



A+MP 道路安全示警護欄

A+MP Road Warning Safety Plastic Guardrail



環保、節能  
可回收再利用



全球首創



同防彈  
玻璃材質



多國  
專利認證



通過多項  
無毒測試檢驗



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## COMPANY PROFILE 公司簡介

Aplus Molds & Plastics Co., Ltd. (formerly known as Chen Lueng) was founded in July of 1995, with the collaboration of a team of experienced elite associates.

Possessed of professional experiences & knowledge, we devoted ourselves to plastic products and molds production, items include but not limited to auto parts; OA accessories; small appliances and electronic parts. Currently, we focus on both ODM development and OEM production, as well as production of plastic molds and the export of such items. Furthermore, by utilizing our special technology with the characteristics of plastic, we developed and produced the innovative "A+MP Road Warning Safety Guardrail".

成緯企業股份有限公司創立於 1995 年七月初，經集合全體工作夥伴皆是歷經工作磨練之精英而創立。

本公司以專業的經驗與知識投入塑膠業和模具業服務於市場，生產之產品以汽、機車零配件、辦公傢俱零配件、家電產品及相關電子類產品為主，並以專業技術運用塑膠之特性研發與製作出 [A+MP 道路安全示警護欄]，目前皆以 ODM 開發，OEM 生產為主，並積極開拓模具製造外銷等業務。

## CERTIFICATES 專業認證

To achieve the highest quality control standard in our fields, we integrated ISO-9001:2008, ISO/TS-16949:2009, ISO-22000:2005 & HACCP management systems to truly satisfy our promises to our esteemed customers.

為將品質提升到業界最嚴謹的品質管理水準，以 ISO-9001:2008, ISO / TS-16949:2009, ISO-22000:2005 暨 HACCP 體系之管理系統，以達到真正滿足客戶需求之承諾及保證。



>> ISO-9001



>> ISO/TS-16949



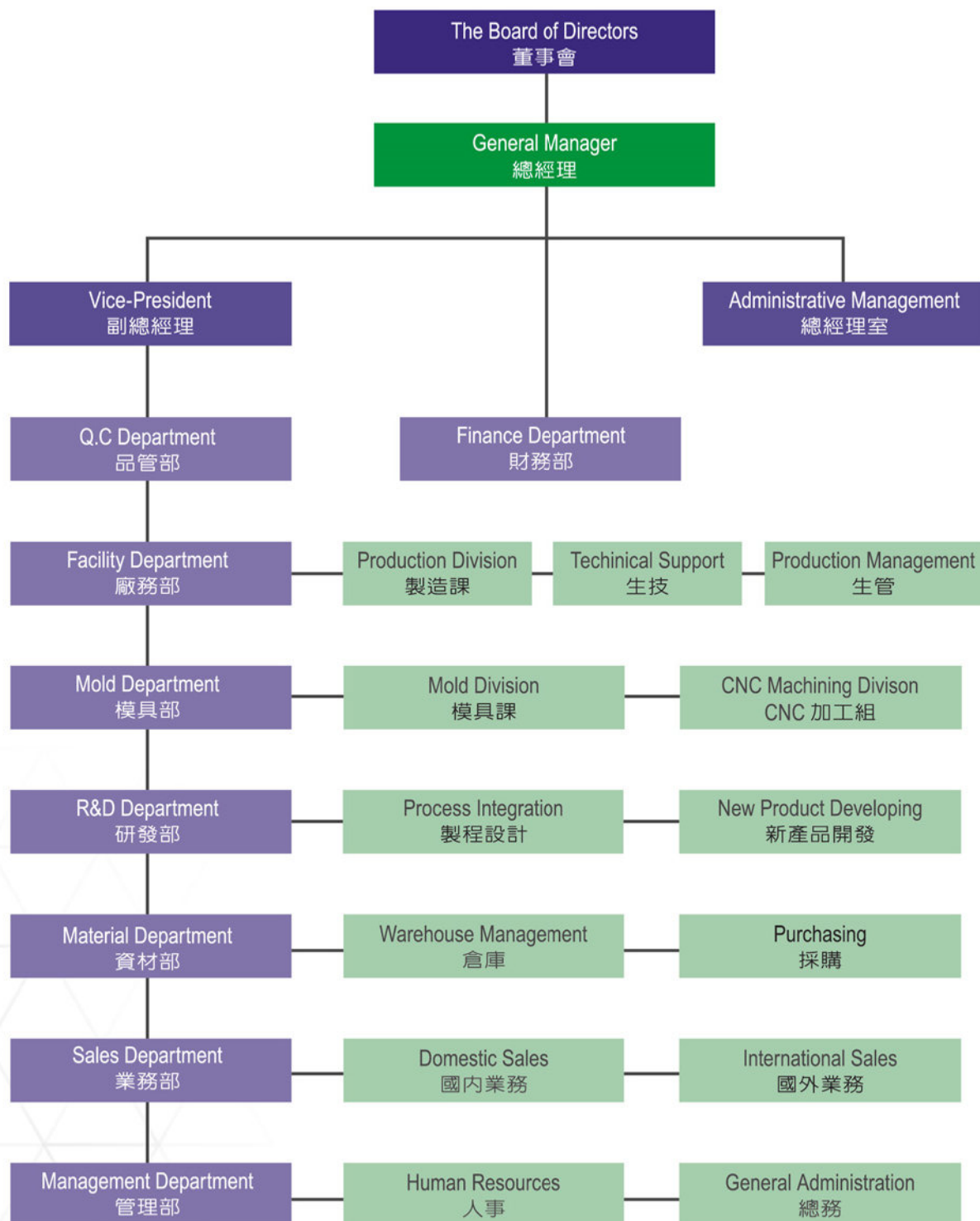
>> ISO-22000



>> HACCP

# ORGANIZATION CHART

## 組織架構



# PRODUCT INTRODUCTION

## 產品簡介

These PC & PP safety guardrails are our newly developed innovations, and they can be used in roads around the globe. This A+MP plastic guardrail is different from the traditional Jersey barrier or steel guardrail with the advantages such as stronger product structure safety; higher malleability; light weight and anticorrosion.

