

**TECHNICAL
BRIEF**

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Product Specification

ArmorGuard™ Gate System

I. General

The ArmorGuard Gate System provides a means to close 8, 12, and 16 meter openings in rigid longitudinal barrier systems. The system can be opened to allow emergency vehicle access and to be able to reroute traffic. The system provides positive separation when in the locked position. The ArmorGuard Gate System performs to the criteria set forth for Longitudinal Barriers in the National Cooperative Highway Research Program Report 350 (NCHRP 350) at Test Level 3 (100 km/hr).

II. Performance

The ArmorGuard Gate System is a longitudinal barrier with the ability to be disconnected from the adjacent rigid barrier system and pivot open from either fixed end to move sections of the barrier laterally or longitudinally without the use of heavy equipment. The system is designed to provide positive lane separation and vehicle redirection characteristics in accordance with NCHRP 350 guidelines for longitudinal barriers. The system is intended to be attached to rigid barrier.

A. When properly installed according to manufacturer's recommendations, the ArmorGuard Gate System shall be able to meet the recommended structural adequacy, occupant risk, and vehicle trajectory criteria set forth in NCHRP 350 for Test Level 3 (100 km/hr) Longitudinal Barriers:

1. An 820 kg vehicle at 20 degrees impacting the midpoint of the system (Test 3-10).
2. A 2000 kg vehicle at 25 degrees impacting the midpoint of the system (Test 3-11).
3. A 2000 kg vehicle at 25 degrees impacting at the critical impact point of the system (Test 3-21).

B. The impact velocity of a hypothetical front seat passenger against the vehicle interior as calculated from the longitudinal vehicle acceleration and 600 mm [23 5/8 in] forward displacement, and the lateral vehicle acceleration and 300 mm [12 in] lateral vehicle

displacement, shall be less than 12 m/s (39.3 ft/s). The highest 10 ms average vehicle acceleration in the longitudinal and lateral directions subsequent to the instant of hypothetical occupant impact shall be less than 20 g's.

Detached debris shall not show potential for penetrating the vehicle occupant compartment or present a hazard to other traffic, pedestrians, or workers in a work zone. The vehicle shall remain upright during and after the collision although moderate roll, pitch, and yaw may occur.

III. Description of System

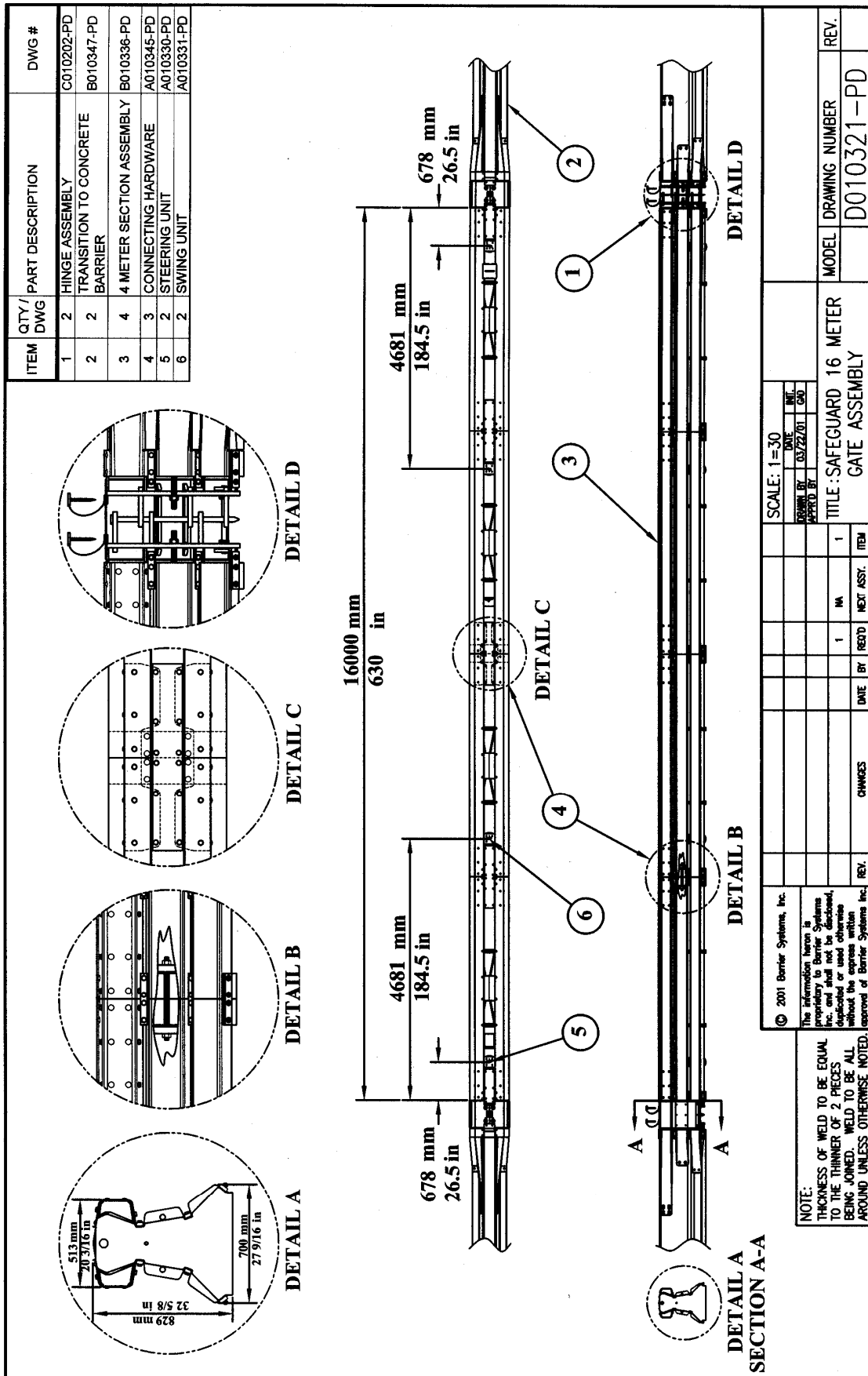
A. The ArmorGuard Gate Systems are as shown in Drawings D010321, D010322, and D010321. The systems consist of four key elements and shall be made from materials conforming to the following specifications:

