

HIGHWAY SAFETY PRODUCT GUIDE



Reliability   
*AT EVERY TURN*



An aerial photograph of a road curving through a dense forest. The road is paved and has a grassy shoulder. A table of contents is overlaid on the bottom right of the image, consisting of a yellow triangle on the left and a white bar on the right containing text. The text is in all caps and includes page numbers and chapter titles.

**4** **GUARDRAILS**

**6** **GALVANIZING METHODS**

**8** **STAMPING CODES | FINDING THE RADIUS**

**10** **BARRIERS**

**12** **END TERMINALS**

**14** **ATTENUATOR**

**16** **CONTINUING THE GREGORY LEGACY**

**17** **CUSTOMER PROMISES**

**18** **REASONS TO CHOOSE GREGORY HIGHWAY**



To meet the challenges of today's highways, you need complete solutions that are strong, long lasting and easy to install. And you deserve a supplier you can rely on for quick turnarounds and responsive service. Partner with Gregory Highway, the national leader in roadside safety.

Gregory Highway converts ideas into forward-thinking, trusted products that offer constant protection and lifesaving potential. Our capabilities are driven by our commitment to excellence in roadside safety.

Find out what sets us apart.

**CONTINUOUS GALVANIZING EXPERTISE**

Compared to traditional batch dip methods, our specialized continuous galvanizing process provides zinc-coated steel sheets with intrinsic quality and consistent thickness.

**METAL FORMING EXCELLENCE**

Our manufacturing team has years of proven metal forming experience as well as dedicated skills in metal punching, sawing, shearing and drilling.

**WIDE PRODUCT INVENTORY**

We have a full selection of raw material and processed steel along with the ancillary components needed for highway guardrail systems and end treatments.

> GUARDRAILS

Roadside safety begins with guardrail products from Gregory Highway. Contractors prefer our W-Beam and Thrie-Beam guardrails for their easy installation and long service life. Whether your project calls for W-Beam or Thrie-Beam, curved or straight sections, we deliver complete guardrail systems to ensure continuous performance and fast, safe installations.



W-BEAM




TRANSITIONS



THRIE-BEAM



CONVEX AND CONCAVE  
CURVED PANELS

  
Find what you need?  
Request a  
quote online now.  
[gregoryhighway.com](http://gregoryhighway.com)



STANDARD AND SPECIAL  
LENGTH PANELS



FLARED  
END SECTIONS



BUFFER  
END SECTIONS



TERMINAL  
END SECTIONS



STEEL POSTS



WOOD POSTS



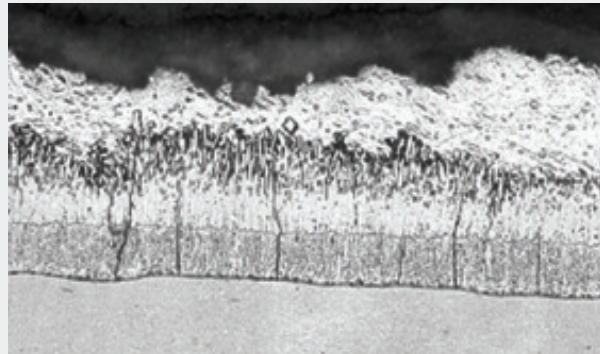
STANDARD  
GUARDRAIL FASTENERS

# GUARDRAILS

Components that meet today's standards



There are two galvanizing methods for commercially coated guardrail: **batch dip galvanizing** and **continuous galvanizing**. While either method is capable of producing a product that meets guardrail technical specifications, the coating processes differ and produce significant metallurgical differences in the structure and characteristics of the finished galvanized coating.



Batch dip galvanizing



**Process**

Pre-formed steel parts are chemically fluxed and dipped into a bath of molten zinc.



**Time**

Zinc immersion requires several minutes to allow significant iron-zinc alloys to form.



**Composition**

Coatings are comprised of about 50% free zinc and 50% iron-zinc alloys.



**Thickness**

Zinc thickness is controlled primarily by immersion time and the rate of withdrawal.



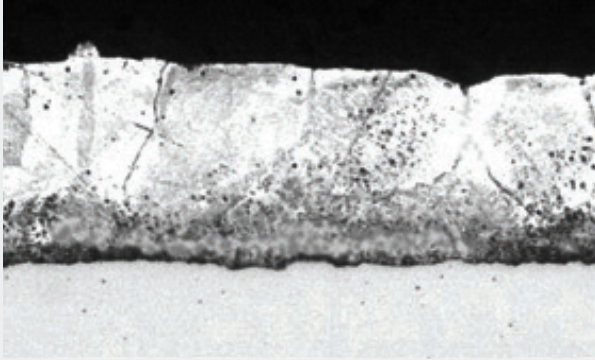
**Weight**

Zinc coating weight is typically about 4 oz. per square foot of steel, but it can also be affected by the base metal composition.



