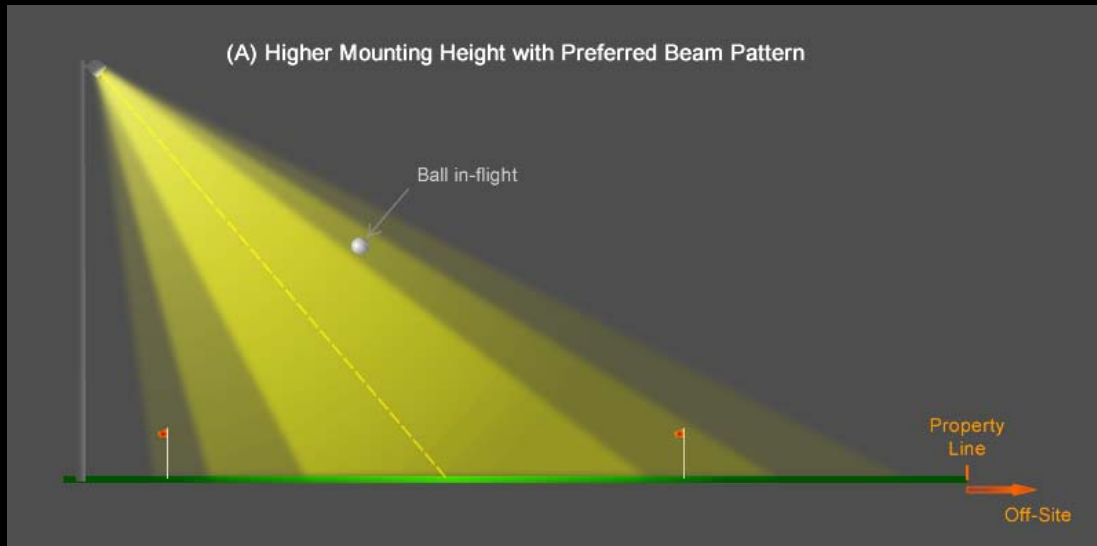


## Discussion Points:

- The goal of sports lighting is to create optimum playability for the players to play the game safely and to create a safe and pleasing environment for spectators and the surrounding neighborhood.
- Plan is to use the industry best spill and glare HID technology available today along with the proper mounting heights and photometrics (fixture design) .
- Musco's technology has continued to evolve through the years with quantum leaps in ability to put light only where it is needed.
- Distance from site to homes is substantial. Spill light depreciates by a factor of 10 as you move away from the light source.
- Robust internal and external visors ensure that spill and glare are reduced and represent most HID control in the marketplace today.
- Site has substantial buffer of pine trees.
- Control Link internet controls and monitoring assures the light are only turned on/off at the appropriate times.





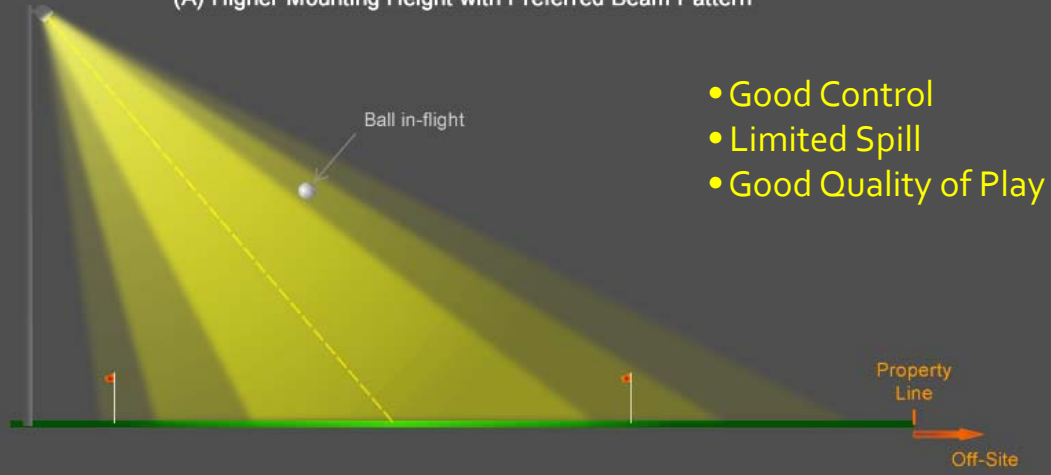
With appropriate, higher mounting heights, notice how the amount of “spill” light (light beyond the Property Line) and glare is controlled.

