

# About SHIELD



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Constuction area is generally regarded as messy and noisy place because of noise and dust created from there.

However, thanks to SHIELD's well exprienced professioanlity, many construction areas have been changed into places that are cleaner and safer than before.

Our panels are produced and designed to completely block dust sand and any type of noise from construction and industrial area.

The importance of noise control has been increasing to ensure the life quality of people who live nearby as well as improve the image of the area.

Moreover, We are doing our best to make these area be naturally harmonized with surrounding so that the site does not ruin the overall urban design.

With SHIELD, construction area becomes safer, cleaner and a part of urban design.

SHIELD

SHIELD LTD.



The following items are required for the hoarding of various types of construction area. Recently more and more rebuilding sites are increasing because of the buildings with old-condition which were built several decades ago. So it becomes common to create a rebuilding construction sites in the middle of city or residential area. Even though there have been relentless efforts of constructors to minimize the noise and dust from their sites, Noise and dust from construction area have become problematic these days. However, with SHIELD's professional panels specialized to solve these struggles, more and more construction areas have become cleaner and neater and quieter.



Steel Noise Barrier

Pemanent and temporary noise absorbing sound proof wall with exceptional quality



GL Steel Hoarding

Exclusive Quality Based on GL Steel Coil New Vision of Hoarding industry



Pre-coated Steel Hoarding Panel

White-colored pre-painted panel specialized for reusing



GL Steel Fence

Flat version of GL steel fence with unrivaled lifespan and quality



Window Panel

Transparent Panel for Additional Design



RPP(Recycable PVC Panel)

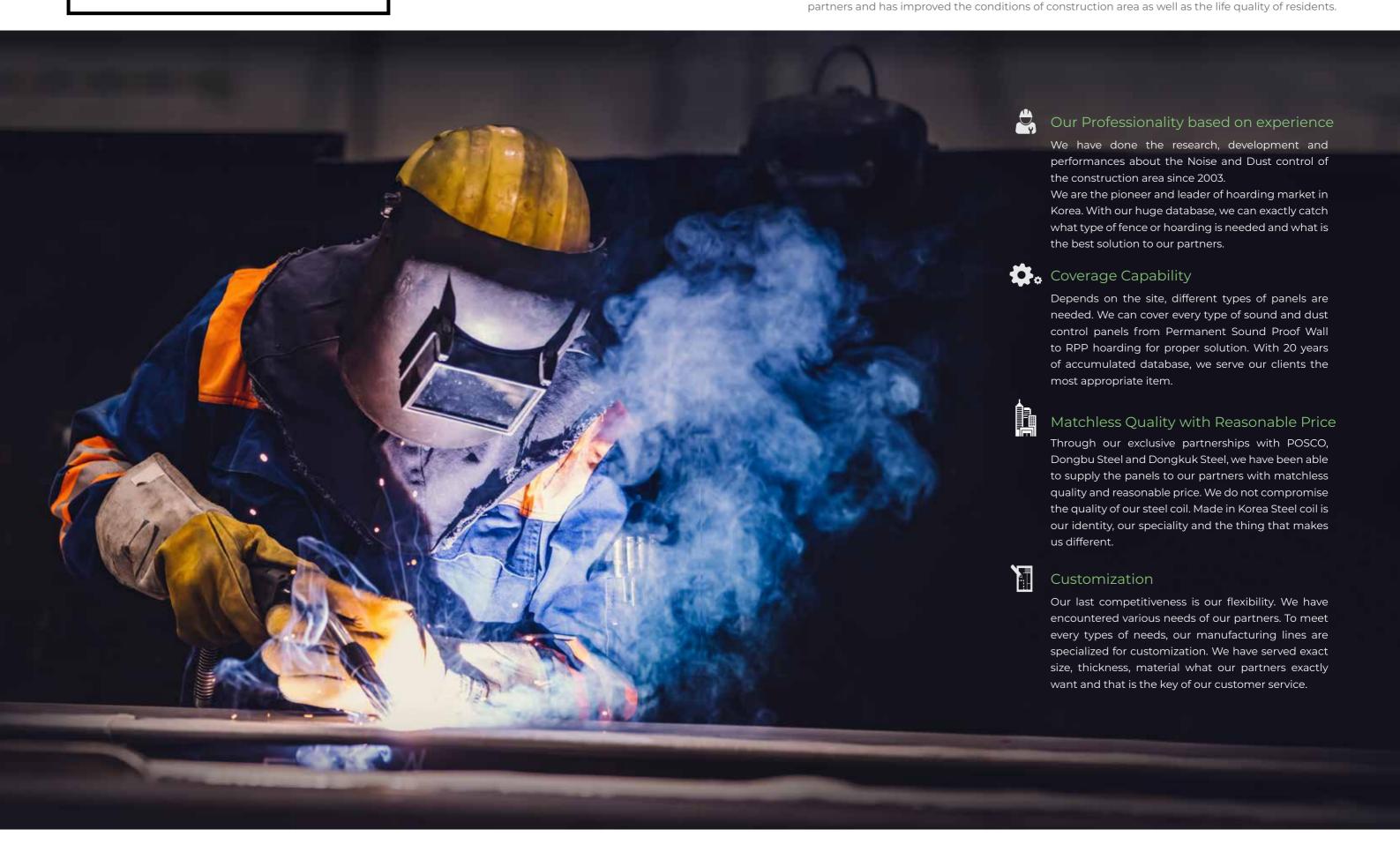
Cost-effective hoarding that is widely used in every type of constrction

