

SUPERIOR BOLLARDS

BOLLARDS FOR EVERY SITUATION

SINCE
1977



SECURITY BOLLARDS

- Stationary Bollards
- Folding Bollards
- Removable Bollards
- Retractable Bollards
- Decorative Bollards
- Lighted Bollards
- Steel Bollards
- Stainless Steel Bollards
- Aluminum Bollards
- Crash Rated Bollards

FIXED BOLLARDS

- Steel
- Stainless Steel
- Decorative Sleeves
- K4, K8, K12

REMOVABLE BOLLARDS

- Steel
- Stainless Steel
- Decorative Sleeves
- K4, K8, K12

MANUAL BOLLARDS

- Steel
- Stainless Steel
- Decorative Sleeves
- K4, K8, K12

RETRACTABLE BOLLARDS

- Steel
- Stainless Steel
- Decorative Sleeves
- K4, K8, K12
- Pneumatic, Hydraulic, Electric

ANTI-TERRORIST EQUIPMENT

- Crash Rated Hydraulic Bollards
- Crash Rated Pneumatic Bollards
- Crash Rated Stationary Bollards
- Crash Rated Removable Bollards
- Crash Rated Shallow Mounted Security Bollards
- Surface Mounted Crash Rated Barricades
- Pit Style Crash Rated Barricades
- Crash Rated Swing Barriers
- Crash Rated Tilt-Up Barriers

**K4, K8, & K12 CRASH-CERTIFIED BY
THE U.S. D.O.S. & U.S. D.O.D.**

DESIGN ♦ SALES ♦ TURNKEY INSTALLATIONS ♦ MAINTENANCE ♦ SERVICE & REPAIRS 24/7

OUR CREDENTIALS:

- Technicians are Trained and Certified
- Canadian Welding Bureau (CWB) Certified Welding Company
- Technicians & Installers are members of Iron Workers Local 721
- ESA/ECRA Licensed Electrical Contractor

- IDEA Accredited
- Electricians are Members of IBEW Local 353
- Our Workers have Full WSIB Coverage
- 35 Radio & GPS Equipped Trucks

- \$25,000,000.00 Liability Insurance
- Bonding Available where Required
- Better Business Bureau Accredited
- In Business Since 1977

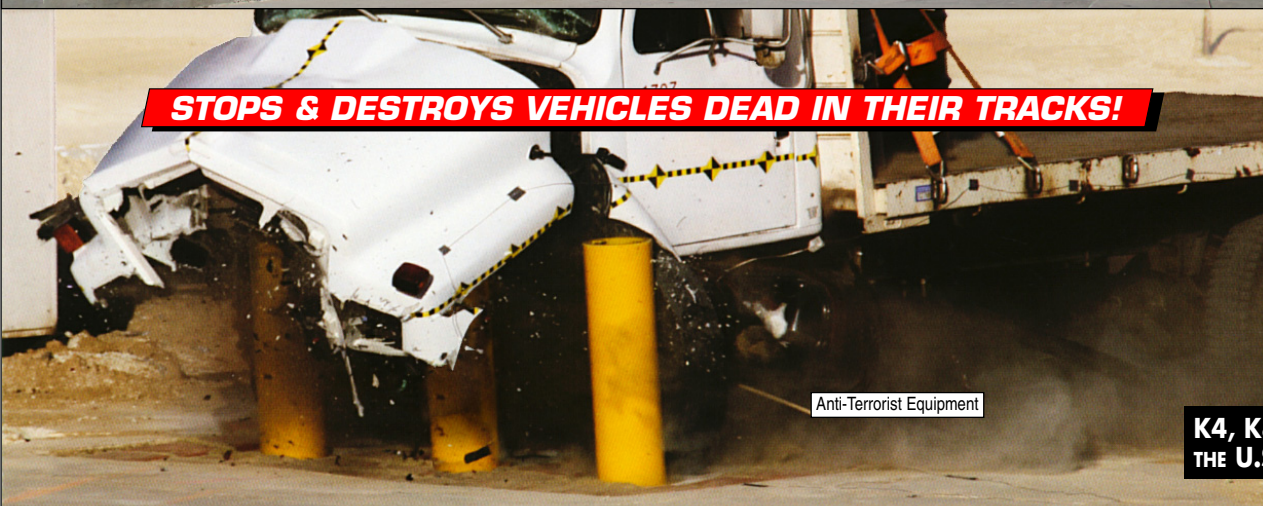
**24/7
EMERGENCY SERVICE
905-828-7000**



Fixed Stainless Steel Bollards



Retractable Bollards with Bullet Resistant Guard House



STOPS & DESTROYS VEHICLES DEAD IN THEIR TRACKS!

Anti-Terrorist Equipment

Superior Bollard Systems is a premier Canadian manufacturer, distributor and installer of the widest selection of security bollards from around the world. We take pride in our ability to bring our customers quality products and fast, reliable service at competitive prices. You can request a quote on our web site or contact us with your inquiries and orders.

TRUST YOUR SECURITY NEEDS TO THE COMPANY THAT'S BEEN DOING IT SINCE 1977

BOLLARDS CAN BE BEAUTIFUL: Architecturally-Enhanced High Security Bollard Systems

Create the look you wantfaceted, fluted, tapered, rings, and ripples, colours, pillars, shields, emblems, logos....you decide.



K8 Rated Fixed Steel Bollards

FREQUENTLY ASKED QUESTIONS

Bollards come in many different shapes and sizes. Deciding what type of bollard is needed for your application can be a difficult task. The following frequently asked questions should clear up most questions concerning the types of bollards as well as their use and application.

1. What type of bollard should I use?
2. What is the difference between bollards?
3. What type of footing or embedment do I need to use?
4. What if there are utilities and underground pipes that I am not aware of?
5. I have a parking structure, can I core drill into the suspended slab?
6. I have a need to shut down certain parts of a street at certain times for Farmer's Market, events, parades, etc. What should I use?
7. I have a very sensitive, high security project that needs bollards than can stop a speeding truck full of explosives from penetrating the first line of perimeter security. What should I use?
8. I need a big bollard for a medium to high security application, but I also need to be able to remove it occasionally. What should I use?
9. What are your bollards made from?
10. What are the sizes/diameters of the bollards?
11. On a manually operated bollard, what is the difference or advantages of an internal locking bollard and an external locking bollard?
12. What are the differences and/or advantages of electro-mechanical bollards, pneumatic operated bollards or a hydraulically operated bollards?
13. Is the base plate mounted bollard as strong as a fixed embedded bollard?
14. What is the expected delivery time from when I place the order?

