



SCAN ME

Or visit:

pollev.com/evanmascitti998

Who's in the audience?

Grounds manager - water access

Grounds manager - no water access

Contractor

Soil supplier

Academic/research

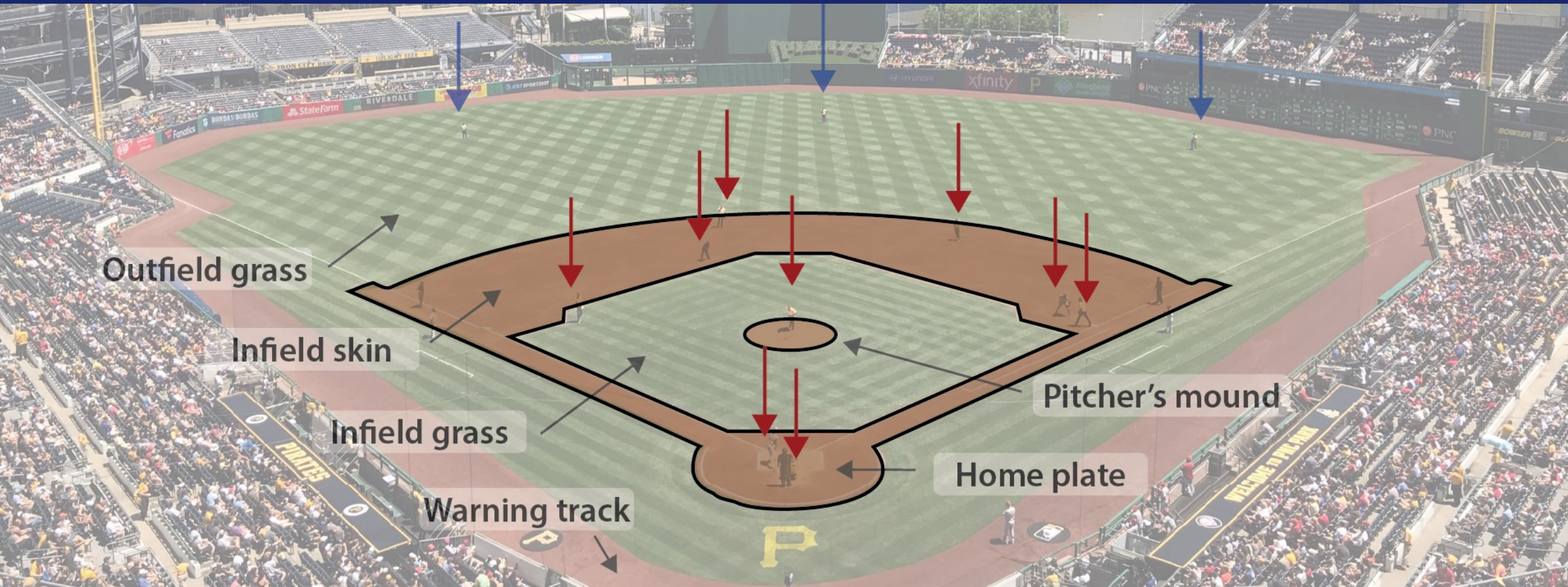
Other

Infield skin construction and renovation

Evan C. Mascitti

MASTMA Spring Education Event

2 March 2023



Outfield grass

Infield skin

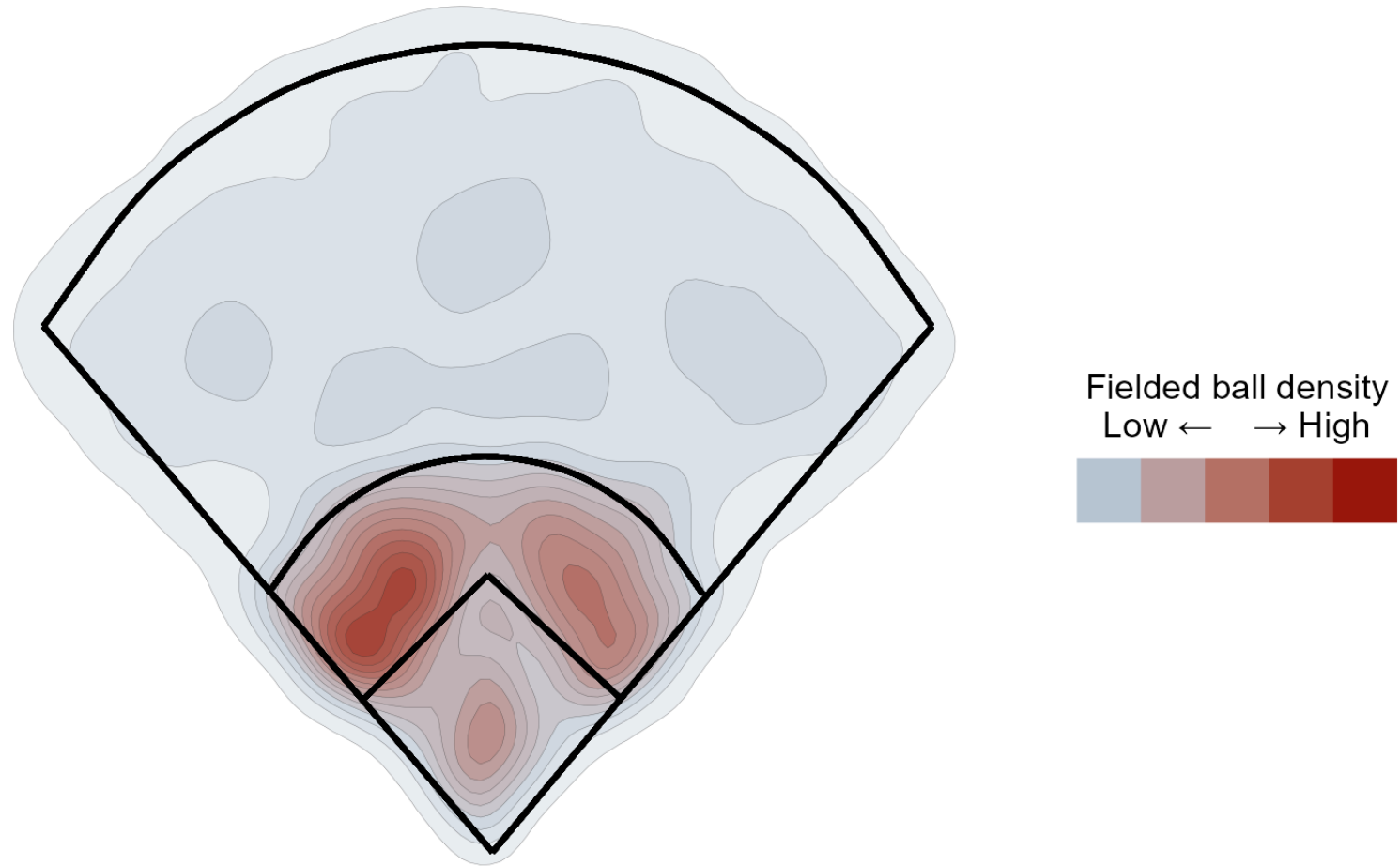
Infield grass

Warning track

Pitcher's mound

Home plate

Density of MLB fielding plays



- Map includes 39,869 batted balls from 2020 season
- Data source: Baseball Savant database

Fixing a wet field

Remove water



Use:

- Puddle pillows
- Pumps
- Wet vacuum
- Siphon

(But fix the real problem!)