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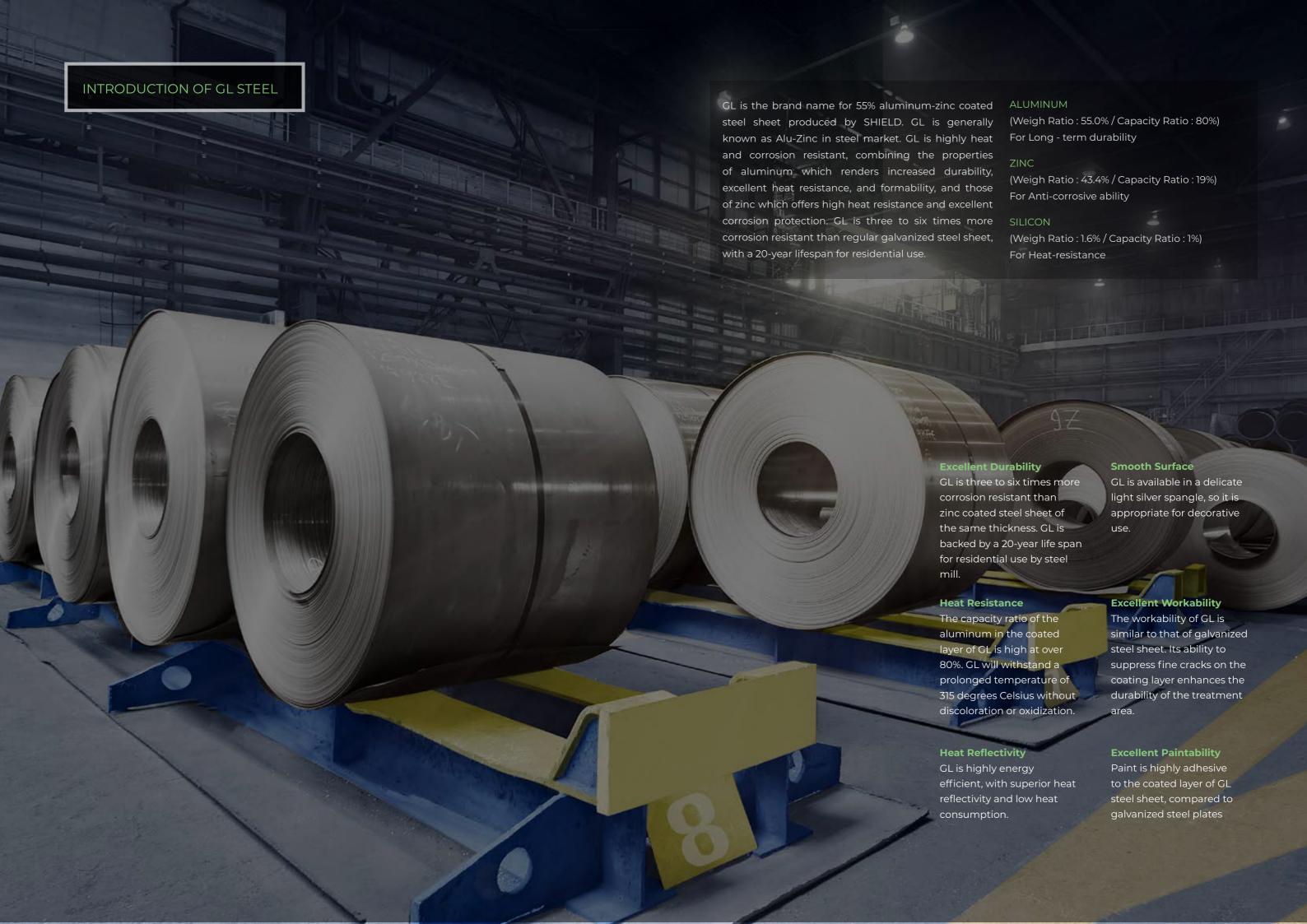
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SHIELD team has used its technological acumen and years of experience to solve the actual problem of our

