



LYSAGHT GUARDRAIL™

SAFETY FENCE



COMBINING STRENGTH AND FLEXIBILITY

FOR SAFER MOTORING

Lysaght Guardrails are extensively used in Malaysia, Singapore and other Asean countries.

FEATURES

DESIGN PURPOSE

Guardrails are used where vehicles accidentally leaving the highway would be subjected to hazard.

This protection is usually required where fixed objects are located near the edge of pavement and along high hills with steep slopes. Other locations which may require guardrail protection are water courses and rock cuts.

Guardrails are therefore designed to:

1. Prevent errant-vehicle penetration. Median barriers prevent vehicles from crossing the median and causing head-on collisions. Guardrails reduce accident severity by excluding vehicles from dangerous areas.
2. Redirect errant vehicles in a direction parallel to traffic flow, thereby minimising the danger to following and adjacent traffic.
3. Minimise the hazard to the vehicle occupants during impact.

In addition to the basic objectives, guardrail and median barrier systems should have certain desirable performance characteristics.

These can be summarised as follows:-

1. Minimise vehicle damage so that they can be manoeuvred after impact.

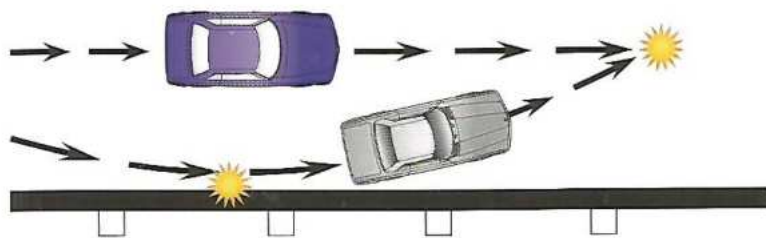
2. Be resistive to impact damage.
3. Be economical in construction, installation and maintenance.
4. Have a pleasing functional appearance.

EASE IN INSTALLATION AND MAINTENANCE

Installation is simple. Posts are laid and the rail sections bolted to them. Two men with no previous experience can readily carry and install each beam section, and there is no need to use special tensioning or adjusting during installation. No special tools are required, only spanners and equipment for digging post holes.

Maintenance is minimal.

- The sections are protected from corrosion by a heavy galvanized coating which guarantees many years of useful service.
- Expansion and contraction are absorbed by the joints, so there is no buckling.
- Damaged sections can be quickly replaced without removing all of the remaining installations, so most of the rail continues to provide protection.



Too rigid a guardrail 'bounces' a car back into oncoming traffic



Too weak a guardrail 'pockets' a vehicle with a resultant abrupt impact



The controlled flexibility of Lysaght Guardrail spreads the load and redirects the vehicle gradually.

ENGINEERING PROPERTIES AND DATA

THE BASE STEEL OF LYSAGHTGUARDRAIL IS CHOSEN FOR ITS STRENGTH AND FLEXIBILITY

The steel used conforms to the requirements of AASHTO M 180-00 (2004) or its equivalent, and is always higher than the following minimum requirements:

Minimum Yield Strength: 345 N/mm² (50,000 ibf/in²)

Minimum Tensile Strength: 483 N/mm² (70,000 ibf/in²)