Stay off until it firms up



Credit: Dan Douglas (Reading Fightin' Phils)



Do not:

Sweep

Squeegee

Light on fire



Credit: Dan Douglas (Reading Fightin' Phils)

Apply calcined clay



Credit: Dan Douglas (Reading Fightin' Phils)

Lip removal





Grading plans



BASEBALL *and Softball* **FIELDS**

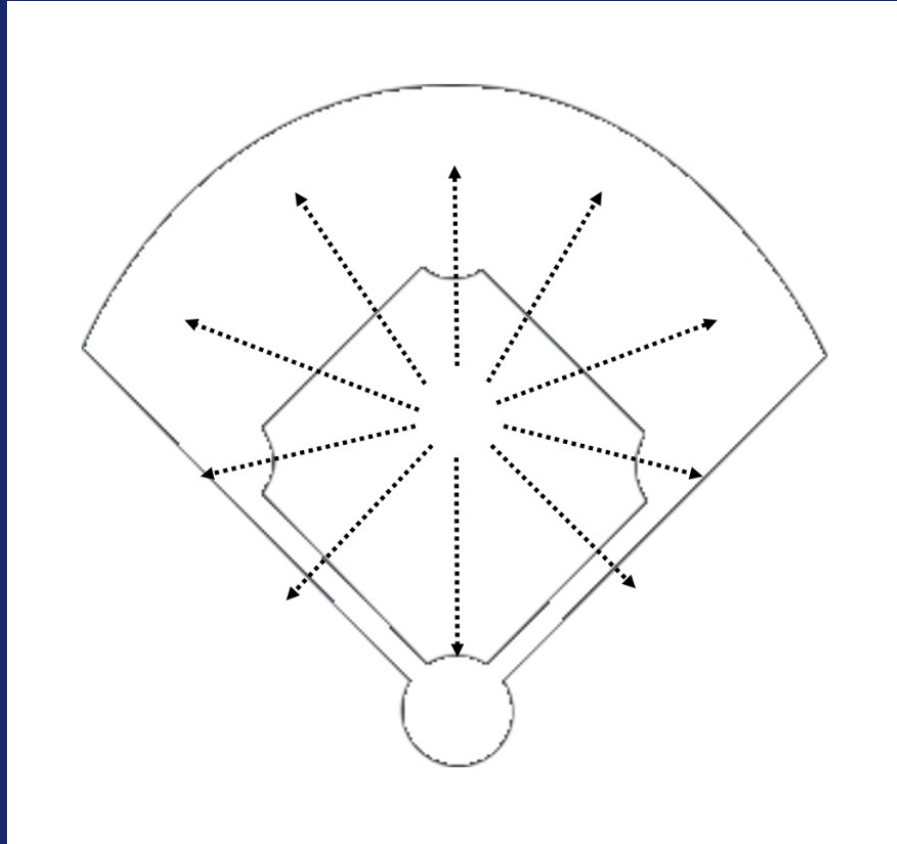
Design, Construction, Renovation, and Maintenance

