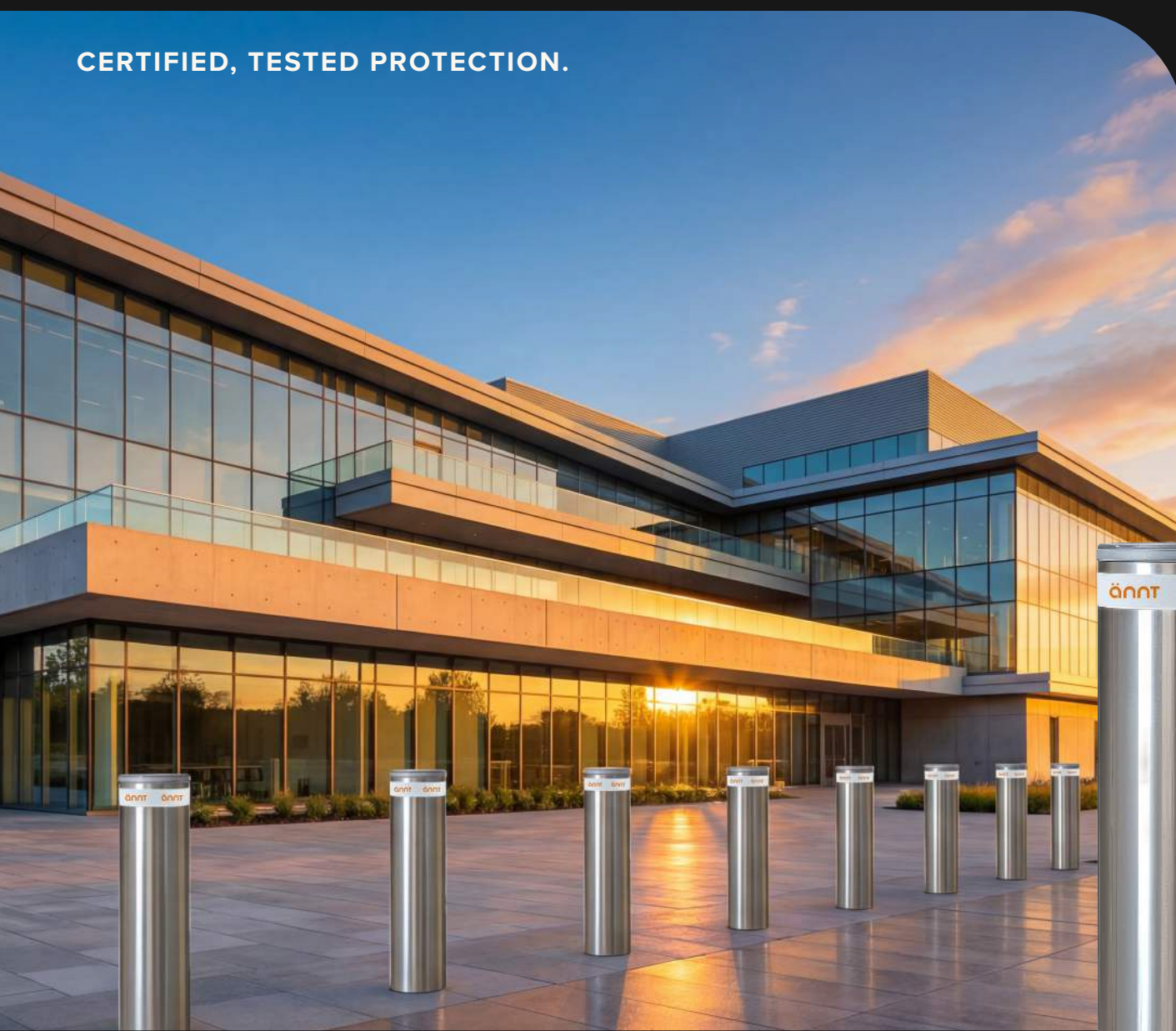


Architect Toolkit

HOW TO DESIGN WITH BOLLARDS

CERTIFIED, TESTED PROTECTION.



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A photograph of a modern building with large glass windows and a grey facade. In the foreground, three black bollards with white bands and orange text are visible. The sky is blue with white clouds.

How to Design With Bollards

Design with bollards starts by defining the site condition, the level of protection required, and how people, vehicles, and services need to move through the space. The right solution is determined not only by crash rating, but also by spacing, accessibility, below-grade constraints, operating requirements, and architectural intent.