**Coating**

As the liquid zinc drains down on long sections, end-to-end coating uniformity can be affected.



Continuous galvanizing



**Process**

Coils of flat steel sheets are heated in a reducing atmosphere and then pass through a bath of molten zinc in a continuous moving web.



**Time**

Immersion in zinc is only required for a few seconds with limited alloy formation.



**Composition**

Resulting coatings are almost entirely free zinc.



**Thickness**

Weights are controlled by high technology air knives.



**Weight**

There is infinite coating control between 0.4 and 4 oz. per square foot of steel, which is not affected by the base metal composition.



**Coating**

Coating is done on a continuous flat web with no ends.

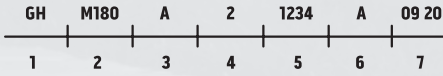


**THE CONTINUOUS GALVANIZING DIFFERENCE**

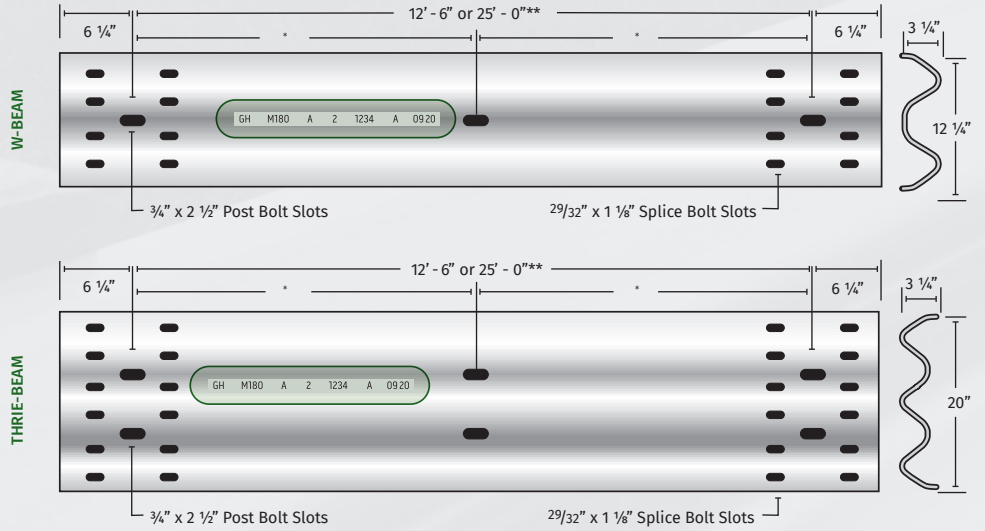
Gregory Highway's continuous galvanizing process is the key to better highway guardrail products. We galvanize entire steel coils before they are roll-formed rather than after. The result is a uniform and smooth zinc coating across the entire surface of the guardrail that provides superior performance, improved corrosion resistance, safer handling and easier installation.

# GUARDRAIL STAMPING CODES

## STAMPING CODES

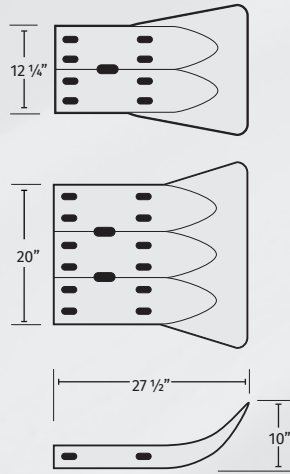


- 1 Manufacturer (GH = Gregory Highway)
- 2 AASHTO specifications
- 3 Class: Class A = 12 ga, Class B = 10 ga
- 4 Type: *Type 1* = Zinc coated 1.8 oz/ft<sup>2</sup> (550 g/m<sup>2</sup>) min single spot  
*Type 2* = Zinc coated 3.6 oz/ft<sup>2</sup> (1100 g/m<sup>2</sup>) min single spot  
*Type 3* = Uncoated steel  
*Type 4* = Weathering steel
- 5 Operator identification (A-Z)
- 6 Mill heat number code
- 7 Galvanized lot: 09 = Week (9th week)  
20 = Year (2020)

