

 bollard



**STEEL**

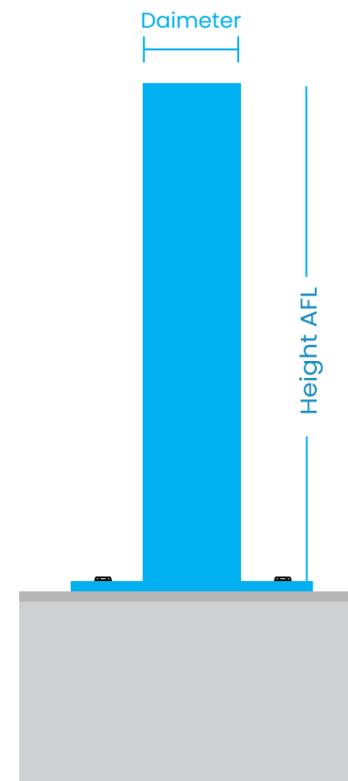
**BOLLARDS**



# SGB

## STEEL

### BOLTED FIXED BOLLARD



	SGB1	SGB2	SGB3	SGB4	SGB5	SGB6	SGB7
<b>Diameter</b>	101.6 mm 4 inch	114.3 mm 4.5 inch	141.3 mm 5.5 inch	168.3 mm 6.5 inch	219.1 mm 8.5 inch	273.0 mm 10.7 inch	323.9 mm 12.7 inch
<b>Wall Thickness (mm)</b>	2.11 3.05 5.49	2.11 3.05 5.74	2.11 3.05 3.96	2.77 3.40	2.77 3.76 6.35	3.40 4.19 4.78	3.96 4.57 4.78
<b>Height (mm)</b>	700 - 800 - 900 - 1000 - 1100						
<b>Material</b>	Structural Steel ASTM A500, Grade B						
<b>Top Cap</b>	Flat or Angle						
<b>Base Plate Size (mm)</b>	200 200 10	250 250 12	300 300 16	350 350 20	400 400 25	450 450 25	
<b>Bolts</b>	4 M12 100 mm	4 M16 120 mm	4 M16 120 mm	4 M20 150 mm	4 M20 160 mm	8 M24 200 mm	8 M24 200 mm
<b>Finish</b>	Galvanizing ASTM A123 / ISO 1461				Powder Coating ASTM D3359 / B117		
<b>Weight (kg)</b> @ 1000 mm height (per wall thickness)	8.5 10.8 16.5	11.9 14.5 21.7	13.4 16.6 19.7	23.0 25.6	34.7 39.9 53.6	55.0 60.3 64.2	72.3 77.2 78.8
<b>Impact Resistance/Car Speed (Kj/KPH)</b> 1.5t Car	0.6/3.2 0.9/3.8 1.5/4.9	0.8/3.6 1.1/4.3 1.9/5.7	1.2/4.4 1.7/5.3 2.1/6	2.2/6.1 2.7/6.7	3.7/8 5/9.2 8.2/11.9	7.1/11 8.7/12.2 9.9/13	11.6/14.2 13.4/15.2 14/15.5

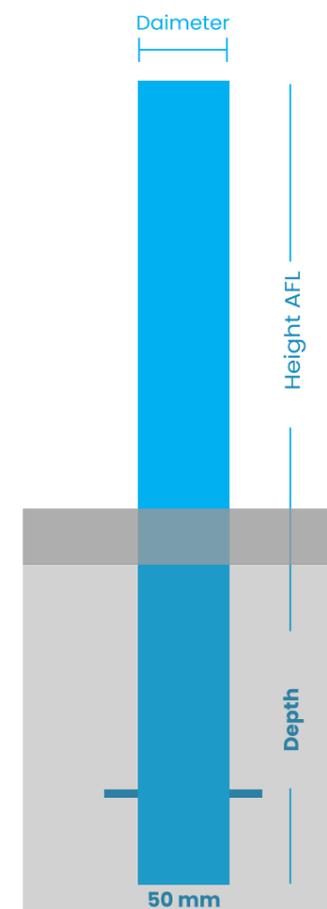
- Options**
- Reflective band
  - Name Plate/Logo
  - Custom Cap
  - UV resistance
  - Imm Groove
  - Base Plate cover
  - Chain Holders
  - Dome Top