Jim
Puhalla

Jeff
Krans

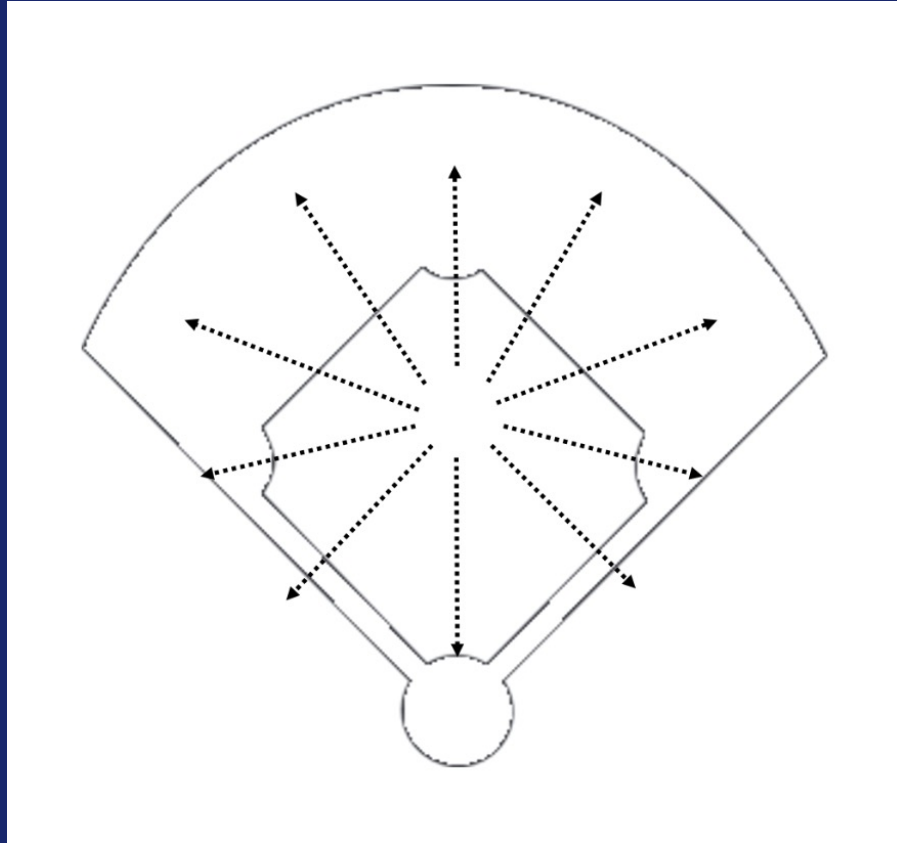
Mike
Goatley

Simple cone



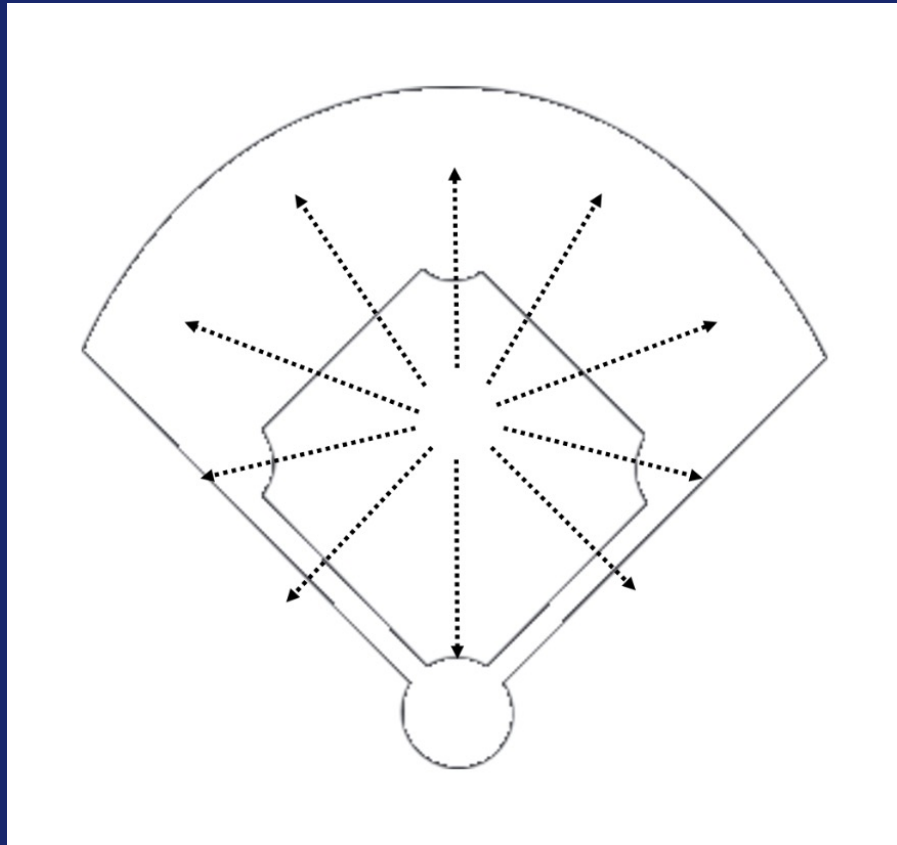
- Simple

Simple cone



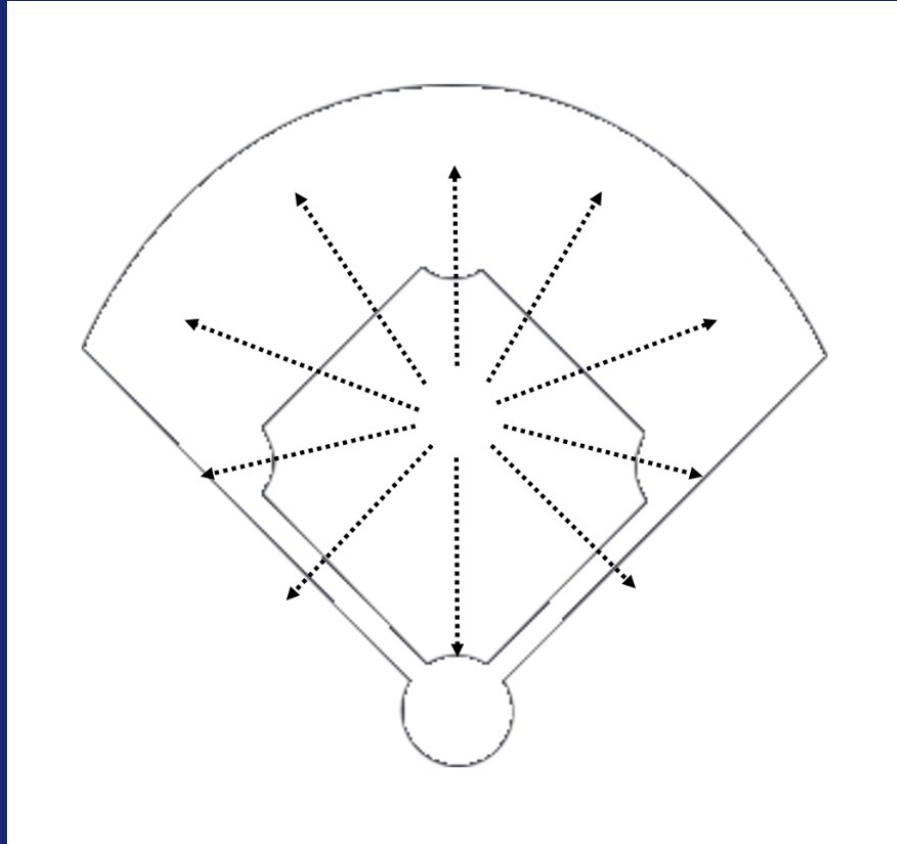
- Simple
- Same setup for entire field

Simple cone



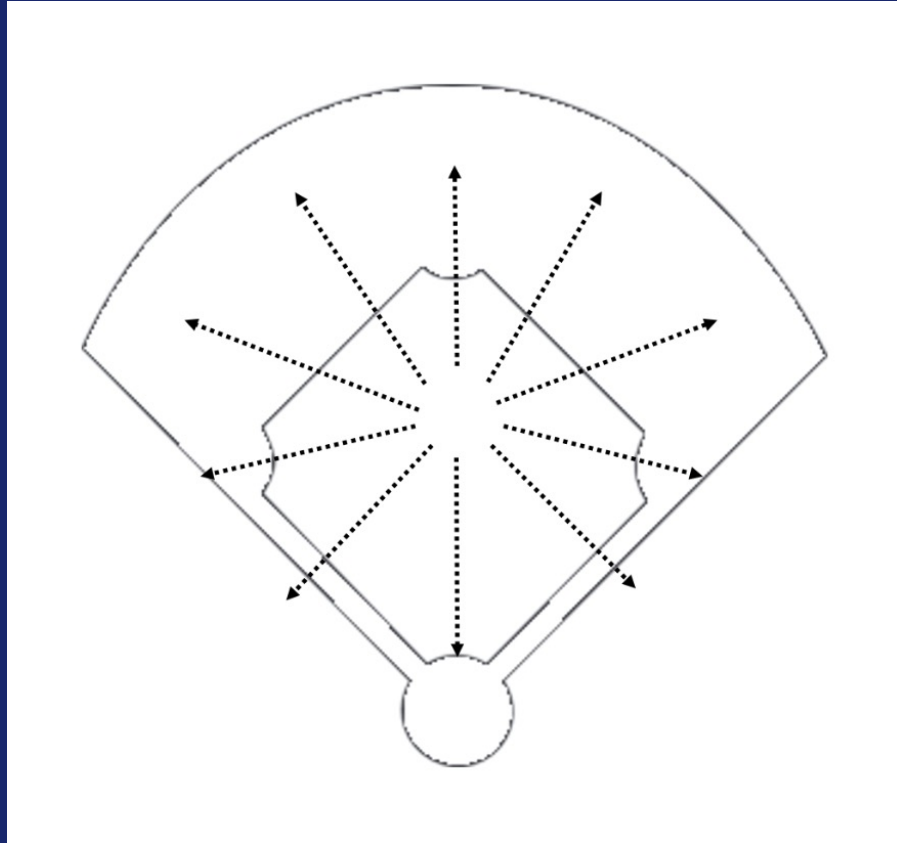
- Simple
- Same setup for entire field
- Short path for water to move

