Hangil Industrial Company Ltd ("the Company") specializes in the production and installation of road facilities, bridge products, stormwater storage tanks, non-point pollution treatment devices, and anti-weed systems.

The Company was established in 1998 and opened an in-house research center to develop road safety facilities including the multi-stage shock-absorbing guardrail that has its patent registered.

The Company's bridge safety barriers, open safety barriers, and road center dividers have passed the official collision tests (SB 2, SB 4, SB 5) at the Traffic Safety Institute and the Road Traffic Research Institute proving their outstanding performance, and they are certified as "Good Product for Official Procurement".
Multi-stage shock absorbing guard rail

Feature of product

- Multiple-stage of shock absorption with three stages
- Outstanding optical guidance effect and beautiful appearance due to round shape rail.
- Excellent in visibility by open type and securing economic feasibility by high efficiency section design.
- A product which is completed on vehicle crash test conducted by Korea Expressway Corporation Research Institute and Korea Transportation Safety Authority, etc.

Product contents

- HG-SG201P (for bridge)  SB4 class (W2000* H750)
- HG-SG303P (for bridge)  SB5 class (W2000* H850)
- HG-SGR202 (for road side)  SB2 class (W4000* H900)
- HG-SGR203 (for road side)  SB4 class (W4000* H900 banking section)
- HG-SGR204 (for road side)  SB4 class (W2000* H900)
- HG-SGR205 (for road side)  SB4 class (W2000* H900)
- HG-MS201 (for median strip)  SB4 class (W2000* H900)
- HG-DJ2W (for road side)  SB2 class (W4000* H725)
- HG-YC2W-1 (for road side)  SB2 class (W2000* H725)
- HG-YC2W-2 (for road side)  SB4 class (W2000* H775)
- HG-YC3W-01 (for road side)  SB2 class (W4000* H855)
- HG-YC3W-02 (for road side)  SB4 class (W2000* H855)

Vehicle crash test

Performance Certification of Korea Highway Corporation
Bridge Guard Rail

- In case of a vehicle collision, the barrier guides the vehicle in the direction of travel preventing further fail, secondary collisions, or collision accidents involving others.

- The open safety barrier with clear visibility is suitable for roads along the sea, bridges crossing the river and danger zones.

HG-SG201P  SB4 Class  (W2000* H750)

HG-SG303P  SB5 Class  (W2000* H850)
Guard Rail

- In case of a vehicle collision, the barrier guides the vehicle in the direction of travel preventing further fall, secondary collisions, or collision accidents involving others.
- The open safety barrier with clear visibility is suitable for roads along the sea, bridges crossing the river and danger zones.

HG-SGR202  SB2 Class  (W4000×H900)
Guard Rail  Banking section

- In case of a vehicle collision, the barrier guides the vehicle in the direction of travel preventing further fall, secondary collisions, or collision accidents involving others.

- The open safety barrier with clear visibility is suitable for roads along the sea, bridges crossing the river and danger zones.
Guard Rail

- In case of a vehicle collision, the barrier guides the vehicle in the direction of travel preventing further fall, secondary collisions, or collision accidents involving others.
- The open safety barrier with clear visibility is suitable for roads along the sea, bridges crossing the river and danger zones.

HG-SGR204 SB4 Class (W2000*H600)

HG-SGR205 SB2 Class (W2000*H900)
**Median Strip**

- Applicable to 4-lane highways and car-only lanes
- Applicable to suburban roads designated for the installation of center dividers for its poor linearity and their exposure to traffic hazard

**HG-MS201**

SB4 Class (W2000* H900)
2W Guard Rail

- The guard rail which has excellent performance in preventing car from escaping to out of the road.