Call Superior Now! We have all the answers for you. 905-828-7000

DESIGN ♦ SALES ♦ TURNKEY INSTALLATIONS ♦ MAINTENANCE ♦ SERVICE & REPAIRS 24/7

SUPERIOR DECORATIVE BOLLARDS - FIXED & REMOVABLE

DECORATIVE BOLLARDS: AESTHETICALLY PLEASING SECURITY

Superior Security Decorative Bollards add exclusive architectural accents to your perimeter security, landscape architecture, traffic control and streetscape projects. We offer high-strength premium metal Bollard models in steel, cast, cast ductile iron and light-weight aluminum. Installation options are available for virtually any construction setting – decorative retrofit of existing pipe Bollards, architectural covers for new pipe Bollards, removable Bollards, removable Bollards for emergency access, or for use as various stand-alone site features. Whether you need your Bollards to be installed on new concrete, existing concrete, asphalt, landscaping or any other surface, trust your traffic control needs to the company that has been doing it since 1977.

STEEL • CAST DUCTILE IRON • ALUMINUM



CUSTOMIZATION TO MEET YOUR NEEDS



Our powder coated Bollards can be customized to meet a wide variety of requirements; we have several popular standard colours available, as well as a large selection of mounting options and accessories. All of our Bollards can be customized to add chain links for maximum pedestrian and vehicular control.

SUPERIOR *Fixed Bollards*

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Superior Fixed Bollards add protection to your facility, prevent damage to your equipment and also provide a safer working environment for your employees and visitors. Superior offers bollards in a wide variety of styles and colours. The natural solid appeal of Superior Bollards provide a distinct aesthetic enhancement to any property.

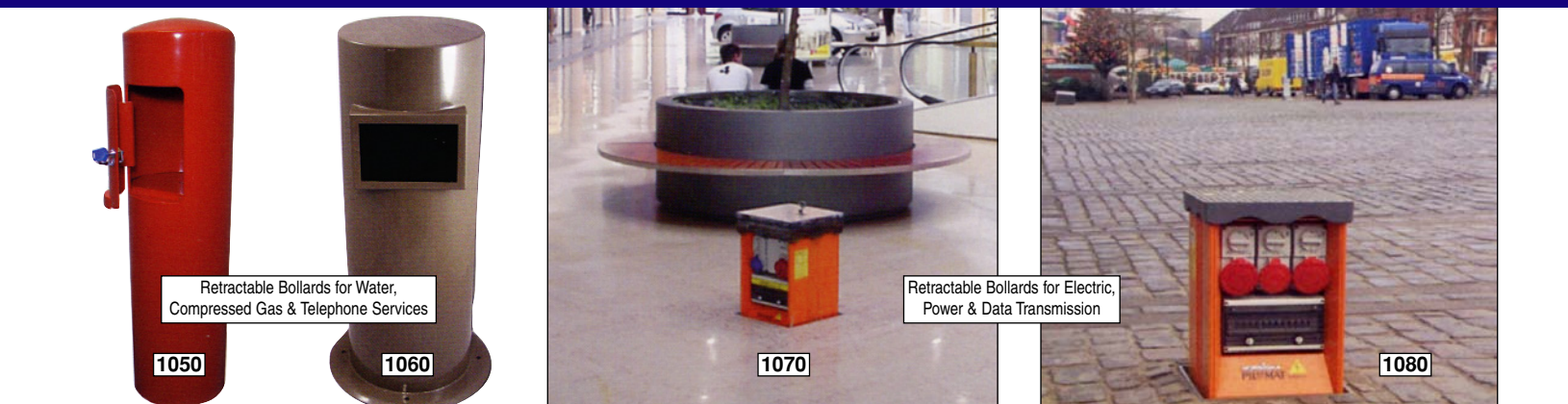
FIXED CONCRETE DECORATIVE BOLLARDS: *AESTHETICALLY PLEASING SECURITY*



LIGHTED SECURITY BOLLARDS



SPECIALTY BOLLARDS



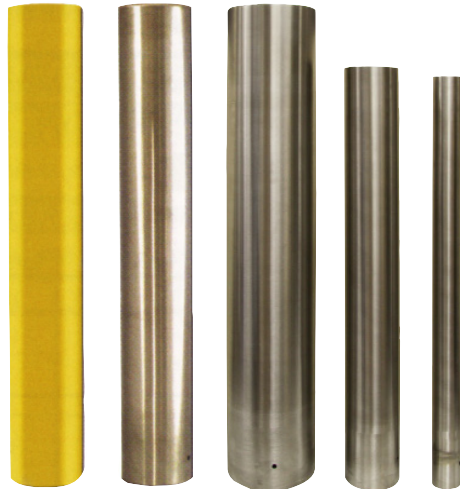
Superior Utility Retractable Bollards are ideal for the supply of Electric power, telephone services, data transmission, compressed air and other services for both indoor and outdoor environments, for example: markets, squares, areas used for entertainment events, sport centres, shopping centres, trade fair pavilions, conference halls etc.

SUPERIOR *Fixed* BOLLARDS

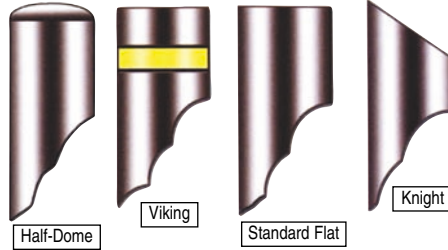
Tel: (905) 828-7000

Superior Fixed Bollards add protection to your facility, prevent damage to your equipment and also provide a safer working environment for your employees and visitors. For most installations, fixed post security bollards provide solid, uncompromising protection against vehicle incursion. For locations where surface penetration is impractical or impossible, Superior offers engineered plate-mounted bollards in steel or stainless steel. For some sensitive government institutions we offer Crash Certified models from K4, K8, and K12 level.

FIXED BOLLARDS



BOLLARD CAP CHOICES



Choose from a variety of styles to top off your bollard. Choose from 180 Powder coat colours.