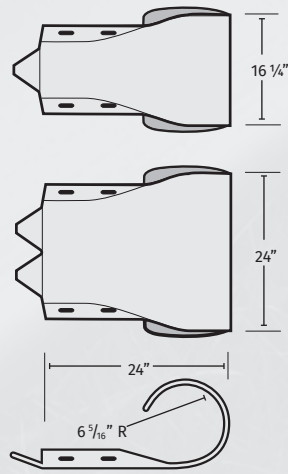


\* Various post-hole spacing available    \*\* 9' 4 1/2" and 15' 7 1/2" MGS length panels available

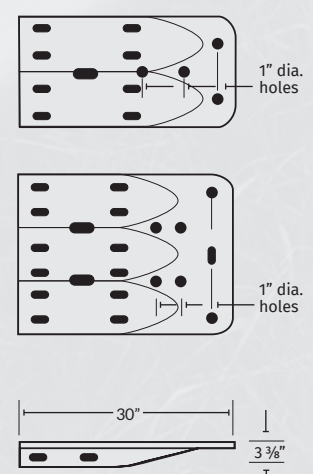
**FLARED END SECTION (12 GA)**



**BUFFER END SECTION (12 GA)**



**TERMINAL CONNECTOR PARAPET (10 GA)**

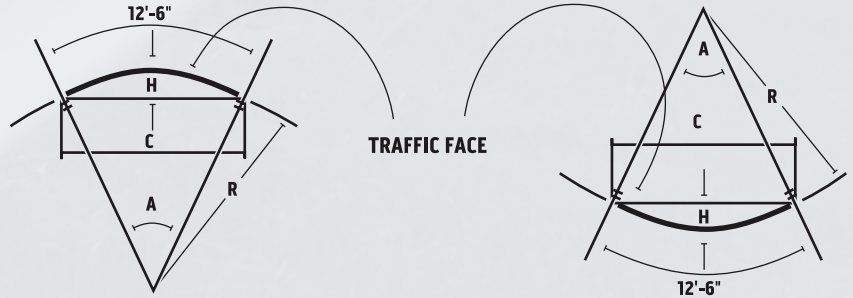




**FINDING THE RADIUS**

**Functions of 12'6" Arch for Different Radii**

Guardrails can be curved in our fabricating facilities for installation on stretches of road with radii of 5 to 150 ft. The terms convex and concave refer to the inward or outward curve relative to the traffic face of the guardrail. Follow these steps to measure the radius of each piece of guardrail section in the curved run:



**NOTE:**

*The arc may not be consistent across every guardrail in the curved run, and each consecutive piece of guardrail may differ in radius from the previous.*

**Finding the radius of a curved guardrail:**

**Step 1**

Starting at the last post in the straight run (point A), lay cloth tape along the path that the curved guardrail will follow.

**Step 2**

Mark off two points along the curved cloth tape: one at 6'3" (point B) and the second at 12'6" inches (point C).

**Step 3**

Pull the string directly from the starting point (point A) to the second mark off point (point C).

**Step 4**

Measure from the first mark off point (point B) over to the midpoint of the taut string. This measurement (D) is the rise.

**Step 5**

Check the chart to find the radius (R) given the rise (D).  
Example: a rise of 3 1/8 in. would result in a radius of 60 ft.

RADII	ANGLE	CHORD	HEIGHT / RISE
5	143° 14'	9'5 7/8"	3'5"
10	71° 37'	11'8 3/8"	1'10 3/4"
15	47° 45'	12'1 3/4"	1'3 3/8"
20	35° 49'	12'3 5/8"	11 5/8"
25	28° 39'	12'4 1/2"	9 3/8"
30	23° 52'	12'4 7/8"	7 3/4"
35	20° 28'	12'5 1/8"	6 5/8"
40	17° 53'	12'5 3/8"	5 7/8"
45	15° 55'	12'5 1/2"	5 1/4"
50	14° 19'	12'5 5/8"	4 5/8"
55	13° 01'	12'5 5/8"	4 1/4"
60	11° 56'	12'5 3/4"	3 7/8"
65	11° 01'	12'5 3/4"	3 5/8"
70	10° 14'	12'5 3/4"	3 3/8"
75	9° 33'	12'5 3/4"	3 1/8"
80	8° 57'	12'5 7/8"	3"
85	8° 26'	12'5 7/8"	2 3/4"
90	7° 58'	12'5 7/8"	2 5/8"
95	7° 32'	12'5 7/8"	2 1/2"
100	7° 10'	12'5 7/8"	2 3/8"
110	6° 31'	12'5 7/8"	2 1/8"
120	5° 58'	12'6"	2"
130	5° 31'	12'6"	1 3/4"
140	5° 07'	12'6"	1 5/8"
150	4° 47'	12'6"	1 1/2"

BARRIERS



# BARRIERS

## SAFENCE

---



### **HIGH TENSION CABLE BARRIER SYSTEM**

In medians and embankment slopes where forceful collisions are common, SAFENCE is the top cable barrier solution. On impact, the cables gain lateral resistance and remain restrained by the end anchors, helping to safely redirect vehicles.