Simple cone



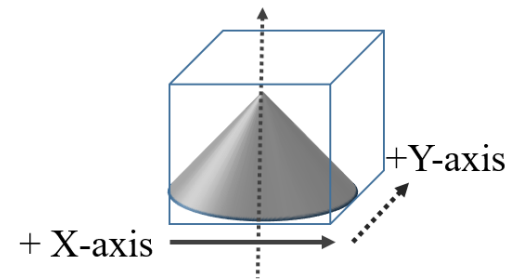
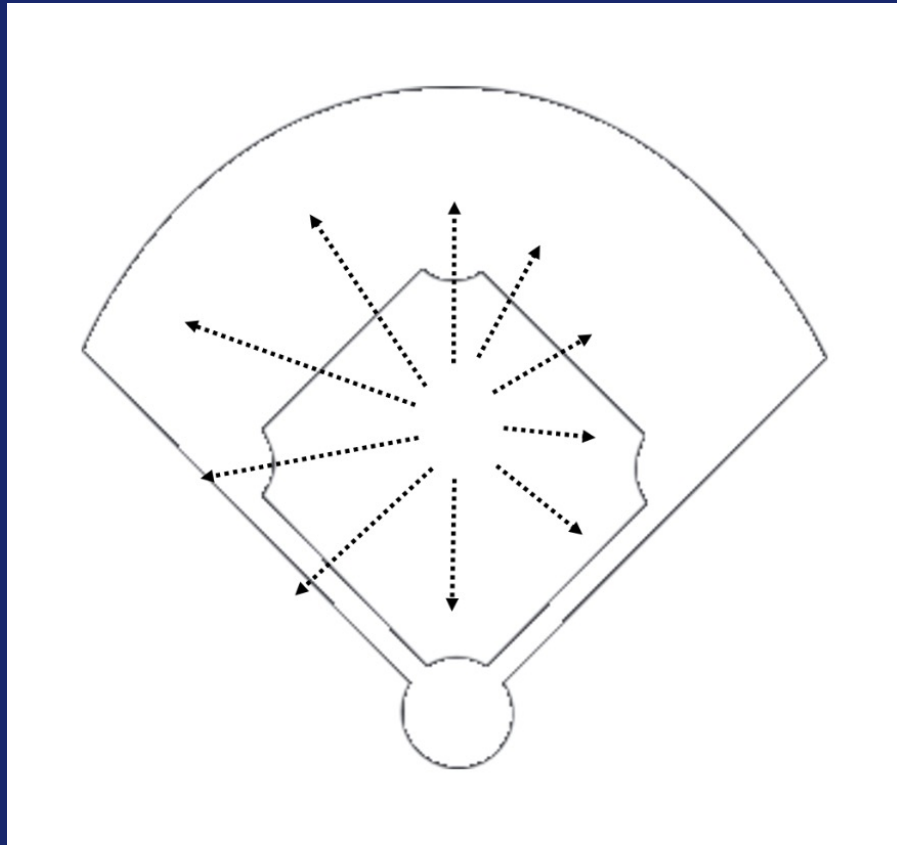
- Simple
- Same setup for entire field
- Short path for water to move
- Not visually appealing

Simple cone

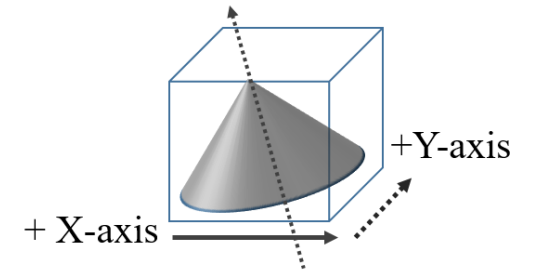


- Simple
- Same setup for entire field
- Short path for water to move
- Not visually appealing
- Reduces mound height

Tilted cone



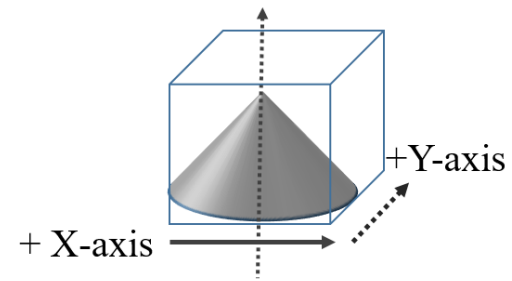
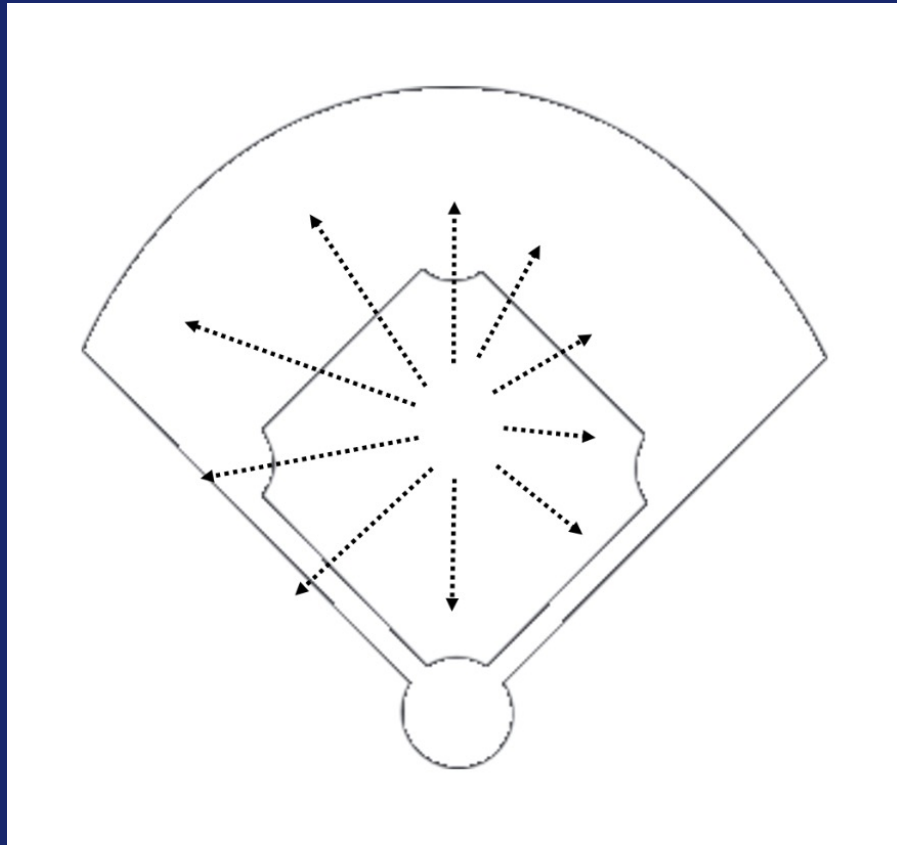
Standard cone



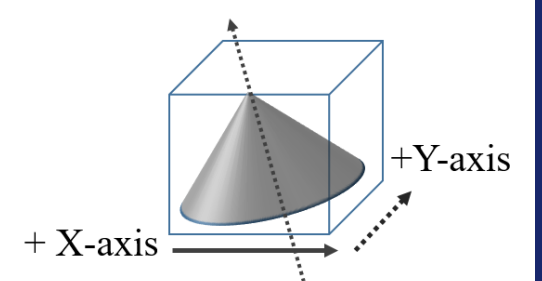
Tilted cone

- For “MacGyver’ renovations only
- Hard to reproduce later
- Not visually appealing
- Reduces mound height
- Can salvage an otherwise un-gradeable field