STEEL • ALUMINUM • STAINLESS STEEL

FIXED POST BOLLARDS

Diameter	Above	Below	Length
76mm (3")	1200mm (48")	1200mm (48")	2400mm (96")
100mm (4")	1200mm (48")	1200mm (48")	2400mm (96")
127mm (5")	1200mm (48")	1200mm (48")	2400mm (96")
150mm (6")	1200mm (48")	1200mm (48")	2400mm (96")
203mm (8")	1200mm (48")	1200mm (48")	2400mm (96")
254mm (10")	1200mm (48")	1200mm (48")	2400mm (96")
305mm (12")	1200mm (48")	1200mm (48")	2400mm (96")
356mm (14")	1200mm (48")	1200mm (48")	2400mm (96")

- Longer Bollard Length's Available
- Decorative Sleeves
- Highly Reflective PVC Sleeves
- Variety of Colour Finishes
- Personalized Models Available

CRASH RATED FIXED BOLLARDS



Crash Rated Stainless Steel Fixed Bollards

CRASH RATED FIXED BOLLARDS K4, K8, K12

Model	Diameter	Crash Rating
SB-6-36	150mm (6")	6,803.9kg @ 48.3kph (K4/M30) (15,000 lbs @ 30mph)
SB-8-36	203mm (8")	6,803kg @ 48.3kph (K4/M30) (15,000mph @ 30mph)
SB-10-36	254mm (10")	6,803kg @ 64.4kph (K12/M50) (15,000lbs @ 50mph)

- Decorative Design Options
- Integrated Lighting Options
- Pedestrian Friendly
- Stainless Steel Options

STEEL • STAINLESS STEEL

CRASH RATED FIXED BOLLARDS WITH CABLE



Crash Rated Fixed Bollards with Cable

CRASH RATED FIXED BOLLARDS WITH CABLE

Diameter	Above	Below	Length
203mm (8")	1200mm (48")	1200mm (48")	2400mm (96")
254mm (10")	1200mm (48")	1200mm (48")	2400mm (96")
305mm (12")	1200mm (48")	1200mm (48")	2400mm (96")

- High Security
- Cost Effective Solution
- Forced Entry Prevention
- DOS Certified Fence
- Scalable to K12, K8, and K4 Ratings

STEEL • STAINLESS STEEL

PLASTIC BOLLARD COVERS



Plastic Bollard Covers

PLASTIC BOLLARD COVERS

Nominal size	Length
100mm (4")	1321mm to 1626mm (52" to 64")
178mm (7")	1321mm to 1829mm (52" to 72")
203mm (8")	1829mm (72")
279mm (11")	1829mm (72")

- 1/8" Thick High Density Polyethylene
- UV Protected
- 3M Reflective Tape Colours.
- Variety of Colour Finishes
- Personalized Models Available

SUPERIOR REMOVABLE & FOLDING BOLLARDS

Superior Removable & Folding Bollards are economical, physical deterrents, that can prevent unauthorized parking and restrict unauthorized vehicles, but always allow pedestrians to browse freely 24/7. When the bollards are unlocked and deactivated authorized and large objects can pass through the opening. These type of bollards do not require electrical controls to operate thereby making them the most economical to install & maintain.

REMOVABLE BOLLARDS: EXTERNAL PAD LOCKING: AESTHETICALLY PLEASING SECURITY



Decorative Removable Bollard with External Pad Locking



Bollard Removed & Cover/Lid Flush with Pavement



Cast Ductile Iron

REMOVABLE BOLLARDS			
Diameter	Above	Below	Length
114mm (4-1/2")	1000mm (39-1/2")	178mm (7")	1175mm (46-1/4")

- Available in a Wide Variety of Styles & Shapes
- Anti-Ram Models Available
- Powder Coat Finishes Available in 180 Colours

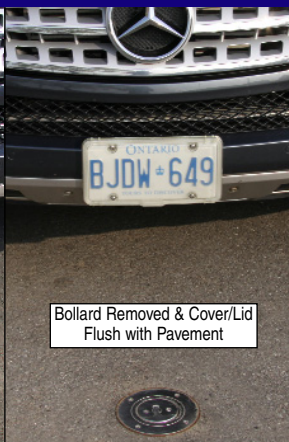
STEEL • CAST DUCTILE IRON • ALUMINUM

In-Ground Socket

REMOVABLE BOLLARDS: EXTERNAL PAD LOCKING



Decorative Removable Bollard with External Pad Locking



Bollard Removed & Cover/Lid Flush with Pavement



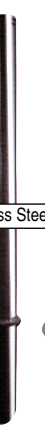
Steel



Aluminum



Stainless Steel



Steel



Stainless Steel



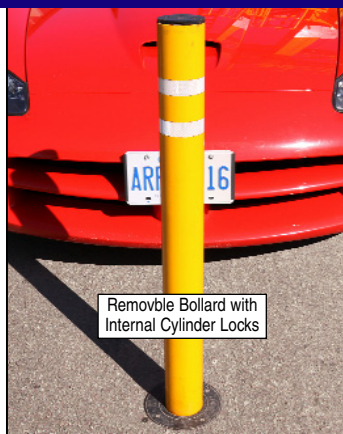
In-Ground Socket

REMOVABLE BOLLARDS			
Diameter	Above	Below	Length
76mm (3")	900mm (36")	305mm (12")	1200mm (48")
100mm (4")	900mm (36")	305mm (12")	1200mm (48")
127mm (5")	900mm (36")	305mm (12")	1200mm (48")
150mm (6")	900mm (36")	305mm (12")	1200mm (48")
203mm (8")	900mm (36")	305mm (12")	1200mm (48")
254mm (10")	900mm (36")	305mm (12")	1200mm (48")
305mm (12")	900mm (36")	305mm (12")	1200mm (48")

- Available With High Security Wall Thickness For Extra Stopping Power.
- Longer Bollard Lengths Available
- Powder Coat Finishes Available in 180 Colours

STEEL • ALUMINUM • STAINLESS STEEL

REMOVABLE BOLLARDS: INTERNAL CYLINDER LOCKING



Removable Bollard with Internal Cylinder Locks



Bollard Removed & Cover/Lid Flush with Pavement



Stainless Steel

In-Ground Socket

REMOVABLE BOLLARDS			
Diameter	Above	Below	Length
76mm (3")	900mm (36")	305mm (12")	1200mm (48")
100mm (4")	900mm (36")	305mm (12")	1200mm (48")
127mm (5")	900mm (36")	305mm (12")	1200mm (48")
150mm (6")	900mm (36")	305mm (12")	1200mm (48")
203mm (8")	900mm (36")	305mm (12")	1200mm (48")
254mm (10")	900mm (36")	305mm (12")	1200mm (48")
305mm (12")	900mm (36")	305mm (12")	1200mm (48")

- Available With High Security Wall Thickness For Extra Stopping Power.
- Longer Bollard Lengths Available
- Powder Coat Finishes Available in 180 Colours