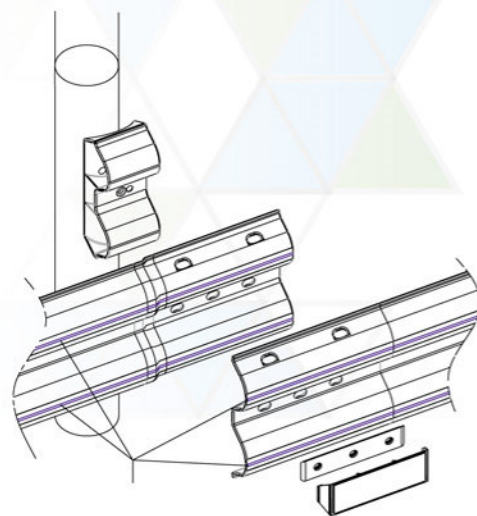
Furthermore, these products are anti-UV treated which can withstand continuous sun exposure and heat, and the material can be recycled so it will not damage the soil or our ecosystem; better suit currently enforced environmental protection idea and economic benefits.

With pleasant appearance, product color can be custom-ordered to better fit local scenery and please the views of the drivers. These safety guardrails are equipped with special light reflector (yellow-ongoing, red-reversion), which act as the functions of caution and guiding and improving road safety.

本新產品為自主創新研發以聚碳酸酯與聚丙烯製作之公路護欄，適用於世界各國之道路，此塑化之「A+MP 道路安全示警護欄」有別於傳統紐澤西護欄與鋼質護欄，其優點在於產品結構安全性強、延展性高、質輕且耐候（蝕）性佳，並有示警、吸震、緩衝、強韌、美觀與安全之功能，建置與維護成本低廉且安裝（或拆卸）方便等特性。

此外，本產品採抗 UV 色料耐光 8 級（汽車最高等級），可防日曬及高溫環境。亦具有材料可回收再利用之特性，不破壞土壤與生態環境，較符合現行之環保理念且具經濟效益。

另在本產品外觀部分，其外表美觀可依整體規劃設計，採用不同色彩（可由使用單位指定）融合該地景觀並增加道路風光，且公路護欄具備特殊反光鈕設計（順向黃光、逆向紅光），讓駕駛者有示警與提高行車安全。



## C OMPARISON CHART

### 特色比較

Based on the characteristics of A+MP road warning guardrail and steel guardrail, the following is a chart to show the comparisons of color, maintenance cost, construction, plasticity and CO<sub>2</sub> emission.

A+MP 示警護欄和鋼板護欄之特性，依其強度、色彩、養護成本、施工、可塑性、環保等相互比較。

COMPARISON CHART 護欄特色比較表格

| Type<br>種類                                                                                                                                   | Illustration<br>圖示                                                                  | Strength<br>強度                                                                                                                                           | Color<br>色彩                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Steel<br>Guardrail<br>鋼板護欄                                                                                                                   |   | Under the displacement 319.4mm and impact force 4802.3kg, the product is deformed.<br>位移量 319.4mm，<br>衝擊力量 4802.3kg，<br>成品 <b>凹陷且無回復</b>                 | Most of the guardrail is gray and does not have the function of caution.<br><b>多為灰色，<br/>色彩單調且<br/>無示警功能</b> |
| <br><b>A+MP Warning<br/>Guardrail</b><br><b>A+MP 示警護欄</b> |  | Under the displacement and 550mm impact force 5661.7kg, the product is not broken and not deformed.<br>位移量 550mm，<br>衝擊力 5661.7kg，<br>成品 <b>無破裂且回復原狀</b> | Color can be customer-ordered.<br>可依使用單位指定採用<br><b>不同顏色</b>                                                  |

COMPARISON CHART 護欄特色比較表格

| Maintenance<br>養護成本                                                                                        | Construction Difficulty<br>施工難度                                                                                                                       | Plasticity<br>可塑性                                                                                                      | CO <sub>2</sub> Emission<br>環保                                                                                              |
|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 100% of the guardrail needed to be replaced after car crash.<br>發生碰撞後<br>必須立即 <b>100%</b> 更換               | Difficult to construct dismantle;<br>about 5 workers and hoist are required.<br><b>施工、拆卸困難度高，</b><br>施工人員約 <b>5 人</b><br>且須有吊車輔助安裝                    | It requires to be machine-bended in factory in advance.<br><b>鋼性高，</b><br>需預先於工廠內<br>以設備塑型彎曲                           | 1.7 ton of CO <sub>2</sub> emissions per 1 ton steel production.<br>每生產 1 公噸鋼材<br>排放 <b>1.7 公噸</b> 二氧化碳                     |
| Only around 3% of them needed to be replaced and repaired after car crash.<br>發生碰撞時，<br>僅約 <b>3%</b> 需更換維護 | The weight is only 25% of steel guardrail; Easy to construct dismantle, only need 2 workers.<br><b>施工、拆卸容易，</b><br>重量只有鋼板的 25%<br><b>2 名</b> 施工人員即可作業 | It can easily be adjusted by all kinds of roads with high elongation.<br><b>延展性高，</b><br><b>可依不同地形</b><br><b>作彎曲調整</b> | 0.4-0.5 ton of CO <sub>2</sub> emissions per 1 ton plastic material production.<br>每生產 1 公噸塑膠原料<br>產生 <b>0.4-0.5 噸</b> 二氧化碳 |