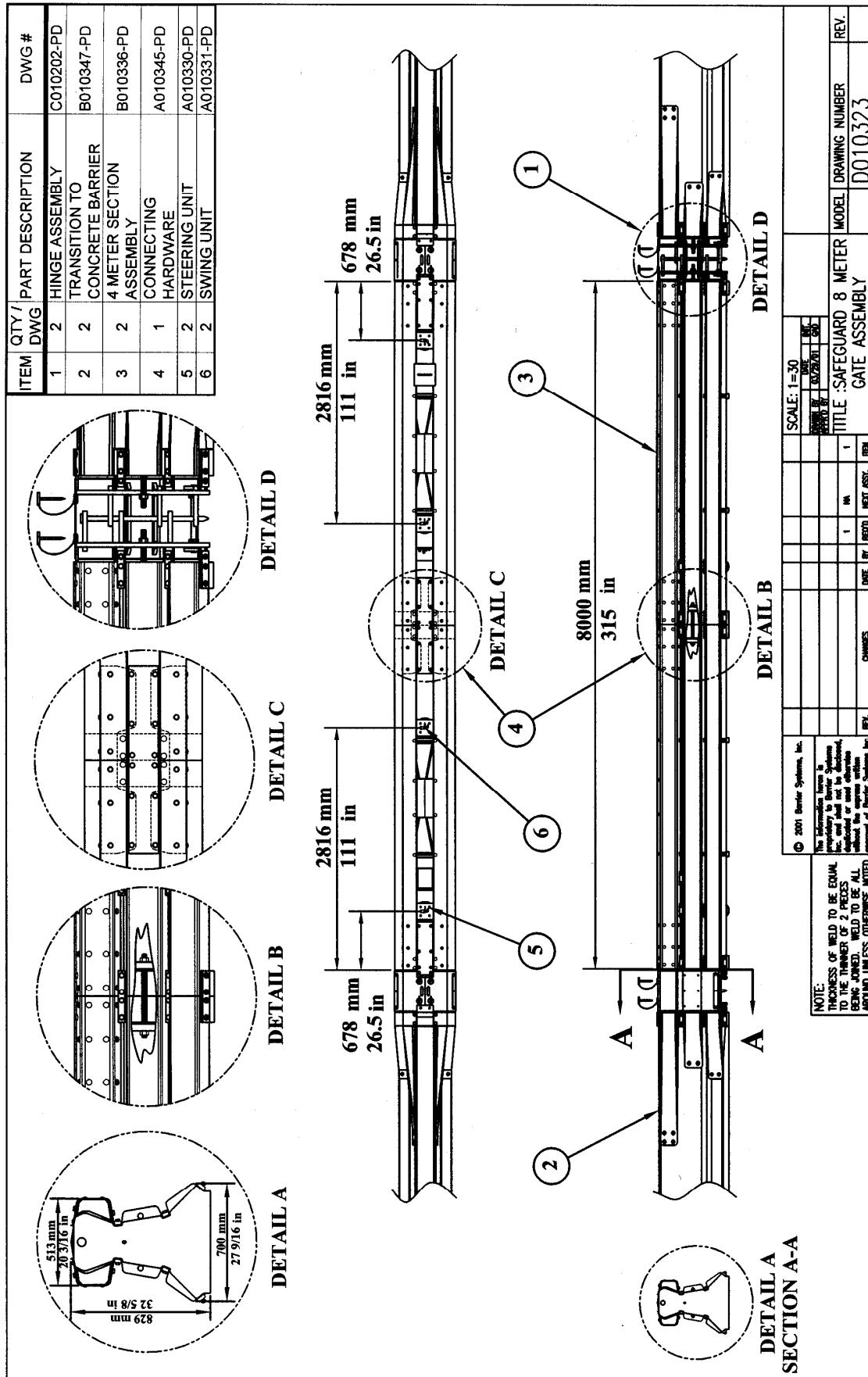
1. The Gate Assembly Section (B010336) is 4 meters in length. These are assembled together in two, three, or four sections to create gates that are 8, 12, or 16 meters in length. Each Gate Assembly Section shall be composed of end supports, center supports, diagonal braces, a shear plate, and longitudinal panels for the top, center, and bottom. These components are held together using clamp strips and a variety of fasteners.
 - a. All steel clamp strips, supports, braces, shear plates, and panels shall be fabricated from mild steel in conformance with ASTM A-36 specifications and galvanized in accordance with ASTM 123.
 - b. All fasteners shall be Class 4.6 (Grade 2) or greater and galvanized in accordance with ASTM 153. Washers shall be hardened and galvanized.
2. The Connecting Hardware (B010343) is used to connect the 4 meter assemblies together. Connecting of the assembly sections is accomplished using upper and lower coupling strips, threaded rod, top panel connecting brackets, and a coupling shear plate. Fasteners and bolt strips hold the connection.
 - a. All steel coupling strips, connecting brackets, shear plates, and bolt strips shall be fabricated from mild steel in conformance with ASTM A-36 specifications and galvanized in accordance with ASTM 123.
 - b. Threaded Rods and fasteners shall be Class 4.6 (Grade 2) or greater and galvanized in accordance with ASTM 153. Washers shall be hardened and galvanized.
3. The Pneumatic System provides the lifting capacity and control functions for the gate. This installation consists of the control and filter units and all necessary air lines to facilitate independent lifting and lowering of the steering and swing units (A010330 and A010331) as well as directional control of each steering unit.
 - a. All steel components such as mounting brackets and steering and swing unit frames shall be fabricated from mild steel in conformance with ASTM A-36 specifications and galvanized in accordance with ASTM 123.