# SGD

## STEEL

### DEEP FIXED BOLLARD



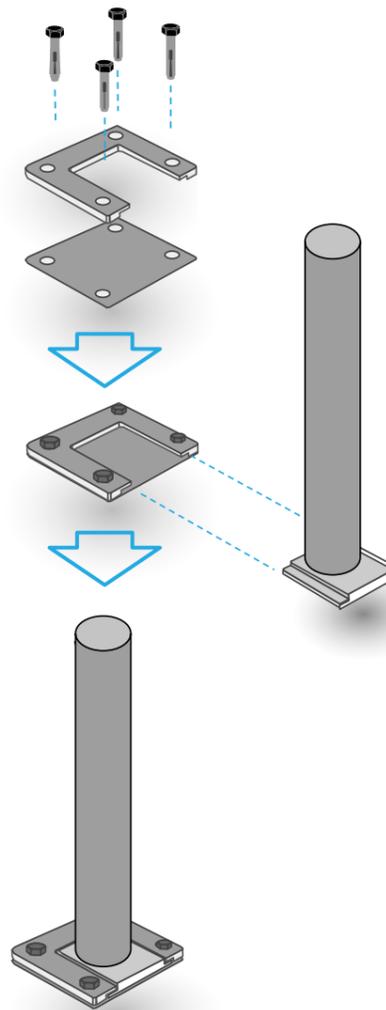
	SGD1	SGD2	SGD3	SGD4	SGD5	SGD6	SGD7
<b>Diameter</b>	101.6 mm 4 Inch	114.3 mm 4.5 Inch	141.3 mm 5.5 Inch	168.3 mm 6.5 Inch	219.1 mm 8.5 Inch	273.0 mm 10.7 Inch	323.9 mm 12.7 Inch
<b>Wall Thickness (mm)</b>	2.11 3.05 5.74	2.11 3.05 3.96	2.77 3.40 6.55	2.77 3.40 4.78	2.77 3.76 6.35	3.40 4.19 4.78	3.96 4.57 4.78
<b>Foundation Area (mm)</b>	300 300 mm	350 350 mm	400 400 mm	500 500 mm	650 650 mm	800 800 mm	950 950 mm
<b>Height/Depth (mm/mm)</b>	700/200 - 800/200 - 900/300 - 1000/350 - 1100/400						
<b>Material</b>	Structural Steel ASTM A500, Grade B						
<b>Top Cap</b>	Flat or Angle						
<b>Finish</b>	Galvanizing ASTM A123 / ISO 1461			Powder Coating ASTM D3359 / B117			
<b>Weight (kg) @ 1000 mm height (per wall thickness)</b>	7.1 10.2 18.7	8 11.5 14.8	13 15.9 29.1	15.6 19 26.5	20.3 27.5 45.8	31.1 38.2 43.5	43 49.5 51.8
<b>Impact Resistance/Car Speed (Kj/KPH) 1.5t Car</b>	0.7/3.2 0.9/3.9 1.6/5.1	0.8/3.6 1.1/4.3 1.4/4.9	1.6/5.2 1.9/5.7 3.5/7.7	2.3/6.2 2.7/6.8 3.8/8	3.8/8.1 5.1/9.3 8.4/12	7.2/11.1 8.8/12.3 10/13.1	11.8/14.3 13.6/15.3 14.2/15.6
<b>Options</b>	Reflective band Name Plate/Logo Custom Cap UV resistance			Imm Groove Chain Holders Concrete Filling Trim Ring Dome Top			



# RGB

## STEEL

### SLIDE-OUT REMOVABLE BOLLARD



**RGB1**

**RGB2**

<b>Diameter</b>	88.9 mm 3.5 Inch	101.6 mm 4 Inch
<b>Wall Thickness (mm)</b>	2.11 3.05	
<b>Height (mm)</b>	700 - 800 - 900 - 1000 - 1100	
<b>Material</b>	Structural Steel ASTM A500, Grade B	
<b>Top Cap</b>	Flat or Angle	
<b>Base Plate</b>	Galvanized Steel 160x160x18mm	
<b>Bolts</b>	4 x M12 x 100mm	
<b>Finish</b>	Galvanizing ASTM A123 / ISO 1461	Powder Coating ASTM D3359 / B117
<b>Weight (kg)</b> @ 1000 mm height (per wall thickness)	8.2 10.2	8.5 10.8
<b>Impact Resistance/ Car Speed</b> (Kj/KPH) 1.5t Car	0.5/2.8 0.7/3.4	0.7/3.2 0.9/3.9
<b>Options</b>	Reflective band Name Plate/Logo Custom Cap	Imm Groove Internal Cam Lock Dome Top UV resistance