# AUTOMOTIVE RESEARCH & TESTING CENTER TEST REPORT

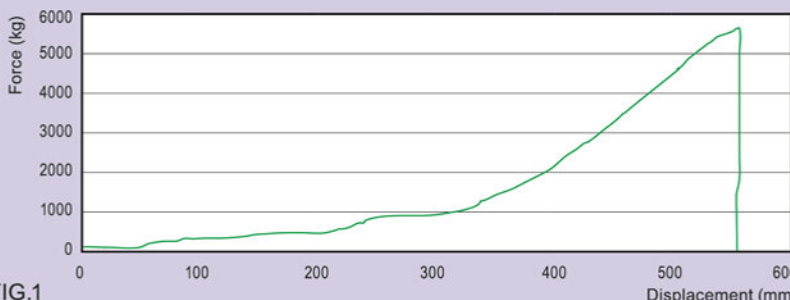
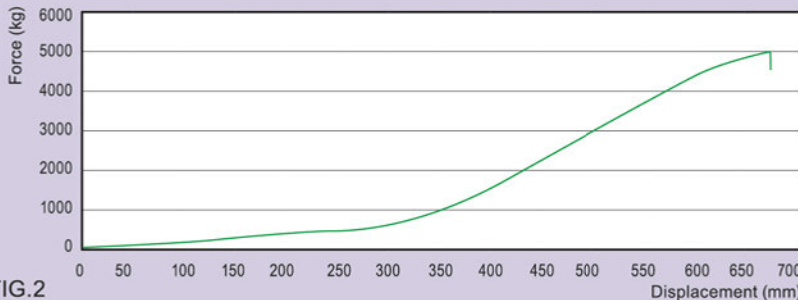
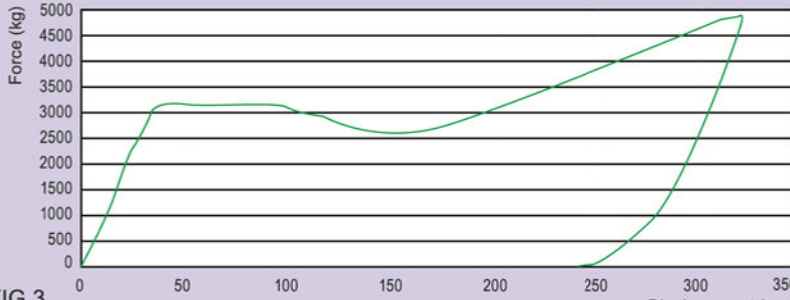
## ARTC 財團法人車輛研究測試中心檢驗報告

### Strength Test \ 靜態強度試驗

| Item 項目<br>Material 材質 | The Traveling Distance<br>預設位移量 | Max. Force (kg) /<br>Max. Displacement (mm)<br>最大力量 (kg) /<br>最大位移 (mm) | Force V.S.<br>Displacement Curve<br>力量 - 位移曲線 | During the Test<br>檢測中 | Post-Test<br>檢測後 |
|------------------------|---------------------------------|-------------------------------------------------------------------------|-----------------------------------------------|------------------------|------------------|
| Polycarbonate<br>聚碳酸酯  | 550 mm                          | 5661.7 / 540.2                                                          | FIG.1                                         | FIG.4                  | FIG.7            |
| Polypropylene<br>聚丙烯   | 600 mm                          | 4979.4 / 677.0                                                          | FIG.2                                         | FIG.5                  | FIG.8            |
| Steel<br>鋼板            | 300 mm                          | 4802.3 / 319.4                                                          | FIG.3                                         | FIG.6                  | FIG.9            |

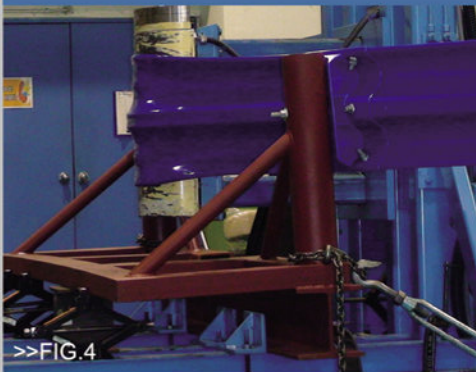
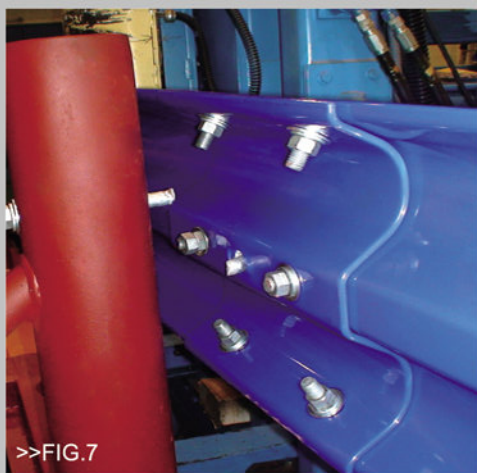
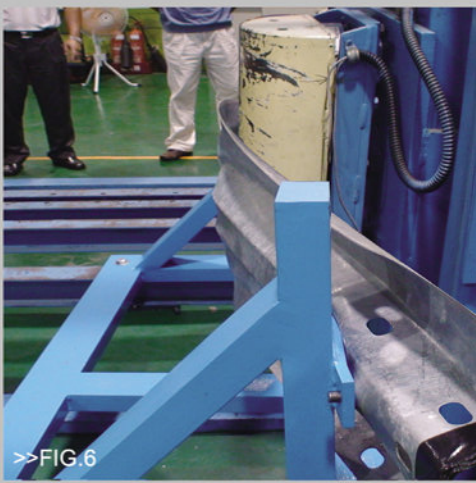
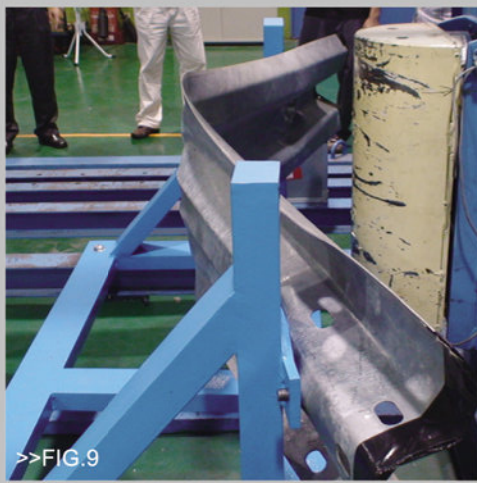
>> SOURCE : AUTOMOTIVE RESEARCH & TESTING CENTER ARTC  
>> 資料來源：財團法人車輛研究測試中心