The higher mounting heights typically provide better field uniformity and can reduce fixture counts when lighting to meet uniformity standards.

Additionally, a ball in-flight during play remains visible for safety and quality of play.

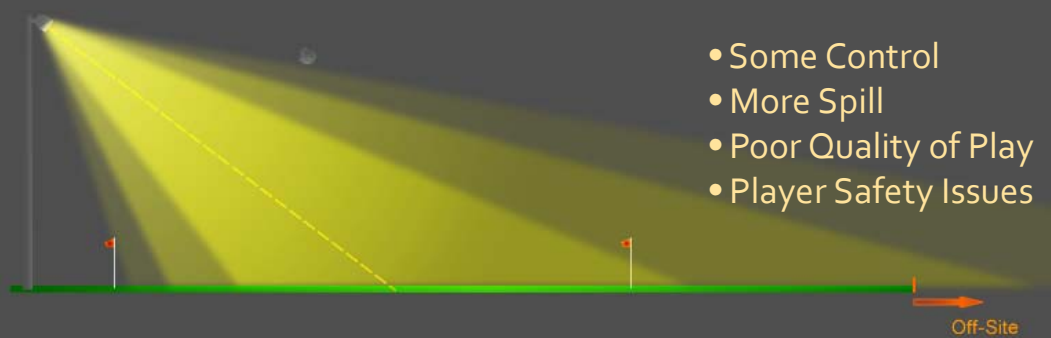
- Good Control
- Limited Spill to neighbors
- Good Quality of Play

(A) Higher Mounting Height with Preferred Beam Pattern



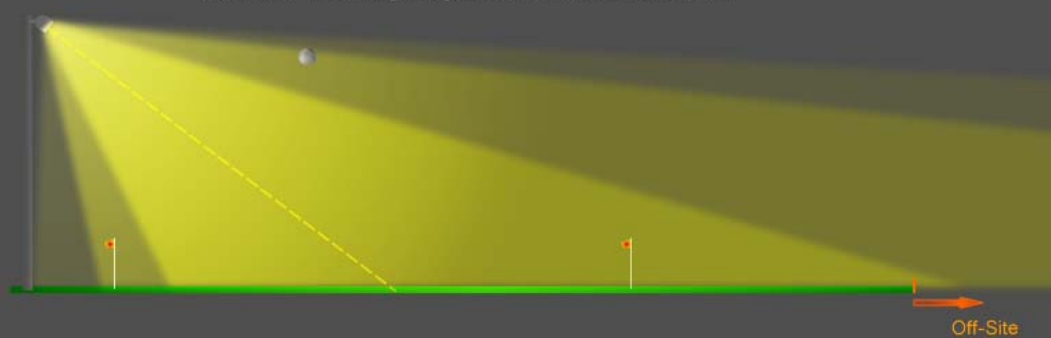
- Good Control
- Limited Spill
- Good Quality of Play