Tilted cone

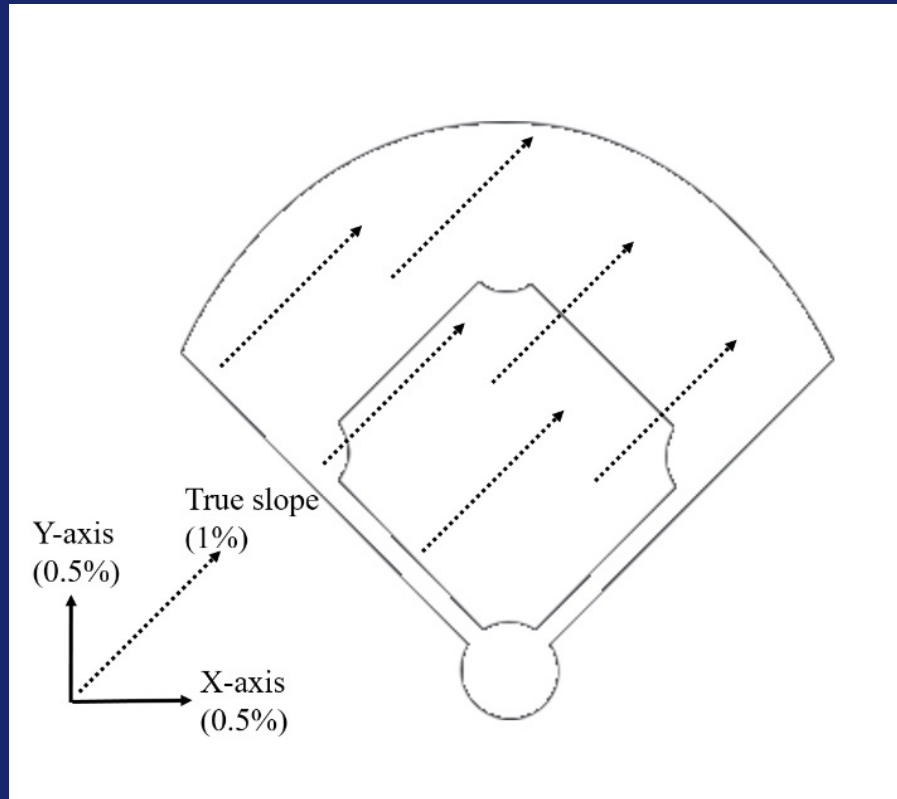


Standard cone



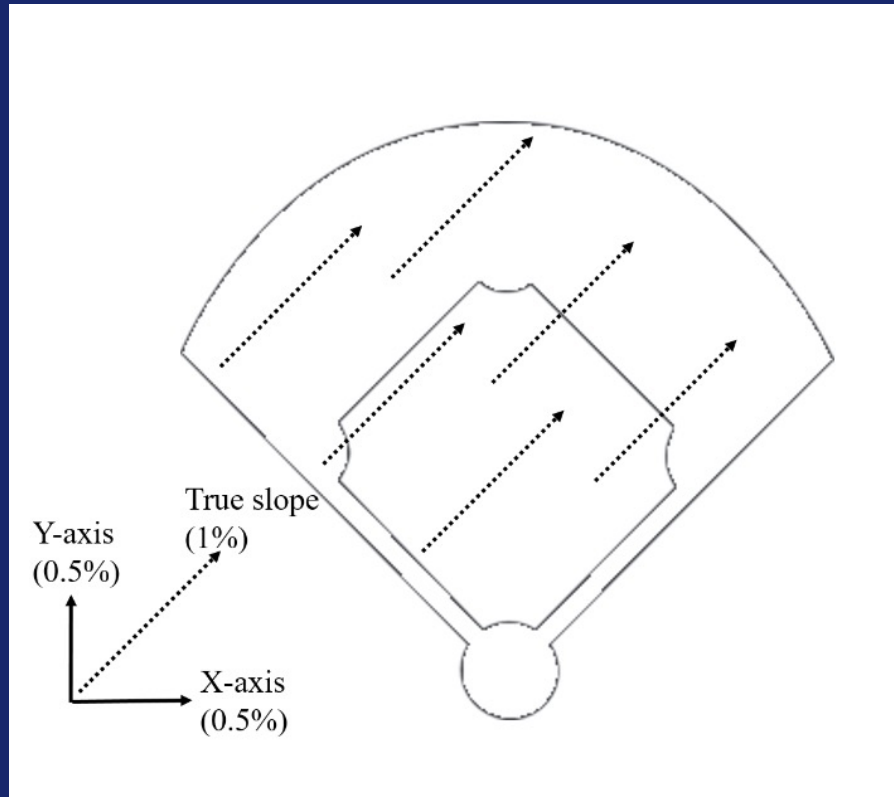
Tilted cone

Single-plane



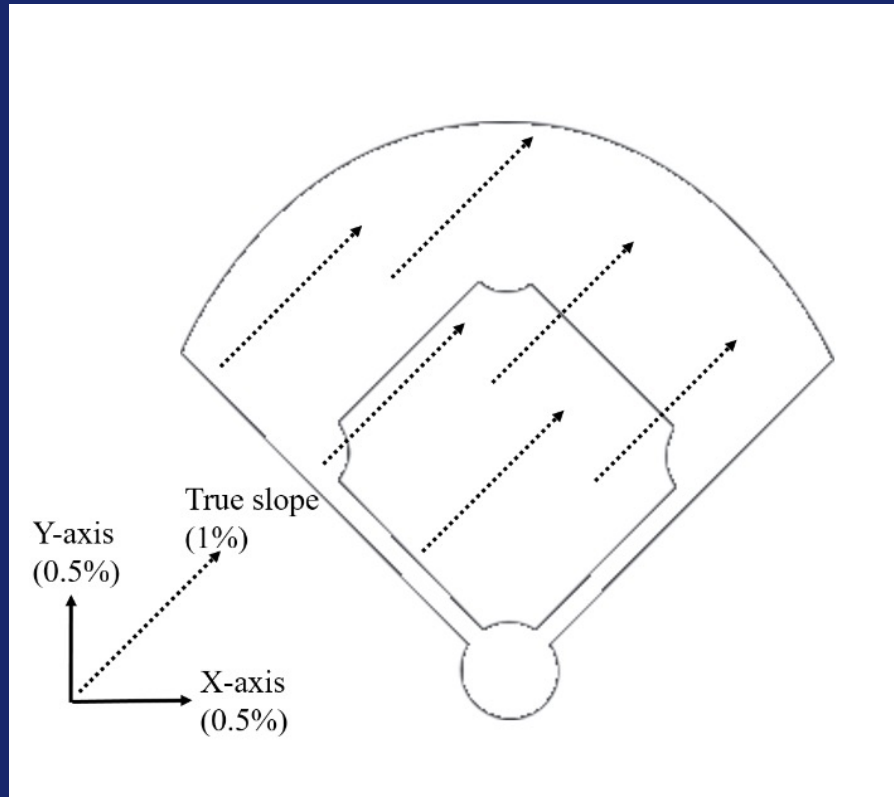
- Simple

Single-plane



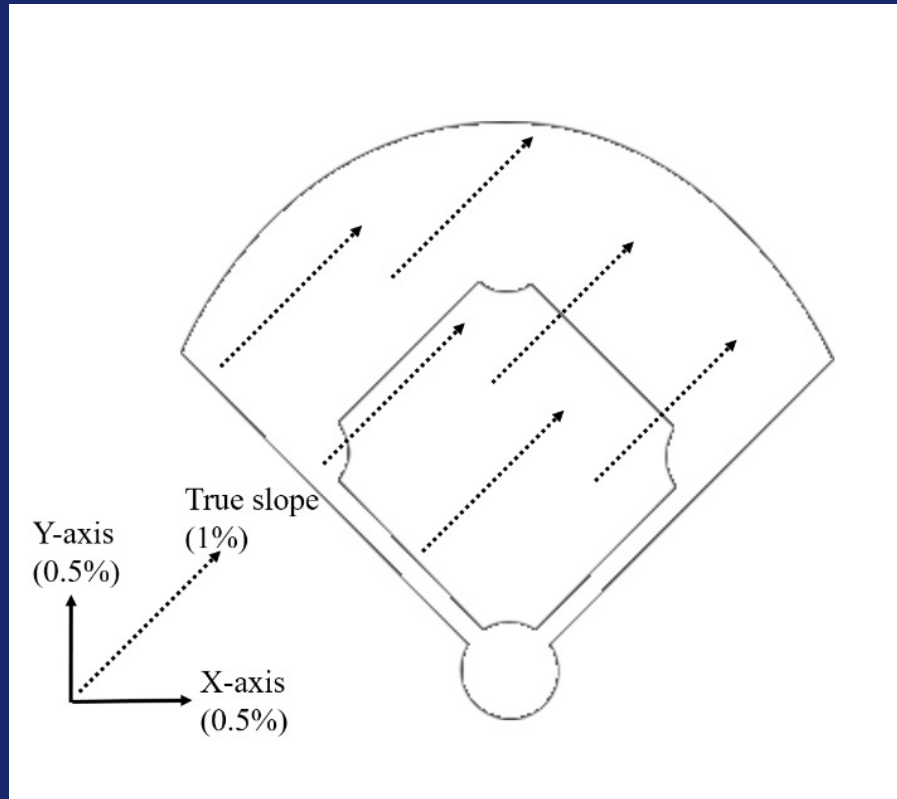
- Simple
- Large total elevation change