### Strength Test Comparison Table \ 靜態強度試驗比較表

| Material<br>材質        | Force V.S. Displacement Curve<br>力量 - 位移曲線                                                                | Report number<br>報告編號 |
|-----------------------|-----------------------------------------------------------------------------------------------------------|-----------------------|
| Polycarbonate<br>聚碳酸酯 |  <p>&gt;&gt;FIG.1</p> | B101SS0038            |
| Polypropylene<br>聚丙烯  |  <p>&gt;&gt;FIG.2</p> | B101SS0030            |
| Steel<br>鋼板           |  <p>&gt;&gt;FIG.3</p> | B099SS0037            |

>> SOURCE : AUTOMOTIVE RESEARCH & TESTING CENTER ARTC  
>> 資料來源：財團法人車輛研究測試中心

### Strength Test photos Comparison Table \ 靜態試驗實照比較表

| Item 項目<br>Material 材質 | During the Test<br>檢測中                                                                                                                                                                                                                      | Post-Test<br>檢測後                                                                                          | Test Date<br>檢測日期 |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------|
| Polycarbonate<br>聚碳酸酯  | <p>Under the displacement 550 mm and impact force 5.6 ton, the guardrail is not broken. 測試進行中位移量 550 mm，衝擊力量達 5.6 噸，護欄仍無破裂。</p>  <p>&gt;&gt;FIG.4</p>      |  <p>&gt;&gt;FIG.7</p>   | 2012/04/19        |
| Polypropylene<br>聚丙烯   | <p>Under the displacement 600 mm and impact force almost 5 ton, the guardrail is not broken. 測試進行中位移量 600 mm，衝擊力量近 5 噸，護欄仍無破裂。</p>  <p>&gt;&gt;FIG.5</p> |  <p>&gt;&gt;FIG.8</p>  | 2012/06/13        |
| Steel<br>鋼板            |  <p>&gt;&gt;FIG.6</p>                                                                                                                                    |  <p>&gt;&gt;FIG.9</p> | 2010/09/30        |

>> SOURCE : AUTOMOTIVE RESEARCH & TESTING CENTER ARTC  
>> 資料來源：財團法人車輛研究測試中心

# AUTOMOTIVE RESEARCH & TESTING CENTER TEST REPORT

## ARTC 財團法人車輛研究測試中心檢驗報告

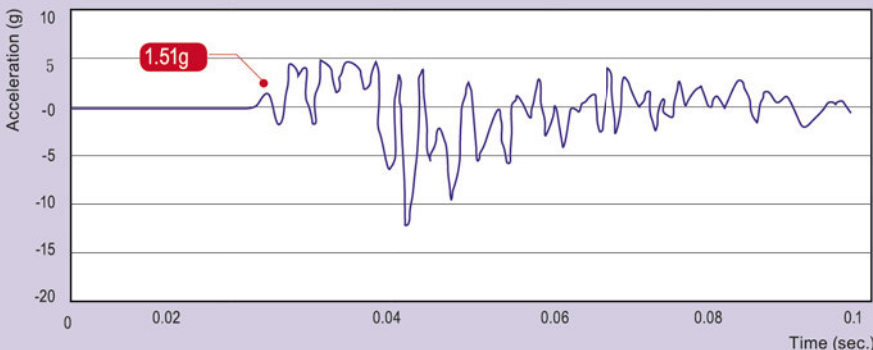
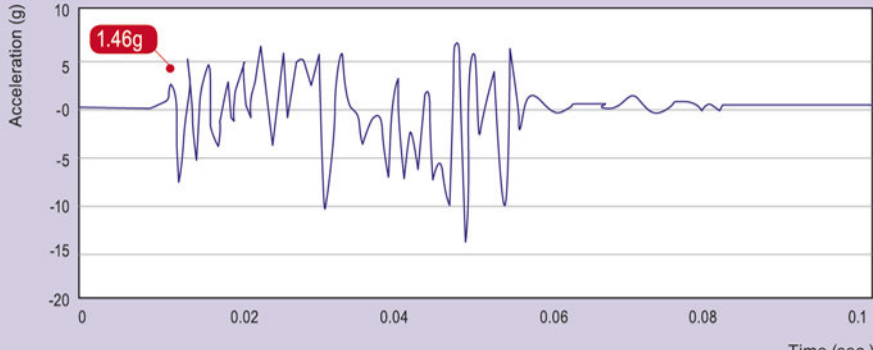
### Impact Test \ 動態衝擊試驗

| Item 項目<br>Material 材質 | The Mess of the Pendulum<br>擺錘重量 | Impact Speed<br>衝擊速度 | Acceleration<br>-Time Curve<br>加速度 - 時間曲線 | During the Test<br>檢測中 | Post-Test<br>檢測後 |
|------------------------|----------------------------------|----------------------|-------------------------------------------|------------------------|------------------|
| Polycarbonate<br>聚碳酸酯  | 1802 kg                          | 6.49 km /h           | FIG.10                                    | FIG.12                 | FIG.14           |
| Polypropylene<br>聚丙烯   | 1802 kg                          | 6.55 km /h           | FIG.11                                    | FIG.13                 | FIG.15           |