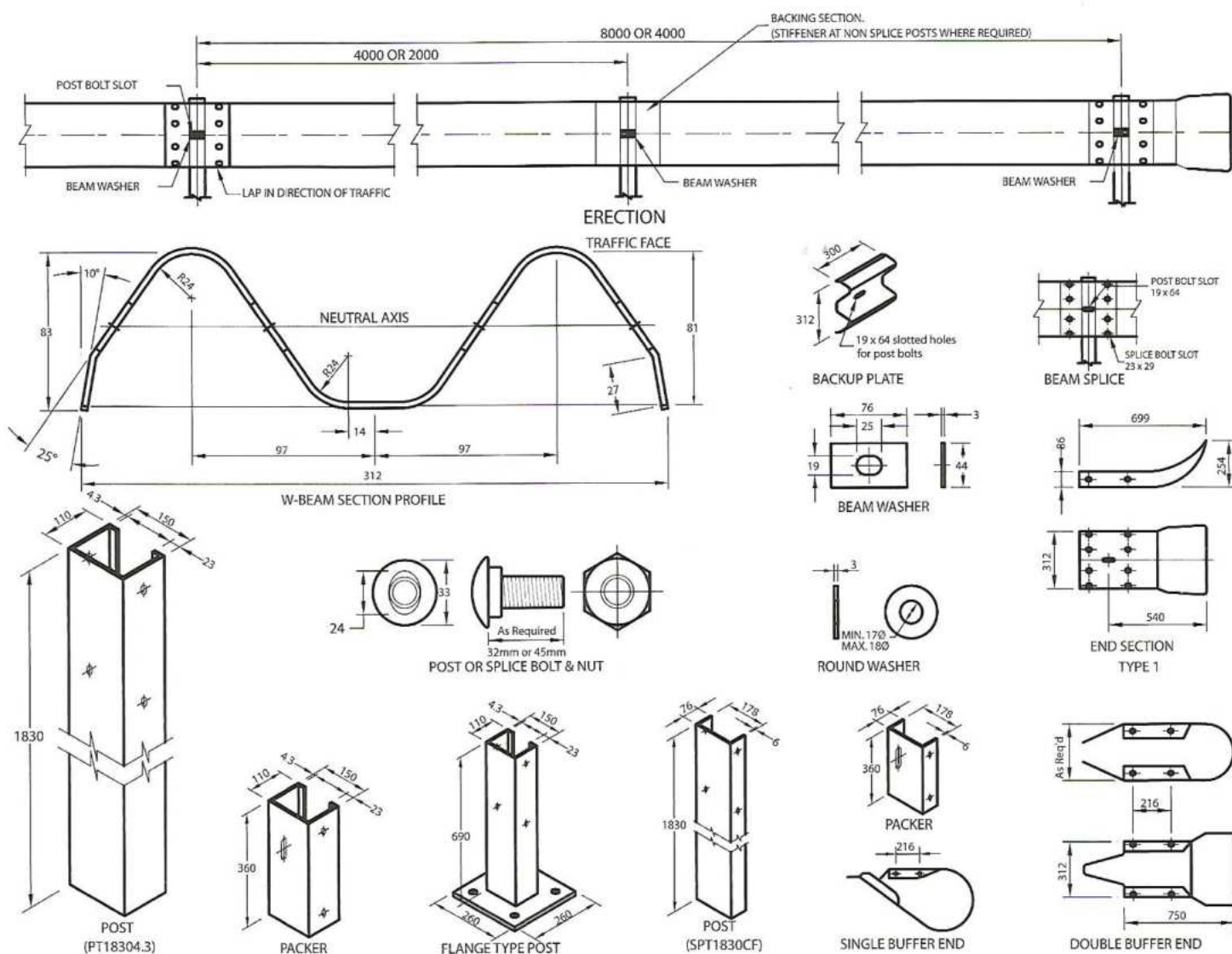
Minimum Elongation: 12% on 50mm (2 inches) gauge

The galvanized coating is applied using our modern hot-dip galvanizing process. The engineering and technical expertise of the Lysaght Group of Companies is utilised in the design, construction and operation of the plant. The Zinc used conforms to AASHTO M 120. The Zinc coating applied easily conforms to the requirements of AASHTO M 180-00 (2004) or its equivalent. The bolts are 16mm (5/8in) diameter and comply with the requirements of AASHTO M 180-00 (2004) and ASTM A 307, and galvanized to the specification of AASHTO M 232 or its equivalent.

