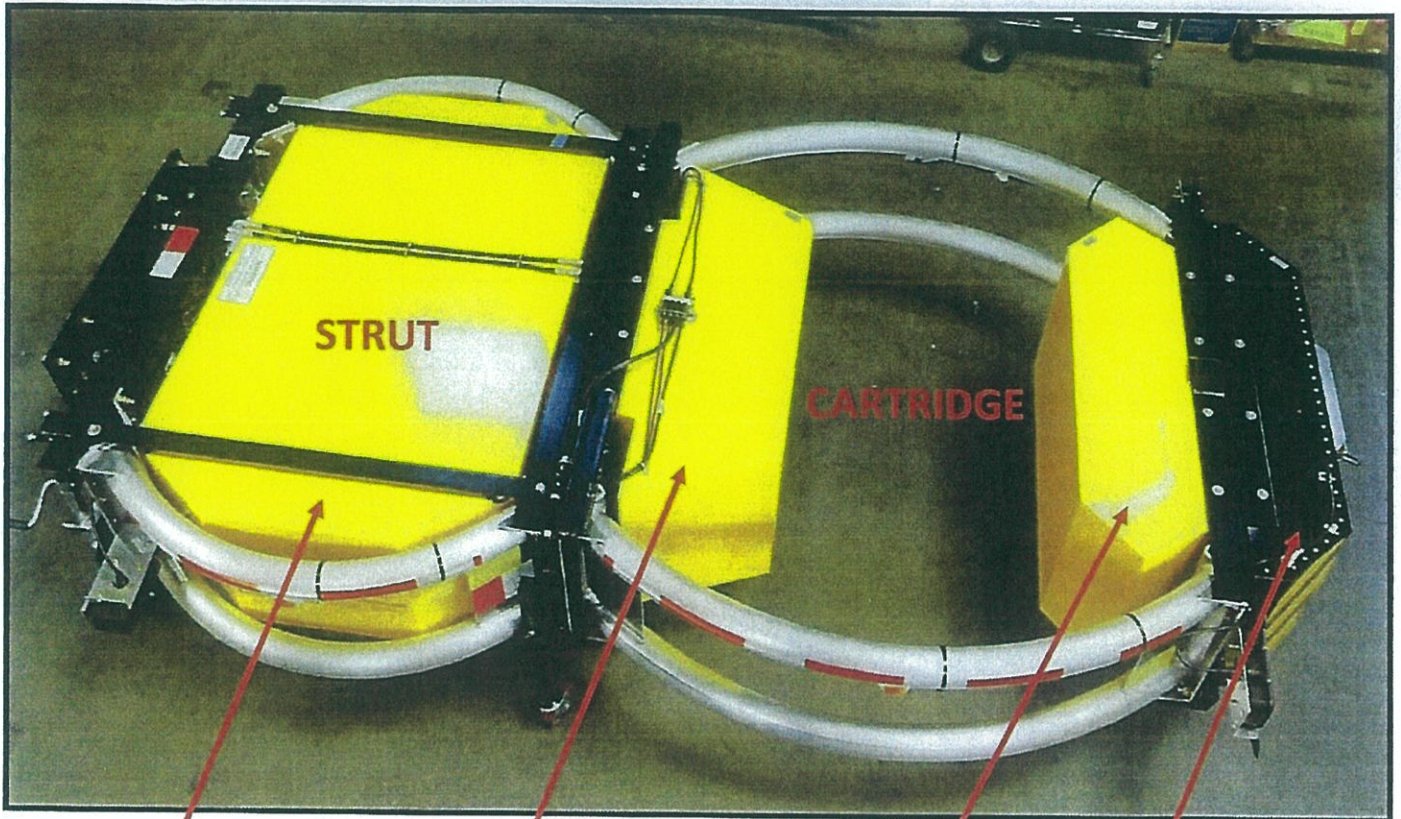
TraFFix
Devices Inc. 

