

**GIBRALTAR**  
**M50 P1 G-3000 Vertical Lift Barrier**  
**Section 34 71 13.19**  
**Active Vehicle Barriers**

**PART 1 – GENERAL**

**1.01 WORK INCLUDED**

The contractor shall provide all labor, materials and appurtenances necessary for installation of the active vehicle barrier system defined herein at (*Insert Site Location Here*).

**1.02 SYSTEM DESCRIPTION**

A. The manufacturer shall supply a total active vehicle barrier system of the Gibraltar M50 P1 Vertical Lift Barrier design. The system shall include all components (i.e., frames, supports, posts, and hardware) required. The barrier shall comply with Gibraltar's System Drawing Number (*Insert Drawing Number Here*).

B. The Gibraltar M50 P1 Vertical Lift Barrier was tested to the pass requirements in accordance with ASTM F2656-07 and achieved a rating of M50 P1. The barrier was tested to 24ft [7.3m] blocking width. The test report was approved by the USACE PDC and is on the DOD list of approved barriers.

C. Gibraltar products are tested by an ISO 17025 accredited testing facility.

D. Gibraltar offers a Hydraulic operated unit, operating off 208V 60hz power input. All Gibraltar products are designed to operate in a wide range of environmental conditions. These include the following:

- (1) Ambient temperature ranges without heating or cooling systems: 32 °F (0 °C) to 150 °F (65 °C)
  - a.) heating and cooling options to be used when necessary
- (2) Ambient relative humidity range: 5% to 100%
- (3) High dust environments

E. The Gibraltar M50 P1 Vertical Lift Barrier has a raised height of 39in (990mm) to the center of the blocking member. The entire blocking member sits flush to roadway when in the retracted position. When in the retracted position, the barrier shall be capable of supporting a 32,000-pound (14,515 kg) axel load.

F. Gibraltar will provide any information requested pertaining to Gibraltar products to local agents and users upon request to include manufacturing catalogs and/or device specifications.

G. The Gibraltar M50 P1 Vertical Lift Barrier deployment speeds are adjustable to match customer specifications. The barrier shall be capable of less than 2 second deployment to secured position during emergency operation and between 3 to 8 second deployment for normal operation. Retracting speed shall be adjustable per customer specification.

H. In the event of electrical or mechanical failure, the Gibraltar M50 P1 Vertical Lift Barrier is designed to hold the last commanded position, including the raised position. The Gibraltar control system shall provide back-up and manual operating capability for use in event of power failure. Back-up and manual operating equipment available upon request. Back-up operating system shall provide, as a minimum, three complete cycles (open and shut) without use of manual system. Manual operation of barrier shall be simple and without need of special tools or knowledge.

**1.03 QUALITY ASSURANCE**

A. All Gibraltar products are processed under the Gibraltar quality management system.

B. The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

C. Installer Qualifications: Engage an experienced Installer who has completed in last five years an active roadway barrier system installation similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

D. Nameplates: The vehicle barrier shall have the manufacturer's name, contact for service, and catalog or serial number permanently affixed to a plate securely attached to the equipment in a suitable location.

#### **1.04 REFERENCES**

- ASTM A36 - Standard Specification for Carbon Structural Steel
- ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
- ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- ASTM D7803- Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Powder Coating
- ASTM B117 - Practice for Operating Salt-Spray (Fog) Apparatus.
- ASTM D523 - Test Method for Specular Gloss.
- ASTM D714 - Test Method for Evaluating Degree of Blistering in Paint.
- ASTM G155 - Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials
- ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
- ASTM D2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
- ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
- ASTM D3359 - Test Method for Measuring Adhesion by Tape Test.
- ASTM F2656 - Standard Test Method for Vehicle Crash Testing of Perimeter Barriers
- AWS D1.1/D1.1M - Structural Welding Code - Steel (2010)

#### **1.05 SUBMITTAL**

A. The manufacturer's literature shall be submitted prior to installation. Shop drawings available upon request, the following can be found within the Gibraltar M50 P1 Vertical Lift Barrier owner's manual:

- (1) Product data
- (2) Field testing guidelines
- (3) Operation and maintenance instructions
- (4) Spare parts list

B. A Crash Testing certification letter can be available upon request.

#### **1.06 PRODUCT HANDLING AND STORAGE**

A. All Gibraltar products shall be packaged to protect the materials from damage during shipment.

B. Upon receipt at the job site, all materials shall be checked to ensure that no damage occurs during shipping or handling.

C. While Gibraltar does not assume responsibility for injury to persons or property during loading, unloading, transporting or installation, verbal guidance and additional written instructions are available upon request.

D. The installer is responsible for insuring that the rigging and lifting gear should be properly sized and attached when lifting heavy components in all instances. Equipment used to set the barrier must be capable of handling product in an overhang position to set the components within the excavation.

E. All Gibraltar barrier products are coated to protect materials from the effects of exposure to all outdoor elements; however, when site storage is required Gibraltar recommends the following guidelines:

- (1) Short term storage (0-12 months): Store in such a manner to ensure proper ventilation and drainage. The storage location shall protect against damage, vandalism and theft.
- (2) Long term storage (more than 12 months): In addition to the recommendations for short term storage, Gibraltar products shall also be covered to prevent exposure to the elements prior to installation. The purpose of this recommendation is to preserve the aesthetic appearance of the coating finish. Long term exposure to the elements naturally degrade coating appearances; therefore, proper storage is essential for ensuring preservation of the material.

F. Upon delivery of Gibraltar M50 P1 Vertical Lift Barrier control systems, the crate or pallets containing any electrical components shall be marked as such and stored in a covered location that ensures proper ventilation and drainage. The storage location shall protect against damage, vandalism and theft. Control cabinets may not be rated for outdoor exposure; therefore, higher storage measures should be taken.