STEEL • ALUMINUM • STAINLESS STEEL

FOLDING BOLLARDS: EXTERNAL PAD LOCKING



Locks in Up Position for Security



Folds Down for Access

FOLDING BOLLARDS

Diameter	Above
76mm (3")	900mm (36")
100mm (4")	900mm (36")

- Square Tubing Construction
- Base Plate Bolts Flush With Driveway
- Folds Down For Access
- Locks in Up Or Down Position
- Powder Coat Finishes Available in 180 Colours

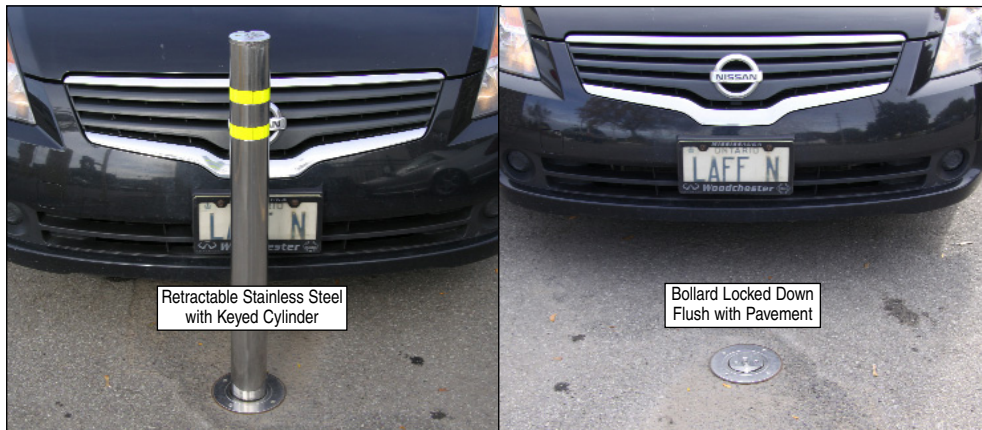
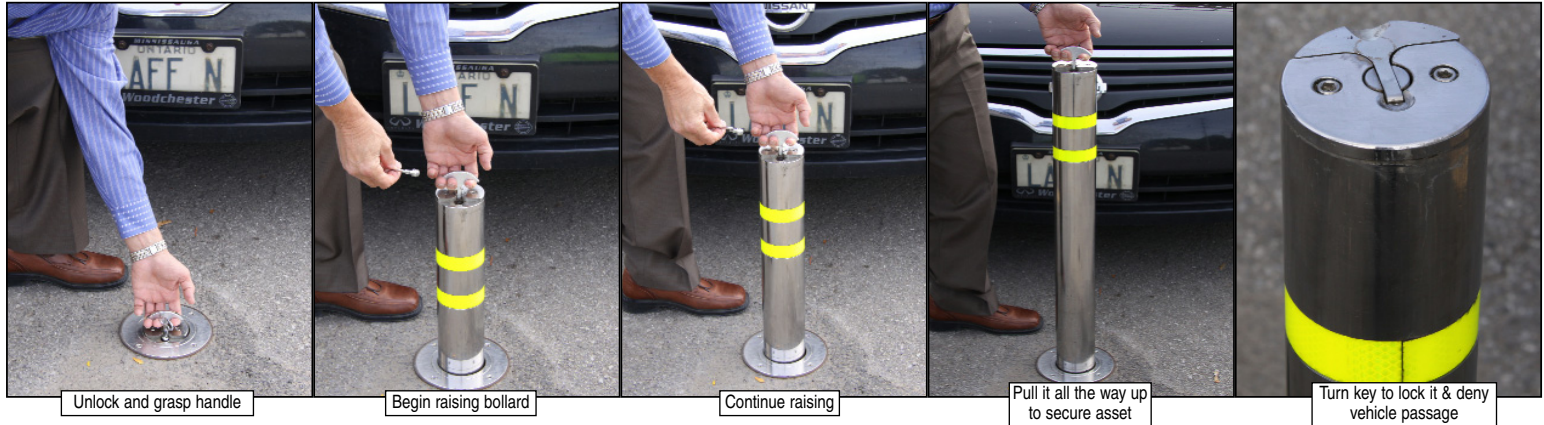
STEEL • ALUMINUM • STAINLESS STEEL

SUPERIOR MANUAL PUSH-DOWN PULL-UP BOLLARDS

Our entry level line of manually operated Pull Up-Push Down Bollards are available with internal cylinder locks. When the bollard retracts, the top of the bollard is flush with the pavement neatly locked with a secure key. These models are manufactured from Decorative Steel, Aluminum, Steel and Type 304 Stainless Steel for long-lasting durability, low maintenance and ease of installation and operation. These manually operated bollards are perfect for all of your light security needs. From traffic control to limited access pathways, these bollards are the obvious choice for ease of use and economical, maintenance-free operation.

MANUAL PUSH-DOWN PULL-UP RETRACTABLE BOLLARDS: INTERNAL LOCK SYSTEM

Superior Manual Push-Down Pull-Up Retractable Bollards are an economical physical deterrent that can prevent unauthorized parking 24/7. They are easily operated to allow access to occasional authorized vehicles only. Restricts vehicles but allows pedestrians to browse freely.



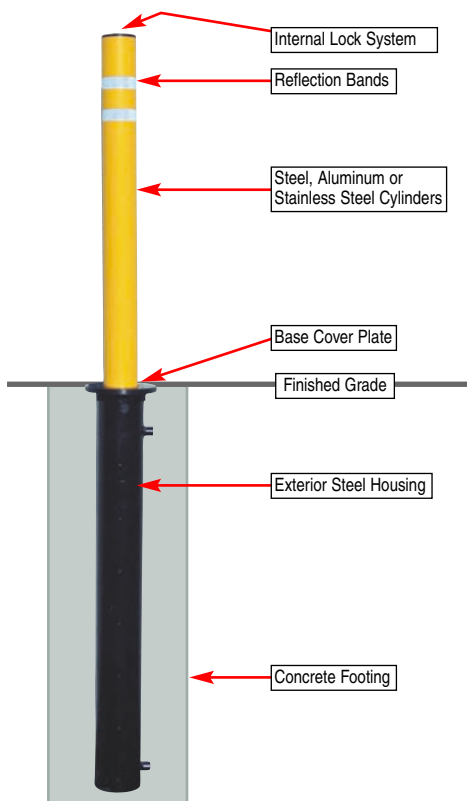
MANUAL PUSH-DOWN PULL-UP BOLLARDS

AVAILABLE SIZES:

Diameter	Above Ground	Below Ground
89mm (3.5")	900mm (36")	1200mm (48")
114mm (4.5")	900mm (36")	1200mm (48")
133mm (5.25")	900mm (36")	1200mm (48")

- Available With High Security Wall Thickness For Extra Stopping Power.
- Powder Coat Finishes Available in 180 Colours

STEEL • ALUMINUM • STAINLESS STEEL



SUPERIOR SEMI-AUTOMATIC BOLLARDS

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Activated with a manual key inserted in a slot on top of the bollard. It then automatically rises and locks. To retract the bollard, the manual key unlocks it, then foot pressure pushes it down flush to the ground and it locks again. Concealed bollards guarantee free pedestrian flow but manage vehicle traffic or limited parking. They do not disfigure the characteristics of the environment.