>> SOURCE : AUTOMOTIVE RESEARCH & TESTING CENTER ARTC

>> 資料來源：財團法人車輛研究測試中心

### Impact Test Comparison Table \ 動態衝擊試驗比較表

| Material<br>材質        | Acceleration- Time Curve<br>加速度 - 時間曲線                                                                     | Report number<br>報告編號 |
|-----------------------|------------------------------------------------------------------------------------------------------------|-----------------------|
| Polycarbonate<br>聚碳酸酯 |  <p>&gt;&gt;FIG.10</p> | B101SS0033            |
| Polypropylene<br>聚丙烯  |  <p>&gt;&gt;FIG.11</p> | B101SS0030            |

>> SOURCE : AUTOMOTIVE RESEARCH & TESTING CENTER ARTC

>> 資料來源：財團法人車輛研究測試中心

### Impact Test photos Comparison Table \ 動態衝擊試驗實照比較表

| Item 項目<br>Material 材質 | During the Test<br>檢測中                                                                                    | Post-Test<br>檢測後                                                                                           | Test Date<br>檢測日期 |
|------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------|
| Polycarbonate<br>聚碳酸酯  |  <p>&gt;&gt;FIG.12</p>  |  <p>&gt;&gt;FIG.14</p>  | 2012/06/13        |
| Polypropylene<br>聚丙烯   |  <p>&gt;&gt;FIG.13</p> |  <p>&gt;&gt;FIG.15</p> | 2012/06/13        |

>> SOURCE : AUTOMOTIVE RESEARCH & TESTING CENTER ARTC  
 >> 資料來源：財團法人車輛研究測試中心

# SGS TEST REPORT

## 道路安全示警護欄 SGS 的檢驗數據

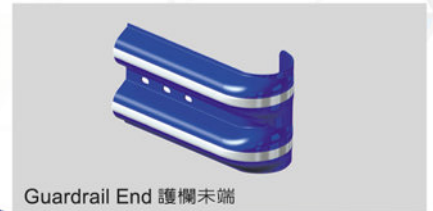
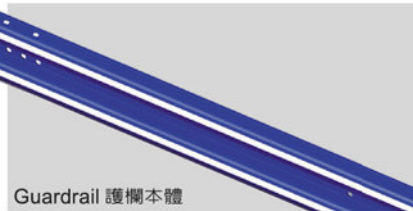
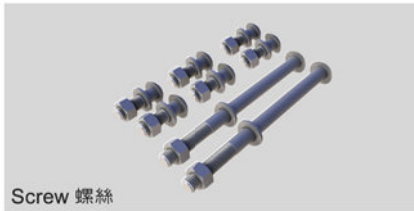
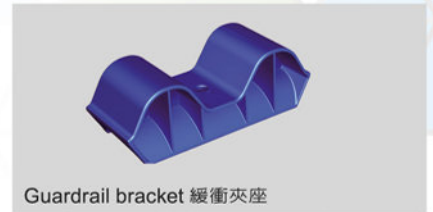
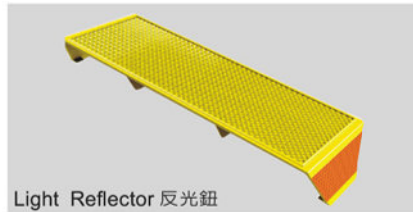
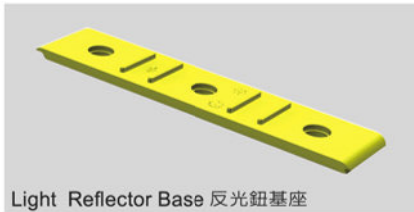
### SGS TEST REPORT 道路安全示警護欄 SGS 的檢驗數據

| Test Item<br>測試項目                                       | Test Method<br>測試方法                     | Test Result PC<br>測試結果    | Test Result PP<br>測試結果 |
|---------------------------------------------------------|-----------------------------------------|---------------------------|------------------------|
| Yield Tensile Strength<br>降伏抗拉強度 (Kgf/cm <sup>2</sup> ) | ASTM D638-10 (Type I, V=50mm/min)       | 689                       | 227                    |
| Elongation at Break<br>斷裂伸長率 (%)                        |                                         | 54                        | 249                    |
| Impact Strength<br>衝擊強度 (Kgf.cm/cm)                     | ASTM D256-10 Method A (Un-notch)<br>無缺口 | >372.4 (Non-Break)<br>無斷裂 | 202 (Non-Break)<br>無斷裂 |
| Heat Deflection Temperature<br>熱變形溫度 C°                 | ASTM D648-07 Method B (0.455MPa)        | 132.4                     | 107.0                  |
| Flexural Strength<br>彎曲強度 (Kgf/cm <sup>2</sup> )        | ASTM D790-10 Procedure B                | 1034                      | 330                    |