**PART 2 – MATERIALS**

**2.01 MANUFACTURER**

A. The active vehicle barrier system shall conform to the Gibraltar M50 P1 Vertical Lift Barrier design manufactured by Gibraltar Material Distribution, L.P. in Marble Falls, Texas. This system shall be tested and certified to meet ASTM F2656-07, Impact Condition Designation M50, Penetration Rating P1, with capability of stopping a 15,000 pound (6804 kilogram) vehicle traveling at speeds up to 50mph (80km/h).

B. Gibraltar products are designed and tested with standard steel components to meet ASTM F2656 requirements.

C. The entire active vehicle barrier system, and all associated accessories, fittings, and fasteners shall be obtained from Gibraltar.

D. Traffic light type indicators/lighting can be installed per the customer requirements.

E. Upon request, Gibraltar can supply a full set of “As Built” drawings for all electronic, hydraulic, or mechanical systems work upon shipment in an easily accessible format.

F. All Gibraltar active anti-ram barrier products requiring control panels/switches, motors, sensors, etc., are installed and controlled per customer requirements.

G. Gibraltar can provide a Plug and Play product that can interface with any access control system.

**2.02 MATERIAL**

A. Steel material shall conform to the ASTM requirements shown in Table 1.

<b>Table 1 – Steel Material Requirements</b>	
<u>Material</u>	<u>Specification</u>
Welding	Performed by welders certified to AWS D1.1
Steel tubing	ASTM A500
Solid round bars	ASTM A36/A529 GR50 Dual Grade
Steel Plates	ASTM A36

B. Gibraltar will provide material certifications with each order upon request.

**2.03 FABRICATION**

A. Fabrication of the members shall be in accordance to manufacturer’s instructions, the plan details, and this specification.

B. Upon request, shop drawings will be provided for site specific locations of each barrier.

C. The Gibraltar M50 P1 Vertical Lift Barrier coating system shall protect against the effects of long term corrosion. Gibraltar has the capability to provide systems in galvanized, powder coated, or wet painted finishes. The standard coating design shall be a powder coated or wet paint solid color finish. The buyer will specify any custom color or design to the manufacturer at the time of ordering. Gibraltar does not recommend hot dip galvanizing the blocking beam as some of the materials should not be subjected to exposure to high heat after curing. If complex color design is required, the manufacturer may use a combination of powder coat and wet paint processes to achieve the final design. If the buyer specifies a powder coated finish on top of galvanizing, the powder coating will be applied in accordance with ASTM D7803. The standard galvanized coating is Hot Dip Galvanized to ASTM A123.

D. All Gibraltar products are coated to the customer specification.

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. The purchaser shall indicate the location of active vehicle barrier line with suitable stakes.
- B. The purchaser shall indicate all underground utility locations, USC&G benchmarks, property monuments, and other underground structures.
- C. Before installing the Gibraltar M50 P1 Vertical Lift Barrier, all necessary site clearing and grading shall be performed by the purchaser. An adequate clearance on both sides of the active vehicle barrier line is required.
- D. Soil strength shall be equivalent to soil strength recorded during the ASTM F2656-07 certification test or the footer size and depth must be adjusted accordingly based on professional engineering analysis.
- E. Power Lines: Where power and hydraulic lines are required and are below grade they must be protected with rigid electrical conduit. Where temperatures will exceed 100 °F (38 °C) for extended periods of time provide a cooling unit for the hydraulic fluid.

### **3.02 INSTALLATION**

- A. The barrier shall be installed per Gibraltar's System Drawing Number (*Insert Drawing Number Here*).
- B. Gibraltar active barrier products are warranted against defects in material and workmanship on mechanical components for three years when installed by a factory-trained installer. Gibraltar will pass on the original manufacturer's warranty of all electrical, electronic, and hydraulic components to the purchaser of any active barrier.
- C. Gibraltar provides training for all installers of Gibraltar products.
- E. Where necessary, Gibraltar can provide operator training, supervisor training, and maintenance training.

### **3.04 CONTROL SYSTEM**

- A. Each Gibraltar M50 P1 Vertical Lift Barrier shall be provided with one HPU. Up to two barriers can be powered by a single HPU. Customer to specify EPU configuration at the time of ordering. Each HPU shall be provided with 50ft (15M) of hydraulic lines per barrier. 50ft (15M) of pre-terminated low voltage power and feedback cables shall be provided with each barrier. If needed, additional hydraulic line or cable length shall be specified at the time of order.
- B. Control panels are provided per customer specification. Basic Open/Close and EFO controls are provided as a standard, unless specified otherwise. All control cables to be used between EPU/HPU and any control panels shall not be provided by Gibraltar, unless specified.
- C. All EPU's, HPU's, and Control Panels are customizable per customer specification.
- D. Site work materials to include EPU/HPU footings, footing rebar, or conduit not provided by Gibraltar.

### **3.05 MAINTENANCE**

- A. General maintenance of the Gibraltar M50 P1 Vertical Lift Barrier shall consist of removing foreign materials from frame or sub-grade frame as debris may cause damage to the barrier and may cause safety concerns. Refer to the Gibraltar M50 P1 Vertical Lift Barrier owner's manual for more details on the system maintenance.
- B. Gibraltar will supply an operator manual that contains recommended maintenance intervals, procedures and replacement parts lists.
- C. Maintenance instructions shall include routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guide. The instructions shall include piping layout, equipment layout and simplified wiring, and control diagrams of the systems as installed.

### **3.06 CLEANING**

The contractor shall clean the jobsite thoroughly to ensure it is left neat and free of any debris caused by the installation of the anti-ram vehicle barrier system