Bollards should be specified as part of the site design strategy, not added at the end. The right solution depends on five questions:

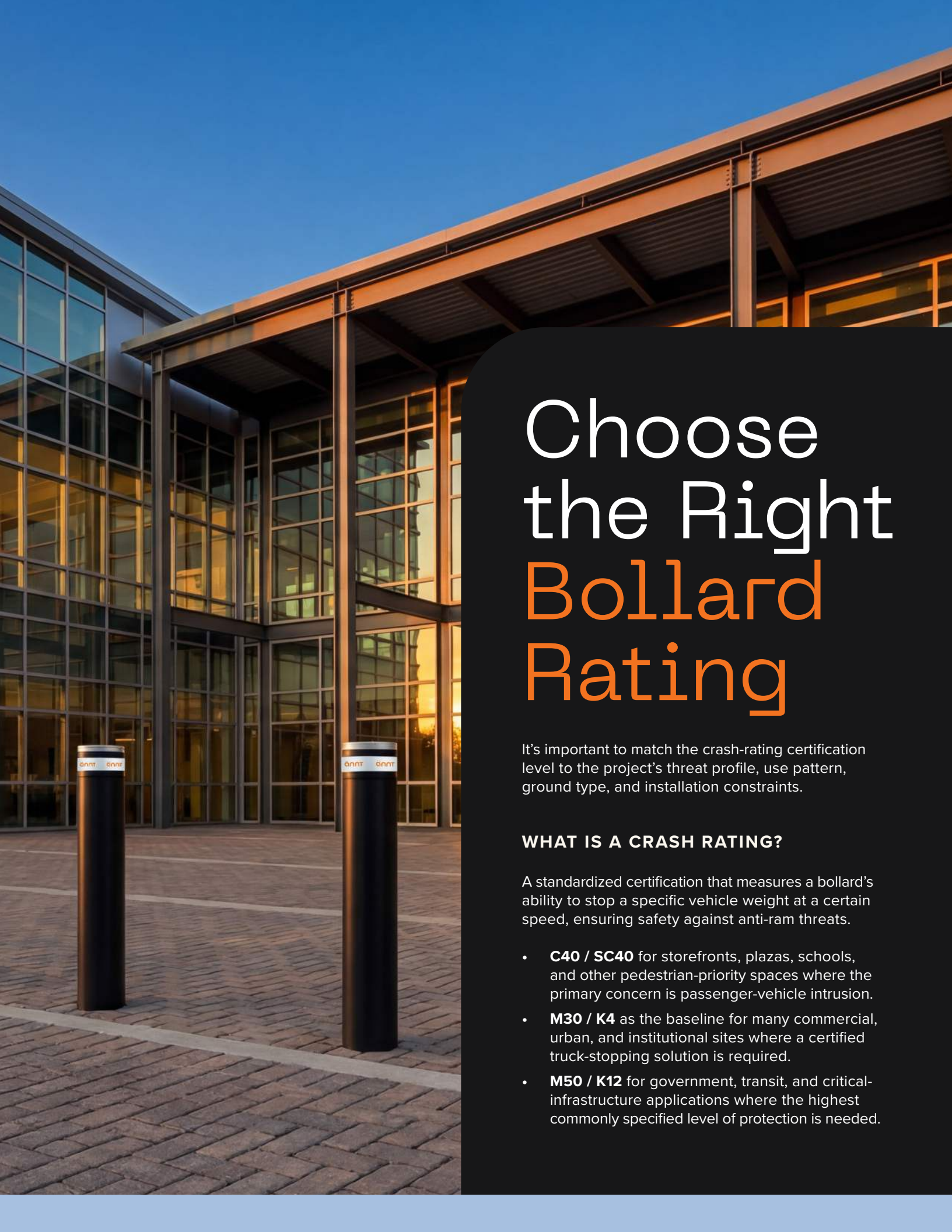
- What are you protecting?
- What vehicles need to be stopped?
- What access must remain open?
- What site constraints exist below grade?
- How should the system read architecturally?

Design Application Matrix by Project Type

Start with the site condition, not the product. Project type helps determine the required protection level, operating method, spacing strategy, and coordination priorities. In most cases, the design path begins by matching the site to a typical threat condition, then narrowing to the right rating and bollard type.