Single-plane



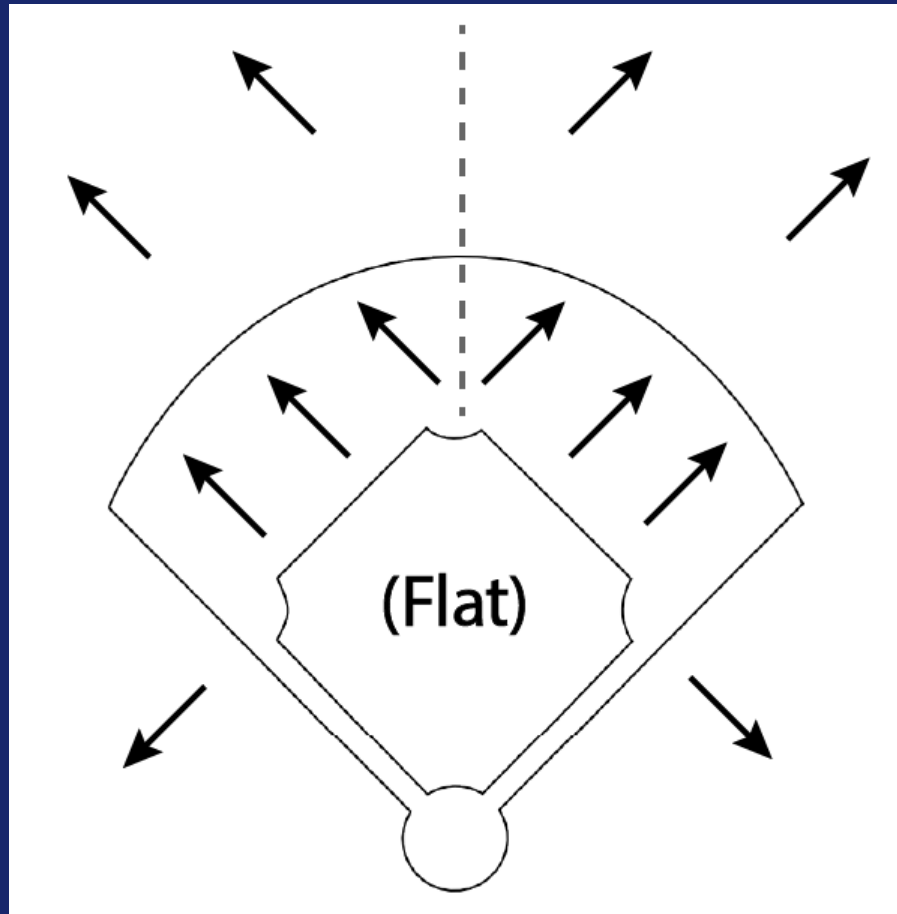
- Simple
- Large total elevation change
- Long path for water to move

Single-plane



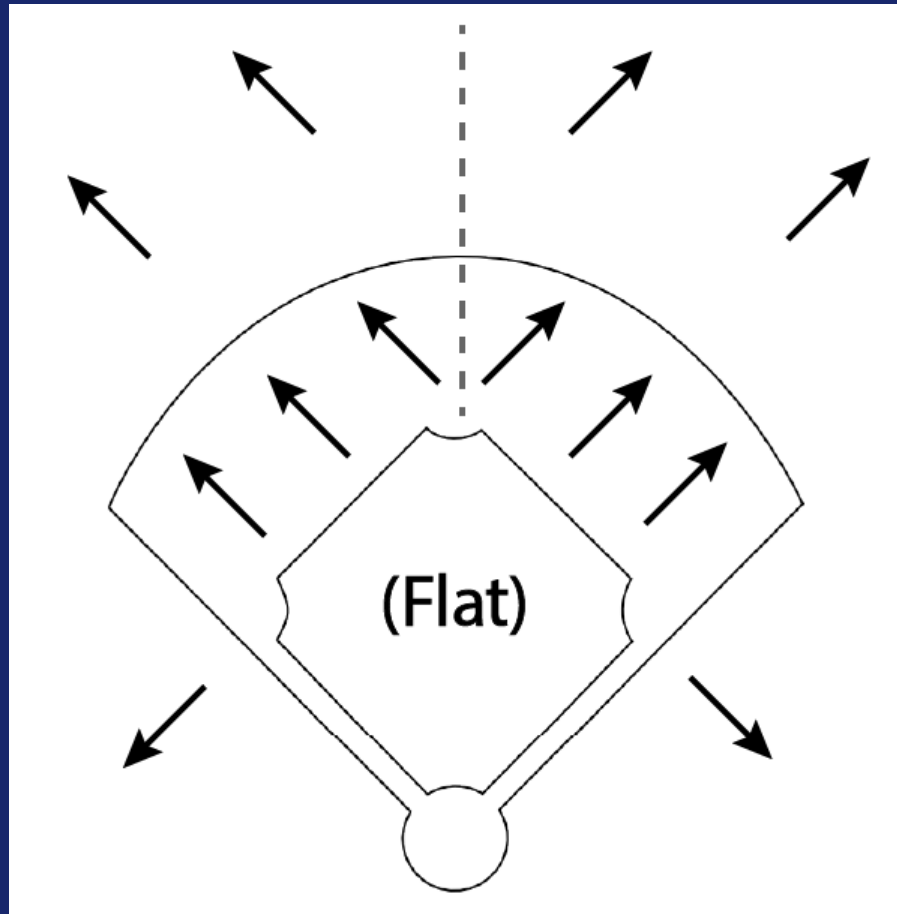
- Simple
- Large total elevation change
- Long path for water to move
- Not preferred, but play the hand you are dealt

