

Roll Paper 1 Protection Requirements – Changes to FM Global Data Sheet 8-21, Roll Paper Storage

Yogish Gopala and Brent Wunderlich



FACTORS THAT IMPACT HAZARD

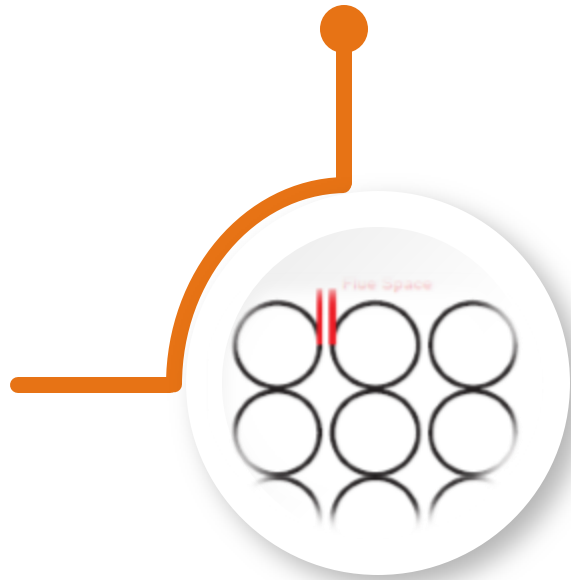
Paper type

Storage arrangement



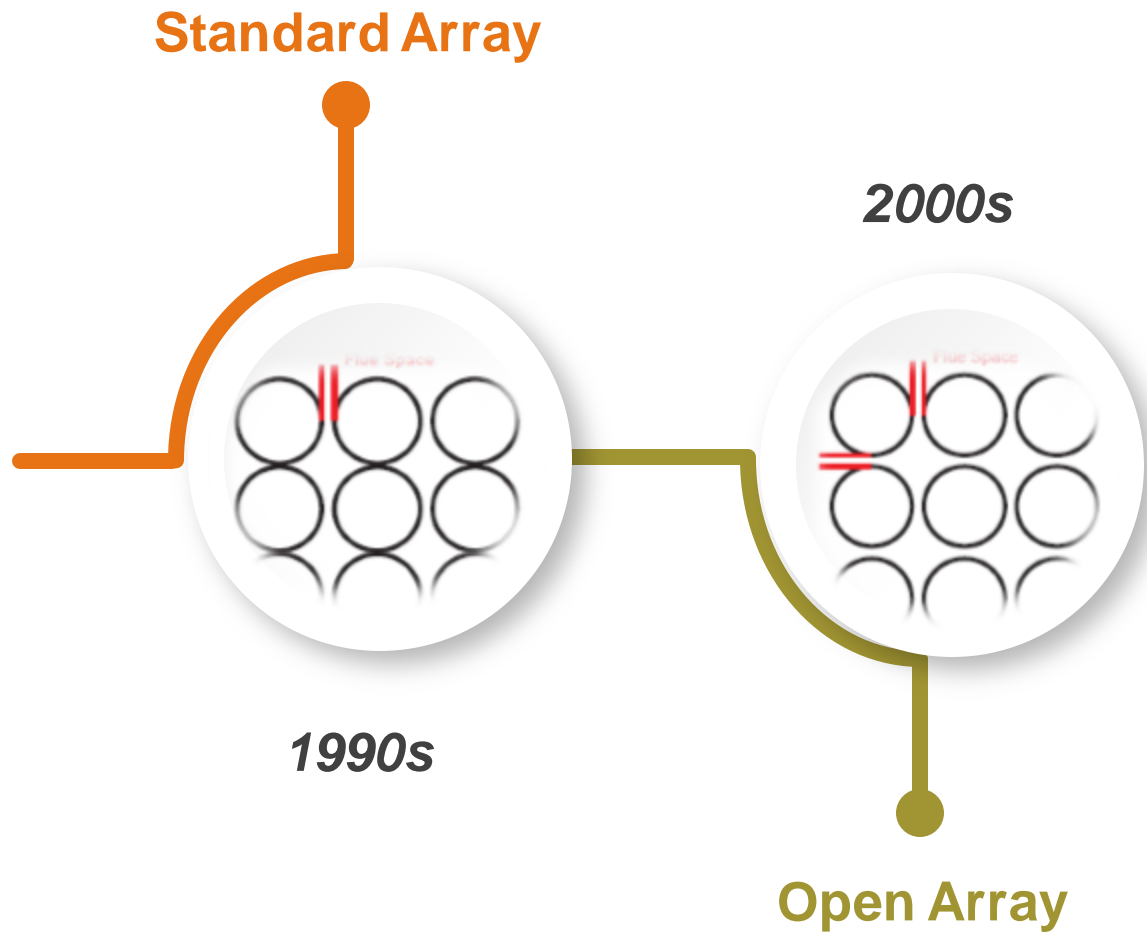
RP1 is a High Hazard, Difficult to Protect