LYSAGHTGUARDRAIL PROFILE CONFORMS TO THE REQUIREMENTS OF AASHTO M 180 - 00 (2004) OR ITS EQUIVALENT

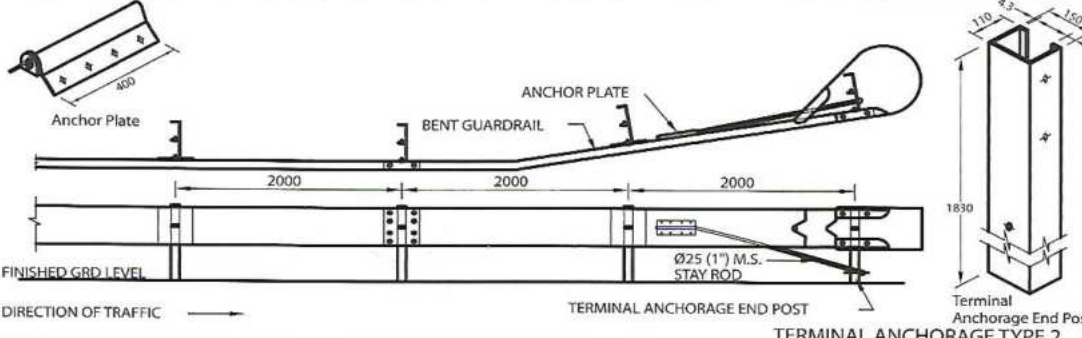
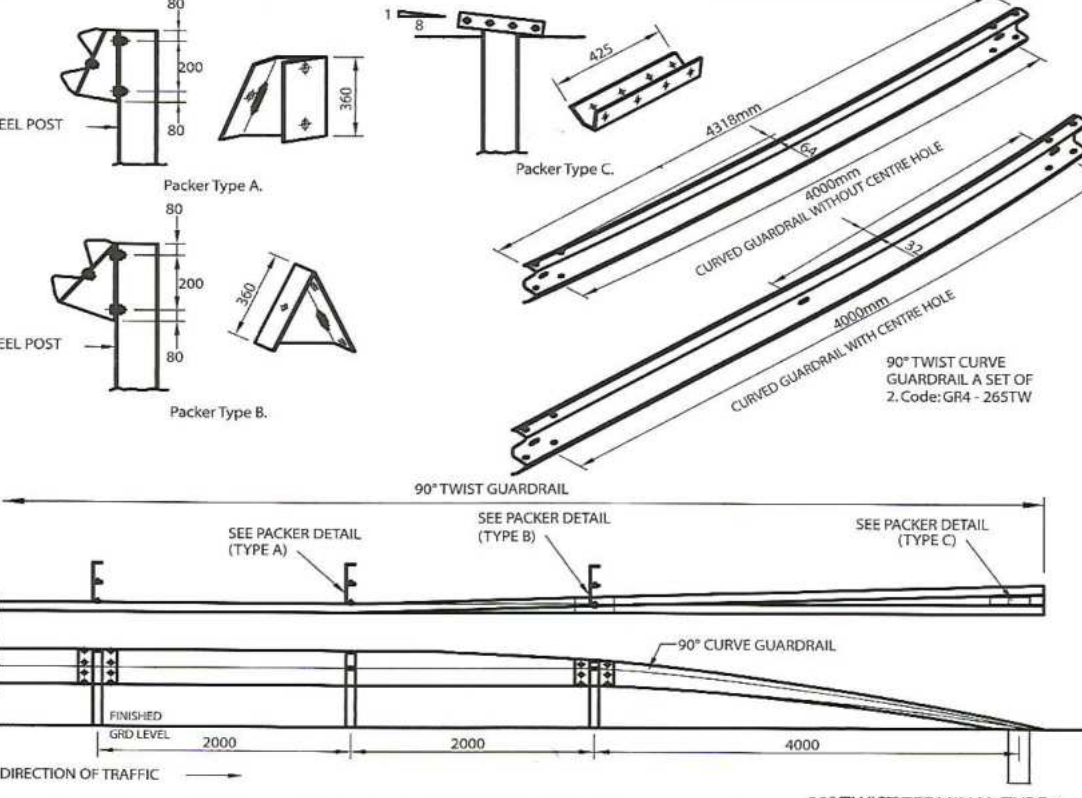
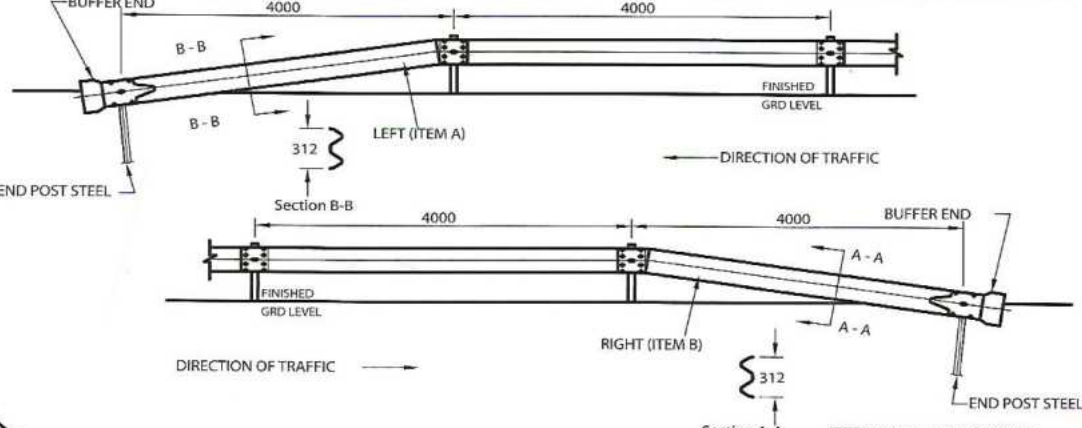
PHYSICAL PROPERTIES - W BEAM