HG-DJ2W  **SB2 Class**  (W4000* H725)

HG-YC2W  **SB2 Class**  (W2000* H725 / W2000* H775)
3W Guard Rail / Median Strip

- The guard rail which has excellent performance in preventing car from escaping to cut of the road.
- A protective fence installed in the middle of the road to prevent the vehicle from leaving the road.
Roller Guard Rail

- The barrier reduces a momentary shock and reduces the reflection angle to 0% in a collision by transforming the impact method to the rotational friction method to convert the impact energy to the rotational energy, thereby keeping vehicles from departing off the lane. It can also help the vehicle retain the speed as similar to the speed after a collision to prevent a secondary collision and ensure the safety of the vehicle and passengers.

- Securing passenger safety and preventing secondary accidents with the rotating rollers: When there is a collision, the collision angle is slackened, and the reflection angle is reduced to 0% at the same time thanks to the rotating rollers of the barrier. The barrier also prevents the vehicle from departing from the lane thereby preventing potential secondary collisions which often cause more severe consequences.

- The rollers are made of highly durable EVA. They are also highly resistant to shock, excellent in impact prevention and absorption, and do not break easily.

- The rollers are excellent in sequential impact absorption and recovery in the direction of travel as they are in reverse trapezoidal shape. When there is a collision, the reverse trapezoidal shape of the rollers absorb the impact in sequence, and the roller surface remains perpendicular to the vehicle even if the barrier support is sloped thereby recovering the vehicle in its direction of travel quickly.

- The key-system is used to facilitate partial replacement: The rollers can be replaced in part to offer significant savings in maintenance cost.

Guard Rail Reflector

- The reflector can be installed on sharp bends, in distant mountain areas, or on roads without streetlamp to help the drivers grasp the driving path and keep an eye on the road.
Aluminum Bridge Rail

- This is suitable for bridges, 4-lane highways, and car-only lanes.
- It adds an aesthetic touch to the scenery since it is made of aluminum.

HG-275AD-1 SB4 Class

HG-R101

HG-R302
Footway Rail

- The guardrail suitable for sidewalks on the bridge or on the cut slopes to prevent pedestrians from falling
- Easy to maintain as it is highly resistant to wind, rain, and corrosion
- Can be installed to emphasize localities and local symbols
- Made of aluminum to offer light weight and excellent appearance
- Can be custom-made in various designs
- Can apply the photovoltaic system to the guardrail
Design Fence

- The fence can be used as a safety barrier for children zones, bike-only lanes, boundaries, and crossing prevention. It can be custom-made in various designs.

Multifunctional Bracket Wooden Fence

- The bracket adjustable to the left and right or up and down is used.
- Adds flexibility in installation to the stairs and crooked areas.
Bridge Widening System

The system utilizes the construction method of which a bridge without the sidewalk is fitted with the widening brackets, floorings, and rails on the bridge side(s) to create a sidewalk for pedestrians and bikes.

- Minimized vehicle control during construction
- Eco-friendly since it does not damage the existing facilities
- Minimized lead time as it is built at the factory and installed at the site.
- More economical to install compared to the conventional methods
Retaining Wall Widening System

The system utilizes the construction method of which the existing roads, river banks, or road slopes without the sidewalk are fitted with the retaining brackets, floorings, and rails on their side(s) to create a sidewalk for pedestrians and bikes.

- Savings in the land acquisition cost since no land needs to be acquired for the construction,
- Pedestrian safety secured as the sidewalk is separated from the existing road,
- Minimized excavation and minimized traffic congestion
- Minimized lead time as it is built at the factory and installed at the site,
Bridge Check Way

- **Prevention of Safety Accidents**
  - Site assembly and minimized installation processes
  - The handrail installation method applied, which can guide the maintenance personnel to safe walking
  - The U-shaped foothold is used to reduce sagging and vibrating thereby offering psychological comfort to the maintenance personnel.

- **Diverse designs: the maximum gap of the bracket is 1.85m.**

- **The foothold and the lower honeycomb finishing material are used to prevent falling and improve visual stability to the maintenance personnel.**

- **Maximized Structural Performance**
  - A tapered bracket is used to improve and optimize the resistance to bending moments,
  - Projecting ribs causing no loss in the cross-section of the bracket are used.