# OUR COMPETITIVENESS



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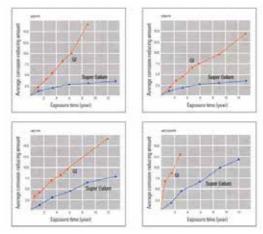
### GL vs GI

### Durability

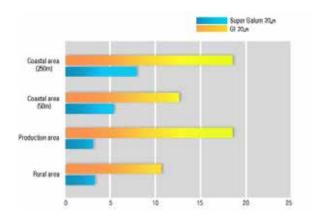
GL(SuperGalum®) is three to six times more corrosion resistant than regular zinc coated steel sheet. The shearing surface has superior corrosion and stretch resistance to aluminum coated steel sheet. GL is backed with a 20-year life span.

### Corrosion Test (Outdoor Exposure Test)

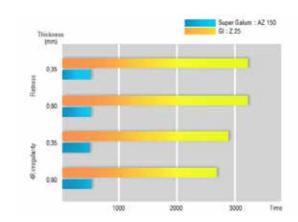
Galvanized steel is subjected to a continuous rate of corrosion, whereas the corrosion of GL tends to slow down over time. This outstanding corrosion resistance is attributed to the anticorrosion properties in the coated layer.



Exposure test comparing levels of corrosion (test period: 13 years)



Salt spray test on GL(SuperGalum®) Steel Sheet



Results of exposure tests conducted in a coatal region (test period: 13 years)

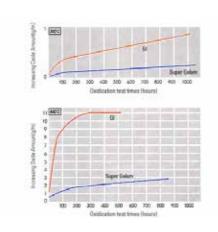




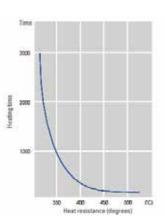
### Heat Resistance

The capacity ratio of the aluminum in the coated layer of GL is high at over 80%. SuperGalum® will withstand a prolonged temperature of 315 degrees Celsius without discoloration or oxidization.

Rate of oxidization from continuous heat







### Heat Reflectivity

GL steel sheet boasts superior heat reflectivity, which produces increased energy efficiency, making it an excellent material for the interior of electronic home appliances. Used as a roofing material, GL will inhibit the rise of a building's temperature, thereby lowering the cost of air conditioning. Food storage buildings made with GL enjoy the additional benefit of having stored grains protected from quality change.

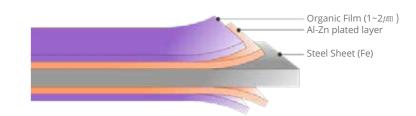
### Comparison of heat reflectivity by product

Product	Heat Reflectivity (%)
GL Steel Sheet	70 ~ 75
Galvanized Steel Sheet	30 ~ 40

### **Organic Coating Process**

Our organic film treatment on the coated layer of the GL steel sheet, which is applied to the in-line coater, includes acryl resin organic film containing 1~2 pm chromate. In comparison with the temporary corrosion resistant property of the conventional chromate applied in post-treatment, GL offers the following functions.