Standard Array



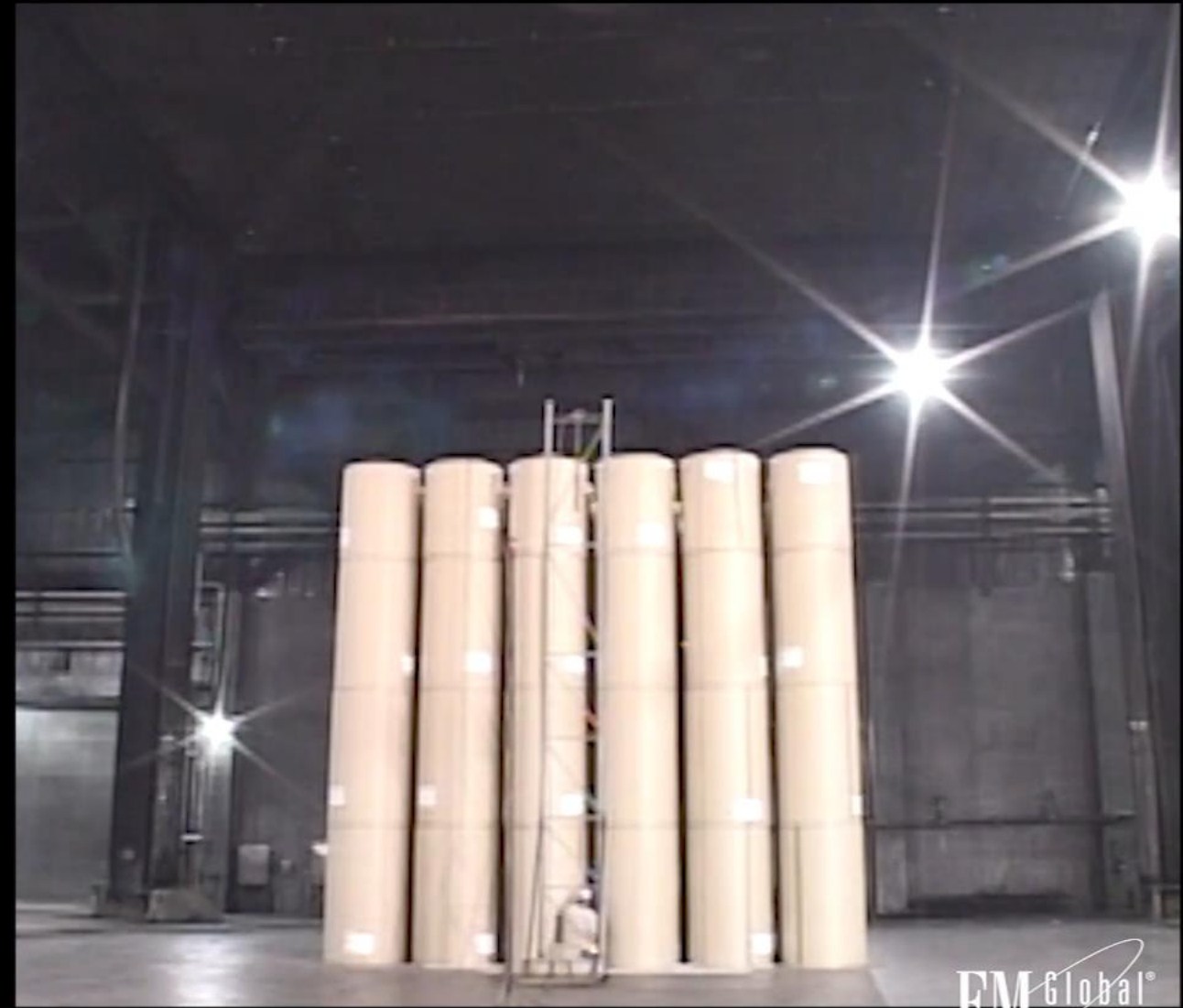
1990s

RP1 is a High Hazard, Difficult to Protect



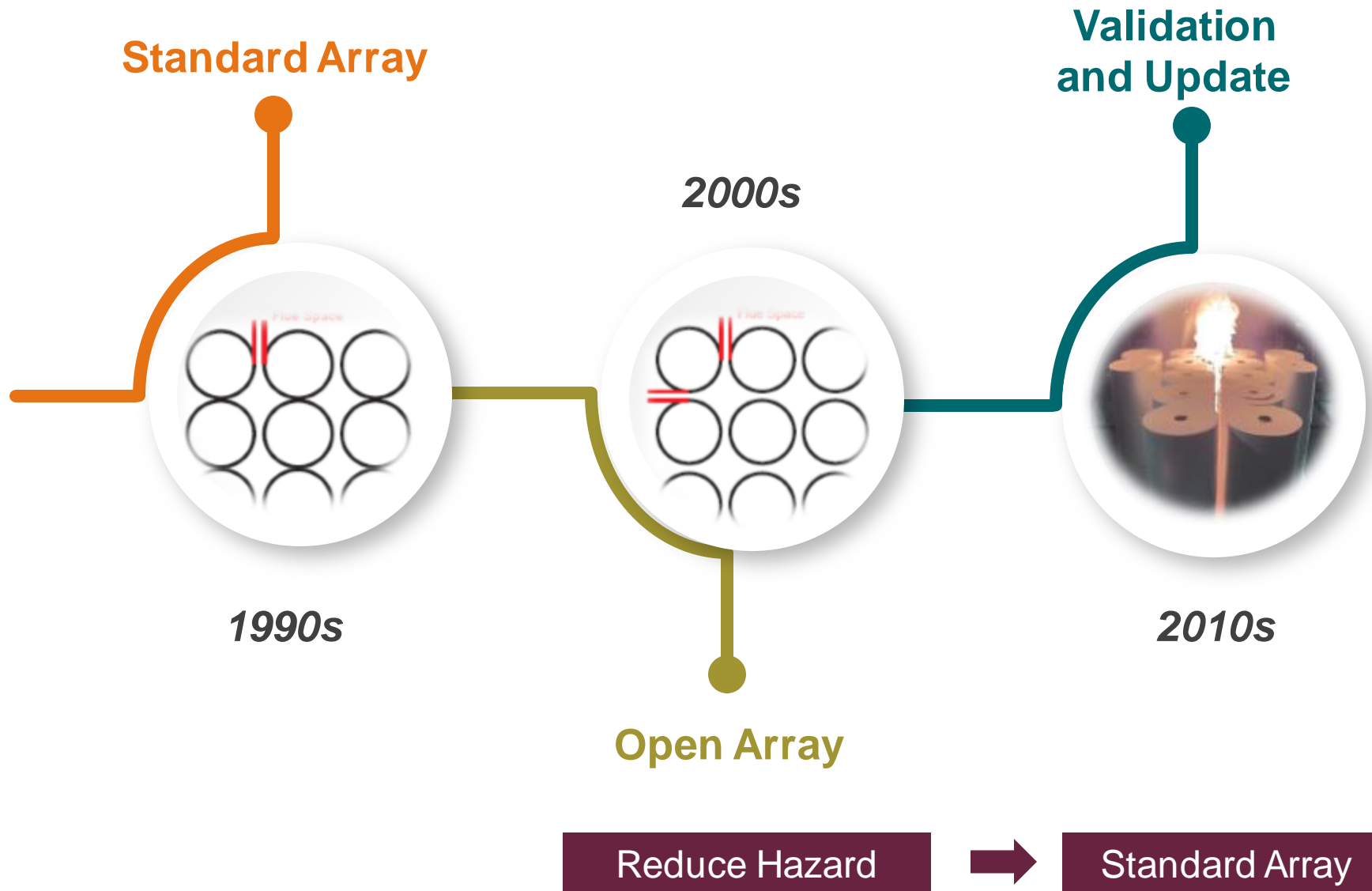


Standard Array

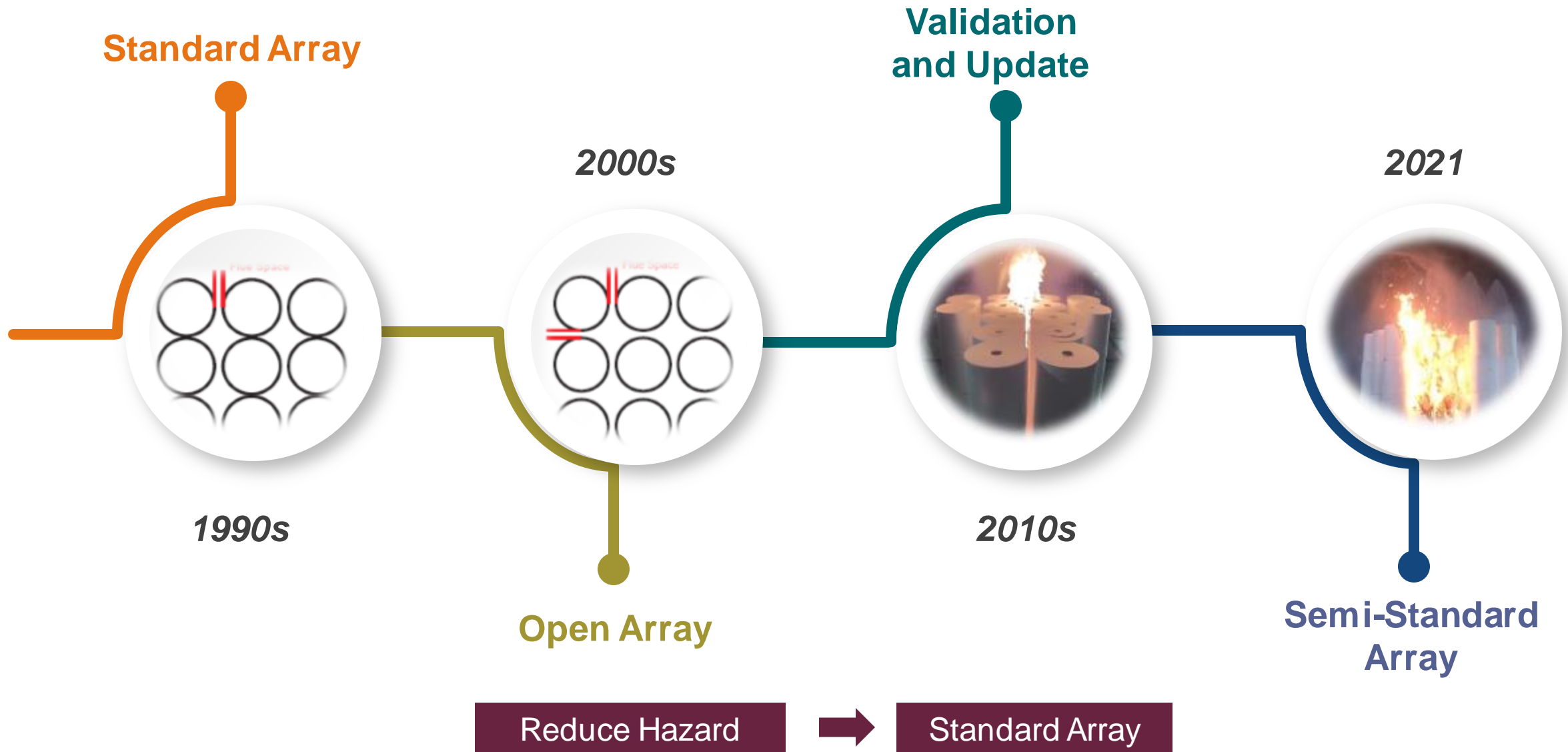


Open Array

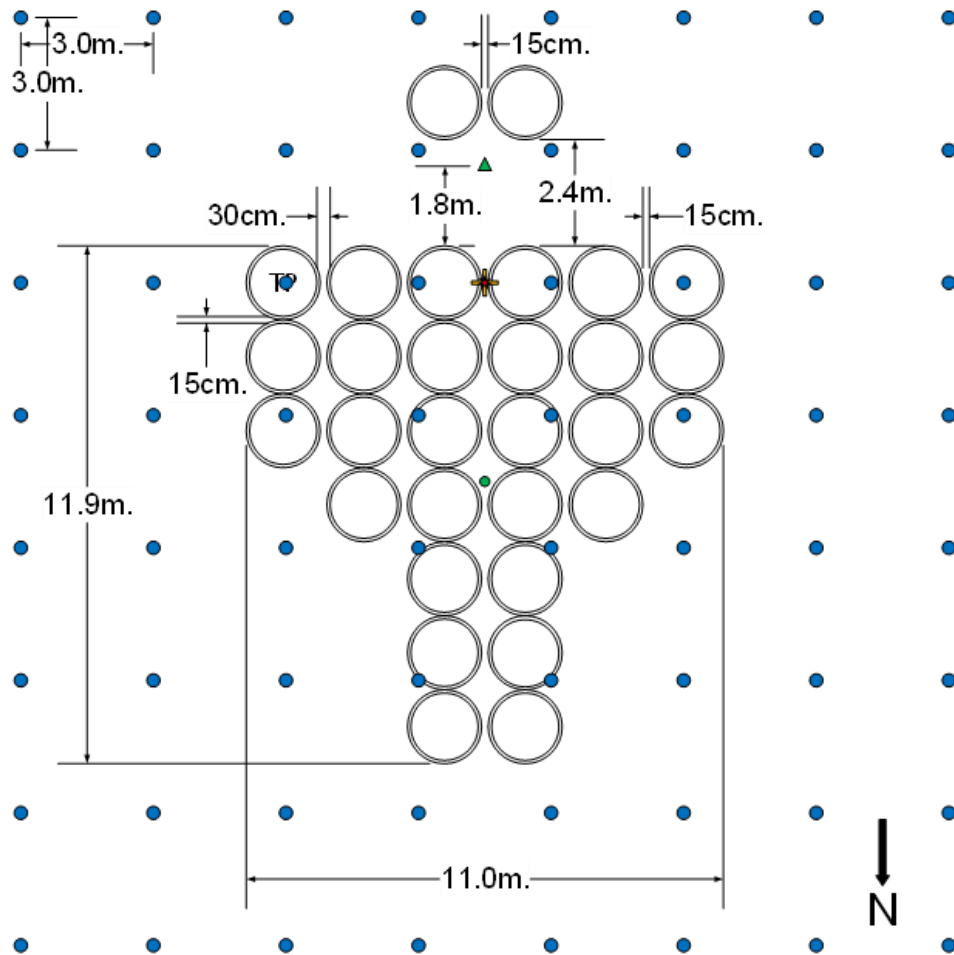
RP1 is a High Hazard, Difficult to Protect



RP1 is a High Hazard, Difficult to Protect



Semi-Standard Array Fire Test Setup



- RP1 parent rolls
- Storage to 6.4 m (21 ft)
- Ceiling at 12.2 m (40 ft)
- Target array
- K240 @ 6.2 bar

open array

standard array

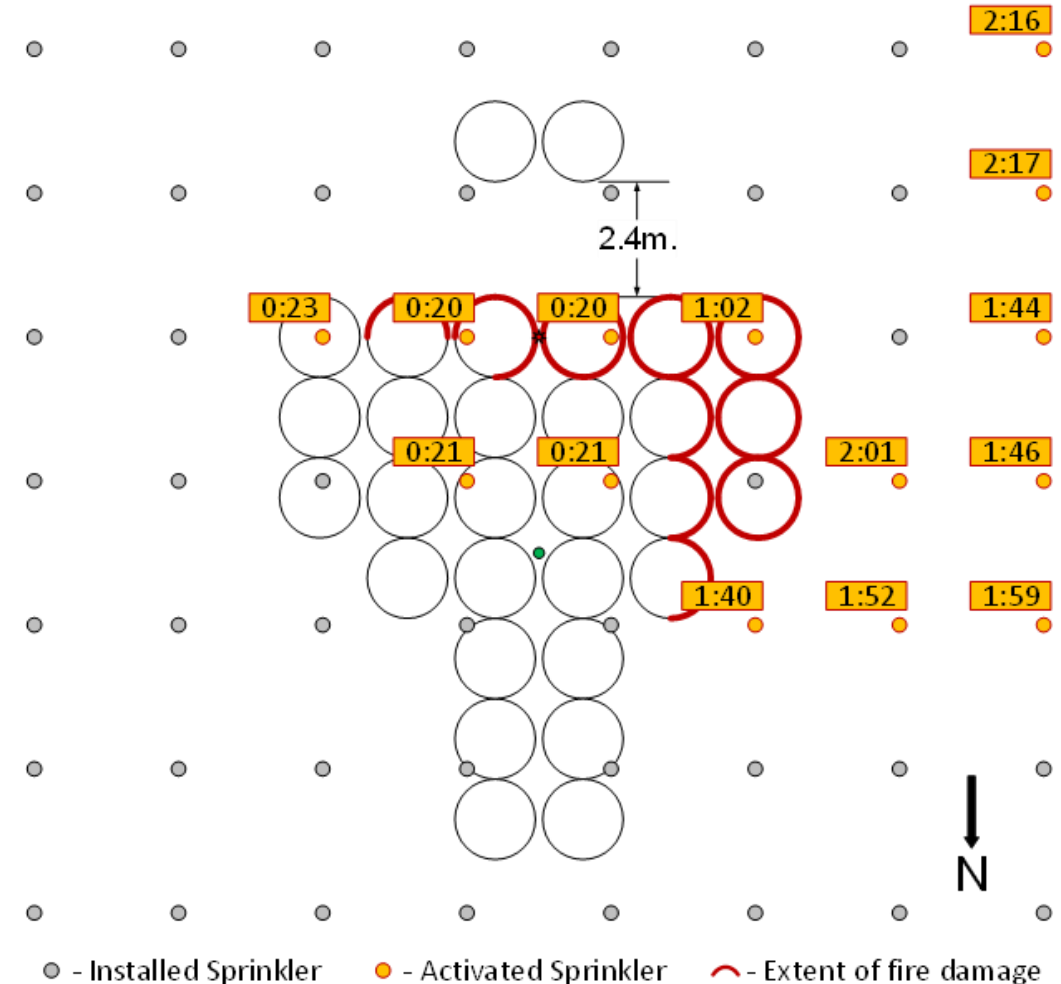




Semi-Standard Array Test Results

Protection adequacy based on:

- Number of Sprinklers - 14
- Ceiling Steel Temperature - Adequate
- Fire Spread – Uncontrolled in Main Array; Target Array did not ignite



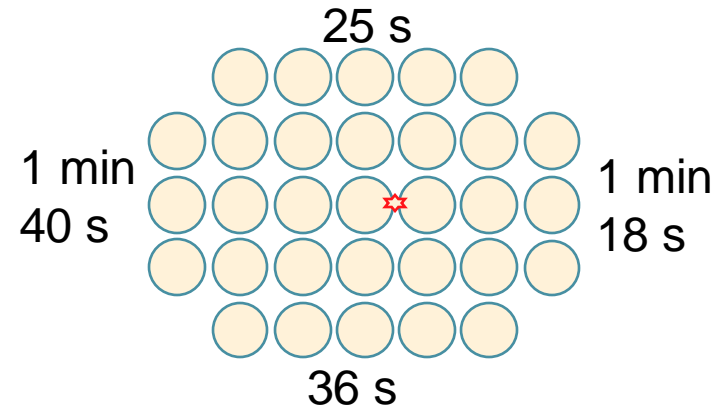
RP 1 Fire Hazard Summary



High Water Absorptivity



Rapid Fire Spread

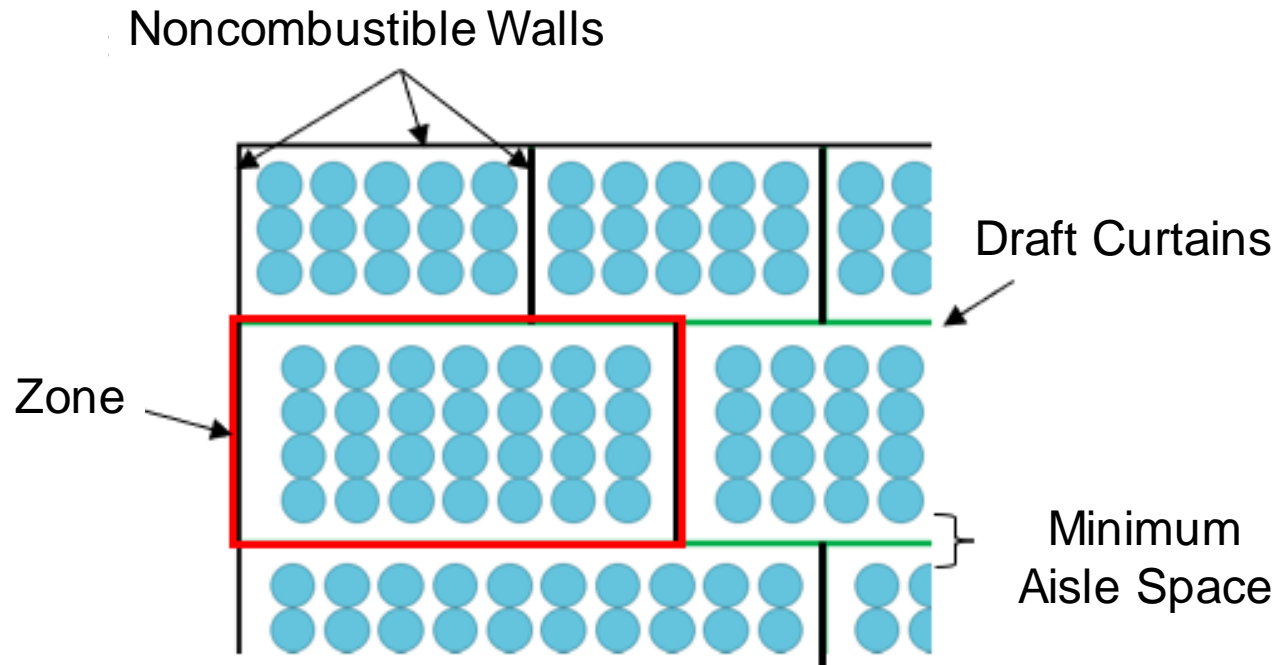


Exfoliation

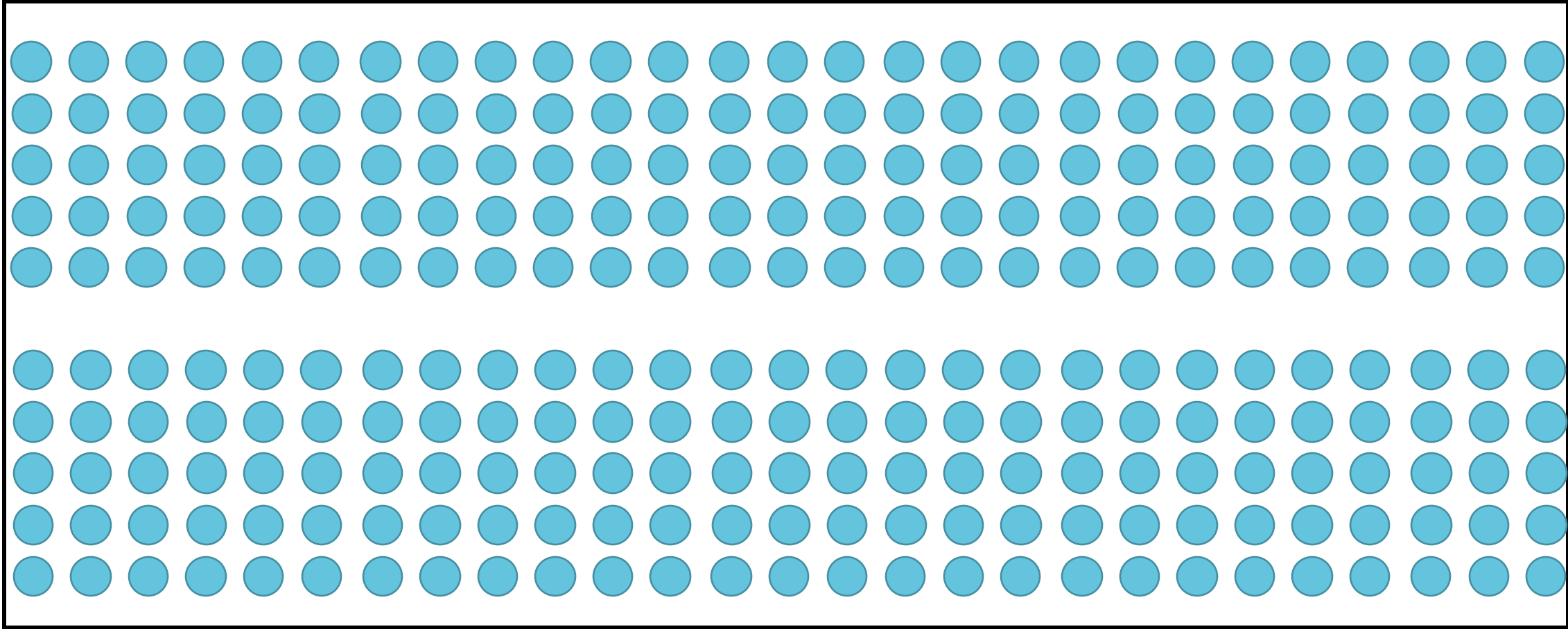


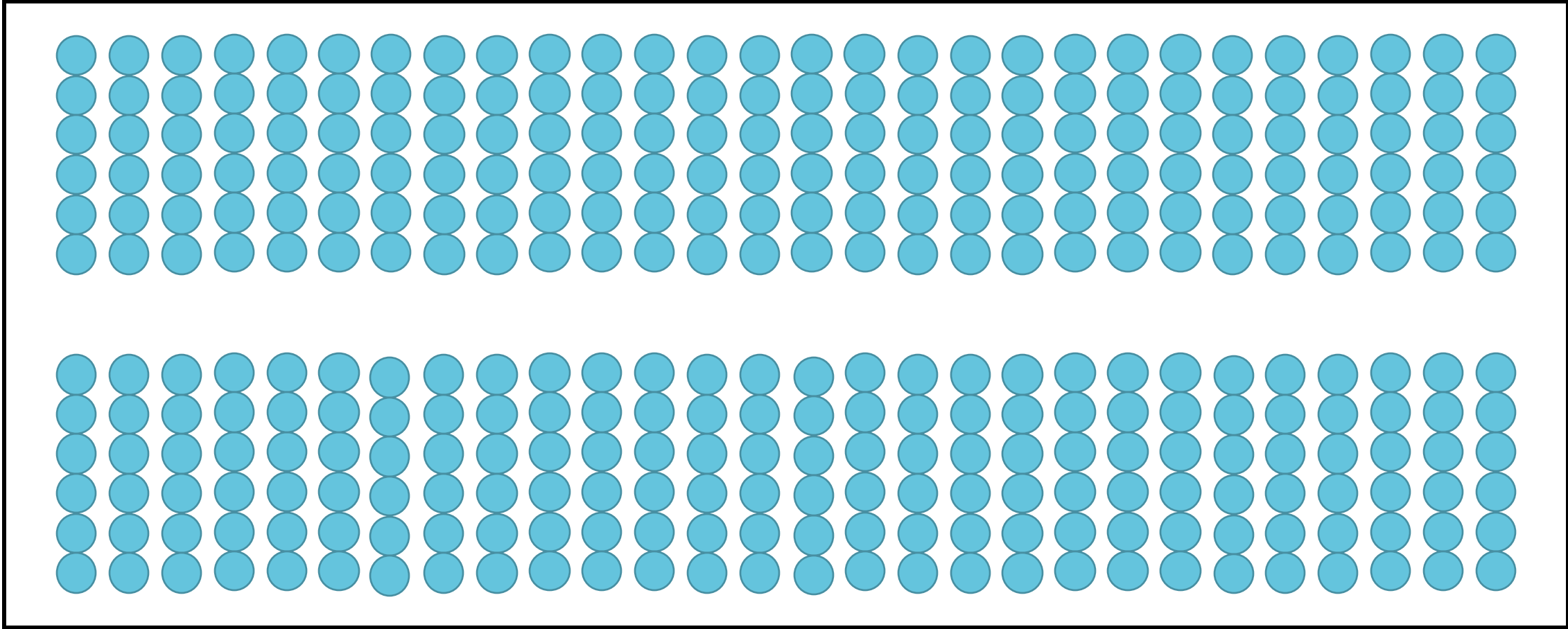
Debris on Sprinkler

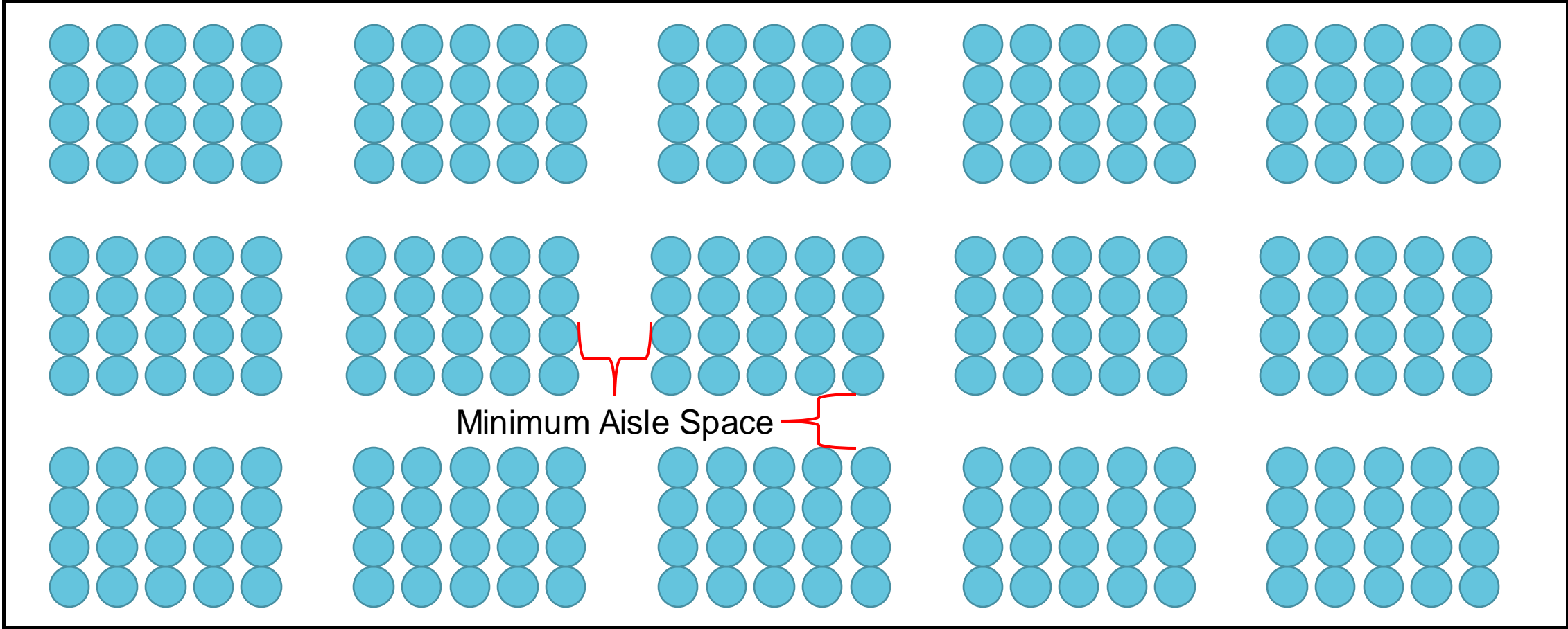