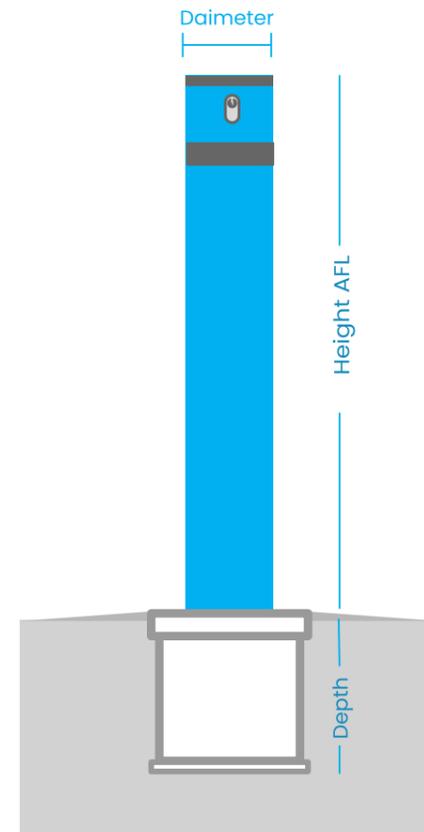




# RGD

## STEEL

### LIFT-OUT REMOVABLE BOLLARD



**Drainage**  
If soil is impermeable or groundwater is high, provide a **positive drain** to a nearby drain/sump (by others).

**RGD1** **RGD2** **RGD3** **RGD4** **RGD5**

	RGD1	RGD2	RGD3	RGD4	RGD5
<b>Diameter</b>	101.6 mm 4 Inch	114.3 mm 4.5 Inch	141.3 mm 5.5 Inch	168.3 mm 6.5 Inch	219.1 mm 8.5 Inch
<b>Wall Thickness (mm)</b>	2.11 3.05 5.74	2.11 3.05 3.96	2.77 3.40 6.55	2.77 3.40 4.78	2.77 3.76 6.35
<b>Height/Depth (mm/mm)</b>	700/200 - 800/200 - 900/250 - 1000/250 - 1100/250				
<b>Material</b>	Structural Steel <b>ASTM A500, Grade B</b>				
<b>Top Cap</b>	Flat or Angle				
<b>Foundation Area (mm)</b>	300x300	350x350	400x400	500x500	650x650
<b>Finish</b>	Galvanizing <b>ASTM A123 / ISO 1461</b>			Powder Coating <b>ASTM D3359 / B117</b>	
<b>Weight (kg)</b> @ 1000 mm height (per wall thickness)	11.4 14.3 22.1	14.0 17.2 20.3	20.6 23.2 36.3	27.2 30.4 37.4	37.0 43.6 60.7
<b>Impact Resistance/ Car Speed</b> (Kj/KPH) 1.5t Car	0.5/2.9 0.7/3.5 1.3/4.6	0.7/3.2 0.9/3.9 1.2/4.4	1.3/4.6 1.5/5.1 2.8/6.9	1.8/5.5 2.2/6.1 3/7.2	3.1/7.2 4.1/8.4 6.7/10.7

**Options**

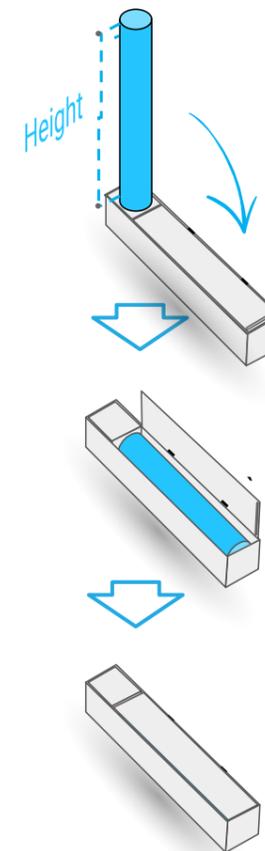
Reflective band	1mm Groove
Name Plate/Logo	Internal Cam Lock
Custom Cap	Hole Cover
UV resistance	Dome Top





# FGD STEEL

## IN-GROUND FOLD-DOWN BOLLARD



**Drainage**  
If soil is impermeable or groundwater is high, provide a positive drain to a nearby drain/sump (by others).



**FGD1** **FGD2** **FGD3** **FGD4** **FGD5** **FGD6**

<b>Diameter</b>	73.0 mm 3 Inch	88.9 mm 3.5 Inch	101.6 mm 4 Inch	114.3 mm 4.5 Inch	141.3 mm 5.5 Inch	168.3 mm 6.5 Inch
<b>Wall Thickness (mm)</b>	2.11 3.05 5.16	2.11 3.05 5.49	2.11 3.05 5.74	2.11 3.05 3.96	2.77 3.40 —	2.77 3.40 4.78