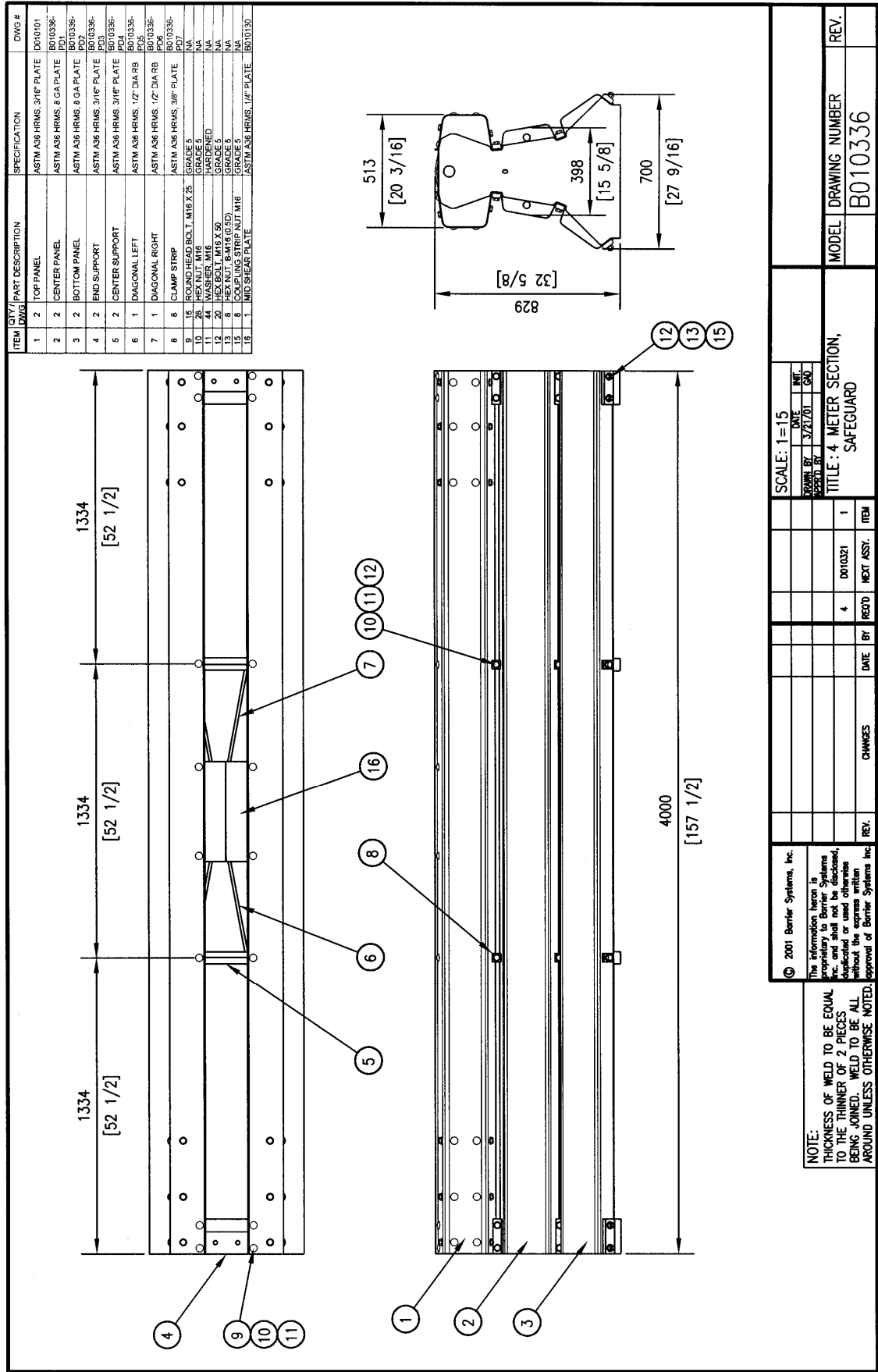
- b. All control and filter units and corresponding air lines shall be specified for outdoor use.
- 4. The Hinge Assembly (C010202 and B010343) connects the ends of the gate to a transition assembly. A hinge set contains two aluminum hinge covers with load carrying engagement rails and pivot rods, opposing hinges, and a master pin.
 - a. All aluminum components shall be made of 5052 H32 in conformance with ASTM B209.
 - b. All steel hinges and hinge cover rails shall be fabricated from mild steel in conformance with ASTM A-36 specifications and galvanized in accordance with ASTM 123.
 - c. The master hinge pin and hinge cover pivot rod shall be fabricated from C1018 CF steel and galvanized in accordance with ASTM 123.
- B. The ArmorGuard Gate System is approximately 700 mm (28 in) wide and 830mm (32 5/8) tall.
- C. A 16 meter gate weighs approximately 2700 kg (6000 lb). A 12 meter gate weighs approximately 2030 kg (4500 lb). An 8 meter gate weighs approximately 1525 kg (3360 lb).
- D. The ArmorGuard Gate System shall be assembled and installed in accordance with the manufacturer's instructions.