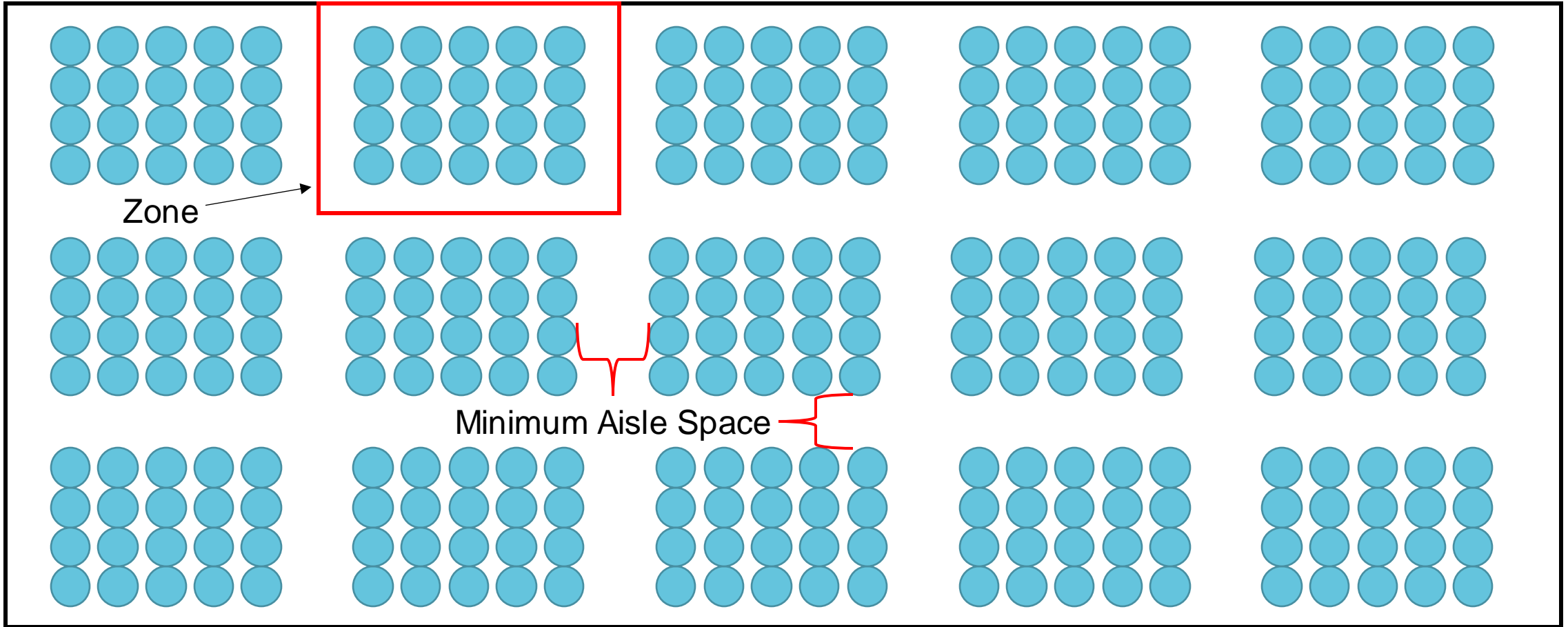


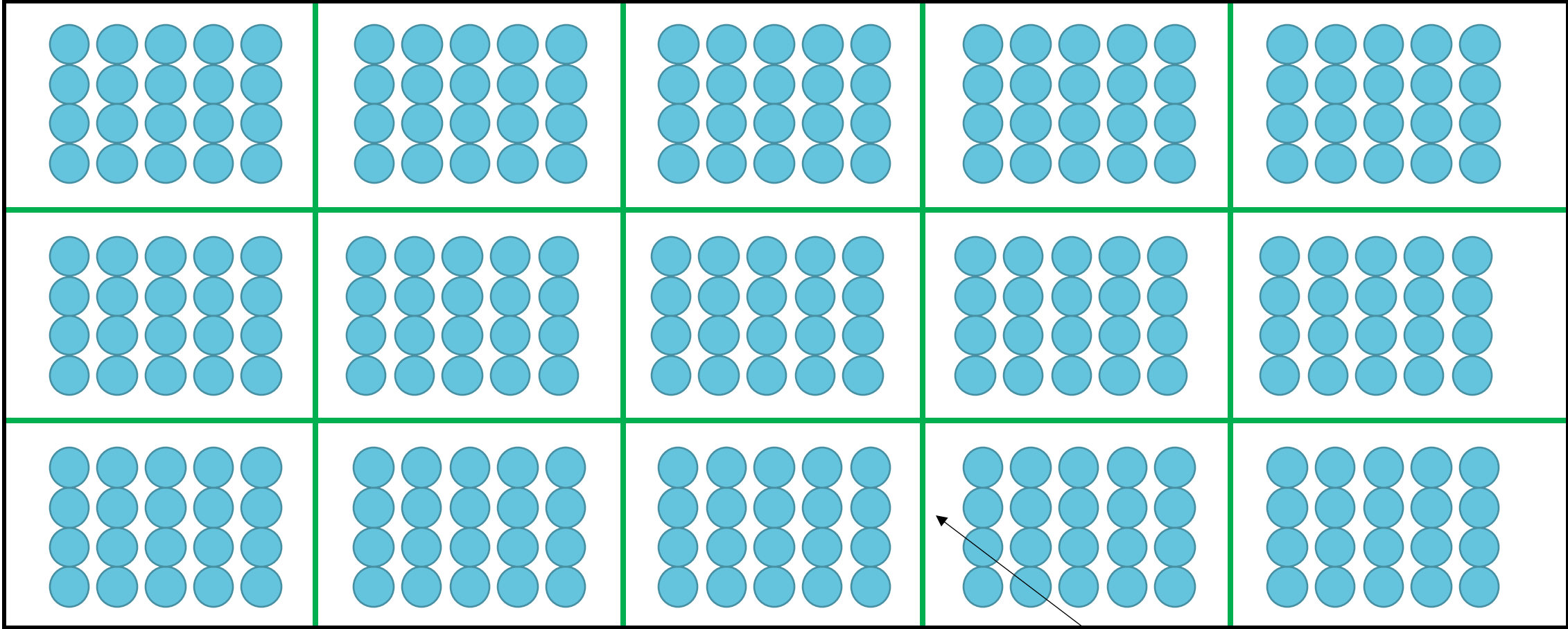
- **Semi-Standard and Standard Array**
 - Wet-pipe ceiling automatic sprinkler system
 - Storage zones separated by either:
 - Noncombustible walls
 - Aisles and draft curtains
 - Maximum storage: 8.2 m (27 ft)
 - Maximum ceiling: 12.2 m (40 ft)
 - Maximum zone size determined by available water supply
- **Open Array**
 - No protection options