- **Improved Constructability and Maintenance**
  - Coupled the projecting rib with the safety foothold using the downward self-drilling screws
  - Used the projecting rib that does not require any accessories
  - Made of light aluminum alloy for easy handling and assembly
  - Used aluminum alloy to avoid corrosion and sticking of foreign materials
Expansion Joint

T/R Joint (Triangle Rail Joint)
- The expansion joint is light in weight and easy to cut, so it is easy to install from various angles.
- Strength and elongation of the expansion joint main body prevents damage due to external impact.
- Because it is a simple assembly type, it can be repaired in a short time, minimizing vehicle control time.
- It has the simple structure, is easy to install, and is easy also to repair as the height of the block out is low.

New Finger Joint (Type A)
- It is structured to minimize the discontinuing regions, has an outstanding flatness and drive ability, and generates little noise.
- A unique rubber is added to improve the joint’s elasticity. The joint can be installed horizontally and vertically on various bridges even on skew bridges.
- The joint is in a simple structure, easy to install, and easy to maintain.
- It is easy to adjust the expansion spaces during installation with the leveler fitted to the main body of the expansion joint.

New Mono Cell Joint
- It offers higher durability than the rubber-based mono cell joints as the top safety steel plate is welded to the side plate, and the rubber is added to it inside the upper and the side plates.
- The top plate is wave patterned to offer excellent drive ability.
- A unique rubber is added to improve the joint’s elasticity. The joint can be installed horizontally and vertically on various bridges even on skew bridges.
- The joint is in a simple structure, easy to install, and easy to maintain.
- It is easy to adjust the expansion spaces during installation with the leveler fitted to the main body of the expansion joint.
Bridge Elastomeric Bearing

Integrated BEB Elastomeric Bearing

- Changes in the elasticity, vertical loads, horizontal loads, or the rotating angle of the upper structure of the elastomeric bearing are absorbed by the changes made in the elasticity of the bearing.
- The elastomeric bearing is highly resistant to bulk strains when loads are applied. However, it can withstand vertical loads and response well to tensile strengths, shearing forces, and low temperatures as it inhibits the deformation of the rubber thereby increasing the load carrying capacity.
- To fix the anchor socket to have the enhanced horizontal forces, a shear groove is formed on the plate, and a negative reaction force plate is attached to the anchor socket. In this way, it can avoid deviation and adjust the level during installation of the bridge bearing apparatus.
01 Special feature

- Prevention of traffic accidents by securing visibility for driver through the suppression of weed growth around the road
- Invigorated supply by overcoming weaknesses of the existing weeding methods, such as inefficiency with wood workers, high cost, low durability, and sophisticated application
- Environment-friendly landscape with the application of nature-friendly colors and materials for parks, walkways, and general sidewalks
- Features of Anti-weed Product: prevention of weed growth (hardening at high compressed strength, alkaline (pH9)), high durability (highly resistant to freezing and thawing)
- Additional features: Eco-friendly, permeable (permeability, color, water circulation), utilization of waste resources (without harmful substances), prevention of fire spread (flame retardant)
- Weaknesses of existing products: high cost to apply, complicated application, poor durability, high waste treatment cost, potential secondary accident when damaged

- Long-lasting action to prevent weed growth
- Highly resistant to photolysis and thermal deformation
- Eco-friendliness without discharging any harmful substances
- Flame retardant with the use of inorganic materials
- Easy and straightforward application by anyone
- Easy to maintain as only the damaged parts can be repaired.
02_ Usage

Before & after guardrail

Before & after Park walkway

Garden

Child protection route

Colonnade

03_ Construction method

1. Ground-making
   - Weed removal

2. Distribution
   - Even distribution

3. Planarization
   - Even planarization

4. Watering
   - Slightly watering