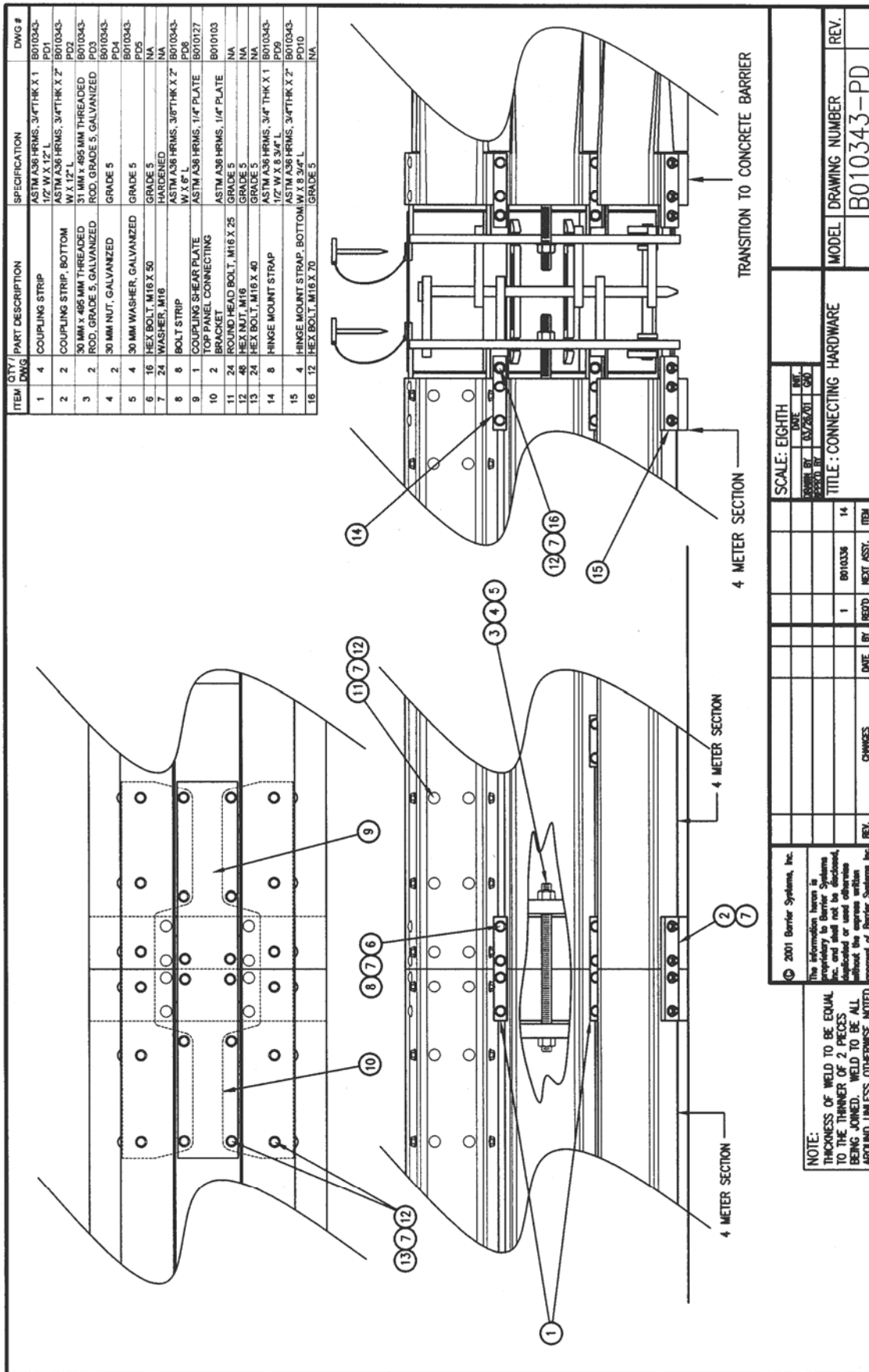
IV. Application of Safety Appurtenances

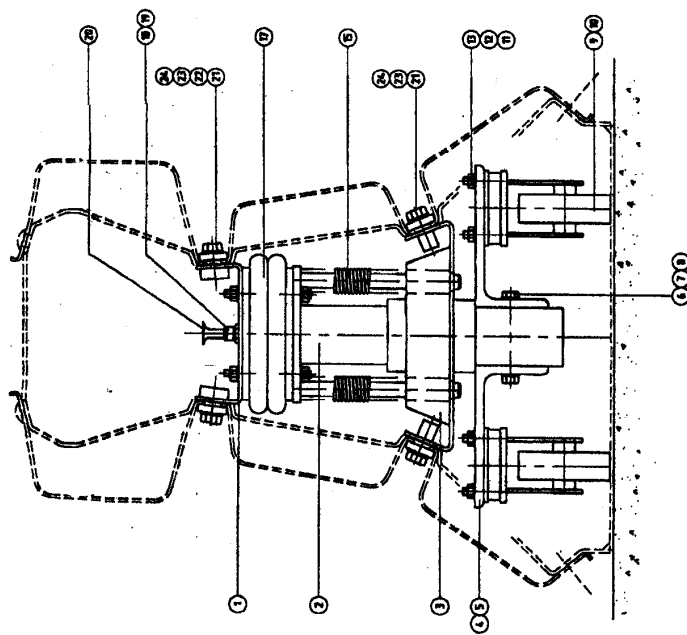
Highway safety appurtenances should be applied to hazardous sites in accordance with the guidelines and recommendations in the American Association of State Highway Transportation Officials (AASHTO), "Roadside Design Guide", and other Federal Highway Administration and State Department of Transportation requirements. Placement of the ArmorGuard Gate System must comply with these specifications and guidelines as well as those of the manufacturer.