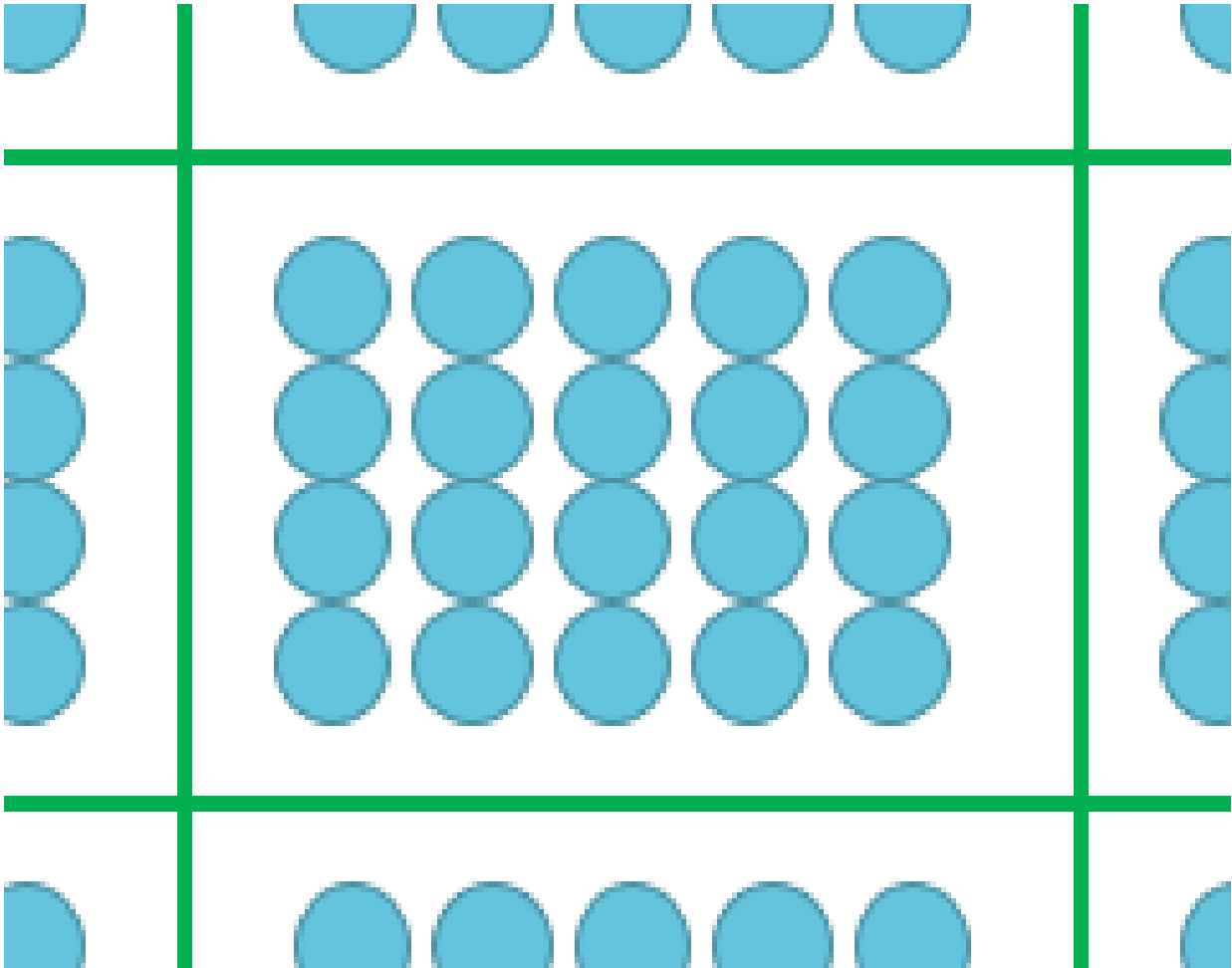


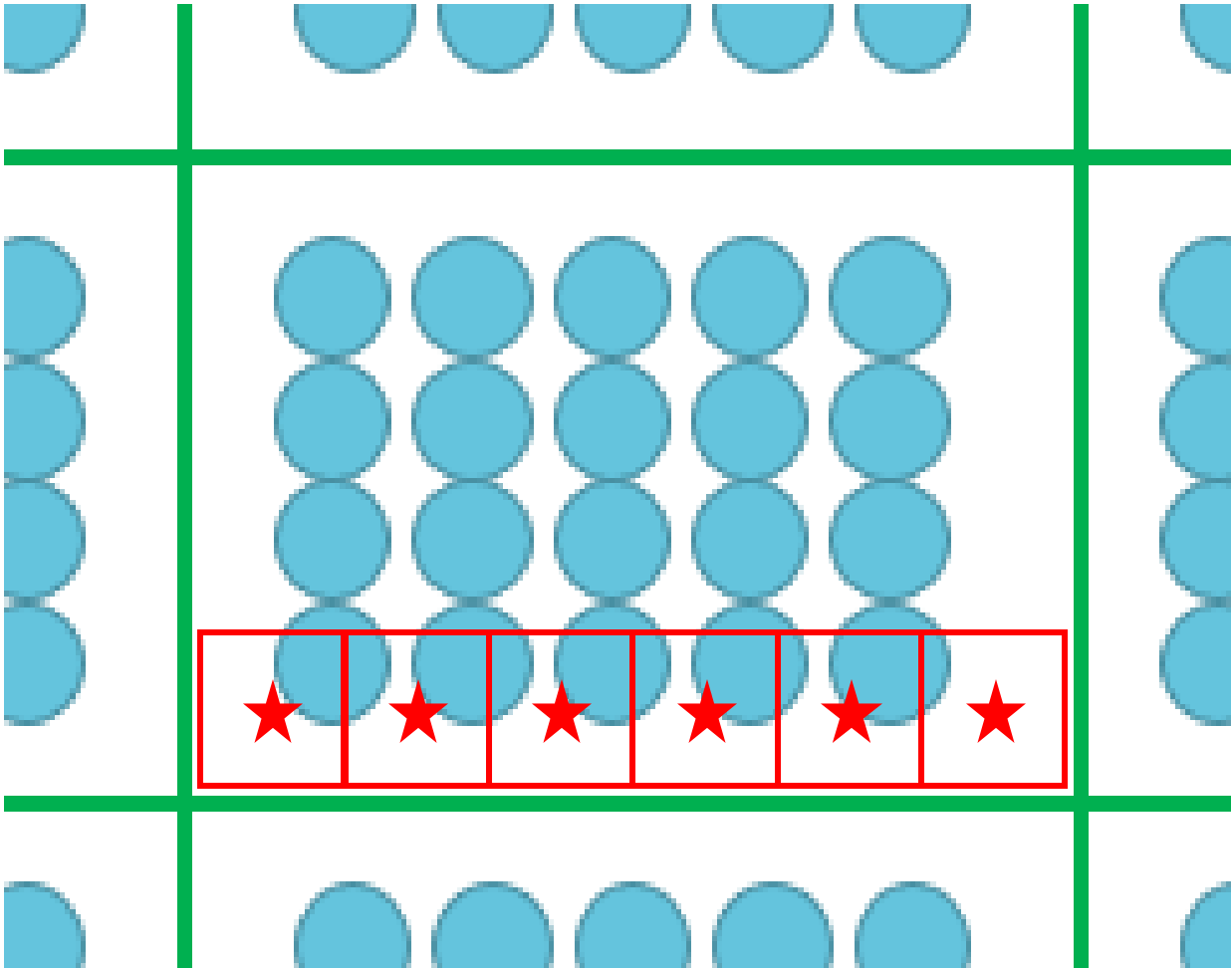


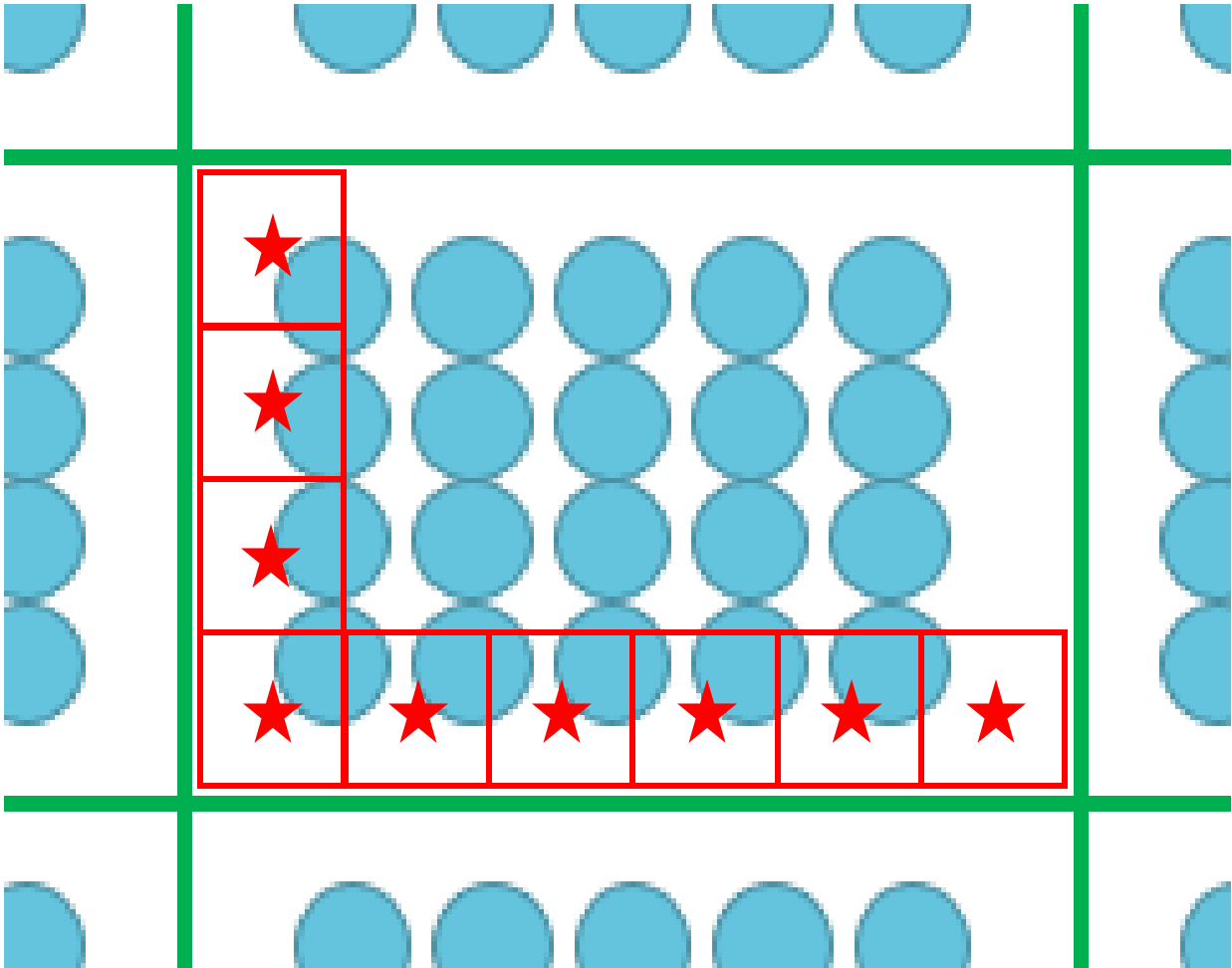


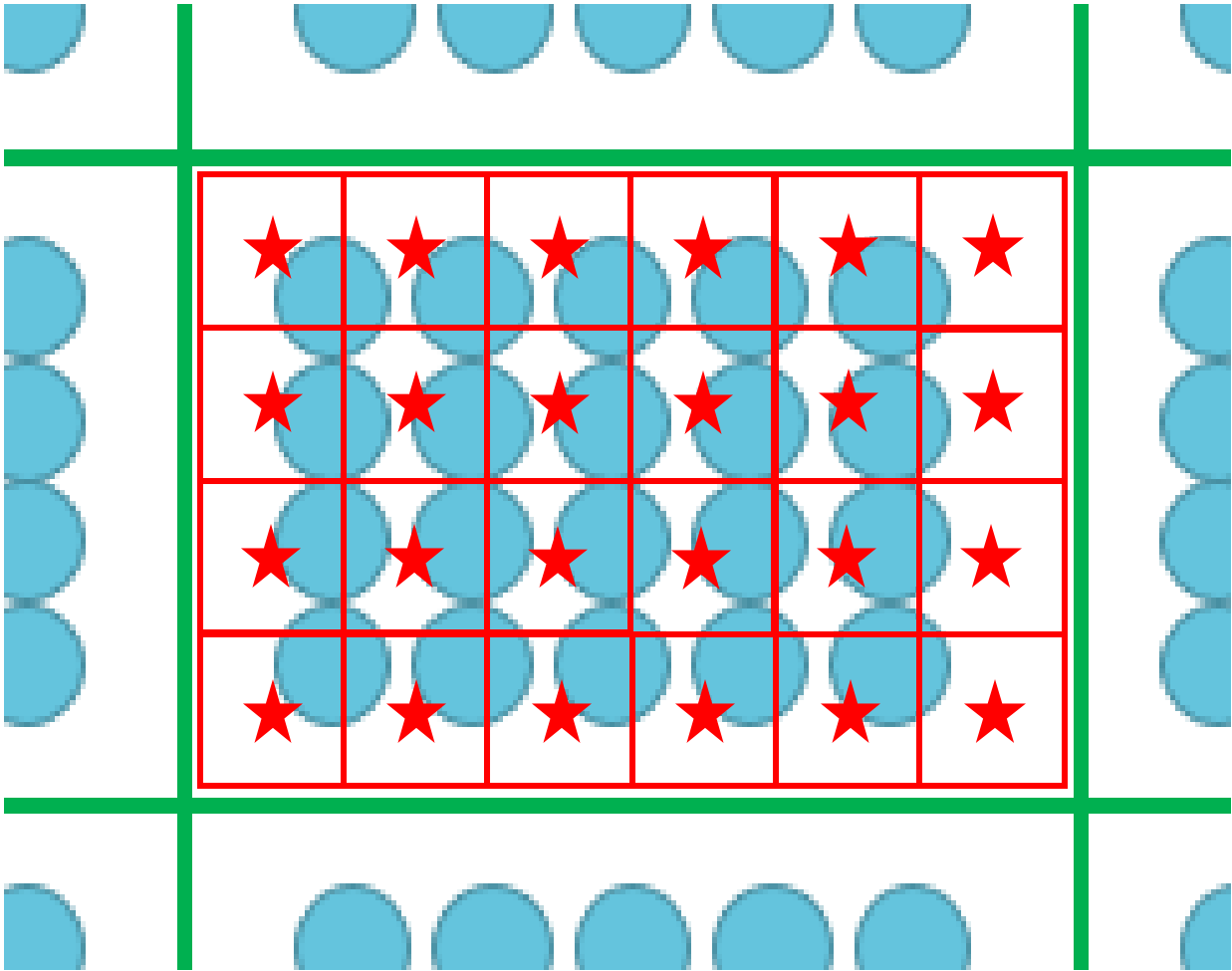


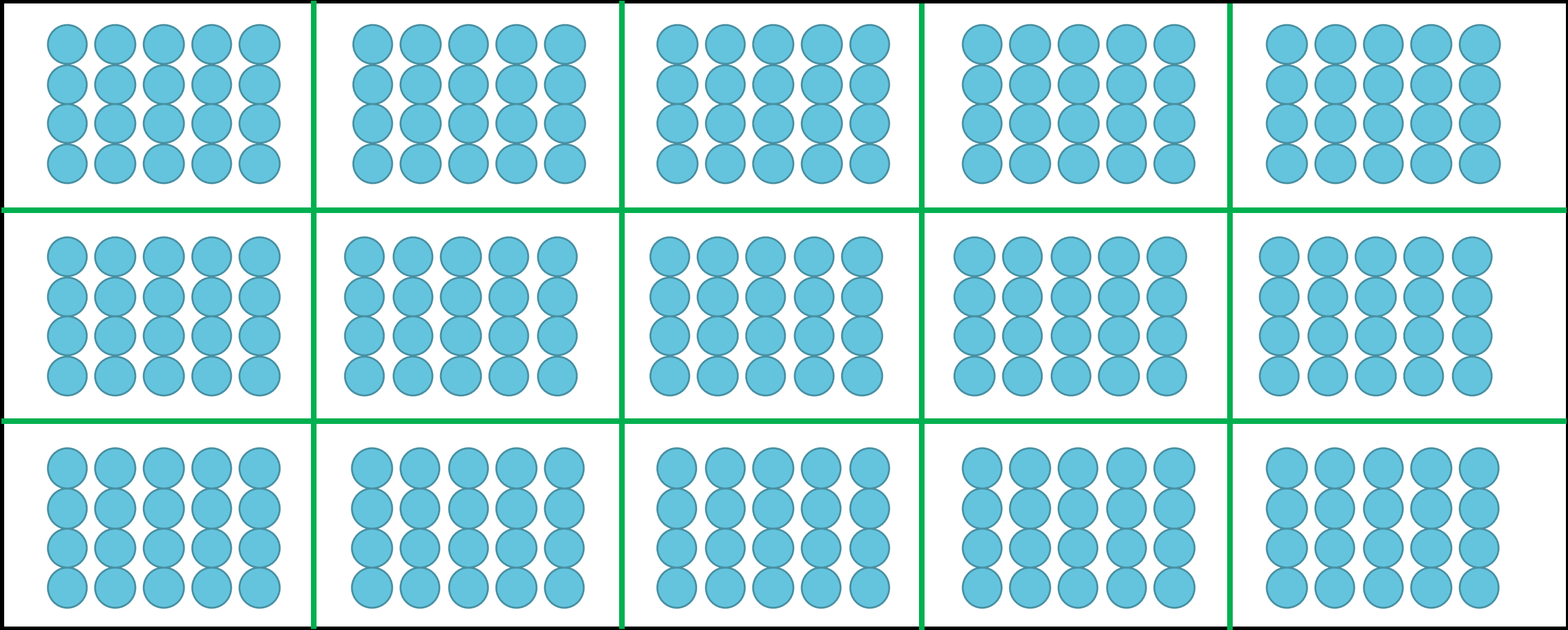
Draft Curtain

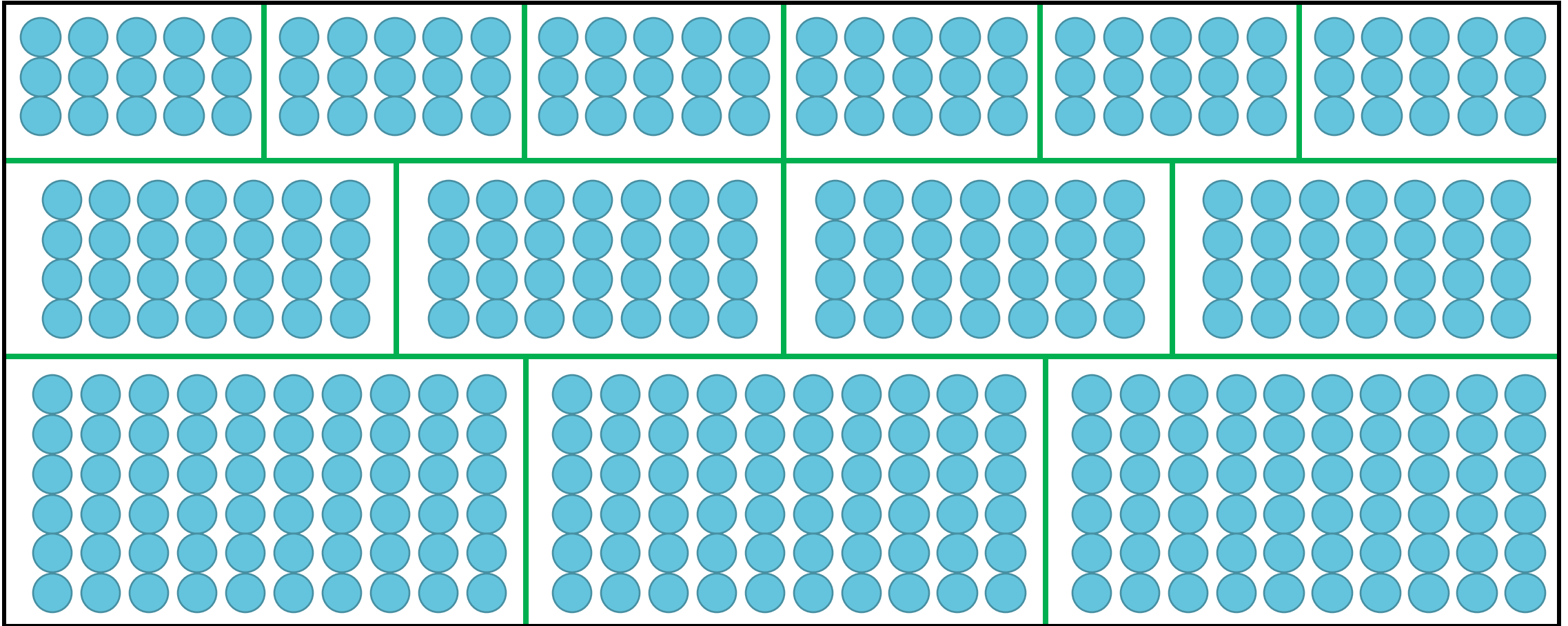


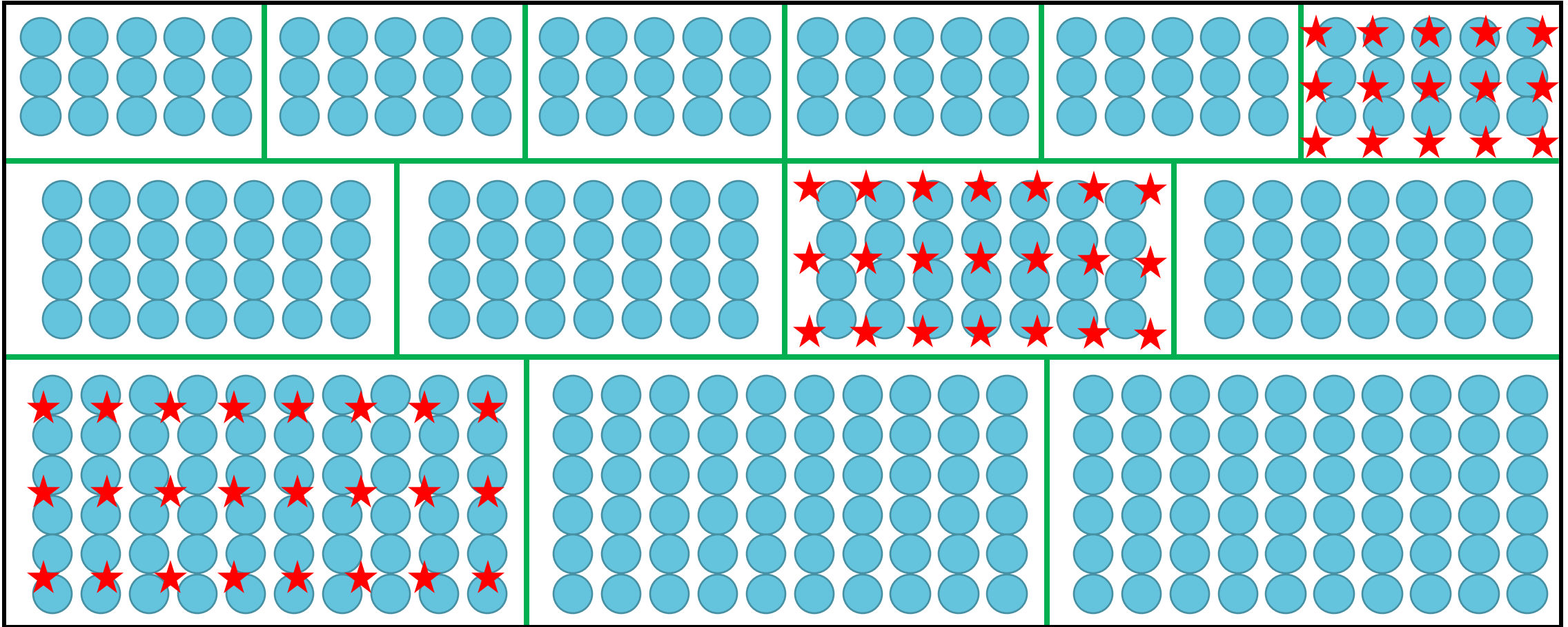