High corrosion resistance
Lubrication properties
Paintability
Anti-fingerprint properties



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STEEL NOISE BARRIER - 50T

### Need of Noise Barrier



To find the most appropriate material, thickness, absorbing material, SHIELD has done its field research over 10 years. To find the most comprehensive Noise Barrier to cover all type of noise-creating area, our R&D team has applied every feedback and complaint of conventional noise barrier. Throughout these relentless effort, SHIELD Steel Noise Barrier has become the most appropriate product for our clients and partners in terms of performance, durability, installation and cost. SHIELD's research is still on its way to solve every type of noise and environmental issue and make the construction and industrial site cleaner, neater and quieter from the sight of citizens and clients. SHILED Steel Noise Barrier will lower the hurdle of the noise barrier and bring the better life quality for citizen all around the world.

SIZE

1980mm x 500mm x 50mm

STEEL(COIL) THICKNESS

Front: 1.0T GL / Back: 0.6T POSMAC (Customizable)

SOUND ABSORBING MATERIAL

GlassWool Nature(Water-Free) / Polyester

STC / NRC

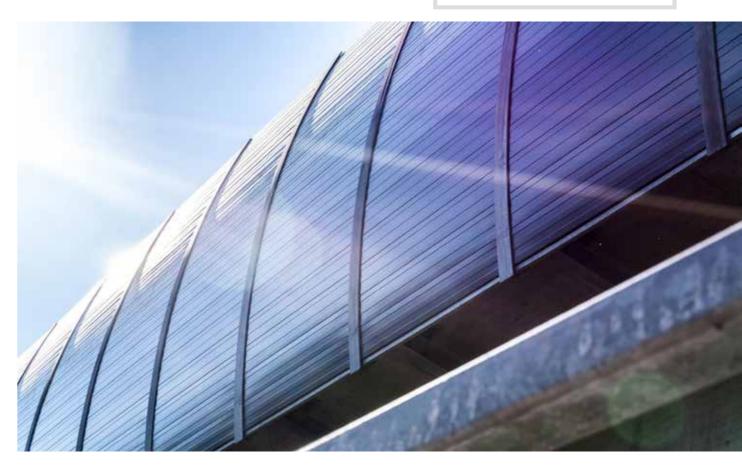
32 / 0.95 (Customizable)

TEST REFERENCE (AUSSURED BY KOLAS / ilac · MRA)

ISO 10140 - 2:2010 / ASTM E 413 : 2016

ISO 354:2003 / ASTM C 423-17





According to WHO research, noise is an underestimated threat that can cause a number of short and long-term health problems, such as for example sleep disturbance, cardiovascular effects poorer work and school performance, hearing impairment and even weakening of national defence. Noise has emerged as a leading environmental nuisance in the world and the public complains about excessive noise more and more often.

The WHO guidelines for community noise recommend less than 30 dB in bedrooms during the night for a sleep of good quality and less than 35 dB in classrooms to allow good teaching and learning conditions. The WHO guidelines for night noise recommend less than 40 dB of annual average outside of bedrooms to prevent adverse health effects from night noise. Installing Noise Barrier is not an optional task anymore but the necessary task.

CONSTRUCTION

Urban construction
Reconstruction
Industrial Construction

INFRASTRUCTURE

Highways Port / Airport Railroad COMMERCIAL AREA

Shopping Center Amusement Park

RESIDENTIAL AREA

Village Apartment Condominium INDUSTRIAL AREA

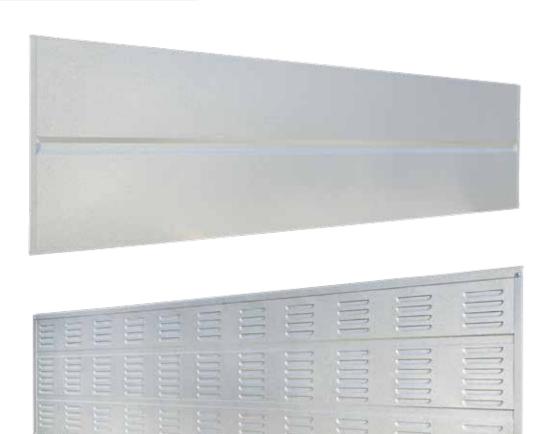
Factory
Oil & Gas
Plant / Mill

MILITARY

Barracks Hoarding Fence Hangar

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STEEL NOISE BARRIER - 30T **RECOMMENED USES** 