Multi-plane



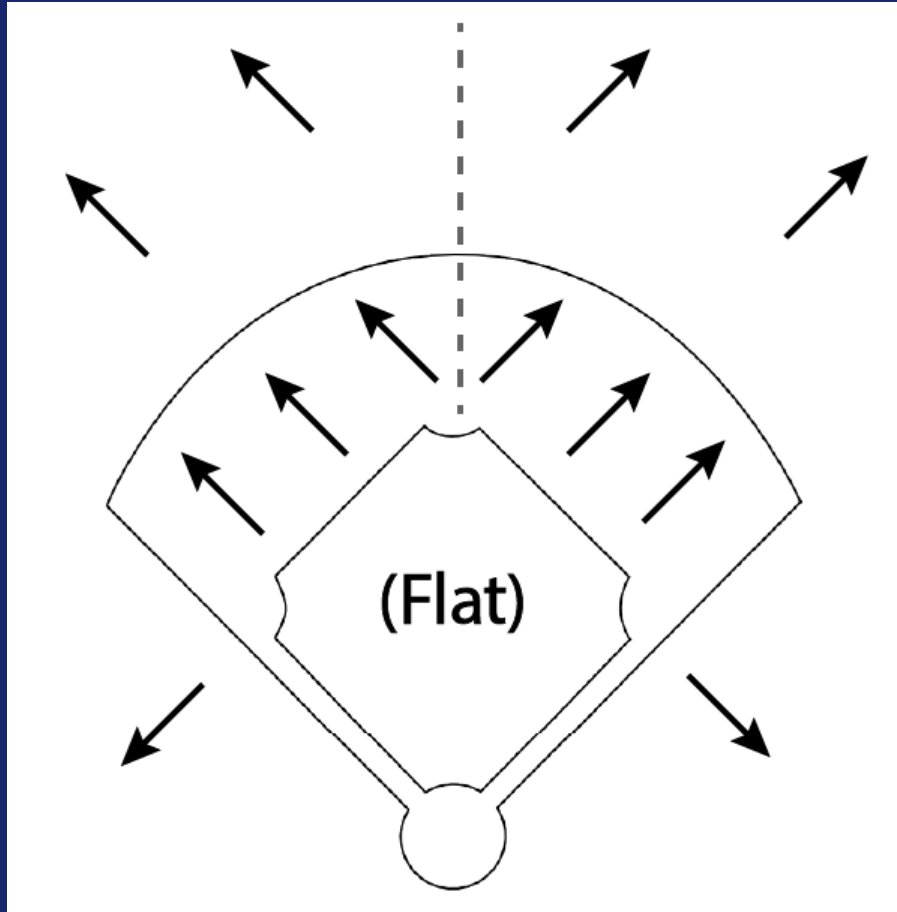
- Best playability (least influence on ball travel)

Multi-plane



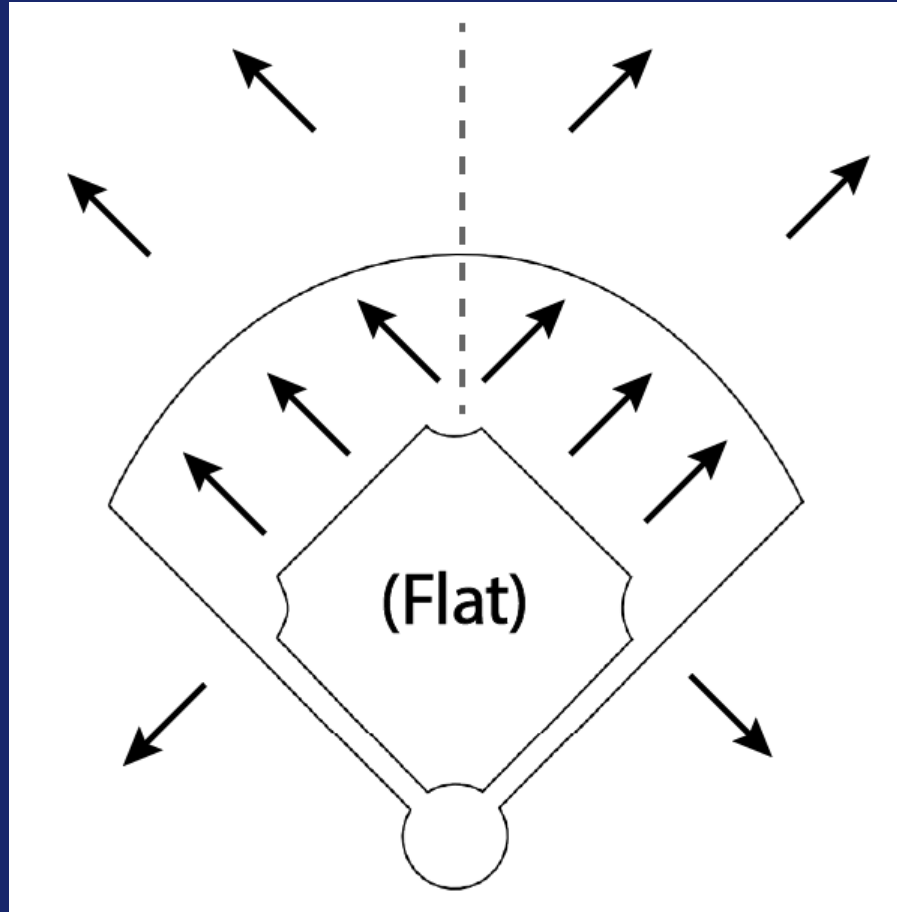
- Best playability (least influence on ball travel)
- Most complex

Multi-plane



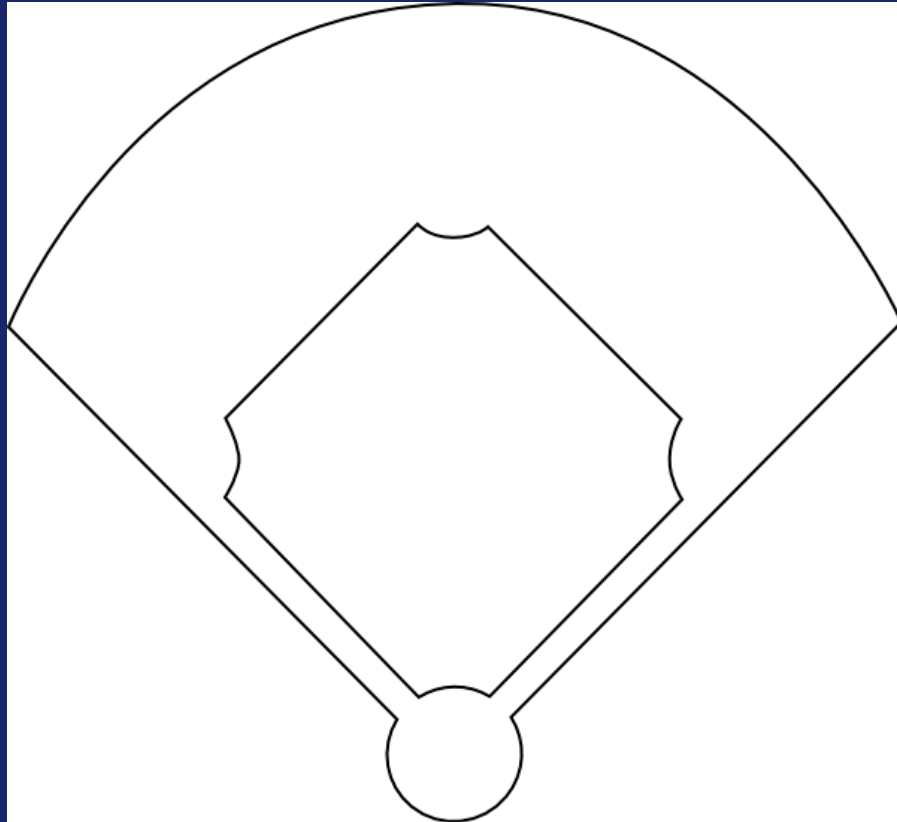
- Best playability (least influence on ball travel)
- Most complex
- Encourages runoff at corners

Multi-plane



- Best playability (least influence on ball travel)
- Most complex
- Encourages runoff at corners (warning track erosion)
- Less runoff from tarp (maybe)

Flat ??