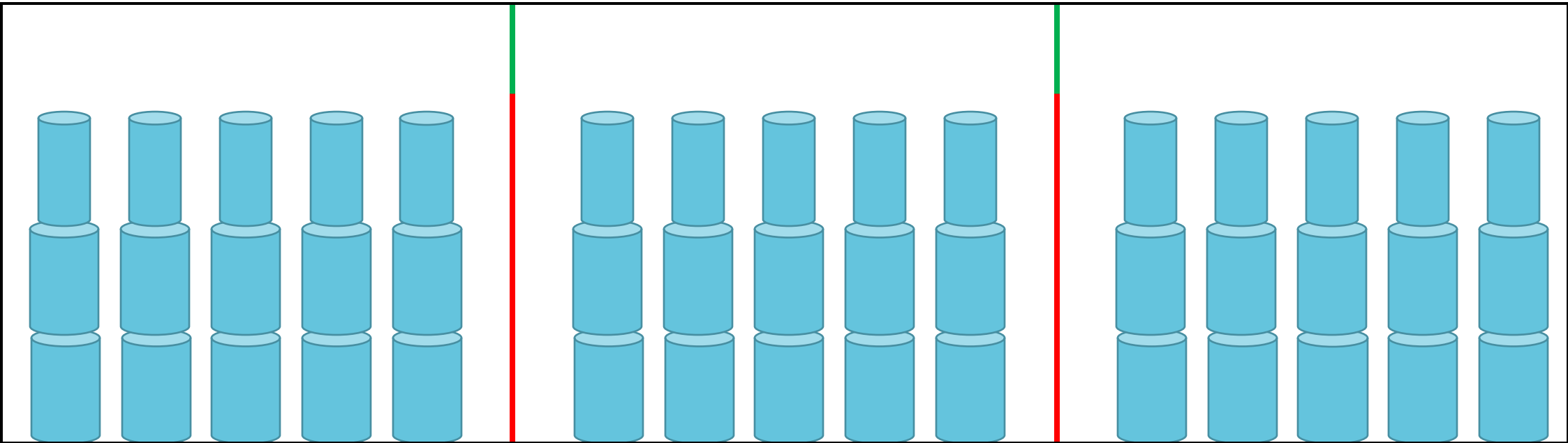


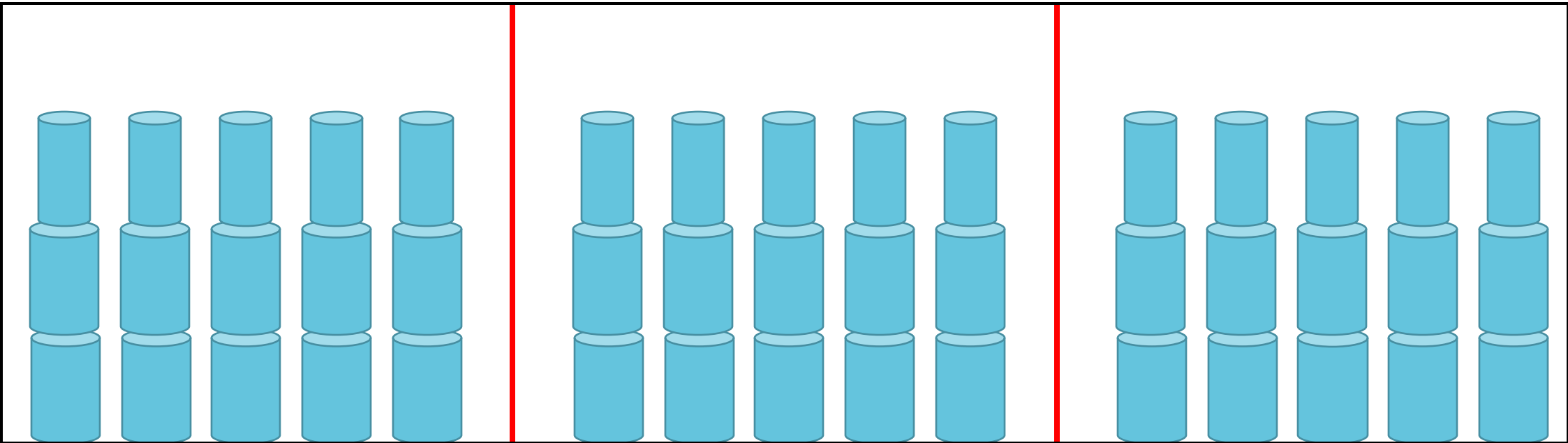


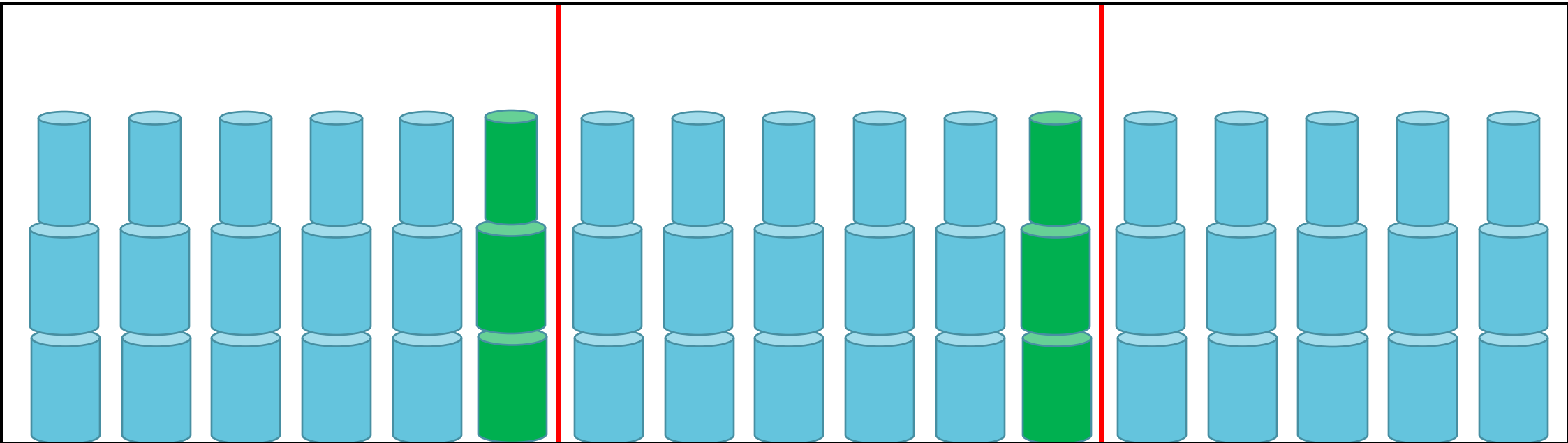


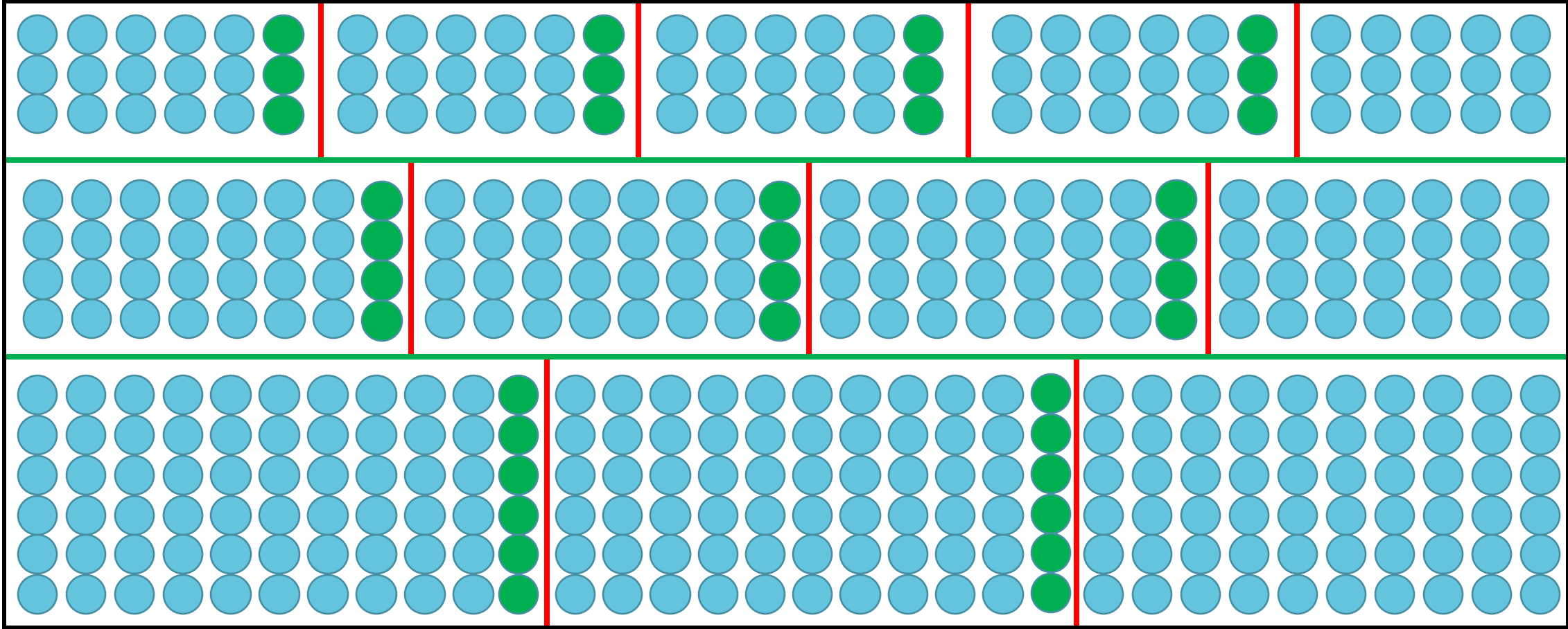








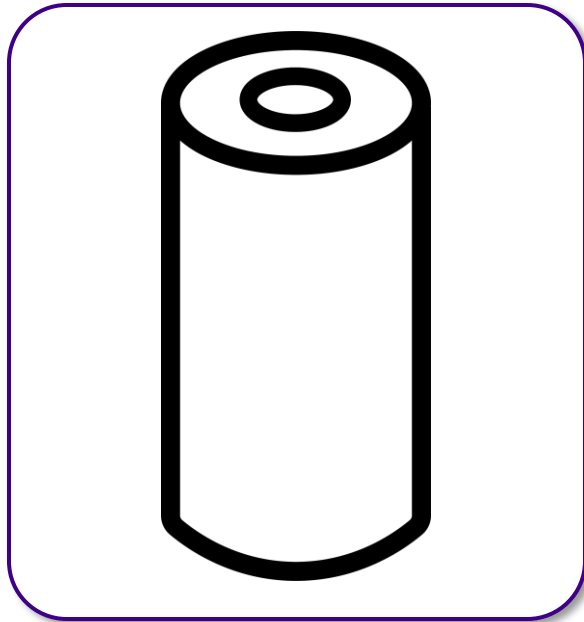




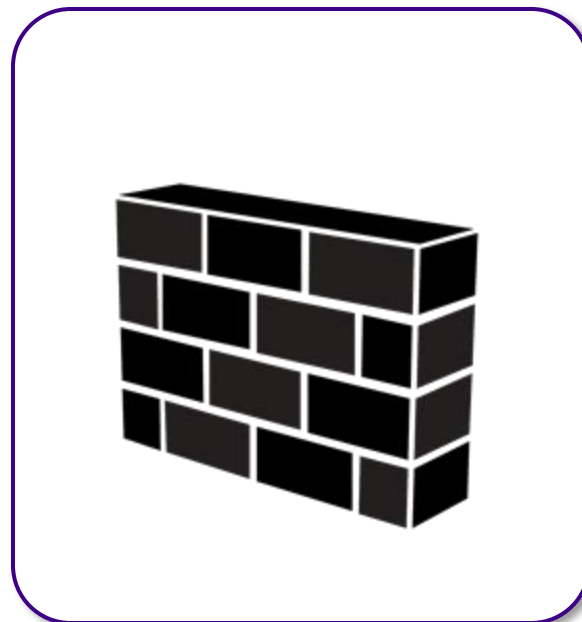
Other RP1 Solutions



