



**CALPIPE
SECURITY
BOLLARDS**
A Division of
CALPIPE INDUSTRIES
INCORPORATED

Safety. Security. Solutions.

CALPIPE Security Bollards

- *Headquartered in Rancho Dominguez, CA, Calpipe Security Bollards (CSB) is a division of Calpipe Industries, Inc.*
- *CSB specializes in fixed, removable, lighted and retractable bollards made from carbon and stainless steel.*
- *CSB has a full range of products from simple industrial bollards to custom aesthetic designs, and crash tested vehicle stopping bollards that are used for anti-terrorist or high-threat applications.*

For more information about Calpipe Security Bollards, visit our website at calpipebollards.com



Calpipe Security Bollards (CSB) is a division of Calpipe Industries, Inc. Since 1998, Calpipe has offered the industry's broadest range and largest selection of bollards from our own manufacturing facility in Rancho Dominguez, California. Headquartered in Southern California, CSB offers a wide range of safety and architectural bollards, as well as high security bollards for anti-terrorist and high-threat applications. CSB also offers fully customizable bollard solutions, available with a variety of features including lighted, removable, retractable, shallow-mount, and more.

Calpipe Security Bollards was tasked to create a removable bollard solution that would protect the public in Times Square from the threat of vehicular terrorist attacks. The bollards were to be installed between 42nd and 47th Streets, and at the cross-streets of 7th Avenue and Broadway. CSB's design and engineering personnel worked with the City of New York, the Times Square Alliance, and representatives of the NYPD and FDNY to satisfy specific security concerns. CSB also collaborated with the international architecture firm Snohetta, the security consultants at LiRo Group, and Tully Construction to complete the custom project.

TIMES SQUARE

CHALLENGE

- Calpipe Security Bollards was asked to create a removable bollard solution that would protect the public in Times Square from potential vehicular terrorist attacks.
- Design challenges arose due to the expansive underground infrastructure just feet below Times Square, including the NYC Subway system and underground utility lines.



- Shallow-mount removable bollards required customization since the base could not be embedded to standard depth.
- The bollards were to be installed between 42nd and 47th Streets, and at the cross-streets of 7th Avenue and Broadway.
- Calpipe Security Bollards engineering and design personnel worked with the City of NY, Times Square Alliance, and representatives of the NYPD and NYFD to specify all of the security and safety features of the removable bollards.
- The project team included Snohetta, LiRo Group, and Tully Construction.

CONSTRUCTION CONCERNS

Due to the high traffic and heavy pedestrian presence in Times Square, there were many safety and security requirements that had to be met during the design and manufacturing stage of the project. The bollards had to be removable and lockable so that authorized vehicles could access the protected area, without compromising the security of the system. Lastly, the project required shallow-mount bollards so that they would not conflict with NYC's subway system, which sits only feet below the surface.

PROJECT CHALLENGES AND SOLUTIONS

CSB provided over 200 stainless steel removable bollards. These Times Square Alliance approved bollards are installed in custom engineered locking embedment sleeves. These were designed and fabricated to allow for installation atop the city's sprawling underground infrastructure. A high security stainless steel lock and proprietary key was designed to accommodate existing FDNY and MTA tools. The custom lock and key required approval and review from the MTA, NYPD, FDNY and a number of other NYC agencies, in order to prevent conflicting demands and guarantee emergency access for any security, safety, fire, or medical emergency.

In order to accommodate NYC's underground infrastructure, a shallow embedment system for each bollard was designed and subjected to testing and analysis to confirm that the bollards and embedment sleeves would be able to withstand the dynamic loads resulting from vehicular impact.



SOLUTION

- Due to the high traffic and heavy pedestrian presence, the 200+ installed bollards had to be removable to allow emergency and maintenance vehicle access as needed.
- Bollards feature a tamper-resistant design to prevent theft and vandalism.
- 6" and 8" diameter Internal Locking Removable bollards with custom embedment sleeves were employed, with many aspects customized specifically for this project.



- The bollards and embedment sleeves are fabricated from Type 316 stainless steel.
- The bollards were also equipped with lifting rings to assist with removing the bollard.
- The only maintenance required for the stainless steel bollards is occasional wiping down with stainless steel cleaner in order to remove dirt and prevent stains.

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PROUDLY MADE IN AMERICA 

The bollards and embedment sleeves were manufactured from Type 316 stainless steel to withstand the harsh environments of New York streets. Additionally, the embedment sleeve lids were supplied with a custom finish that improves traction and reduces the dangers to pedestrians from slipping in wet or icy weather. The bollards were also equipped with lifting rings to reduce the effort required when installing or removing the bollards. Since maintenance was a concern for NYC officials, an architectural finish was added to the bollards, requiring nothing more than simple wipe-downs with stainless steel cleaner in order to remove dirt and preserve the aesthetics.

In consideration of the large crowds and other inherent factors at a location like Times Square, the bollards were designed to be tamper-resistant. Times Square accommodates millions of people per month, exposing the bollards to potential risks inherent with public interaction. CSB made sure the design and finishing details were such that no sharp edges existed that could injure pedestrians. Additionally, all moving components of the removable bollards were flush and sealed, eliminating the possibility of litter, such as gum and cigarette butts, from entering into embedment areas.

Each bollard met the following specification requirements:

- Manufactured from T316 stainless steel
- Custom geometric lock
- FEA static analysis required for each bollard
- "Buy America Act" compliant Materials Used
- 36" above grade height/ custom embedment
- #4 brushed finish
- Easily removed by two people in a few minutes
- Slipnot finish on embedment sleeve removable lid
- Adjusting locking mechanism
- Meet or exceed impact resistance requirements

CONCLUSION

Once all design criteria was established, the first articles were manufactured, installed, and tested. Upon further inspection, the order to proceed was given to Calpipe with the requirement that all 200+ bollards and embedment sleeves had to be fabricated, inspected, delivered, and installed in less than 90 days. Calpipe Security Bollards exceeded this requirement, delivering all of the products ahead of time so that Tully Construction was able to meet the installation deadline with time to spare.

The bollards are fully operable and currently installed throughout Times Square, providing safety and security to as many as 450,000 pedestrians each and every day.