SEMI-AUTOMATIC BOLLARDS

Superior Semi-Automatic Bollards should primarily be used in areas of occasional traffic control. They do not use electricity and electronic control systems thereby saving costs.



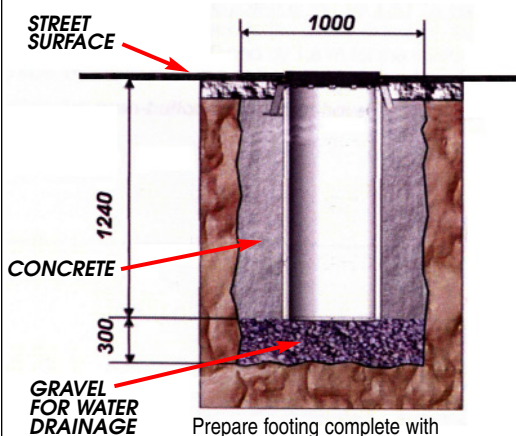
FEATURES & BENEFITS:

- Semi-Automatic for occasional traffic use
- Unlocks with key
- Allows pedestrians to browse freely
- Allows access to authorized vehicles only
- Does not disfigure the characteristics of the surroundings
- A variety of colours to help blend in with the surroundings
- Easily lifts up with gas spring assistance
- Easily pushes down flush to pavement with your foot
- Locks down with key for vehicle passage
- Physical deterrent

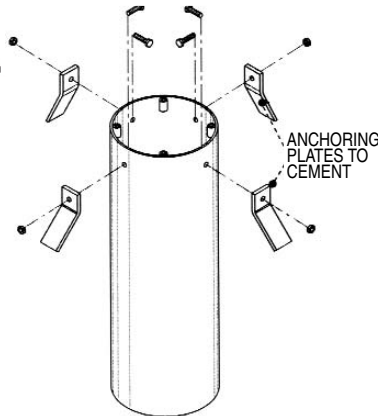
AVAILABLE SIZES:

Diameter	Above Ground	Below Ground
114mm (4.5")	900mm (36")	1200mm (48")
133mm (5.25")	900mm (36")	1200mm (48")
168mm (6-5/8")	750mm (30")	1200mm (48")
220mm (8-5/8")	750mm (30")	1200mm (48")
275mm (10-13/16")	750mm (30")	1200mm (48")

PIT PREPARATION

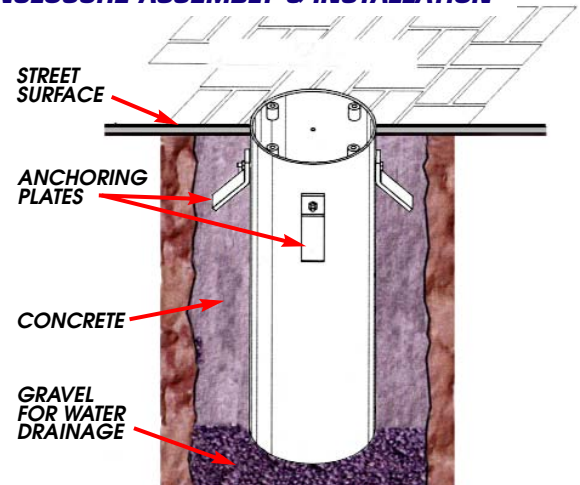


Prepare footing complete with 300mm gravel to absorb water. Water drain with sump pump is available where it is required.



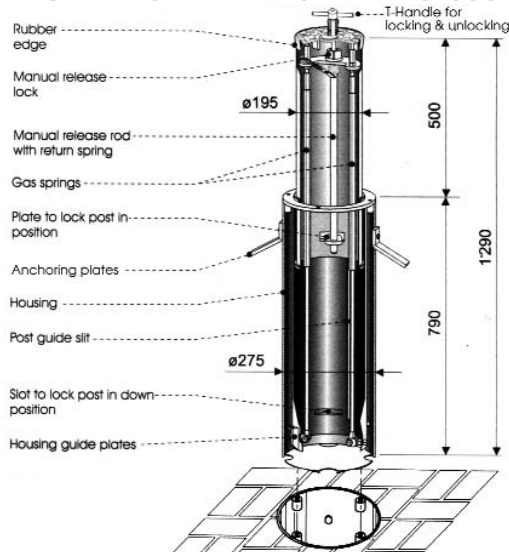
Attach steel plates to the enclosure and place into the pit for the concrete pour.

ENCLOSURE ASSEMBLY & INSTALLATION



The enclosure is positioned level and plumb into the roadway. Concrete is poured around the enclosure and filled to the top for a solid encasement of the enclosure

FITTING THE BOLLARD INTO THE ENCLOSURE

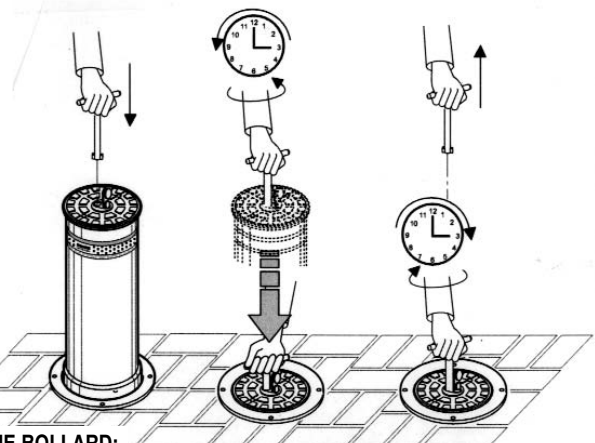


The bollard is ready to be lowered into the enclosure with the surface cover plate firmly screwed to the enclosure.