## Safety Roller Barrier (SRB)

---



### **MASH TL-4 LONGITUDINAL BARRIER**

Ideal for roadside or median applications, SRB is designed to minimize damage on impact by safely converting crash energy into rotational energy. The MASH TL-4 approved design allows SRB to sustain minor impacts with less damage to the vehicle and barrier system.

## Guardian 5 (G5)

---



### **MASH TL-5 LONGITUDINAL BARRIER**

Designed to safely capture and redirect a fully loaded, 80,000-lb. vehicle, G5 is intended for use on roadways with high truck traffic, where drainage is a concern and as bridge pier protection. G5 is a more cost-effective alternative to concrete barriers and meets all MASH TL-5 standards.

## NatureRail

---



### **SCENIC GUARDRAIL SYSTEM**

NatureRail offers a safe, aesthetic alternative to standard steel guardrail. Perfect for scenic highways and park settings, galvanized steel parts and weather resistant wood guarantee a long working life without maintenance.

## END TERMINALS

### MASH approved end sections

Gregory Highway supplies complete guardrail systems for every specification. We meet your full project requirements with standard end sections and energy-absorbing end treatments for wood or steel post designs.

#### **MASH SEQUENTIAL KINKING TERMINAL**

MSKT is an energy-absorbing, tangent terminal that is MASH TL-3 compliant. During head-on impacts, the MSKT head slides over the W-Beam guardrail, sequentially kinking it. The kinked rail exits the head and the vehicle comes to a controlled stop, using the same effective technology seen in NCHRP 350 SKT field performance. When impacted along the side within the length of need, MSKT functions like a guardrail, containing and safely redirecting vehicles.

#### **MASH FLARED ENERGY ABSORBING TERMINAL**

MFLEAT is an industry-leading flared terminal end, combining impressive impact resistance, safe handling and easy installation. Featuring a wide impact face and field-proven technology, MFLEAT safely dissipates crash energy during head-on collisions. With easy delivery and interchangeability with some MSKT parts, MFLEAT can help make your highway safety installations quicker, more efficient and more cost effective.



# END TERMINALS



# ATTENUATOR

## TTMA-200


### TRAILER TRUCK MOUNTED ATTENUATOR


Designed for use in mobile and stationary work zones, TTMA-200 helps to keep your most valuable assets protected in the event of a work zone intrusion. Its patented, energy-absorbing technology offers flexible performance at a competitive price and meets all required MASH TL-3 testing standards.

Made from galvanized steel, TTMA-200 can be used with most supporting vehicles weighing 10,000 lbs. or more. Its flexible configuration is easily adaptable to sweeping, salting, mowing and striping operations, and it can be switched between host vehicles in minutes.







 FIVE GENERATIONS

## Continuing the Gregory legacy

### **GREGORY HIGHWAY IS A DIVISION OF GREGORY INDUSTRIES**

Gregory Industries has a proud legacy of galvanizing and metal forming expertise. For more than 100 years and five generations, the Gregorys have dependably served customers across the nation, treating them like family.

The growth of Gregory Industries is a result of its dependable service, reliable inventory and history of coming through. With a commitment to quality and constant drive to improve, Gregory Industries exceeds expectations at every turn – because excellence is a continuous process.

Gregory Highway is proud to carry on the legacy.



# CUSTOMER PROMISES

Gregory Highway has built a longstanding reputation for responsible manufacturing and dependable roadside safety solutions. See how we pave the way for customer success.



## **Convenient deliveries**

Gregory Highway supplies the components you need to complete your projects on time and on budget. We have logistics specialists on call and a fleet of trucks on site, so we can expedite any order and ensure on-time deliveries.



## **Reliable service**

We want you to be satisfied with your order, and we want to be your supplier for years to come. To ensure your full satisfaction, we offer proven products, knowledgeable sales professionals and delivery assurance on every order.



## **Easier installations**

Continuous galvanizing eliminates rough edges that can cause cuts or more serious injuries during installation. Sections fit together easily, saving you time and labor, and consistent zinc coatings resist corrosion over time.