SHIELD's Steel Noise Barrier has been representative item for us since 2003. Steel Noise Barrier is a future oriented product for hoarding system to minimize the noise and dust of every type of construction and industrial area. As more and more cities are becoming urbanized, the needs of noise control have been increasing. To meet the comprehensive needs of citizen, SHIELD's Steel Noise Barrier has been the right answer, and it has changed the general perception of construction area as well as hoarding system. Steel Noise Barrier 30T type is highly preferred by our global partners thanks to its exceptional resilience and durability and unrivaled corrosion-resistance comparing to every other noise barriers with GI steel by using GL with Alu-Zinc Coating.

SIZE

1980mm x 500mm x 30mm

STEEL(COIL) THICKNESS - SuperGalum(GL) 0.5T (0.5mm)

SOUND ABSORBING MATERIAL

Polyester

STC / NRC 24 / 0.65

TEST REFERENCE (AUSSURED BY KOLAS / ilac · MRA)

ISO 10140 - 2:2010 / ASTM E 413 : 2016 ISO 354:2003 / ASTM C 423-17



30T type's easy installation and its exceptional performance, it is widely used in various type of area. It has been installed every types of places that create noises or dust from general construction area to military base. As

Since SHIELD's Steel Noise Barrier more and more people gain concerns about noise control the places that Steel Noise Barrier cover has been diversified. We have been constantly developed to cover those areas to meet the needs of partners who are seeking the most appropriate way to control the noise.

CONSTRUCTION INFRASTRUCTURE COMMERCIAL AREA Urban construction Highways **Shopping Center** Port / Airport Amusement Park Reconstruction Industrial Construction Railroad

RESIDENTIAL AREA INDUSTRIAL AREA MILITARY Village Factory Barracks Oil & Gas Hoarding Fence Apartment Condominium Plant / Mill Hangar



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# Why SHIELD Noise Barrier?



### Color painting

With Alu-Zinc coating at the surface not only make the panels more durable but also maximize its paintability. Colors are perfectly painted with high saturation. Colors improve the panel design, however prolong the lifespan and increase the heat resistance rate.

### Installation

With 50mm thickness. SHIELD steel noise barrier is designed as light-weight so that one person can lift it for installation withour machine.

It allows workers to easily install the structure and save the cost and effort of installation.

### Eco-friendly / Reusable Product

Whole cover of SHIELD steel noise barrier is made with steel. It is durable, long-lasting and rarely creates harmful substance like CO<sub>2</sub> or methane when it is produced, formed and scraped.

Also, we also provide 100% natural substance named glass wool nature as an absorbing material.

Since it is not transformed after installation, it can be reused in the other site.



# Product Layer of SHIELD Steel Noise Barrier

### PosMAC Steel Galley Type Back Plate \_

Magnesium-Aluminum-Zinc Alloy Coating Steel Panel, Much durable and stable than aluminum plate. Wider-designed gallery(Sound absorbing hole) allows it to effectively absorb sounds in any conditions.

### Glass Wool Nature / Polyester \_

Core of SHIELD Steel Noise Barrier 50T Type.

Absorbs wide-range of noise and exactly reduce the

noise by its exceptional quality.

Eco-friendly material that does not produce pollution

Eco-friendly material that does not produce pollution on its disposal. No risk of deterioration with special water-resistant coating.

### Sound Insulation Membrane Pad —

Sound insulation membrane pad for additional insulation of sound as well as absorbing sound with main absorbing material. It is designed for perfect supporting to enhance its insulating ability.

### GL Steel Front Plate -

Sophisticatedly designed front plate to prevent bending or physical damage.

Perfectly protect the inner material and maintain the whole structure.

Extremely durable and much more anti-corrosion with 55% Aluminum-Zinc coated steel.

### GL Steel Galley Type Back Plate

Aluminum-Zinc Alloy Coating Steel Panel,
Extremely Durable and anti-corrosion
compare to normal Galvanized Steel.
Lightweigt for easy installation and safety of workers.
Wider-designed gallery(Sound absorbing hole) makes
it effectively absorb sounds in any conditions.