160 Avenida La Pata
San Clemente, CA 92673
(949) 361-5663
FAX (949) 361-9205
www.traffixdevices.com

Revision C (Dated 11/5/03)

Complete Assembly of Model C

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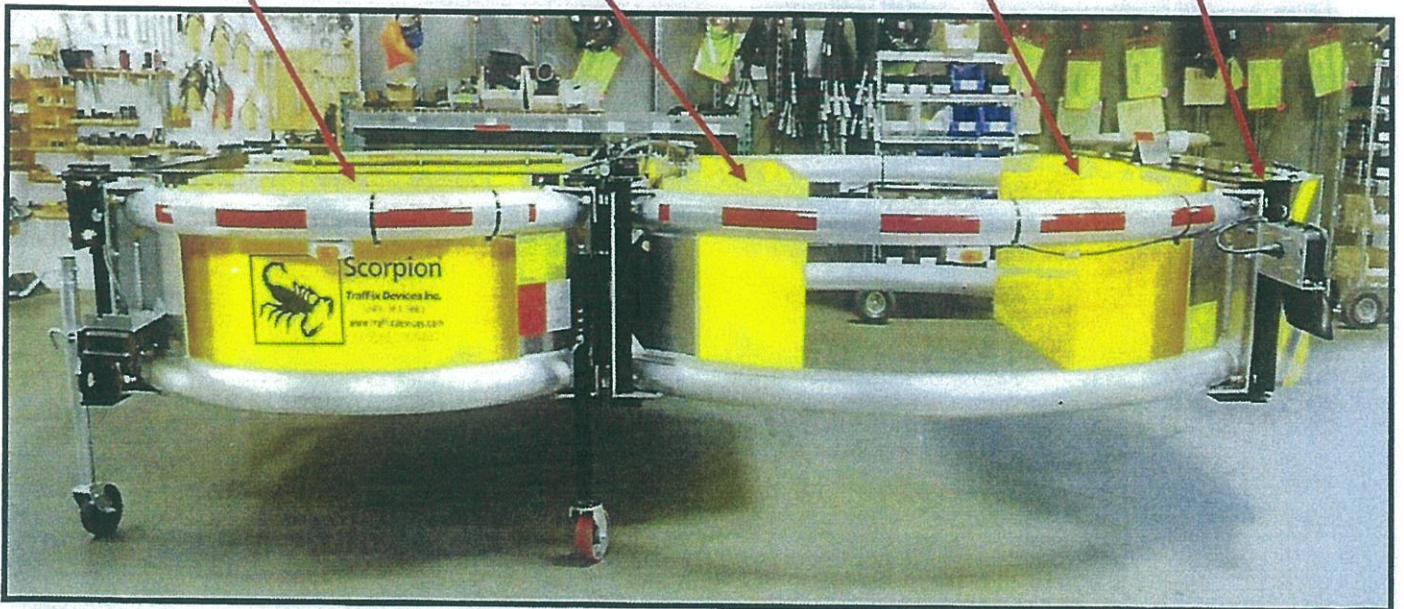


Module D

Module C

Module B

Module A



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TMA DAMAGES REPORT

To: *Indopave Group Pte Ltd*

Ref: *TMA/R/1913*
 Date: *19/8/19*
 Tel:
 Fax:

Attn: *Mr. Philip Yip*

Vehicle's No: *XE 3025 Z (Gim Tian)*

TMA S/No: *10021*

Parts Damage and To Be Replace:

S/no	Descriptions	Qty	Remark
1.	<i>Energy Absorber Module 'A'</i>	<i>1</i>	<i>NO</i>
	<i>S/No: 52867</i>		
2.	<i>Tail Lamp with Bracket (Left)</i>	<i>1</i>	<i>NO</i>

Yours Truly,

[Signature]

See Tiong Suan

See Hing Suan

See Tiong Suan
C/O TMA systems printer

This is the Exhibit marked "STS- 8"

referred to the Affidavit of Evidence in Chief

of

SEE TIONG SOON

10 SEP 2021

affirmed before me this

Before Me


A Commissioner for Oaths