PROJECT TYPE	TYPICAL DESIGN GOAL	LIKELY THREAT / USE CONDITION	RECOMMENDED RATING / TYPE	TYPICAL OPERATION	KEY DESIGN WATCHOUTS
Storefronts & mixed-use retail	Protect pedestrian edge without overbuilding	Low-speed vehicle intrusion / pedal error	C40 / SC40 or non-rated where certification is not required	Fixed or removable	Maintain clear pedestrian routes and visual openness
Campuses, schools, daycares, playgrounds	Separate people from vehicles	Passenger vehicle threat	C40 / SC40 fixed	Fixed	Prioritize wide clear widths and intuitive circulation
Urban streetscapes & civic plazas	Protect public realm while supporting streetscape design	Standard commercial vehicle threat	M30 / K4	Fixed, removable, or shallow-mount fixed	Coordinate with paving, utilities, and accessible paths
Transit, government, critical infrastructure	Stop high-speed hostile vehicle threat	15,000 lb truck at higher speed	M50 / K12	Fixed, removable, semi-automatic, automatic	Access control, power, drainage, and security coordination
Parking structures, bridge decks, retrofit sites	Add protection where deep excavation is limited	Certified protection with shallow depth constraints	Shallow-mount K4/K12 where applicable	Fixed or removable	Verify slab conditions, utilities, and structural coordination
Event sites, temporary closures, venues	Rapid deployment and temporary control	Temporary vehicle mitigation	Portable crash-rated barriers / ättaGard	Portable	Deployment logistics and storage
Residential / architectural access control	Define boundaries and restrict access with refined appearance	Low-risk / non-certified use	Non-rated stainless or retractable lines	Fixed, removable, automatic	Aesthetic integration, finish, maintenance

A photograph of a modern building with a large glass facade and a dark metal frame. Two black bollards with reflective white bands are positioned in the foreground on a paved area. The sky is clear blue.

Choose the Right Bollard Rating

It's important to match the crash-rating certification level to the project's threat profile, use pattern, ground type, and installation constraints.

WHAT IS A CRASH RATING?

A standardized certification that measures a bollard's ability to stop a specific vehicle weight at a certain speed, ensuring safety against anti-ram threats.

- **C40 / SC40** for storefronts, plazas, schools, and other pedestrian-priority spaces where the primary concern is passenger-vehicle intrusion.
- **M30 / K4** as the baseline for many commercial, urban, and institutional sites where a certified truck-stopping solution is required.
- **M50 / K12** for government, transit, and critical-infrastructure applications where the highest commonly specified level of protection is needed.

Resolve Below-Grade Site Constraints Early

Foundation selection is often the design decision that determines whether a concept is viable. Specify the bollard type only after understanding slab depth, utilities, drainage, traffic loading, and power requirements.

FOUNDATION TYPE	APPLICATION	DEPTH/ DIMENSIONS	DETAILS/ APPLICATION
Standard Foundation	Suit typical fixed and removable crash-rated installations.	500–700mm	K4/M30 and K12/M50 rated fixed and removable bollards. Uses a steel base plate with reinforcement rods. Typical footprint: 590x590mm (K4) or 735x735mm (K12).
Shallow-Mount (SF)	When deep excavation is limited, including retrofits, utility conflicts, parking structures, and bridge decks.	200mm	ännT's key differentiator. Achieves K4 and K12 ratings with a flat ground fitting system. Ideal for retrofits, over utilities, parking structures, and bridge decks.
Deep-Mount (Cast-in-place)	New construction	700–1200mm	FB275/M30-1000 and FB275/M50-1000 models are cast directly into reinforced concrete. ännT supplies the rebar cage. Ideal for new construction.
Foundation Box	Support automatic and semi-automatic systems where operation, drainage, and access control must be coordinated.	950–1560mm	Prefabricated steel/stainless housing for automatic and semi-automatic bollards. Available with immersion pumps for water-prone sites.



Electrical and Environmental Requirements

Coordinate power, climate, and site conditions early to ensure the selected bollard system is compatible with the project's operational and environmental demands. Automatic systems require the right control configuration, cable runs, and backup planning, while exterior installations must account for temperature extremes, moisture, salt exposure, and traffic loading.

ELECTRICAL REQUIREMENTS

- Control unit voltage: 120/230/400V AC +/- 10%, 50/60 Hz
- Standard cable: 10m (extendable to 30-50m by model)
- Non-rated EM: 1 control unit for up to 9 bollards
- Crash-rated EMB: Controls for 1 to 10+ bollards
- Emergency battery backup standard on non-rated automatics
- Protection category: IP67 across all models

ENVIRONMENTAL REQUIREMENTS

- Operating range: -40°C to +70°C
- 80W heating element for K4/M30 + non-rated
- 150W heating element for K12/M50 models
- Marine treatment for coastal/salt environments
- Stainless steel watertight foundation boxes available
- Load rating: EN 124 D400 (supports vehicle traffic)

All ännT bollards are IP67 rated and designed for year-round continental and subarctic clients.