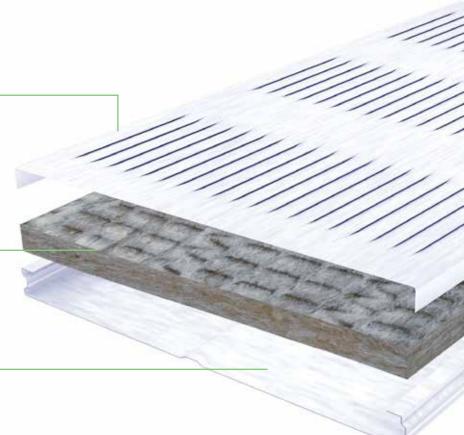
### Polyester \_\_\_\_

Core of SHIELD Steel Noise Barrier 30T Type.
Widely used sound absorbing material with fire-resistance feature.

#### GL Steel Front Plate -

Sophisticatedly designed front plate to prevent bending or physical damage.

Perfectly protect the inner material and maintain the whole structure.



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# Color Designed Steel Noise Barrier 30T type in Singapore

The importance of city beauty and urban design is still increasing.

Singapore, one of the leading countries in the world is taking

SHIELD's Steel Noise Barrier to reduce the noise and dust from

construction area and make the construction site be part of city design.

With exceptional quality with GL steel, our corrosion-resistance panel's color perfectly remains after years and years.





SHIELD has consistency proven itself to be a top supplier in Singapore.

All of our panel is apporved by Singapore Land Transport Authority (LTA).

Moreover, with our specialized customization service, SHIELD has created new spear shaped top panel for LTA project to effectively minimize the sound from transport system.

Our ability of customization has solidfied our reputation and capability meeting the various needs from our global partners.







01

03

- ① Singapore Design Panel near residential area
- ② Singpaore LTA project with TNB panel on top
- ③ Singapore Holding lan project
- ④ Singpore Jalan Angin Laut Playground site
- ⑤ Singpore Obayashi project near residential area

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# Galvanized Color Steel Noise Barrier 30T type in South Korea

In Korea, it is common to watch Galvanized Color Steel Noise Barrier 30T type in everywhere. In 2018, the number of official civil complaint regarding noise control exceeded 28,000. And it is rapidly growing since the importance of life quality and privacy has been stressed. So, it is common to install noise barrier in every type of construction and industrial site. SHIELD has been the leading solution provider of every type of noise issue in Korea.

03

① Namhan Highschool remodeling area

③ Namwon laboratory construction site

② Woosung reconstruction site with dust net on top

④ Kyeonggi Lotte Mart Parking lot noise control

04



To effectively control the dust blown from construction or industrial site, SHIELD has provided the additional Anti Dust Net to partners as an option. Anti Dust Net is also easy to install and maximize the dust control in addition to the Noise Barrier structure.











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# GL Steel Hoarding Panel



#### SIZI

Length:

1000mm ~ 4000mm

Width: 530 mm

**THICKNESS** 

0.45T ~ 1 T (0.45mm ~ 1.0mm) GL Steel

### **Unrivaled Durability**

Unbreakable material with customizable thickness

55% Aluminum-Galvanized to maximize anti-corrosotion to extend lifespan

Expected lifespan: Over 20 years

### RECOMMANDED USE

- 1. Hoarding for Construction and Industrial Site
- 2. Partition in any type of area

### Anti-Corrosion

3-6 times more durable than normal galvanized steel in terms of corrosion rate.

### Reusability

20 years of expected lifespan, elaborately designed for reusing

### Easy to deploy

Do not need heavy supports, can be deployed only with steel pipe with hook

### Eco-friendly Product

Perfect replacement of Plastic or PVC hoarding even with much better performance



# Safe, Clean Construction Work Starts with SHIELD, is completed by SHIELD

Deploying Steel Fence means beginning of the work in construction.

Disassembling Steel Fence means completion of the work.

Steel Fence should stand still from the beginning to completion.

So it must be strong and durable enough to protect the pedestrian and workers for safety.

SHIELD GL Steel Panel is designed to perfectly protect the people and property with durability.

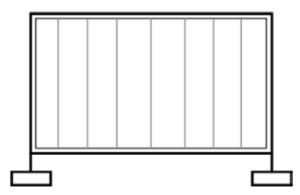
With customizable thickness, it can hold and protect workers from most type of general collision,

And help architect and workers be fully concentrate on their work by blocking the external influences.