Effective Length	Uncoated Thickness	Overall Length	Cross Sectional Area	Moment of Inertia		Section Modulus		Radius of Gyration	Weight
				Horizontal	Vertical	Horizontal	Vertical		
4000mm	2.657mm	4318mm	1284mm ²	0.96x10 ⁶ mm ⁴	12.5x10 ⁶ mm ⁴	2.25x10 ⁴ mm ³	8.03x10 ⁴ mm ³	27.3mm	46kg
8000mm	2.657mm	8318mm	1284mm ²	0.96x10 ⁶ mm ⁴	12.5x10 ⁶ mm ⁴	2.25x10 ⁴ mm ³	8.03x10 ⁴ mm ³	27.3mm	89kg



Posts and packers are manufactured from BS EN 10025 S275JR grade steel in 4.3mm (PT18304.3) BMT (base metal thickness) and 6.0mm (SPT1830CF) BMT (base metal thickness) and hot dipped galvanized after fabrication to BS EN ISO 1461. Note: All dimensions in millimetres and are subject to manufacturer's tolerances except where allowable tolerances are shown.

GUARDRAIL TERMINALS

DESCRIPTION	CODE
 ANCHOR PLATE BENT GUARDRAIL ANCHOR PLATE FINISHED GRD LEVEL DIRECTION OF TRAFFIC Ø25 (1") M.S. STAY ROD Terminal Anchorage End Post TERMINAL ANCHORAGE TYPE 2	BENT GUARDRAIL Code: GR4 - 265TA TERMINAL ANCHORAGE END POST Code: TA2 - EP STAY ROD Code: TA2 - SR ANCHOR PLATE Code: TA2 - AP
 STEEL POST Packer Type A Packer Type B Packer Type C 90° TWIST CURVED GUARDRAIL 90° TWIST CURVED GUARDRAIL A SET OF 2, Code: GR4 - 265TW 90° TWIST CURVED GUARDRAIL SEE PACKER DETAIL (TYPE A) SEE PACKER DETAIL (TYPE B) SEE PACKER DETAIL (TYPE C) FINISHED GRD LEVEL DIRECTION OF TRAFFIC 90° TWIST TERMINAL TYPE 3	PACKER (TYPE A) Code: PK A PACKER (TYPE B) Code: PK B PACKER (TYPE C) Code: PK C 90° TWIST CURVED GUARDRAIL A SET OF 2, Code: GR4 - 265TW
 BUFFER END B-B LEFT (ITEM A) FINISHED GRD LEVEL DIRECTION OF TRAFFIC END POST STEEL Section B-B RIGHT (ITEM B) A-A TERMINAL UNIT TYPE 4	LEFT Code: GR4 - 265TSL RIGHT Code: GR4 - 265TSR

Note: All dimensions in millimetres and are subject to manufacturer's tolerances except where allowable tolerances are shown.



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