Photo 1

# Netting systems: safety and aesthetics

By Jim Myrland

In the Star Trek television show of the 1960's the Starship Enterprise had "protector shields" that could defend the ship against all threats. Wouldn't it be great if we had "protector shields" surrounding our ball fields? Just say "activate the shields, Scottie" and we could sit and enjoy an unobstructed view of the game confident that the next foul ball would not break our nose or bean the kid buying ice cream at the concession stand.

We don't yet have the shields but we do have the foul balls. We also have kicked soccer balls, passed lacrosse balls, golf balls hit into the road, and even cricket balls flying about. We need to protect spectators, by-standers, and property, and stop disruptions in play like that caused when a missed soccer shot rolls into an adjacent retention pond. Until we reach the space age the best way to do this remains mesh netting. Netting may not be exotic but it does work and installing net panels can be a cost-effective way to add protection to an existing

sports field or insure safety from the start when building a new facility.

There are four steps that should be considered at the beginning of a net system design process. The first is a careful look at the site or the site layout plan to identify the likely problem areas and their orientation relative to the source of the hazard. The second is an evaluation of the structure that will be required to support the needed net panels. Third is a review of the cost and complexity of installing the nets and a decision as to whether they will be permanently hung or should be made to be easily removable. Lastly, thought should be given to how the installation will affect the esthetics of the facility. A net system may not improve the look of the place, but a poor design or sloppy installation can certainly detract from the appearance.

The first design step is a determination of what needs protecting and where the flight of the threatening ball is likely to originate. The problem may be a bank of windows on an adjacent building, cars driving along a nearby roadway, spectators sitting on bleachers, or pedestrians walking beside a practice field. For baseball and softball fields the origin is fixed, home plate, but the ball can go just about anywhere from there. Goal sports have an opposite situation in that a shot can come from almost any place on the field but, while wild shots do happen, most balls head toward the end of the field and the goal area.

When it comes to net protection location is everything. The closer the nets are to the point where the ball is hit, kicked, or thrown the smaller the panel needs to be to be effective. The best example of this is the small mobile backstop that is rolled into place at home plate for batting practice. The enclosure leaves only the side facing the pitcher open and any ball that is missed by the hitter or hit such that it would land outside the field of play strikes the netting and is trapped within the cage. This provides perfect protection but the cage would interfere with play and could not be used during a game.

Two alternatives for baseball and softball include the net canopy and the net extension added to a chain link backstop structure. A three-piece net canopy can be added to most existing backstops or included in the installation

Photo 2

**A DESIGN THAT ALLOWS A FEW PEOPLE TO DROP THE NETS FROM THE GROUND CAN PAY FOR ITSELF QUICKLY IF THE ALTERNATIVE IS HIRING A CREW AND A LIFT TRUCK EVERY TIME IT IS DONE.**

plan for a new structure (photo #1). The use of netting rather than chain link reduces the cost of the enclosure and the lower weight puts less stress on the backstop structural members. The front edge of the middle net panel is supported by a cable run from pole-to-pole across the backstop at a location that will result in the best trade-off between protection and possible interference with playable balls. The triangular side panels complete the system and add significantly to the effectiveness of the backstop wing sections. Foul line netting can be attached to the poles used to support the cross cable and run down the line along a cable strung between additional poles or attached to a dugout or other structural point.

Netting can also be used to extend the height of a backstop to add protection without any possibility that the nets will interfere with play (photo #2). Cables run between extension poles support the net panels and vertical cables run down the outside poles secure the net side edge and keep it in place when the wind blows (photo #3).

Sometimes protection can't be located close enough to the action to protect a specific area. A good example of this is a playground located down the first base line of a field but within reach of a foul ball. In this situation it may be better to erect a net "roof" over the area to protect the kids who are playing than to try to build a backstop tall enough or wide enough to stop any foul ball (photo #4).

Once the location and size of a protective net system is determined, and the net panel layout and material are selected, the support structure can be specified. In our experience, the cost of the support components is often more than the cost of the netting to be supported. For this reason it makes sense to take advantage of structural attachment points that may already be part of the facility. Mounting cables can be run from backstop frame members, buildings, fence posts and some light poles. It may also be possible to minimize the supports needed by running a cable at a diagonal from the top of an existing pole to the top of a fence or dugout and then installing a triangular net panel rather than a rectangular net which would require additional pole supports.