# Comparsion between conventioanl Hoarding system and SHIELD GL Steel Hoarding System



- Can be deployed in any type of ground surface
- Fully Cover the construction area
- Cost effective with own installation system
- Easier to store and does not need a lot of space



- Can only be delpoyed in flat surface
- Can be seen through the under gap
- Cost more because of its steel frame
- Take more space because of its size





- ① PyungTaek new town project
- ② Gangbuk medical center rebuilding project
- $\ensuremath{\Im}$  GL Steel Fence with Holding Gate
- Yangju Citizen library project

01

02

03



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# Prepainted Color Steel Fence



### SIZE

Length:

1000mm ~ 6000mm

Width: 530 mm

**THICKNESS** 

0.6 ~ 1.2 T (0.6 ~ 1.2mm) Sunclean

### RECOMMANDED USE

- 1. Hoarding for Construction and Industrial Site
- 2. Steel based Sandwich Panel
- 3. Physical advertisement Structure in industrial complexes

SHILED's Pre-coated Steel Hoarding Panel is an exclusive item of SHIELD based on Dongbu Steel's Anti-Pollution precoated Steel Coil(Sunclean). This product is specialized for reusing and the exact competitive good for PVC hoarding. It has minimum 10 years of life span and the whole installation structure of panel is finely designed to reuse it. In Japan, it is common to use steel hoarding more than decade to decrease the use of plastic. Our Precoated Steel Hoarding Panel provides a new vision and eco-friendly movement of overall hoarding industry.



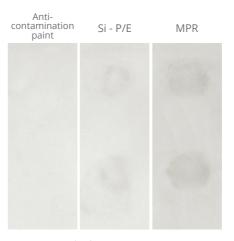
# SunClean / Anti-Pollution Precoated Steel

Excellent resistance against oxidation and alkalization. Optimal choice for panel Materials or factory exteriors. High surface quality against pollutions including sulfurous acid gas in comparison with conventional prepainted steel. Easy maintenance when cleaning buildings Due to super anti-pollution features compared with conventional pre-painted steel. Outstanding weather resistance.

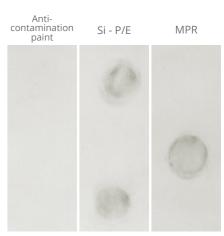
### Carbon black pollution assessment results

Sunclean has been proven to possess the greatest anti-pollution properties, showing the least amount of change in color in comparison with conventional steel sheet.

- Drop 0.5% carbon black solution on the Sunclean product and heat at 80  $^{\circ}$ C for 24~48 hours. Wash with water and examine the color difference.

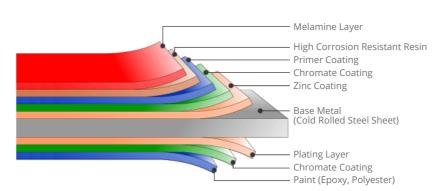


Result of anti-contamination testing after 24 Hours



Result of anti-contamination testing after 48 Hours

### Section of Product





- Galvanized (GI)
- 55% Aluminum SuperGalum(SGL)
- Aluminum (AI)
- Stanless Steel (SUS)

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# Pre-coated Steel Hoarding Panel

- Exceptional Life Span at least 10 years
- Applied Anti-Pollution Material to maximize reusability
- No risk of breaking, decoloration
- Echo Friendly Product perfectly replaces the plastic hoarding system
- Perfect flatness for easy attachment of advertisement
- Always maintain strong structure in multiple uses







### GL Steel Fence



### SIZE

Length:

1000mm ~ 6000mm

Width: 530 mm

THICKNESS

0.6 ~ 1.2 T (0.6 ~ 1.2mm)

GL Steel

### Feature

- 1. Galvanized color Steel Hoarding Panel
- 2. Cost effective product compares to Pre-coated Steel Hoarding Panel
- 3. Eco-friendly product perfectly replace current plastic hoarding system





① Wirye LH Korea Land Housing Corporation Project

03

- ② PyeongChang Seoul National
  University extension Project
- ③ PyeongChang Seoul National University extension Project





SHIELD RS Joiner

SHIELD's RS Joiner is a accessory for Pre-coated Steel Hoarding Panel to maximize its reusability. RS joiner does not ruin or screw up the panel so the panel can be fully preserved after deployment for next use.