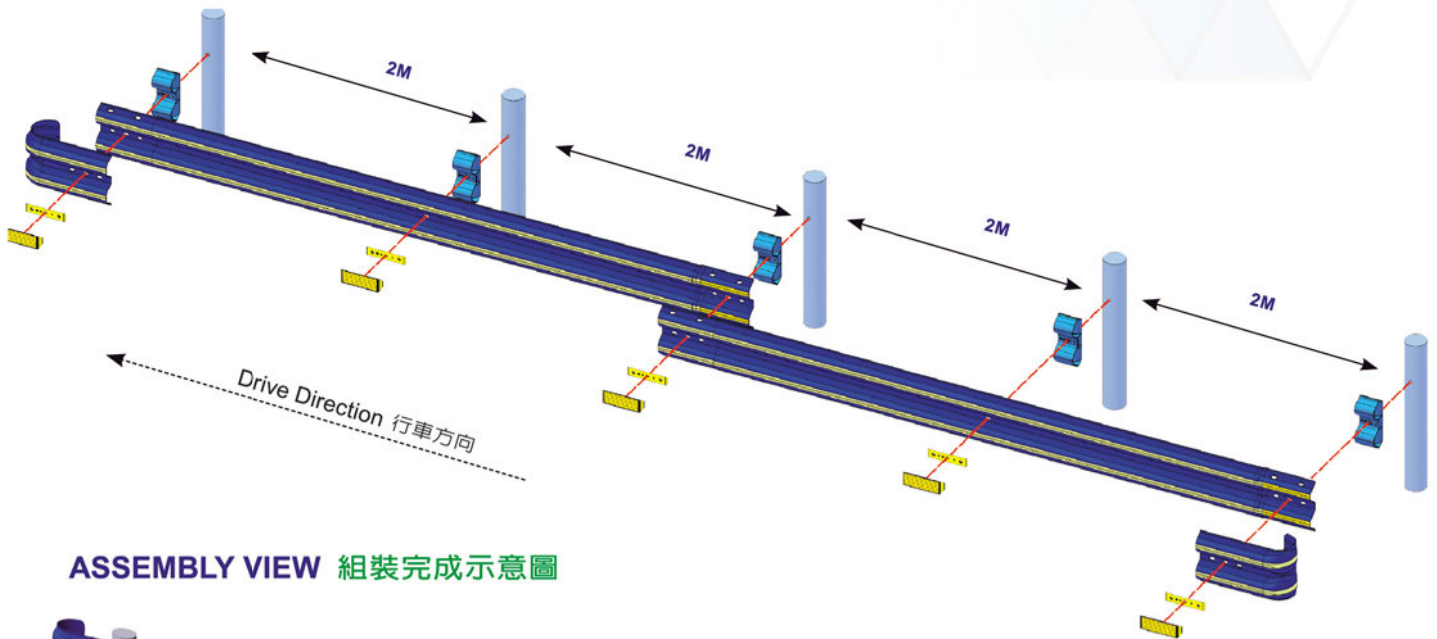
>> 以上依 ASTM 之標準試片 (6.8 m/m) 測得之數據。



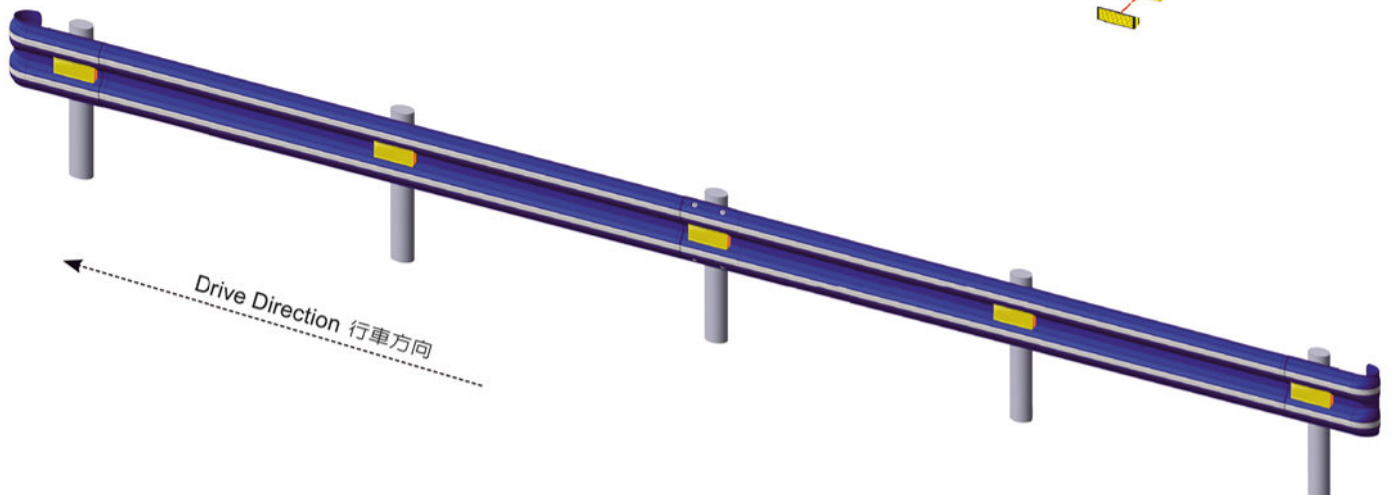
### ROAD WARNING SAFETY GUARDRAIL-ACCESSORIES 道路安全示警護欄 - 配件



### EXPLODED VIEW 分解示意圖



### ASSEMBLY VIEW 組裝完成示意圖



## ACTUAL SCENERY 道路景觀

### REGULAR ROADS

A+MP Road warning safety guardrail suits for highways and regular roads with the weather sustainability and product flexibility.