(B) Lower Mounting Height with Preferred Beam Pattern



- Some Control
- More Spill
- Poor Quality of Play
- Player Safety Issues

(C) Lower Mounting Height with Wide Beam Pattern



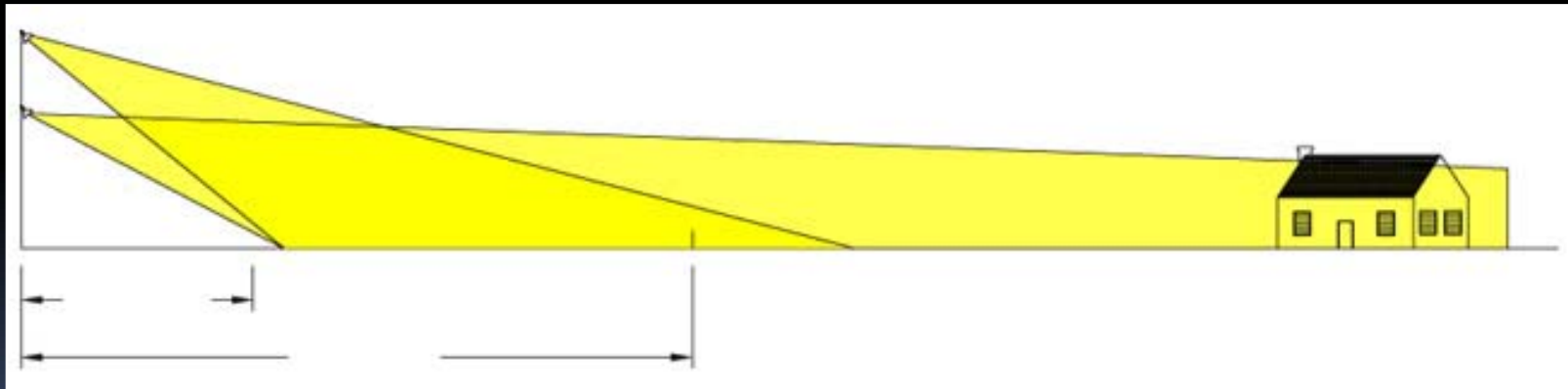
If you lower the mounting heights (C), a wider beam pattern is used to allow more “up light” to address the visibility of a ball in-flight.

This significantly increases the amount of spill light beyond the Property Line.

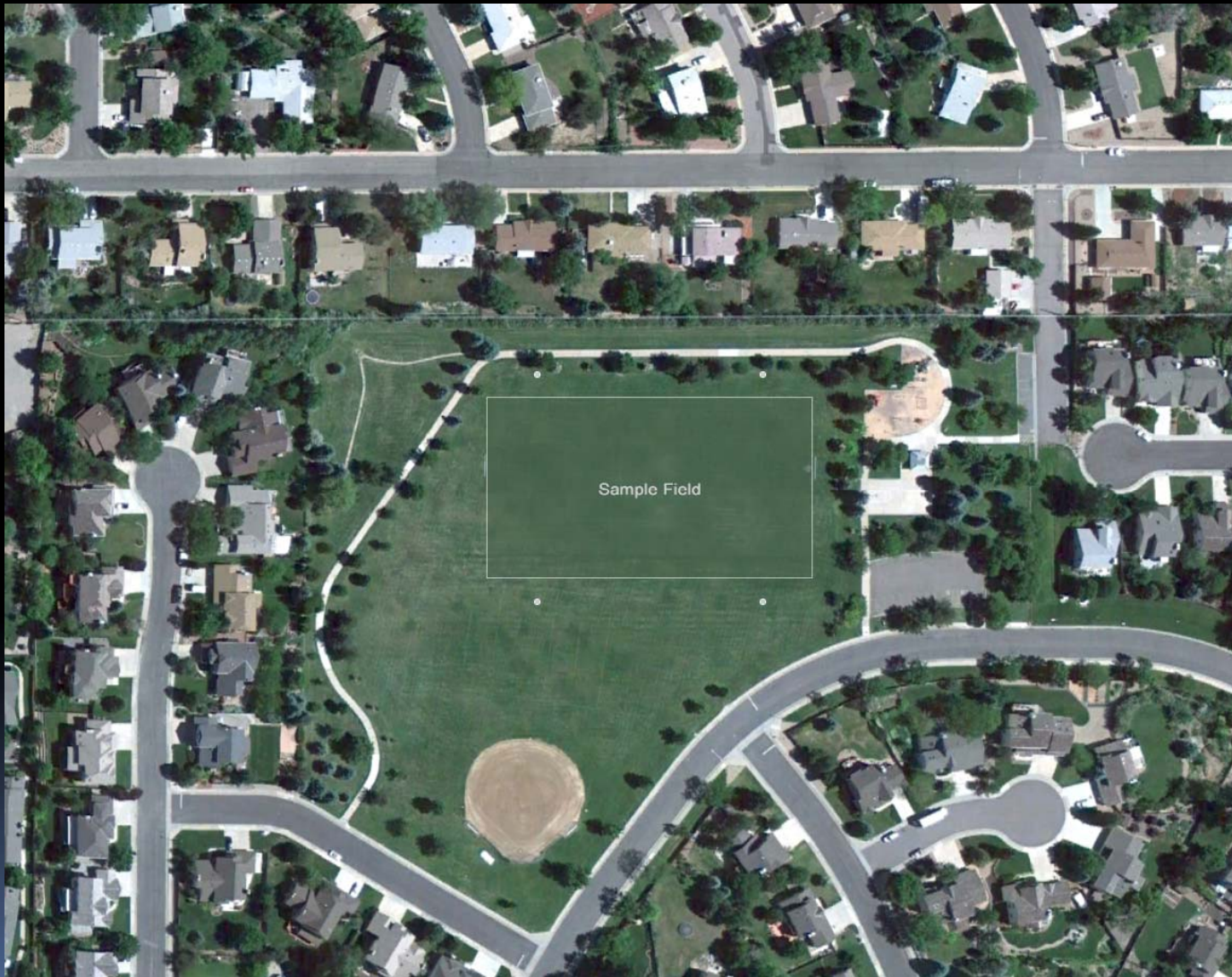
- Poor playability
- Excessive Spill and glare to neighbors