RAISING & LOWERING THE BOLLARD

TO LOWER THE BOLLARD:

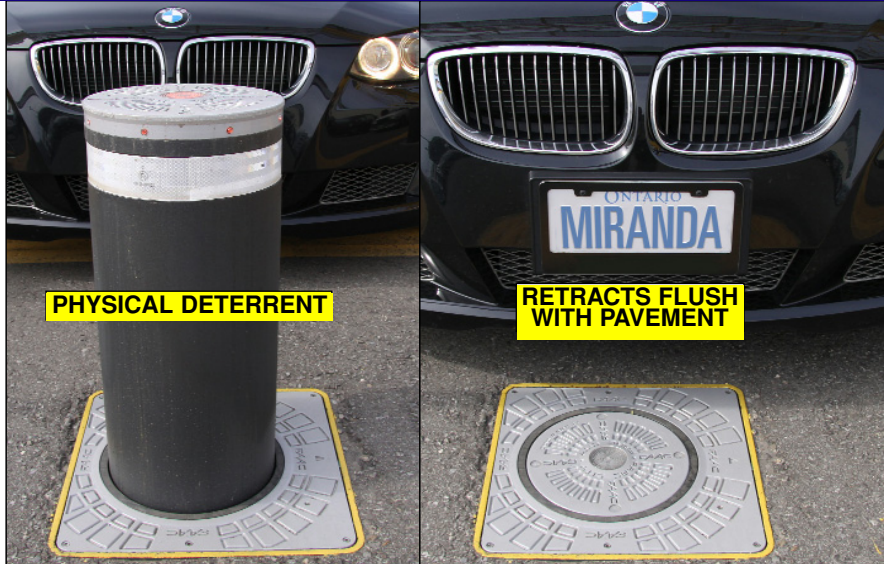
Insert the T-handle into the lock and turn the T-handle anti clock wise. Push the bollard down flush with pavement and turn the T-handle clock wise to lock it flush with the pavement.



TO RAISE THE BOLLARD:

Insert the T-handle into the lock and turn the T-handle anti clockwise to unlock and lift the bollard up. Once the bollard is up you turn the T-handle clockwise to lock it in up position.

RETRACTABLE BOLLARDS FOR ASSET PROTECTION & TRAFFIC CONTROL



RETRACTABLE BOLLARDS

- Fully automatic for constant use
- Retracts itself flush with the pavement
- Does not disfigure the characteristics of the surroundings
- A wide variety of colours to help blend in with surroundings
- Allows access to authorized vehicles only
- Allows pedestrians to browse freely
- Available with a large variety of accessories
- Locks down automatically for vehicle passage
- Fierce Physical deterrent



INTELLIGENT ASSET PROTECTION

- Personal Asset Protection
- Automatic Operation
- Radio Control Operation
- Does Not Disfigure Property
- Allows Pedestrian Traffic
- Fierce Physical Deterrent

**FULLY
AUTOMATIC**



INTELLIGENT TRAFFIC CONTROL

- Blocks off roads for special street events
- Automatically opens & closes roads with timers
- Traffic control can block off areas at touch of a button
- Restricts vehicle traffic
- Allows access to authorized vehicles only
- Allows pedestrians traffic
- Fierce Physical Deterrent

Call Superior Now! We have all the answers for you. 905-828-7000

SUPERIOR CRASH CERTIFIED BOLLARDS

PROTECTING PEDESTRIANS & PROPERTY



K4 DEEP MOUNT STAINLESS STEEL BOLLARDS

- Allows pedestrian traffic
- Restricts vehicle traffic
- Protects property



K8 SHALLOW MOUNT STEEL BOLLARDS

CONSTRUCTION BENEFITS

- Minimal site disruption
- 100mm (4") to 150mm (6") bury depth
- Less concrete than traditional bollards
- Quicker installation



K12 SHALLOW MOUNT STAINLESS STEEL BOLLARDS

- Restricts vehicle traffic
- Allows access to authorized vehicles only
- Allows pedestrian traffic

DEEP MOUNT FIXED BOLLARDS

FEATURES

- K4, K8, K12 DOS Crash Test Certified
- Foundation up to 1200mm (48") Deep
- Steel
- Stainless Steel
- High Visibility Custom Paint Finishes
- Reflective Banding
- Decorative Sleeves
- Physical Deterrent

SHALLOW MOUNT FIXED BOLLARDS CONSTRUCTION

FEATURES

- M30/P1 (F4 DOS) Anti-Ram Rating
- 600mm (12") Diameter Bollard
- Shallow Installation Depth
- Black E-Coat & Powder Finish

OPTIONS

- K12 Engineered - 600mm (12") Dia.
- K8 Engineered/PAS68 certified - 600mm (12") Dia.
- K4 Engineered/PAS68 certified - 200mm (8") Dia.
- High Visibility Custom Paint Finishes
- Reflective Banding
- Decorative Sleeves
- Physical Deterrent

SHALLOW MOUNT FIXED BOLLARDS

FEATURES

- K4, K8, K12 DOS Crash Test Certified
- Steel
- Stainless Steel
- High Visibility Custom Paint Finishes
- Reflective Banding
- Decorative Sleeves
- Physical Deterrent

CONTROLLED ACCESS SYSTEMS

10 WE DO IT ALL! Sales, Installation, Trenching, Electrical, Access Controls, Concrete Work, Interfacing & 24/7 Support

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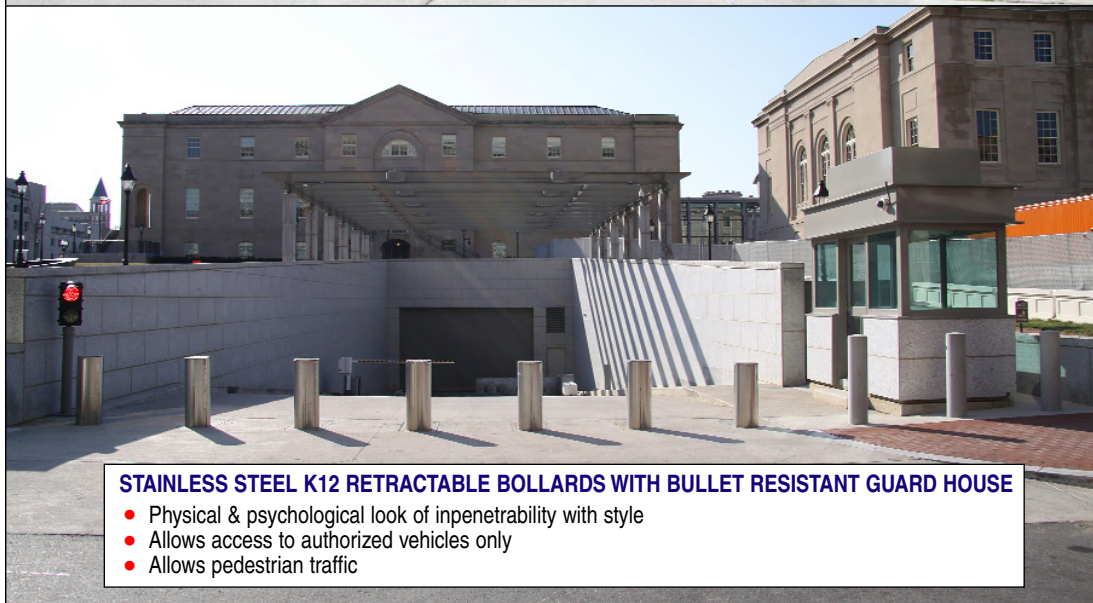
K4 STAINLESS STEEL REMOVABLE BOLLARDS