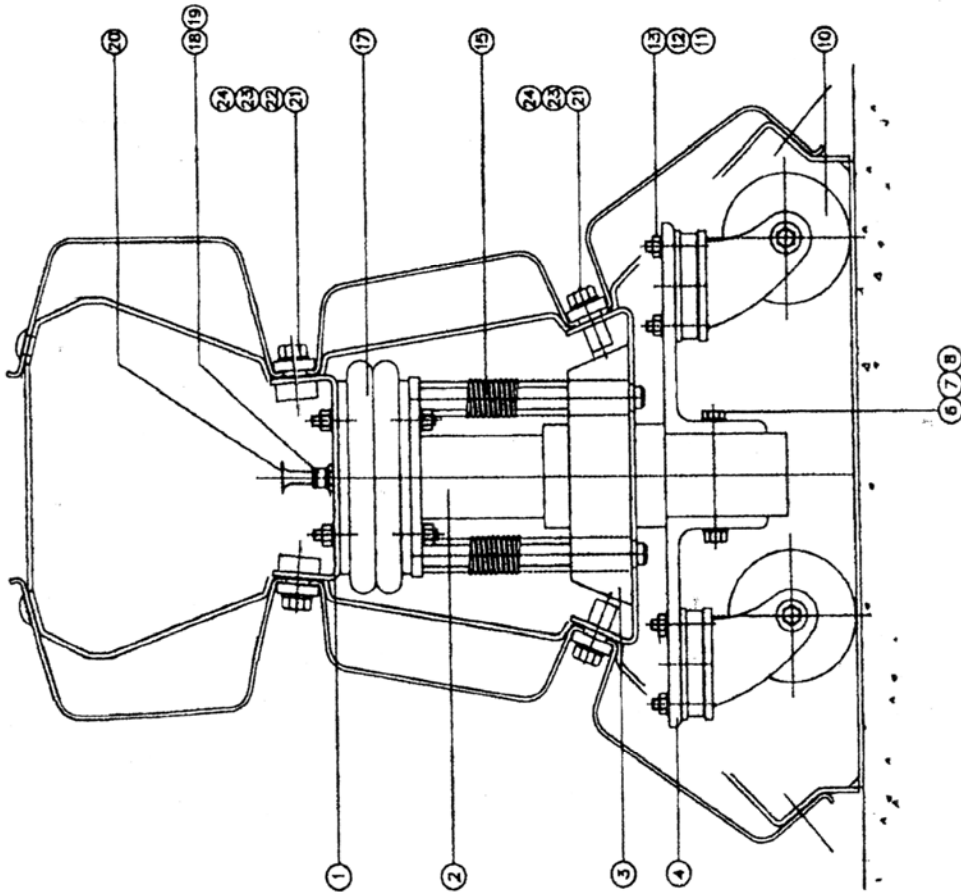






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ITEM	QTY / DWG	PART DESCRIPTION	DRAWING
1	1	CARRIER	A010331-PD1
2	1	CARRIER TUBE	A010331-PD2
3	1	SUPPORT TUBE	A010331-PD3
4	2	WHEEL SUPPORT	A010331-PD4
6	2	HEX BOLT M12 X 120	A010331-PD6
7	2	HEX NUT M12	A010331-PD7
8	2	SPRING WASHER M12	A010331-PD8
10	2	SWING WHEEL	A010331-PD10
11	8	HEX BOLT M10 X 35	A010331-PD11
12	8	HEX NUT M10	A010331-PD12
13	8	SPRING WASHER M10	A010331-PD13
15	2	COMPRESSION SPRING	A010331-PD15
17	1	AIR BAG	A010331-PD17
18	1	STRAIGHT NIPPLE	A010331-PD18
19	1	FIBER GASKET	A010331-PD19
20	1	COUPLING PLUG	A010331-PD20
21	4	CLAMP STRIP	A010331-PD21
22	2	MOUNTING STRIP	A010331-PD22
23	8	HEX BOLT M16 X 45	A010331-PD23
24	8	WASHER M16	A010331-PD24



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