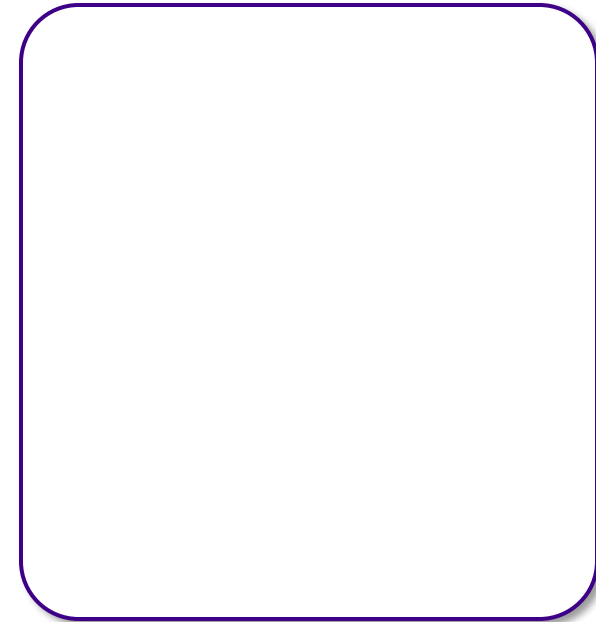
Detached Warehouse



Heavyweight Paper Wrap



MFL Walls



SMART Sprinkler

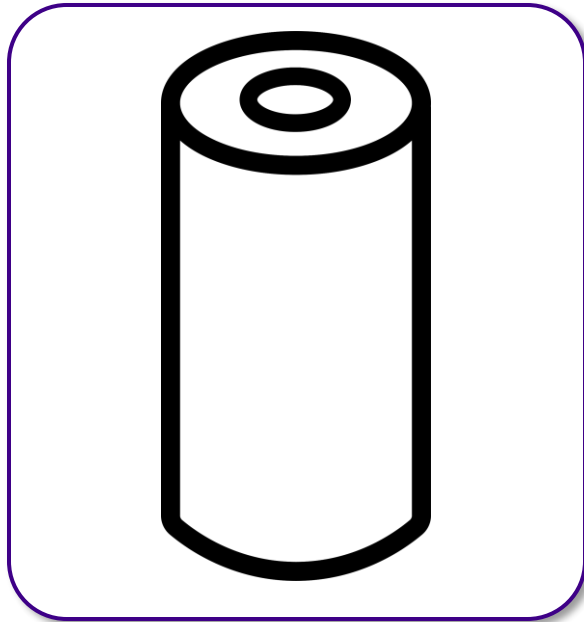
Today

Future

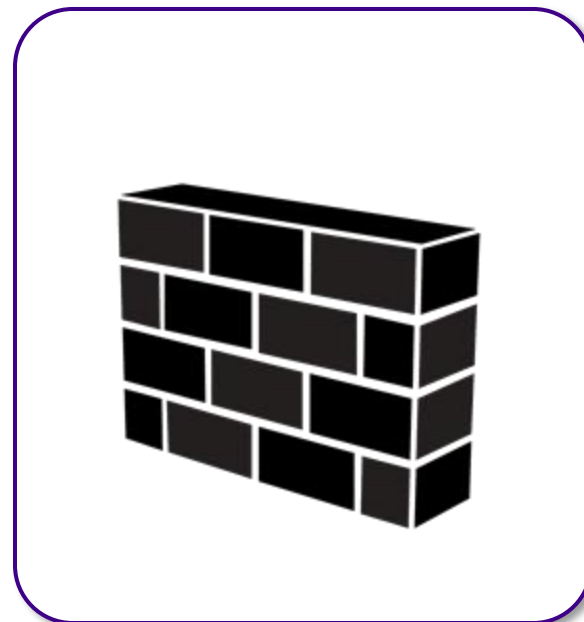
Other RP1 Solutions



Detached Warehouse



Heavyweight Paper Wrap