- Restricts vehicle traffic
- Allows access to authorized vehicles only
- Allows pedestrian traffic



K4 STAINLESS STEEL SEMI-AUTOMATIC BOLLARDS

- Allows pedestrian traffic
- Restricts vehicle traffic
- Protects property



STAINLESS STEEL K12 RETRACTABLE BOLLARDS WITH BULLET RESISTANT GUARD HOUSE

- Physical & psychological look of impenetrability with style
- Allows access to authorized vehicles only
- Allows pedestrian traffic

REMOVABLE BOLLARDS

FEATURES

- K4, K8, K12 DOS Crash Test Certified
- Internal Locking Mechanism
- Hidden Lifting Lug
- Shallow Foundation Technology
- Steel
- Stainless Steel
- High Visibility Custom Paint Finishes
- Reflective Banding
- Decorative Sleeves
- Physical Deterrent

SEMI-AUTOMATIC BOLLARDS

FEATURES

- K4, K8, K12 DOS Crash Test Certified
- Semi-Automatic for Occasional Traffic Use
- Internal Locking Mechanism
- Easily Lifts Up with Gas Spring Assistance
- Easily Pushes Down Flush to Pavement with Your Foot
- Locks Down with Key for Vehicle Passage
- High Visibility Custom Paint Finishes
- Reflective Banding
- Decorative Sleeves
- Physical Deterrent

RETRACTABLE BOLLARDS

FEATURES

- K4, K8, K12 DOS Crash Test Certified
- Foundation up to 1200mm (48") Deep
- Full Guard Height is 965mm (38")
- Steel
- Stainless Steel
- High Visibility Custom Paint Finishes
- Electric, Pneumatic, Hydraulic
- Battery Back Up
- Bollard Arrays of 1 to 6 or More Can be Arranged
- Reflective Banding
- Decorative Sleeves
- Physical Deterrent

APPLICATIONS:

- | | | | |
|------------------------------|---|--------------------------------|---------------------------------------|
| • AIRPORTS | • FEDERAL COURTHOUSES | • MUSEUMS | • POLICE STATIONS |
| • BORDER SECURITY OPERATIONS | • FOOD PRODUCTION & PROCESSING | • NATIONAL LABORATORIES | • POWER PLANTS & POWER GRIDS |
| • CONSULATES | • GOVERNMENT PRIME MILITARY CONTRACTORS | • NUCLEAR PLANTS | • RAIL TERMINALS, PASSENGER & FREIGHT |
| • EMBASSIES | • HISTORICAL SITES | • OIL & GAS PIPELINE TERMINALS | • SEAPORTS & PORT TERMINALS |
| • DISTRIBUTION FACILITIES | • INDUSTRIAL FACILITIES | • OIL & GAS STORAGE FACILITIES | • WATER RESERVOIRS, SYSTEMS, & DAMS |
| • FEDERAL BUILDINGS | • MILITARY BASES & ARSENALS | • PETROLEUM REFINERIES | • OTHER CRITICAL INFRASTRUCTURE |



Superior is your One Stop Shop for all your security needs, giving you total flexibility in evaluating and implementing the best solution for your security needs.

OVERVIEW

A total systems approach to access control and physical security requires integrating all security components including fences, gates, lights, alarms, etc. Because of terrorist tactics, vehicle bollards become essential elements in an effective physical security program. When integrated properly into a total system, vehicle bollards can satisfactorily meet this threat to sensitive resources.

THREATS TO INSTALLATIONS AND FACILITIES

Threats to installations and facilities may range from minor violations of established rules or procedures to attempted theft of Nuclear weapons. Threats can be from individuals with authorized access or from individuals who have little or no affiliation with the installation. Levels of force, number of personnel involved, tools, and methods used vary and are determined by the perpetrator. The Bollards manufactured, distributed, and installed by Superior Door & Gate Systems Inc. are designed primarily to protect the assets located within the installation.

THREAT ASSESSMENTS

It is the responsibility of the appropriate agency to provide threat evaluations for the installation or facility. When evaluating vehicle bollards, particular attention must be focused on the weights and velocities of vehicles that would be used to attempt penetration into sensitive areas. Failing to use the proper equipment to counter the threat may lead to a false sense of security.

BARRIER CAPABILITY

Vehicle crash resistant bollard requirements may not be applicable to all installations due to local site configurations. Vehicle bollards should be used at vehicle access points to sensitive areas. Supplemental gate and fencing reinforcements, may also be needed to optimize vehicle bollard effectiveness.

BARRIER SELECTION

In designing the bollard system consider the use of a passive or active system; the requirements for safety, reliability, and maintainability; operation in environmental extremes; and cost. Normally, an active system with the bollard in the active position, which must be deactivated to permit access, is preferable to one that must be activated to prevent access. The bollard must be capable of safe operation and activation from a remote location and must have high reliability.

THE PROBLEM

A vehicle moving towards a bollard has a certain kinetic energy which is one measure of how much "hitting power" it possesses. Mathematically, kinetic energy is derived from the vehicle velocity and its weight (mass). On impact some of this energy is converted to heat, sound and permanent deformation of the vehicle. The remainder of the energy must be absorbed by the bollard if the vehicle is to be stopped. The amount of energy remaining, varies depending on many factors primary of which is the velocity of the vehicle at the moment of impact. The amount of kinetic energy posed by a vehicle changes as the square of its velocity. For example, a vehicle moving at 90 KPH has twenty, five times as much kinetic energy as it would have moving at 16 KPH. An armored car weighing 30 times as much as a compact car and moving at 10 MPH would have LESS HITTING POWER than the compact moving at 100 KPH !

