

Edge Protection Systems - Which One Is Right For Your Project?

In modern day construction and refurbishment, two basic types of edge protection are commonly seen, with other, more specialist solutions also available. Understanding what systems are appropriate to your project and what that system must be capable of is vital to the safety of those working near an edge and those below it.

The Edge Protection Federation (EPF) and Fall Arrest Safety Equipment Training (FASET) here provide an overview of BS EN 13374 and points clients should consider when dealing with edge protection. Both member organisations provide training and guidance in the supply of edge protection systems and sit on European Standards and HSE committees on the subject.

Up to, but not usually including roof height, Proprietary Edge Protection Systems are commonly installed. At roof height, Tube and Fitting Edge Protection Systems are more typically installed. It is important that the correct system is installed for the application, that the system conforms to BS EN 13374: 2013, and that the operatives involved in the installation, adjustment and removal are competent.

BS EN 13374: 2013 covers any temporary edge protection system, whether Proprietary or Tube and Fitting and is also applied to permanent systems. It does not cover scaffolding which provides a working platform.

Applications

During construction, different applications lend themselves to Proprietary systems, Tube and Fitting systems or sometimes both, as detailed below:

- ❑ Concrete Frame – typically Proprietary system
- ❑ Industrial Steel Frame – Proprietary or Tube and Fitting system
- ❑ Timber Frame – typically Proprietary system
- ❑ Flat Roof – Proprietary or Tube and Fitting system
- ❑ Void – Proprietary or Tube and Fitting system
- ❑ Steeply Sloping Roof – Proprietary Netted Barrier system

More specialist systems must be considered in other, sometimes bespoke, applications. Examples of these are:

- ❑ Completed Flat Roof – typically Proprietary Counterweighted system

- ❑ Voids – typically Proprietary Counterweighted system
- ❑ Trailers – Specialist Proprietary system
- ❑ In construction Staircases – typically Specialist Proprietary system
- ❑ In construction Lift Shafts – typically Specialist Proprietary system
- ❑ Excavations – typically Proprietary system



	Class A	Class B	Class C
Provides resistance to:	Static loads Accidental loads	Static loads Low dynamic forces Accidental loads	High dynamic forces
Supports:	A person leaning on the protection	A person leaning on the protection	
Provides:	A handhold when walking beside the protection	A handhold when walking beside the protection	
Stops	A person who is walking or falling towards the protection	A person who is walking or falling towards the protection A person sliding/falling down a sloping surface	A person sliding/falling down a steep sloping surface
When it is to be used:	Surfaces with a slope of less than 10°	Surfaces with a slope of less than 30° (with no limitation to fall distance) Surfaces with a slope of less than 60° (with a fall distance less than 2m)	Surfaces with a slope between 30° and 45° (with no limitation to fall distance) Surfaces with a slope between 45° and 60° (with a fall distance of less than 5m)

Table 1. Summary of requirements for Class A, B and C Edge Protection systems

	Class A	Class B	Class C
Must retain sphere of diameter:	470mm 9if intermediate guardrail in place) 250mm (if no intermediate guardrail in place)	250mm	100mm
Deflection requirements:	55mm maximum at most adverse position	100mm minimum between posts	200mm minimum between the posts at any level 200mm above the bottom of the system

Table 2. Dimensional and deflection requirements of BS EN 13374

Requirements of BS EN 13374

The dimensional and deflection requirements for the different classes of system can be summarised as detailed in Table 2. (above). Figure 1 (below) illustrates which class of system can be used depending on the angle of the slope and the fall height, as well as the dimensional requirements defined in BS EN 13374.

Testing of Edge Protection Systems

All Edge Protection systems should be calculated and/or tested for the applicable static and/or dynamic loads required by BS EN 13374.

- Class A systems must meet the static load requirements, proven either by calculation or testing
- Class B systems must meet the same static load requirements of a Class A system and pass the low dynamic force (swing bag) test
- Class C systems must meet the low dynamic force (swing bag) test at the top of the system and the high dynamic force (rolling cylinder) test

In all cases, the system must retain the load and meet the deflection requirements detailed in Table 2, but do not *continued overleaf*

In addition to the systems already highlighted, some sites require Proprietary Extended Height Edge Protection, Proprietary Full Height Edge Protection and Climbing Screens which incorporate Edge Protection. All of these systems need to be discussed with the manufacturer due to their specialist nature and additional design and load considerations.

The client and contractor must do whatever they can to meet the requirements of the Work at Height Regulations and BS EN 13374: 2013 – Temporary edge protection systems – Product specification – Test methods. If Edge Protection is not considered at an early stage, this can be difficult or even impossible to achieve.

Classes of Edge Protection Systems

The Class of system required directly relates to:

- The slope of the working surface
- The fall height

BS EN 13374 sets out the performance characteristics of the three Classes of Edge Protection system and the maximum gaps allowed as detailed in Table 1 (left).