## To look at Mounting heights another way:

- Appropriate taller mounting heights allow for optimum aiming angles:



# Example



In this example, we have a sample field in close proximity to residential housing – especially on the North side of the field.

# Example



Here we're rendering an overhead view of the field lit with lower pole heights.

The field is well-lit; however, we can see a fair amount of light extending into the residential areas.

# Example



In this image, higher pole heights are used – the recommended design.

Notice how the amount of spill is considerably eliminated while the field is still well lit.

# SPILL & GLARE COMPARISON



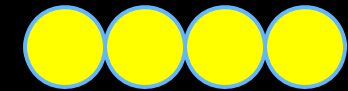
Previous Technology



Light Structure Green

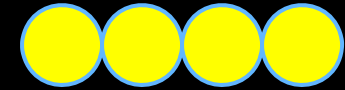






Older Technology  
-Waccamaw  
Youth field,  
Smithville,  
Northwest Park,  
Oak Island  
multipurpose.

Light is emitted  
in 360 degrees  
from fixture- no  
substantial  
control of spill  
and glare.



Light Structure  
Green  
Technology at  
Waccamaw new  
softball, tennis  
and basketball,  
Ocean Isle  
multipurpose  
field, tennis,  
Cedar Grove  
Park, Town  
Creek.

Note how the  
glare is reduced  
substantially.



Glare Packages are mandatory in Brunswick County, NC  
They Make a Difference

NO Spill & Glare Package



Musco's Spill & Glare Package



1977  
SportsCluster-

1989  
SportsCluster-2

1989  
SportsCluster-2  
with Level 8"

1989  
Total Light  
Control™

2005  
Light-Structure  
Green™ — HID



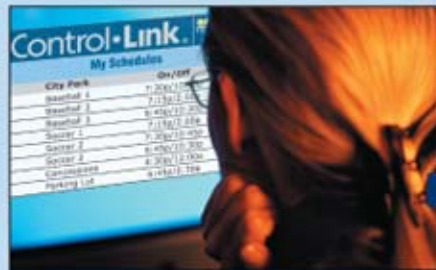
Photographed at 100-feet from field edge

Used equal parameters for:

- On-field light level per pole
- Luminaire aiming angles
- Wattage per luminaire
- Pole distance from aiming point
- Mounting height

# Control-Link® System

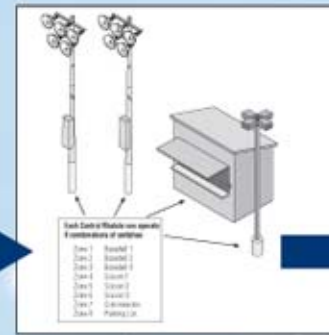
## Flexible Control...Solid Management



**1** Enter schedules at your convenience



**2** Schedules are stored on-site, backed-up at Control-Link Central™



**3** Equipment is controlled automatically



**4** Control-Link Central™ provides support, monitoring and usage data

Scheduling, Diagnostics & Monitoring