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## Window Panel



### SIZE

Length: 1980 mm Width: 495 mm

Transparent Material

Polycarbonate

### RECOMMANDED USE

- Transparent Hoarding for Construction and Industrial Site
- 2. Partial Design among Steel Noise Barrier structure

SHIELD Window Panel is exclusive item that is only produced in SHIELD. Window Panel is design to effective see through the inside of the working area. It makes the working area be harmonized with surrounding so that increase the image of the area. SHIELD Window Panel is also designed with Steel Frame for its durability and Noise insulation ability.



# WINDOW PANEL VERTICAL TYPE FOR HOARDING

- Transparent Hoarding for Construction and Industrial Site
- 2. Partial structure for design and safety





02

03

- ① Singapore Stevens Area Window Panel with Steel Noise Barrier - 30T type
- ② Window Panel on top of Color Steel Panel with Anti-dust Net
- ③ Window Panel beside side walk Seongnam urbanization area





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## RPP(Recycable PVC Panel)



### SIZE

Length: 2000mm~6000mm

Width: 670 mm

**THICKNESS** 

30mm

### **RECOMMANDED USE**

- 1. Design Hoarding for Construction and Industrial Site
- 2. Hoarding Fence with the effect of advertisemnet

SHIELD Recycable PVC Panel is a complex panel for temporary fence to imporve construction method, construction cost saving and urban looks at the same time with the creation of space layer and excellent effect of sound insulation based on major material of PVC reinforced plastic.

### Strong Points

- 1. Products with good performance differentiated from existing products due to the maximized special layer
- 2. Easy construction and economics with light products
- 3. Smooth surface and easy advertisement work
- 4. Good urban looks with the representation of various colors
- 5. Easy maintenance in damaged products and recycability
- 6. No worry of transformation and de-colorization with imporved stability of materials
- 7. Securing the safety of pedestrains and easy block of sound and dirt



### ① Byulnae New Town Project

### STEEL PIPE



Steel Pipe is basic item for every type of construction or industrial area. It can be used from support for SHIELD Steel Noise Barrier - 30T type to Scaffolding. SHIELD Steel Pipe is also munufactured from made in Korea Steel from POSCO, Hyundai Steel and rolled and taylored by SHIELD's well-exprienced  $technique. It can also be customized from \verb||| M to maximum 6M. For special structures, SHIELD's pipe grafts$ cold rolling technology creates a plastic working hardening effect which is one of the strengthening mechanisms of steel. Its strength is improved by 10~30% through hardening of steel by conducting special rolling plastic working on one side of a skelp. It can also secure an elongation with a special shape inside a pipe and save materials by being elongated toward the direction of the width and the length of a skelp by special roll rolling work. At the time of this cold rolling work, strength improvement of steel materials secure required strength necessary for using even though materials become lighter as tensile strength and compression strength increase to 10~30% due to refining of internal tissues of steel by rolling (tissue densification), and work hardening by strength improvement by texture and work hardening by pile-up of dislocation inside metal issues of steel.

### SIZE / SPECIFICATION

Outer Diameter(Round): 48.6 mm Thickness: 2.3 T (2.3 mm)

Length: 6M

Horizontal Support for Steel Noise Barrier - 30T Support for GL Steel Hoarding Any type of Hoarding and Scaffolding

### Key Feature of SHIELD Steel Pipe

Light Weight

Preventing construction workers'musculoskeletal disease, and improving their work efficiency

Enduring external forces well due to high strength

Compatibility

Excellently compatible with other companies' pipes

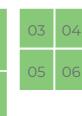












- ① Support for Steel Noise Barrier
- 30T type
- 2 Support for GL Steel Hoarding
- ③ Steel Pipe tighten by RS joiner
- 4 Steel Pipe tighten by
- RS joiner
- ⑤ Scaffolding Clamp

02

6 H-beam Clamp

② Singapore Sentosa Siloso Beach area

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### **COLOR CHART**



<sup>\*</sup> MORE COLORS CAN BE PROVIDED

# SHIELD

SHIELD's expert techincal team is ready to provide the best solution to its customers.

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