**Height (mm)** 700 - 800 - 900 - 1000 - 1100

**Material** Structural Steel  
ASTM A500, Grade B

**Top Cap** Flat or Angle

**Finish** Galvanizing ASTM A123 / ISO 1461 Powder Coating ASTM D3359 / B117

**Options** Reflective band Name Plate/Logo Custom Cap Imm Groove Internal Cam Lock Dome Top UV resistance

### Foundation Size & Bollard Weight

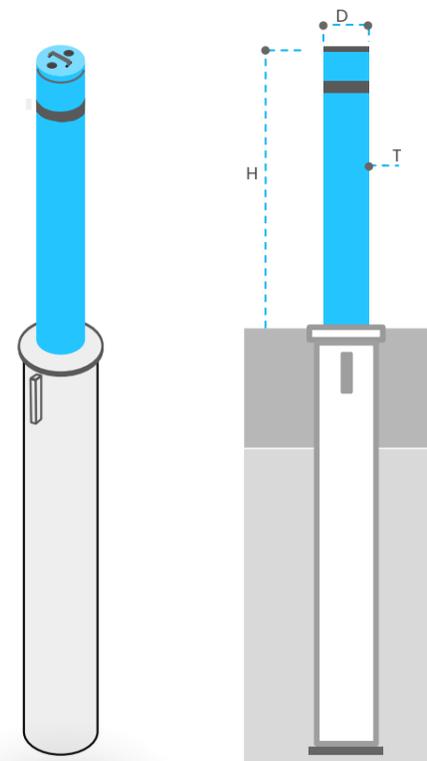
Model / Height	700	800	900	1000	1100
<b>FGD1</b> 73mm	1150x475x275 18 kg	1250x475x275 21 kg	1350x475x275 23 kg	1450x475x275 26 kg	1550x475x275 28 kg
<b>FGD2</b> 89mm	1150x490x290 24 kg	1250x490x290 27 kg	1350x490x290 30 kg	1450x490x290 34 kg	1550x490x290 37 kg
<b>FGD3</b> 102mm	1150x500x300 28 kg	1250x500x300 33 kg	1350x500x300 37 kg	1450x500x300 41 kg	1550x500x300 45 kg
<b>FGD4</b> 114mm	1150x515x315 23 kg*	1250x515x315 26 kg*	1350x515x315 29 kg*	1450x515x315 32 kg*	1550x515x315 36 kg*
<b>FGD5</b> 141mm	1150x540x340 24 kg*	1250x540x340 28 kg*	1350x540x340 31 kg*	1450x540x340 35 kg*	1550x540x340 38 kg*
<b>FGD6</b> 168mm	1150x570x370 40 kg	1250x570x370 46 kg	1350x570x370 52 kg	1450x570x370 58 kg	1550x570x370 64 kg



# MGD

## STEEL

### MANUAL RETRACTABLE BOLLARD

**MGD1****MGD2**

<b>Material</b>	Structural Steel ASTM A500, Grade B	
<b>Length</b>	Above Ground 900 mm Below Ground 1500 mm	
<b>Bollard/Socket Diameter</b>	101.6/114.3 mm 4 inch/4.5 inch	114.3/141.3 mm 4.5/5.5 inch
<b>Bollard/Socket Wall Thickness (mm)</b>	2.11/3.05	
<b>Foundation Size</b>	350x350x1600 mm C40 Concrete	
<b>Finish</b>	Galvanizing ASTM A123 / ISO 1461	Powder Coating ASTM D3359 / B117
<b>Weight</b>	20 kg	24 kg
<b>Impact Resistance/ Car Speed (kJ/KPH) 1.5t Car</b>	0.4/2.4	0.5/2.7
<b>Options</b>	Reflective band Name Plate/Logo	1mm Groove Internal Cam Lock UV resistance