Design Spacing Around Circulation

USE SPACING TO BALANCE THREE NEEDS:

1. Vehicle denial
2. Wheelchair / mobility-device access
3. Service and emergency access

DESIGN SPACING ADA AND ACCESSIBILITY REQUIREMENTS:

MEASUREMENT / SPACE	PURPOSE	DETAILS
915mm	Minimum Clear Width	Between bollards at narrowest point. Measure from outer edge of sleeve, not the post.
1,070+mm	Preferred Width	42-48" in high-traffic areas for comfortable two-way wheelchair/mobility device passage.
1,830mm	Passing Spaces	Required every 30m if accessible route is narrower than 1,830mm wide.
55mm	Reflective Strips	Standard on all ännT bollards. Custom RAL colours available for additional contrast.
450mm	Curb Setback	From curb to allow car doors to open. Extra clearance near accessible parking.

SPACING QUICK REFERENCE:

APPLICATION	CENTER-TO-CENTER	CLEAR SPACE*	NOTES
High Security	1.2m (4 ft)	~927mm (36.5")	ADA minimum met
Standard Commercial	1.35m (4.5 ft)	~1,077mm (42")	Comfortable access
Accessible Priority	1.5m (5 ft)	~1,227mm (48")	Max vehicle gap
Service/Emergency	2.0-2.4m (6-8 ft)	~1,727 - 2,127mm	Use removable/auto

*Clear space based on 273mm diameter bollard. Measure from outer edge of sleeve/cover if applicable.

WHY THIS MATTERS

With ännT's 273mm diameter at 1.2m center-to-center, you get 927mm clear space (meets ADA). Increase to 1.5m c/c and you get 1,227mm (48") without losing your crash rating.



FINISHES

Integrate Protection Into Visual Language

Once performance and spacing are set, finish selection determines whether the bollards disappear into the landscape or become part of the site identity.

Choose bollard designs that integrate well into your environment and project material's palette, wayfinding strategy and maintenance plan.

FINISH TYPE	DETAILS
Steel Painted	Anti-corrosion treatment + powder coat. Default: Anthracite Grey (RAL 7016). Custom RAL available.
Stainless Painted	AISI 304 stainless (or 316 marine) under painted finish. Corrosion resistance + colour choice.
Stainless Brushed	#6 satin brush finish. Clean, modern, architectural look. AISI 304 standard, 316 marine upgrade.
Replaceable Sleeve	Stainless sleeve over structural core. Damaged sleeve swapped without disturbing foundation. Cost-effective maintenance.
Consistent Design	The design language is consistent across the entire product line, ensuring a uniform streetscape appearance regardless of rating or operation type.

Accessories and Options

Options are available to tailor bollards to the site's functional and visual requirements to support wayfinding, branding, paving integration, slope adaptation, and architectural coordination.

ACCESSORY/OPTION	DETAILS
LED Lighting	25 LEDs per bollard. Wayfinding + aesthetic. Power supply serves up to 8 bollards. 80m max line extension.
Cylinder Covers	ännT branded or unbranded. Stainless steel upgrade. Custom city crests, logos, or branding available.
Knurling	Machined diamond pattern on cylinder surface. Visual interest and anti-climb properties.
Pavement Frames	Allow paving stones to be laid flush to bollard opening. Seamless streetscape integration.
Inclined Road Kits	Modification kits for sloped installations. Project-specific assessment available.
Custom RAL Colours	Match any architectural colour scheme. Surcharge option on all painted products.





ännT Product Line Summary

CATEGORY	TYPE	MODELS	RATINGS	HEIGHTS
Automatic Retractable Bollards	Electromechanical	AE275 series	Non-rated, K4, M30, K12, M50	600-1200mm
Semi-Automatic Bollards	Hydraulic	SA275 series	Non-rated, K4, M30, K12, M50	500-1200mm
Removable	Manual Lift	RM275 series	Non-rated, K4, M30, K12, M50	600-1200mm
Fixed	Permanent	FB275 series, FX series	C40, K4, M30, K12, M50	900-1200mm
Shallow-Mount Fixed	Surface	FXSF275 series	K4, K12	900-1200mm
Shallow-Mount Removable	Surface	RMSF275 series	K12	900-1200mm
Road Blockers	Modular/Surface	RBS/RB series, Mobile Road Blocker, Barrier K12	K4, K12, PAS68	500-1000mm
ättaGard Portable	Portable	ättaGard portable bollard	Crash-tested	1250mm

Let's Protect Your Project.

CERTIFIED, NOT ENGINEERED
GUARANTEED EXCELLENCE IN ASSET PROTECTION



Reach out today to book a free Risk
Assessment with the ännT Bollards team.

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