### 一般道路

A+MP 道路安全示警護欄具耐候特性且強韌有彈性，適合在高速公路或一般道路中使用。



### DENSE FOG

Well safety guiding in dense fog.

### 濃霧

在濃霧間行車，其安全性及導引功能極佳。





## ACTUAL SCENERY 道路景觀

### IMPACT RESISTANT

Resistant to falling rocks, not easy to be deformed and broken. Vehicle collision barrier no deformed, only surface scratch.

#### 耐衝擊

抗落石、不易變形、破裂。車輛擦撞後護欄無變形，僅有表面擦痕。



### GUARDRAIL IN CURVE ROAD

It can easily be adjusted by all kinds of roads with high elongation.

#### 地形

本產品因延展性高，可依地形做彎曲調整。





## COLOR

Color can be customer-ordered.

## 顏色

可依使用單位指定採用不同色彩。



## NIGHT VERSION

Guardrail equipped with the light reflector and the reflective strips which serve the functions of warning and guiding for driving safety at night.

## 夜間

此護欄表面貼有反光飾條，並以特殊反光鈕設計，具有道路警示及引導功能，可增加行車之安全性並於夜間行車時效果最佳。



# 40' CONTAINER LOADING QUANTITY

## 裝櫃量

### LOADING DETAILS 裝櫃明細

| Description 品名             | Unit Weight<br>單重 (kg) | Qty<br>數量 (pcs)                     | Total Weight<br>總重 (kg) | Boxes<br>箱數 | Remark<br>備註 |
|----------------------------|------------------------|-------------------------------------|-------------------------|-------------|--------------|
| Guardrail 護欄本體             | 16.26                  | 1250                                | 20325                   |             | PC           |
| Guardrail Bracket 緩衝夾座     | 0.83                   | 2500                                | 2075                    | 125         |              |
| Light Reflector 反光鈕        | 0.13                   | 2500                                | 325                     | 13          |              |
| Light Reflector Base 反光鈕基座 | 0.15                   | 2500                                | 375                     | 13          |              |
| Guardrail End 護欄末端         | 2.92                   | Depending on Client's Request 視客戶需求 |                         |             | PC           |
| Total Weight 加總重量          |                        |                                     | 23100                   | Total 5 km  |              |

### BOM LIST BOM 表

| Description 品名                 | Qty 4 m<br>需求量 4 m                                                                 | Qty 1 km<br>需求量 1 km |
|--------------------------------|------------------------------------------------------------------------------------|----------------------|
| Guardrail 護欄本體                 | 1 pcs                                                                              | 250 pcs              |
| Guardrail Bracket 緩衝夾座         | 2 pcs                                                                              | 500 pcs              |
| Light Reflector 反光鈕            | 2 pcs                                                                              | 500 pcs              |
| Light Reflector Base 反光鈕基座     | 2 pcs                                                                              | 500 pcs              |
| Long Screw 長螺絲 (M 16 X 220 L)  | Depending on Client's Request<br>(Local Procurement is Feasible)<br>視客戶需求 (可於當地採購) |                      |
| Medium Screw 中螺絲 (M 16 X 45 L) |                                                                                    |                      |
| Short Screw 短螺絲 (M 16 X 35L)   |                                                                                    |                      |
| Nut 螺帽                         |                                                                                    |                      |
| Washer 華司                      |                                                                                    |                      |
| Guardrail End 護欄末端             | Depending on Client's Request<br>視客戶需求                                             |                      |