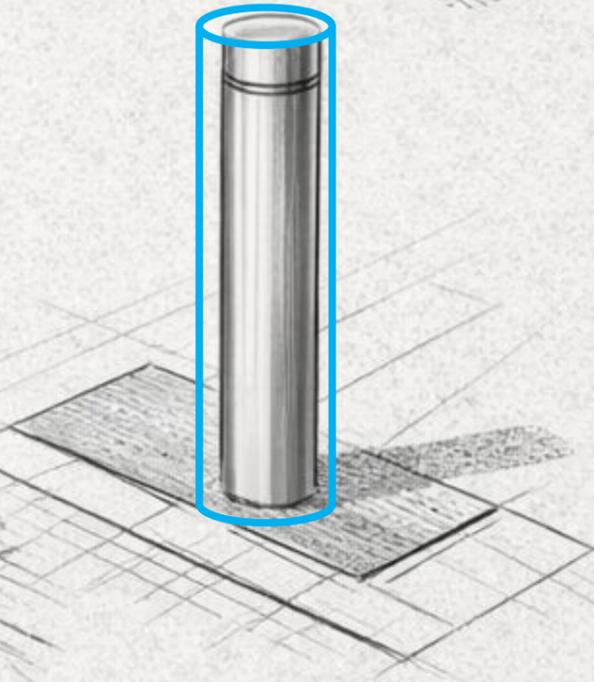
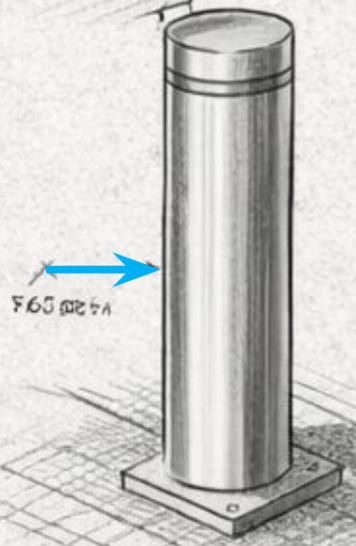
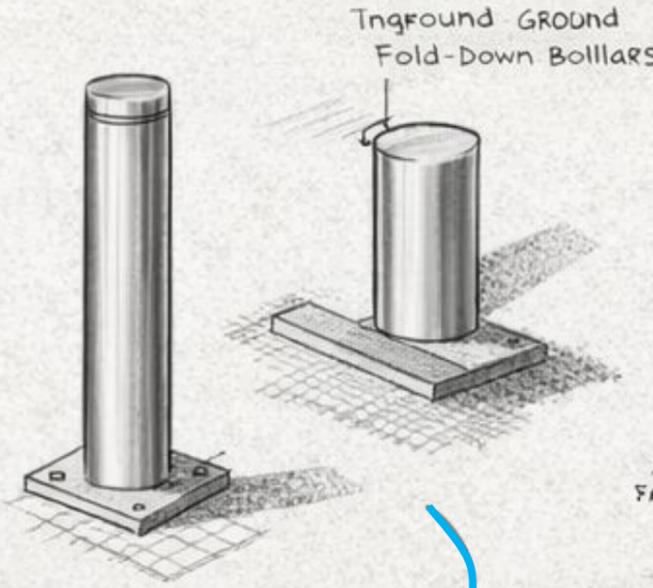
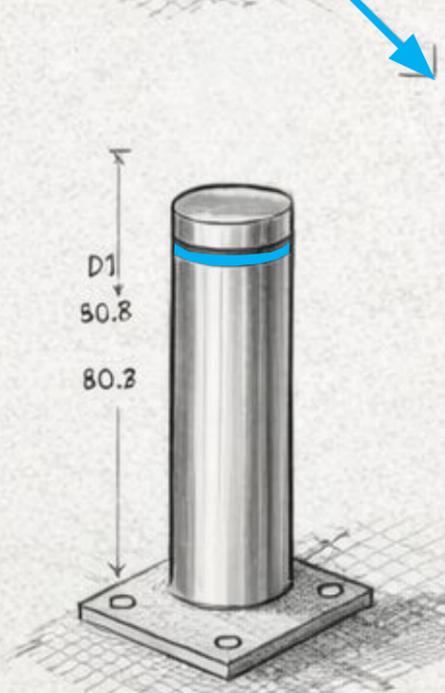
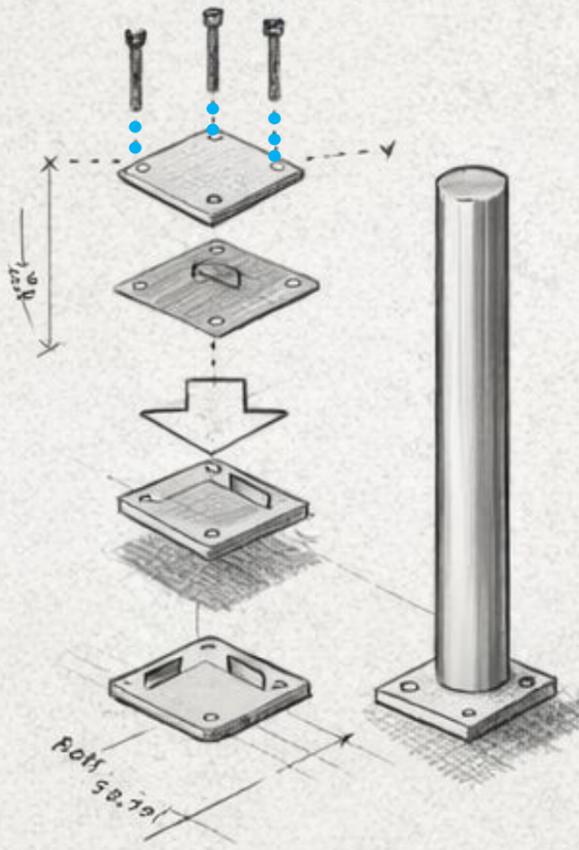