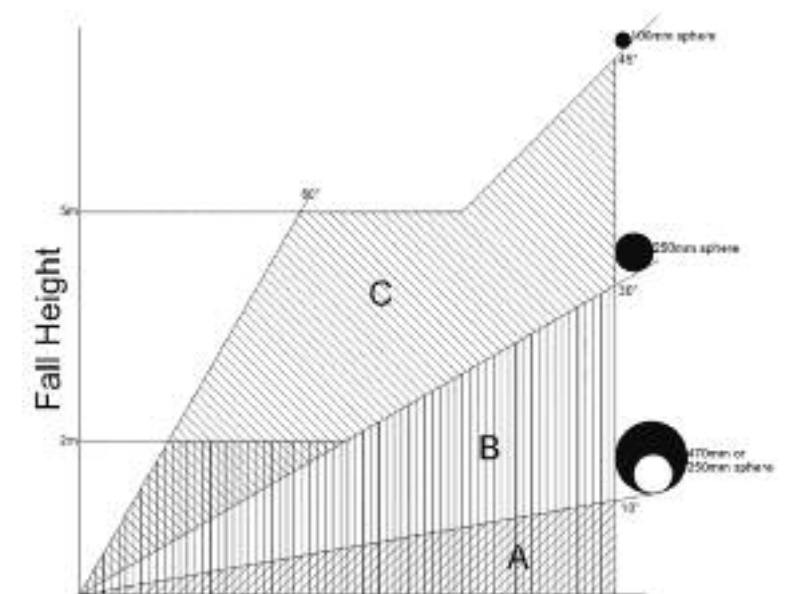


Figure 1. Illustration of appropriate Class of system dependent upon angle of slope and fall height as well as gap requirements of system

have to remain serviceable following the low and high dynamic tests. Clients should ask for evidence that the system being provided has met the requirements of the Standard, but for this to be possible in some situations, early consideration of the Edge Protection requirements and engagement with the provider is needed.

Competency and training

Whatever the system being installed, the competency of the installer should be verified. It has been clarified by the HSE that, just because an Edge Protection system uses Tube and Fitting components, that does not make it a scaffold. In line with this, neither the EPF nor FASET consider it appropriate for an operative installing an Edge Protection system to be required to hold a normally recognised scaffolding qualification. Proprietary systems are manufactured and tested to set criteria and bear little resemblance to scaffolding. These days, nobody would seriously claim a scaffolder is needed to install a Proprietary system and it is time for the industry to move on with the same thinking for Tube and Fitting systems, as they offer a solution to a very different set of circumstances from that of a scaffold.

Edge Protection operatives must hold a CSCS Blue Skilled Worker Edge Protection Operative card to install any system. For Proprietary Edge Protection systems, the operative should obtain training and assessment from the EPF, but for Tube and Fitting Edge Protection, they should obtain training and assessment from FASET.

EPF Training and Assessment

The EPF Edge Protection Operative training course covers all relevant regulations, industry guidance and comprehensively covers the requirements of BS EN 13374 for all forms of Edge Protection systems. Operatives must complete a written assessment to pass this course before undertaking a manufacturer/proprietary-system-specific course covering the components and installation methods of the specific system they are going to be using.

FASET Training and Assessment

FASET offer a theoretical and practical Edge Protection Operative course, which covers all relevant regulations and the requirements of BS EN 13374 in relation to Tube and Fitting systems. Attendees are then instructed on how to install a Tube and Fitting system provided to them by their employer following design by a competent person. All operatives must pass formal assessments on both the theory and practical elements of the course. Once the course assessments have been successfully completed, the candidate has to



gain sufficient experience installing systems under supervision before having their competence formally assessed.

Proof of Competence

Completion of either the EPF or FASET course results in operatives being able to apply for a CSCS Blue Skilled Worker Edge Protection Operative card. It must be remembered that a Proprietary system installer needs to have received formalised training from the manufacturer for the system they are using, and Tube and Fitting system installers must follow the design provided to them by their employer.

Whenever an Edge Protection system is installed, it should be carried out in accordance with the Manufacturer's Instructions (in the case of a Proprietary system) or a specific Temporary Works Design for a Tube and Fitting system or a Proprietary system being installed outside the scope of the manufacturer's parameters.

Temporary Works

Provided that a Proprietary Edge Protection system is installed in line with the Manufacturer's Instructions, it is a 'standard solution', classed as Category 0 under BS 5975 and does not require a specific design. If the system is installed in a way that differs from the usual configuration, it may become Category 1 or Category 2, and therefore require design and calculations from a competent designer.

Tube and Fitting Edge Protection systems will require design and calculations from a competent designer and will be Category 0 (typically simple Class A and Class B systems with pre-arranged system design and testing)

Category 1 (more complex Class A and Class B systems with pre-arranged system design and testing) Category 2 (typically Class A and Class B systems without pre-arranged design and testing evidence) Category 3 (typically Class C systems).

Clients should ask their system provider for the Temporary Works Design and Certificate in every case.

Design considerations

Designers of steel frame structures are increasingly maximizing the spacing between columns and including cold rolled sections. Edge Protection providers are often asked to install systems on bay centres of up to 10m which causes problems when trying to comply with the deflection requirements of BS EN 13374. Early consideration of this and discussion with the system provider can often overcome these problems, saving time and money during the build stage.

Another common issue that providers encounter is large verge overhangs, sometimes up to 2.5m, which require the Edge Protection system to be cantilevered. This causes a void that must be filled using strip nets in order to complete the protection provided to follow on trades.

Both the EPF and FASET encourage clients to engage with the system provider as early as possible so that both parties can fulfil their responsibilities and a compliant system can be designed and installed.

Guidance and training

Both the EPF and FASET have guidance on various aspects of Edge Protection including Codes of Practice and Technical Bulletins. Training can be arranged through both organisations' trainers whose details can be found on the organisations' websites. Please get in touch using the contact details below if either organisation can be of any further assistance. ◆

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