Whatever support configuration you choose, the structure must be strong enough to stand-up to the possible wind-loads. Wind-load is determined by the size of the net panels, their height above ground, and the mesh size and yarn thickness. Small mesh netting (golf) and heavy yearns block more wind and increase wind-load. While all mesh netting for sports applications is mostly open, it is surprising how much load is transmitted to the cables and mounting structure under design wind load conditions (70-150 mph depending on location in the country). For example, a 100-foot run of baseball netting 30 feet high would require four support poles each made from 8-inch diameter steel pipe and each pipe buried at least 9 inches in the ground to resist the design wind-load of 90 mph in the upper Midwest.

Unlike chain link fencing, a safety net installation does not have to be permanent. In fact systems can be designed to be raised or lowered from the ground and the support poles can even be removed if ground sleeves where specified. There are a number of reasons to consider designing your system for ground based removal. Your application might be on a field that is used for more than one activity and netting that is important for one sport would interfere with another user. Exposure to the elements is also a factor in that the life of any polymer net will be extended if it can be taken down and stored during the off-season. A design that allows a few people to drop the nets from the

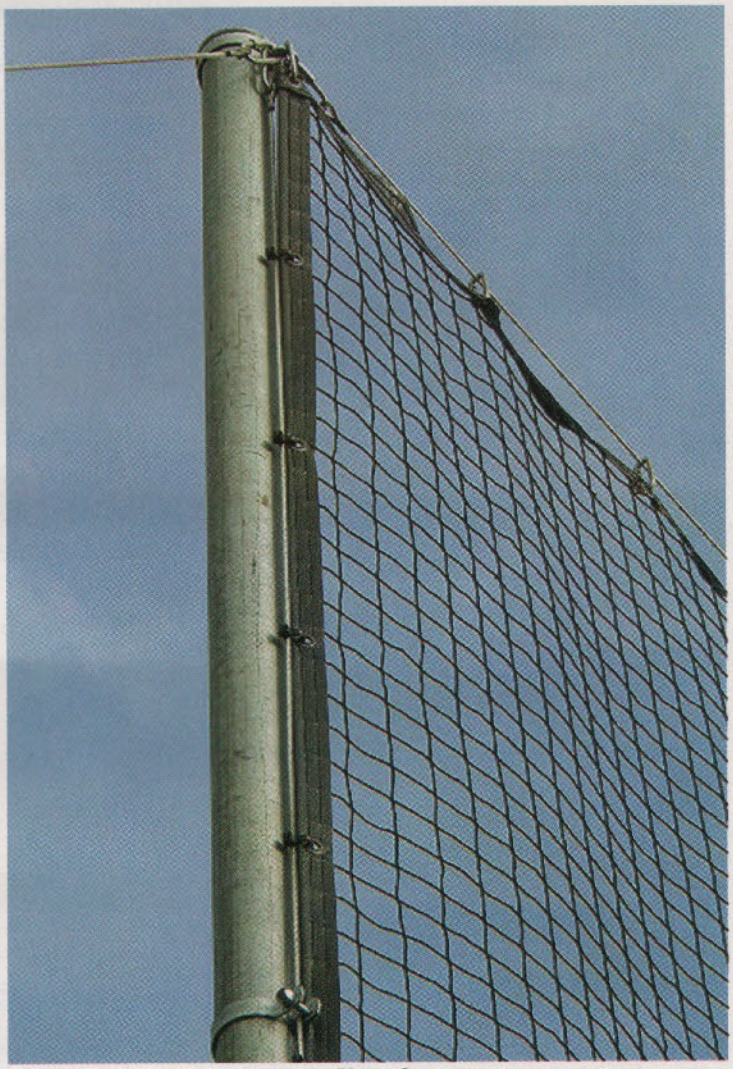

Photo 3

ground can pay for itself quickly if the alternative is hiring a crew and a lift truck every time it is done.

While the purpose of a net installation is protection there is no reason for it to be ugly. Net panels should be finished with clean borders rather than a ragged edge and each section should fit correctly and hang cleanly. Netting hung on-the-square looks better than diamond-hung material and it is also easier for spectators to see through. Black netting is most often specified for outdoor applications because it is less noticeable and it provides a better backdrop for sports played with white balls. Nets can often be mounted without adding poles or other support elements but when these are necessary, making them compatible with the facility design is worth the effort.

A clear understanding of what needs to be protected and from what it needs protection is necessary before a proper design can be done for a protective net system. A proper design will provide the protection needed while minimizing the added cost for structural support, installation, and seasonal removal of the net panels. Good design should also consider the esthetics of the overall installation and how it affects the appearance of the facility.

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**Photo 4**