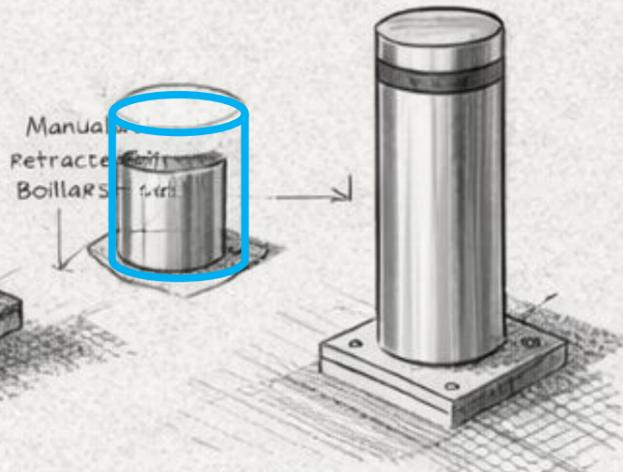
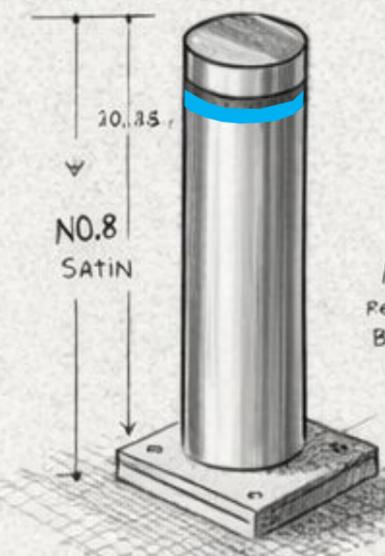
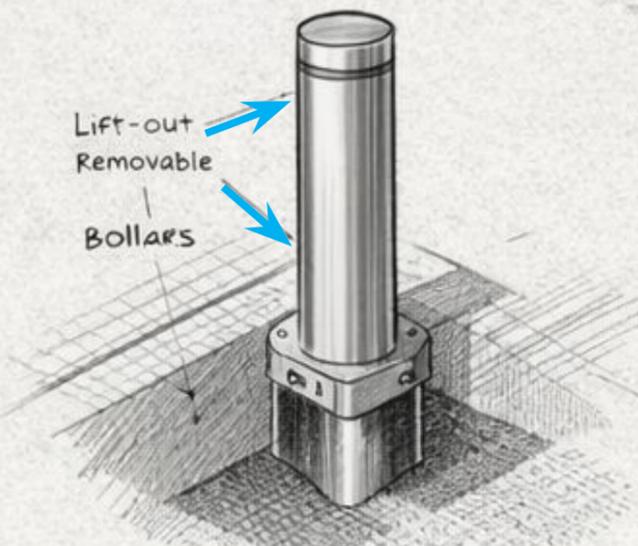
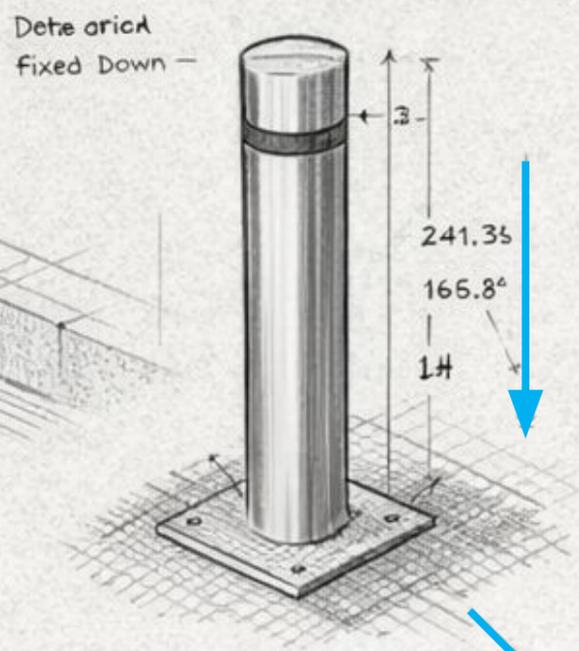