1

**Nearly 100%**  
pure zinc coatings will  
not discolor for the life of  
your products

2

**Easier**  
assembly without  
buildup at bolt holes  
and splice locations

3

**Safer**  
handling due to smooth  
edges without dangerous  
points and hooks

4

**Clean**  
holes and slots punched  
after galvanizing for  
accurate dimensions

5

**Durable**  
zinc coatings eliminate  
weak spots in  
corrosion resistance

6

**Flexibility**  
from high zinc  
content and lower  
iron-alloy content

7

**Four to five times**  
lower lead  
content than  
batch-dipped products

8

**All products**  
conform to  
AASHTO M180  
and ASTM A653  
standards



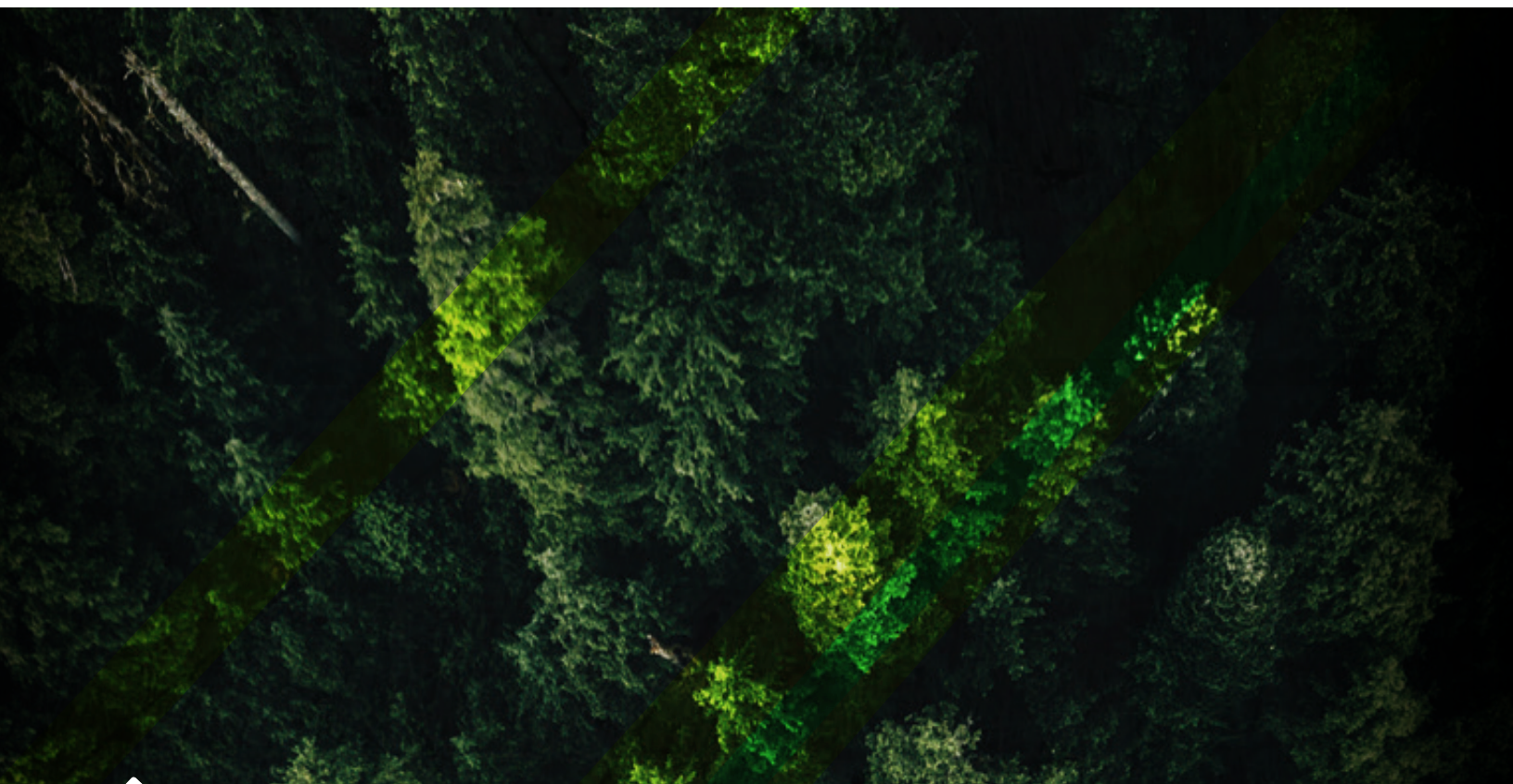
**REASONS TO CHOOSE  
GREGORY HIGHWAY**



Partner with Gregory Highway

[gregoryhighway.com](http://gregoryhighway.com)





**GREGORY  
HIGHWAY**

4100 13th St. SW, Canton, OH 44710 1-866-994-4929

*Gregory Highway is a division of Gregory Industries*

[gregoryhighway.com](http://gregoryhighway.com)