MFL Walls



SMART Sprinkler

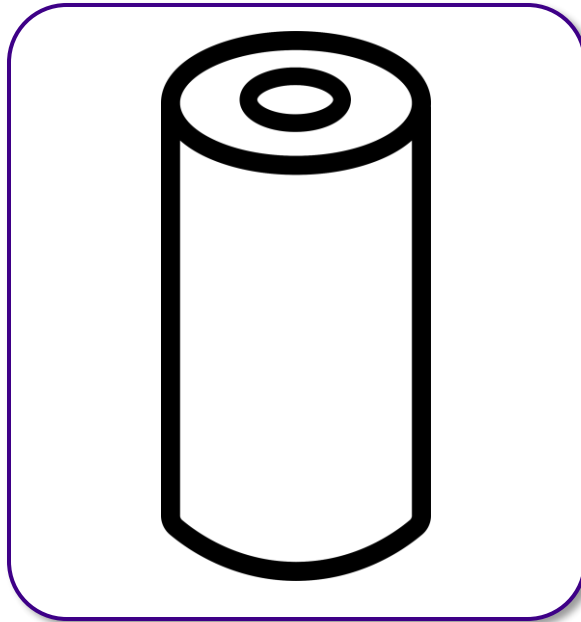
Today

Future

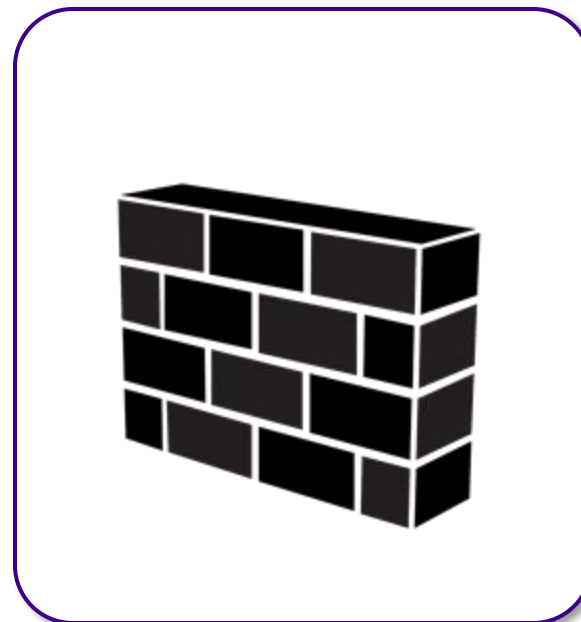
Other RP1 Solutions



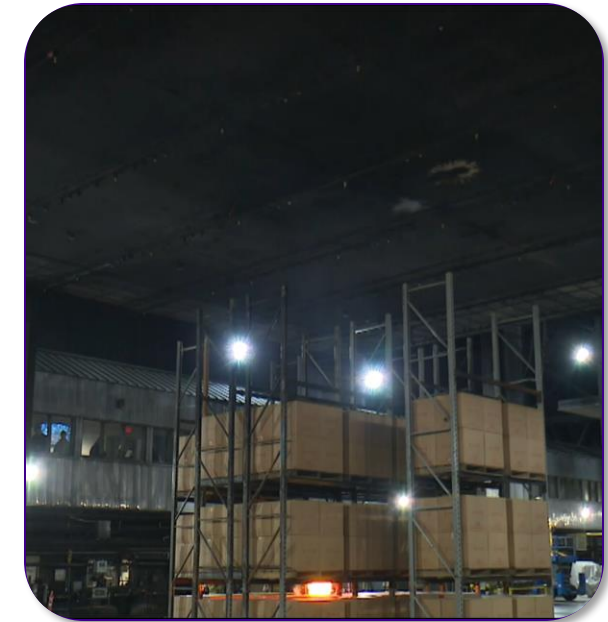
Detached Warehouse



Heavyweight Paper Wrap



MFL Walls



SMART Sprinkler

Today

Future

Questions?