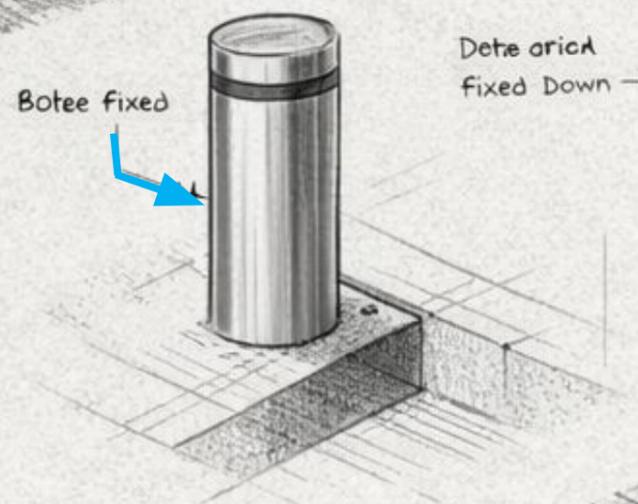
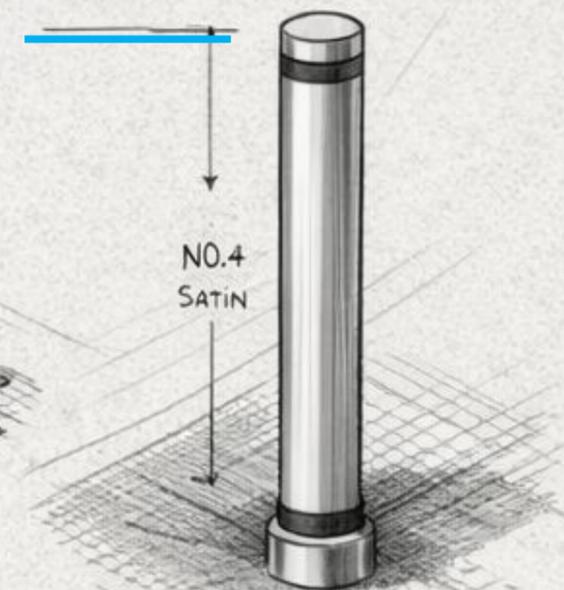
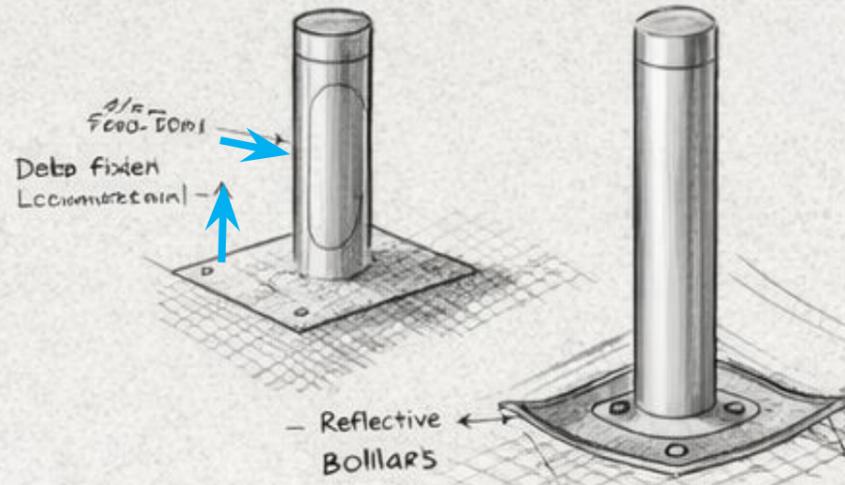
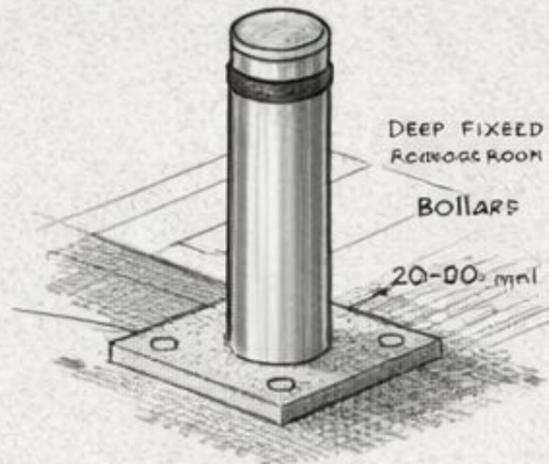
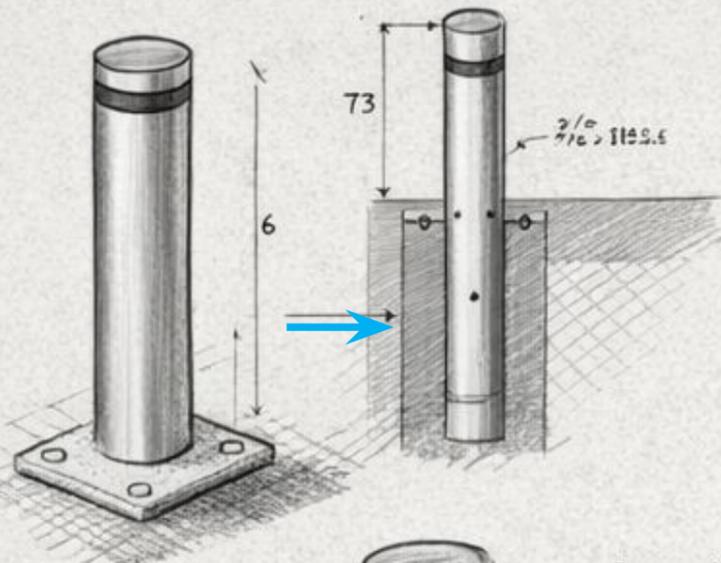


