

Tender Specifications

Bollard M50 ASTM

Bollards shall be designed to control or prevent vehicle access or to protect specific areas from the threat of vehicle attacks. The following specification details are the minimum requirements expected physically and operationally for the high security environment. Bollards shall be a moving heavy-duty steel cylinder installed underground and raising up to block the driveway in order to protect from attack. Bollard should be electro-hydraulic powered for reliability and strength. The system shall comprise and not limited to the following:

- Bollards dimensions and aspects shall be certified according to M30 requirements and designed to ensure safe operation.
- Bollards shall be crash-tested according to ASTM F 2656-07 standard, 6.8 tons of vehicle crashing at 80km/h, angle - 90 degree. The test should be resulted with a penetration rating P1, (with at least minus 0.6 meters penetration, as per official certificate from third-party EU testing laboratory). The bollard shall remain operational after impact and ready to block/open the road.
- Certification test should be done with single bollard only to ensure highest level of protection.
- The bollards cylinder shall have minimum height of 120 cm above the ground in raised position.
- Diameter of cylinder should be 325 mm with 30 mm thickness of the tube wall.
- Overall depth of underground part should be at least 2.1 m to ensure required height of moving cylinder and crash-resistant capacities.
- The bollard shall raise/lower between three (3) to five (5) seconds or better.
- Electro-hydraulically driven with hydraulic power unit located separately in safe location.
- LED flashers need to be embedded within the bollard cylinder.

- The bollard shall be hot dip galvanized to a minimum thickness of 60 microns. It will be painted in grey color with reflective strip on top under LED flasher.
- Bollard's axle load in lowered position shall be not less than 15 tons.
- Operating temperature can be between -40° C to +60°C, 95% non-condensing humidity.
- Electronics shall be located inside the separate steel cabinet.
- Minimum 10-meter hydraulic pressure hoses shall be supplied between bollard and HPU.
- Main controller in the HPU shall be a PLC. There shall be inputs & outputs available on PLC controller to connect & integrate with any Access controller/reader, gate arm barrier, etc.
- There shall be a manual hand pump equipped inside the HPU to raise or lower bollard manually in case of power failure.
- Power inlet of the system shall be 3-phase 400 VAC 50/60 Hz.
- There shall be safety devices in the HPU like hydraulic oil level gauge, pressure manometer.
- System shall be equipped with hydraulic accumulator for emergency raise (1.5 sec).

Bollards cylinder

Cylinder Construction

The blocking cylinder shall be constructed of heavy steel tube. The diameter of cylinder should be at least 325 mm and thickness of the wall 30 mm. The road plate should be an anti-slip plate to withstand a calculated axle load of 15 tons. The blocking cylinder shall be secured into a sub-surface mounting frame. On impact, the forces exerted on the blocking cylinder should be partially absorbed by the structure with the balance being transmitted through the substantial frame and into the re-enforced foundations.

Cylinder Height

The height of the cylinder when in the closed (raised) position, as measured from the top of the mounting frame, will be a minimum of 120cm to minimize the possibility of site penetration and to ensure that higher chassis vehicles are restrained.

Finish

The cylinder shall be finished with an anti-corrosion paint in grey color.

Hydraulic System (HPU)

Operation

The HPU shall consist of a heavy-duty motor driving a hydraulic pump, which will actuate, via a manifold and set of electrically operated valves, a hydraulic ram(s). The bollard cylinder shall be driven both up and down by a double acting hydraulic ram(s) to ensure positive action at all times. The HPU shall have the facility for a hydraulic accumulator added to allow a significantly increased raise speed in case of emergency (1.5 seconds or less).

Limit Switches

Proximity limit switches shall be fitted to provide raised and lowered signaling to the control system.

Motor

The heavy-duty motor used in the HPU shall be a 3ph, 400 V unit with a power rating sufficiently sized to allow for continuous operation (100% duty cycling).

Hydraulic Reservoir

The hydraulic oil shall be contained in a steel reservoir, which is to be sized allowing sufficient oil cooling necessary for 100% duty cycling of the blocker.

Power fail conditions

A hand pump / release to enable the manual raising and lowering of the bollard in the event of electrical power failure.

Casing

The powder-coated steel enclosure shall be resistant to atmospheric and environmental factors and shall come complete with an outer cabinet to give IP 54 protection. The cabinet doors shall be lockable and shall be able to access full length to front of the cabinet with ease. Cabinet construction shall ensure that continuous ventilation is achieved for the equipment housed within, whilst maintaining the required IP rating.

Control System

Main Processor

The Control of each bollard shall be via programmable control board. Properly mounting all relays and all interconnecting cabling shall be in suitable containment running to terminal strips.

Voltage

The main system input voltage shall be 400 V 3phase 50/60 Hz supply with the control system operating at 24V. Main Power sources will be derived from existing power distribution boards at each site.

Casing

The control system shall be housed in a general purpose IP rated housing. The housing shall be located inside the main HPU cabinet and should give easy access to all electrical components for connection, maintenance.

Bollard Control

Push button

Local push button control shall be available in a central location for each bollard or group of bollards (Entry and Exit). It shall be housed within a lockable panel.

Push button shall have:

1. Panel "on" light.
2. Buttons to raise/lower and stop the bollard.
3. Blocker "up", "down" and "stop" indicator lights.

Country of Origin

Only European or USA products accepted. Certificate of Origin from respective Chamber of Commerce to be provided.