MINIMIZING IMPACT

Because of the relationship of velocity to the total kinetic energy possessed by the vehicle, every effort should be made by the security engineer to force the vehicle to slow down before it reaches the barricade. The most frequently used technique is to require a sharp turn immediately in front of the bollard. If the car speed can be reduced by half, then the "Hitting Power" is reduced by four times. If the speed can be reduced by 2/3rds then the force of impact will be reduced by nine times. Where ever possible avoid a long straight shot at a control point. Precautions should be taken that an attacking car cannot make a "corner cutting shot" at a bollard. Often only a light post defines a turning point and a speeding car can take it out and not even hesitate. Superior's security engineers are available to review your site layout and make specific recommendations to help optimize your entrance security.

★ Call Superior Now! We have all the answers for you. 905-828-7000 ★

SUPERIOR *ANTI-TERRORIST BOLLARDS*

ANTI-TERRORIST CRASH-CERTIFIED BOLLARDS



BEFORE IMPACT

Our Anti-Terrorist Equipment is tested by the U.S. Department of State (DOS) Physical Security Division. Each product undergoes an impact test to establish its performance. During this test, the vehicle is accelerated to reach the desired speed. To pass the test, the load area of the vehicle must not penetrate the front face of the barrier by more than 1m (3 ft.). Test variables are standardized to arrive at a single vehicle type of mass, producing the following consistent rating specifications:

Rating	Vehicle Weight	Vehicle Speed	Max Penetration	Spacing
K12	6,800 Kg. (15,000 lbs.)	80 Kph (50 Mph)	1m (36")	1m (36")C/C
K8	6,800 Kg. (15,000 lbs.)	64 Kph (40 Mph)	1m (36")	1m (36")C/C
K4	6,800 Kg. (15,000 lbs.)	48 Kph (30 Mph)	1m (36")	1m (36")C/C



STOPS AND DESTROYS VEHICLES DEAD IN THEIR TRACKS

FIERCE VISUAL, PHYSICAL & MENTAL DETERRENT



Vertical Lift Gate with Barrier Gates and Impregnable Retractable Bollards

APPLICATIONS:

- AIRPORTS
 - BORDER SECURITY OPERATIONS
 - CONSULATES
 - EMBASSIES
 - DISTRIBUTION FACILITIES
 - FEDERAL BUILDINGS
- FEDERAL COURTHOUSES
 - FOOD PRODUCTION & PROCESSING
 - GOVERNMENT PRIME MILITARY CONTRACTORS
 - HISTORICAL SITES
 - INDUSTRIAL FACILITIES
 - MILITARY BASES & ARSENALS
- MUSEUMS
 - NATIONAL LABORATORIES
 - NUCLEAR PLANTS
 - OIL & GAS PIPELINE TERMINALS
 - OIL & GAS STORAGE FACILITIES
 - PETROLEUM REFINERIES
- POLICE STATIONS
 - POWER PLANTS & POWER GRIDS
 - RAIL TERMINALS, PASSENGER & FREIGHT
 - SEAPORTS & PORT TERMINALS
 - WATER RESERVOIRS, SYSTEMS, & DAMS
 - OTHER CRITICAL INFRASTRUCTURE



Excavating Service



Water Drainage Preparation



Placing Enclosures Into Position



PVC Conduit Installation



Pouring Concrete



Pouring & Vibrating Concrete



Filling Pit With Concrete



Screen Finishing Concrete



Concrete Broom Finished

APPLICATIONS:

- AIRPORTS
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SUPERIOR BOLLARD INSTALLATIONS

TURNKEY INSTALLATIONS - OUR SPECIALTY

SINCE
1977



Electricians Making Connections



Lowering Bollards Into Enclosures



Crown Installation



Bollards Final Adjustments



Bollards Armed



Bollards Armed & Barrier Gates Down

WE DO IT ALL!

- DESIGN
- SALES
- INSTALLATION
- SYSTEM INTEGRATION & SPECIFICATION SUPPORT
- TRENCHING
- BACKFILLING
- PAVING
- CONCRETE WORK
- GROUND RESTORATION
- WELDING SERVICES
- LIGHT & CAMERA POLES
- ELECTRICAL WORK
- SYSTEMS INTERFACING

SUPERIOR BOLLARDS

**SINCE
1977**

TRUST YOUR SECURITY NEEDS TO THE COMPANY THAT'S BEEN DOING IT SINCE 1977

THE COMPANY

"Our mission at Superior Door & Gate Systems Inc. is not just to satisfy our customers, but to amaze them!!"

Superior Door & Gate Systems Inc. has been the premier source of perimeter security solutions since 1977. Our unparalleled expertise allows us to provide you with an integrated solution customized to best satisfy your security needs, including design, fabrication, installation and 24/7 service. An ongoing commitment to improving quality, reliability, and safety of all our products, combined with an emphasis on service has allowed Superior Door & Gate Systems Inc. to maintain our premier position within the industry.

THE PRODUCT

Offering a complete range of Bollards, Security Fencing, Driveway Gates, Pedestrian Gates, Gate Operators, Traffic & Parking Systems, Forced Entry Resistant & Anti Terrorist Equipment. We also offer a full line of Access Controls & Video Surveillance Equipment plus the Construction Work required to integrate all the components to UL 325 and ASTM standards. Superior Door & Gate Systems can deliver a turnkey solution and install your entire security system needs including door and gate access locks and controls. Only one call to satisfy your entire security needs, from design/selection through to installation and ongoing service. Superior Door & Gate Systems is your turnkey solutions provider.

THE SUPPORT

Customer support is an ongoing concern, not only from the beginning of the project, but includes providing maintenance and emergency service whenever required. Our Service Technicians are highly trained professionals, available 24 hours per day, 7 days per week. Our desire and commitment is to provide you with the highest levels of quality workmanship and service, while at the same time maintaining a cost effective approach to your ongoing needs. Ask about our preventive maintenance service and benefits of having a service agreement.

CALL NOW! 905-828-7000
OR TOLL-FREE 1-888-384-2837

24^{HR}
EMERGENCY SERVICE
905 828-7000

**OUR PEOPLE MAKE
THE DIFFERENCE!!**

STOP
PROCEED THRU GATE
ON GREEN LIGHT ONLY
WARNING

SUPERIOR
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