# STAINLESS STEEL BOLLARD FINISH OPTIONS

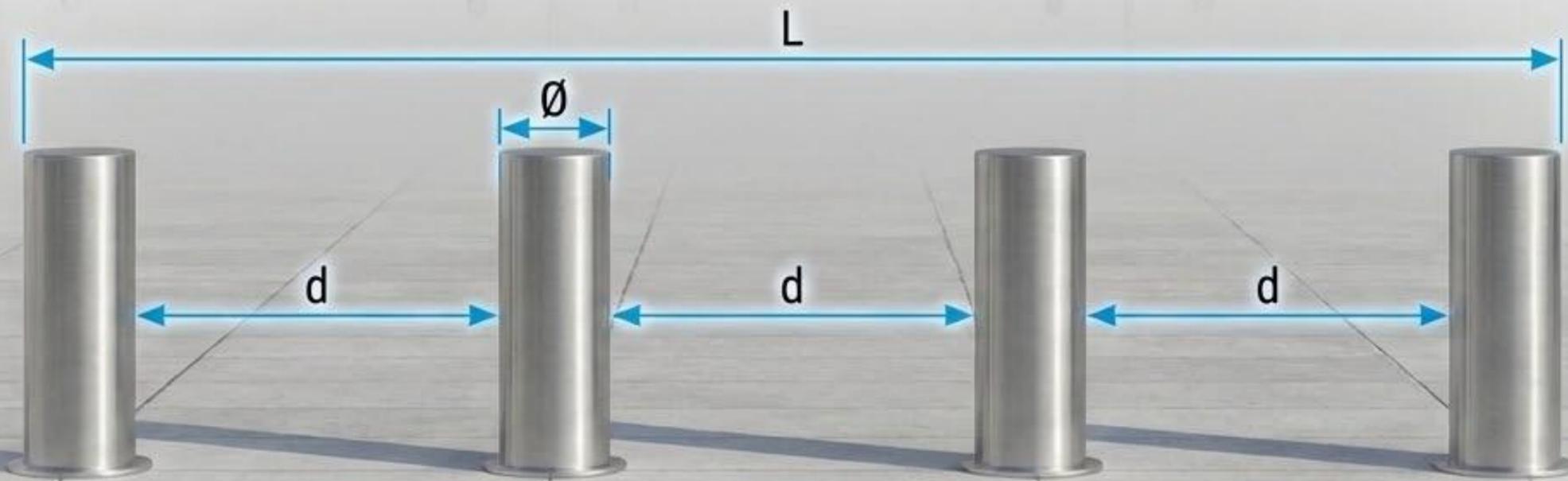


# STEEL BOLLARD SURFACE FINISH OPTIONS





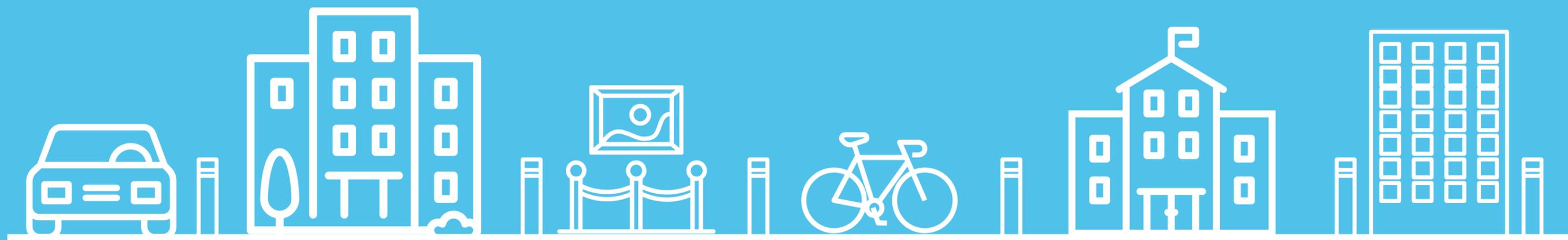
# DISTANCE BETWEEN BOLLARDS



$$N = \frac{L - d}{\text{Ø} + d}$$

$$d = \frac{L - (\text{Ø} * N)}{N + 1}$$

- L (mm) = Passage width for vehicle access
- N = Number of bollards required
- Ø (mm) = Bollard diameter
- d (mm) = Distance between bollards



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