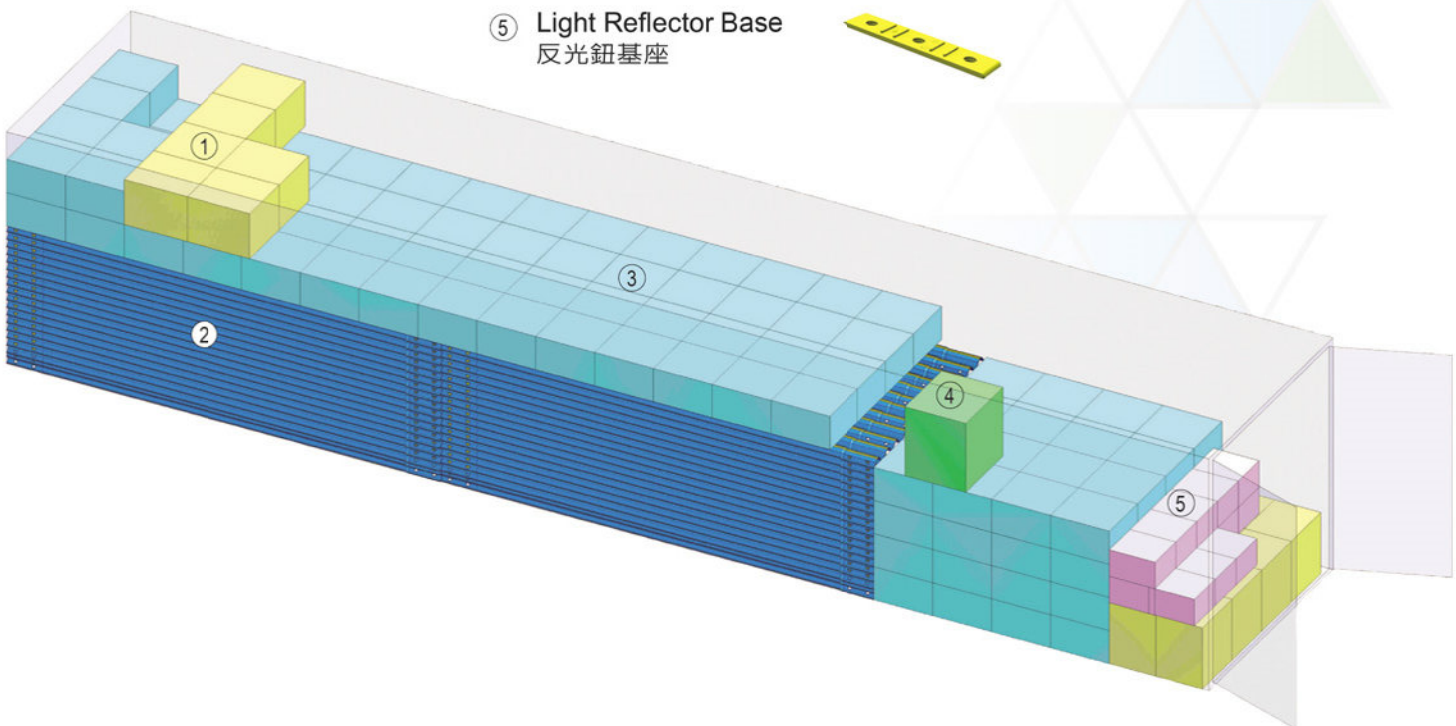


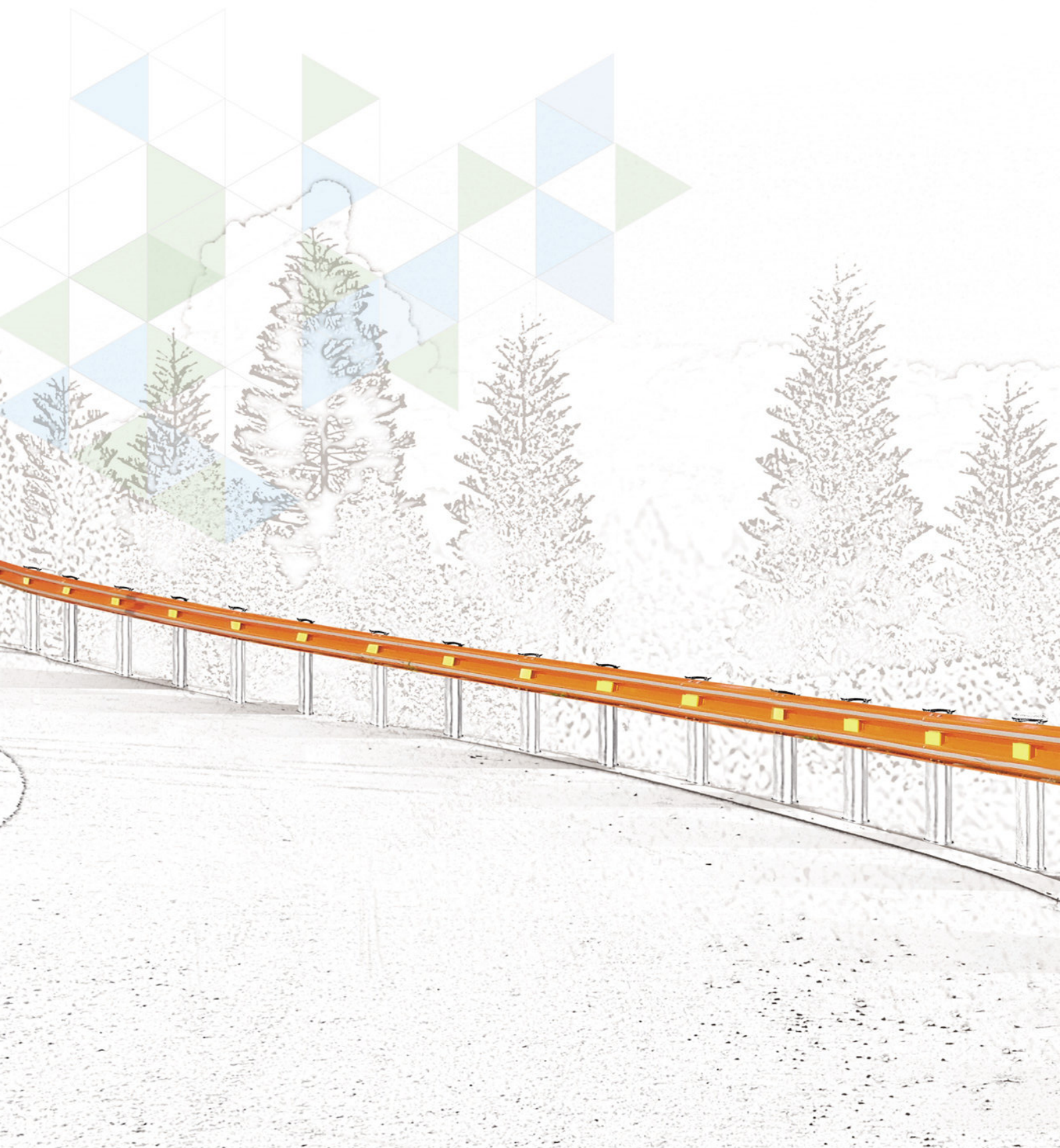
## LOADING ILLUSTRATION OF 40' CONTAINER 貨櫃堆疊示意圖

Above information is the maximum loading quantity of a 40' container. The final quantity is subject to the custom regulation of weight limit in different countries.

此為 40' 貨櫃最多可裝載數量，實際需依各國家海關之限重標準進行調整。

- ① Light Reflector 反光鈕  
反光鈕
- ② Guardrail 護欄本體  
護欄本體
- ③ Guardrail Bracket 緩衝夾座  
緩衝夾座
- ④ Guardrail End 護欄末端  
護欄末端
- ⑤ Light Reflector Base 反光鈕基座  
反光鈕基座





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