- Can work fine with enough labor

- Not for beginners

- Be careful what you wish for!



Grading techniques

Old-school



- Low-tech (can be a good thing)

Old-school



- Low-tech (can be a good thing)
- Cheap

Old-school



- Low-tech (can be a good thing)
- Cheap
- Works for any grading plan

Old-school



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- Cheap
- Works for any grading plan
- A **LOT** of work

Old-school



- Low-tech (can be a good thing)
- Cheap
- Works for any grading plan
- A **LOT** of work
- Wastes material – hard to find high spots

New school: laser grading



Single vs dual-mast equipment



Total station



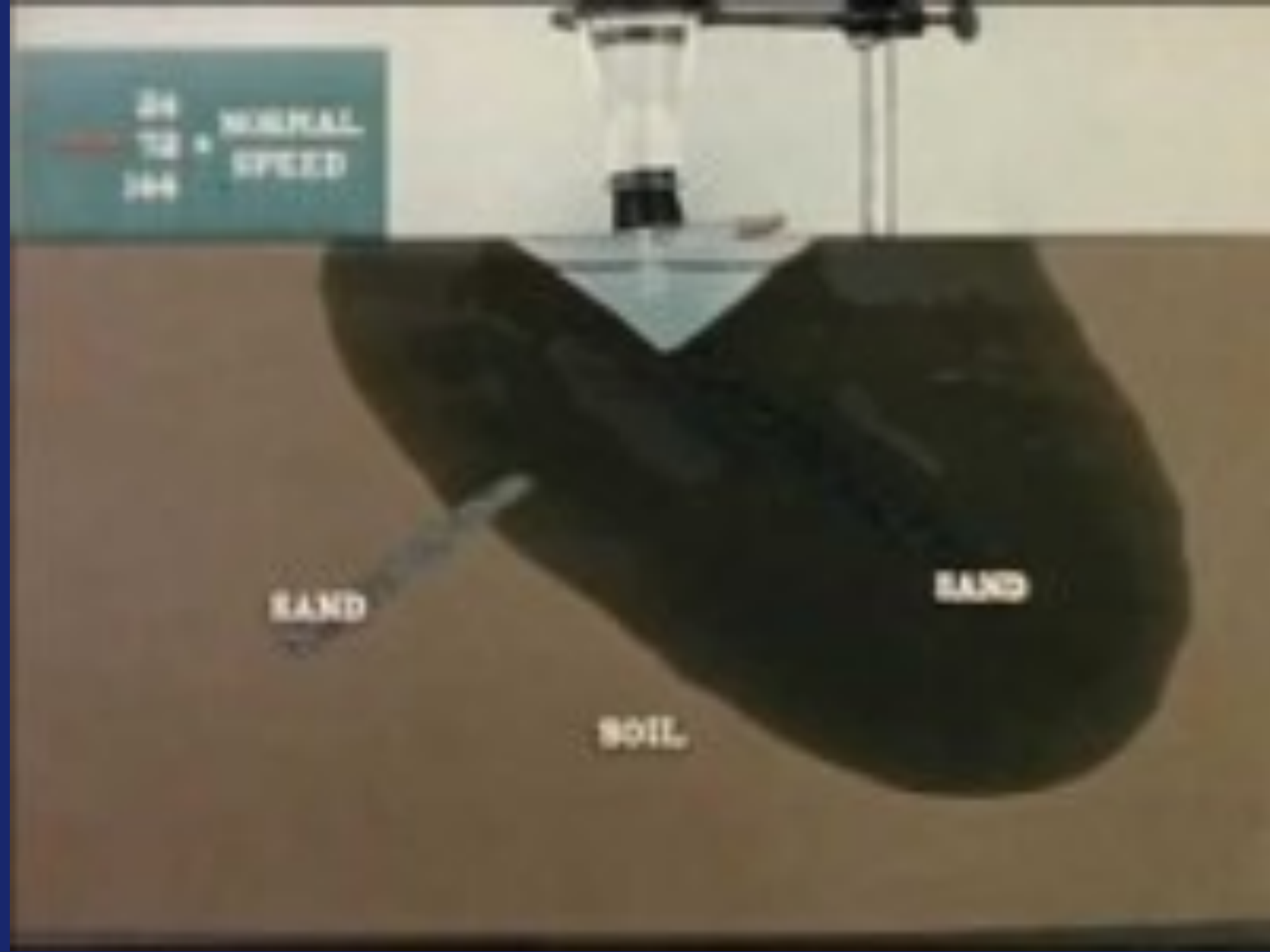
Subsurface drainage?

24
72 = NORMAL
144 = SPEED

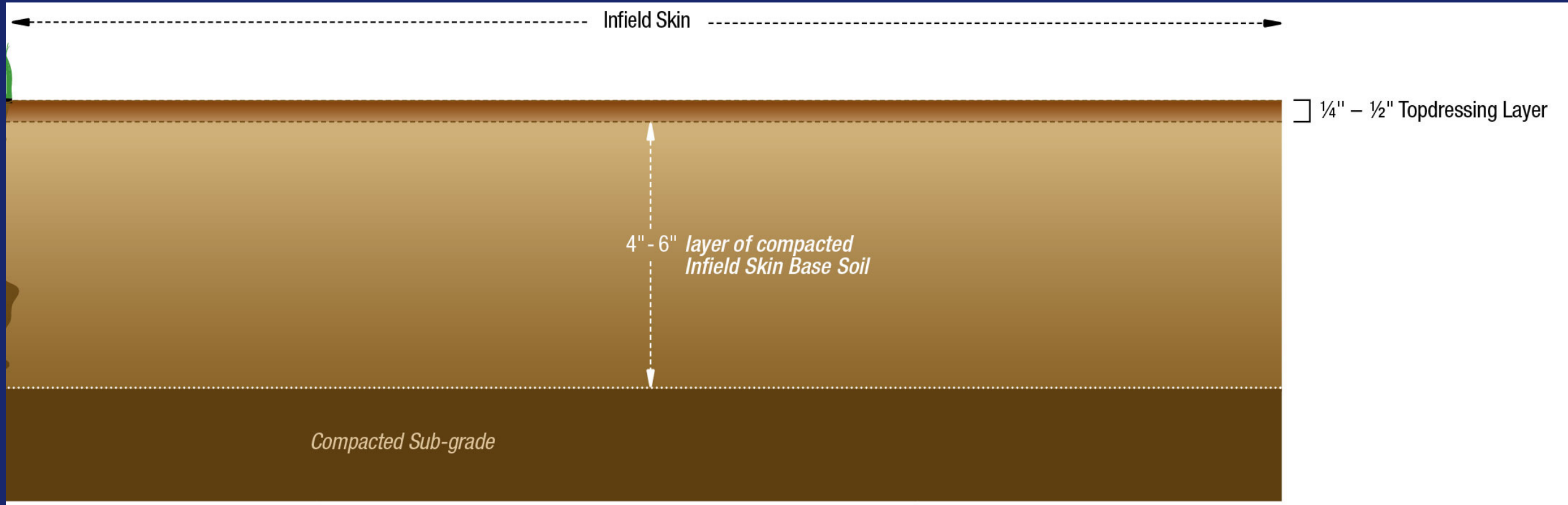
RAND

SOIL

RAND



Infield soil profile









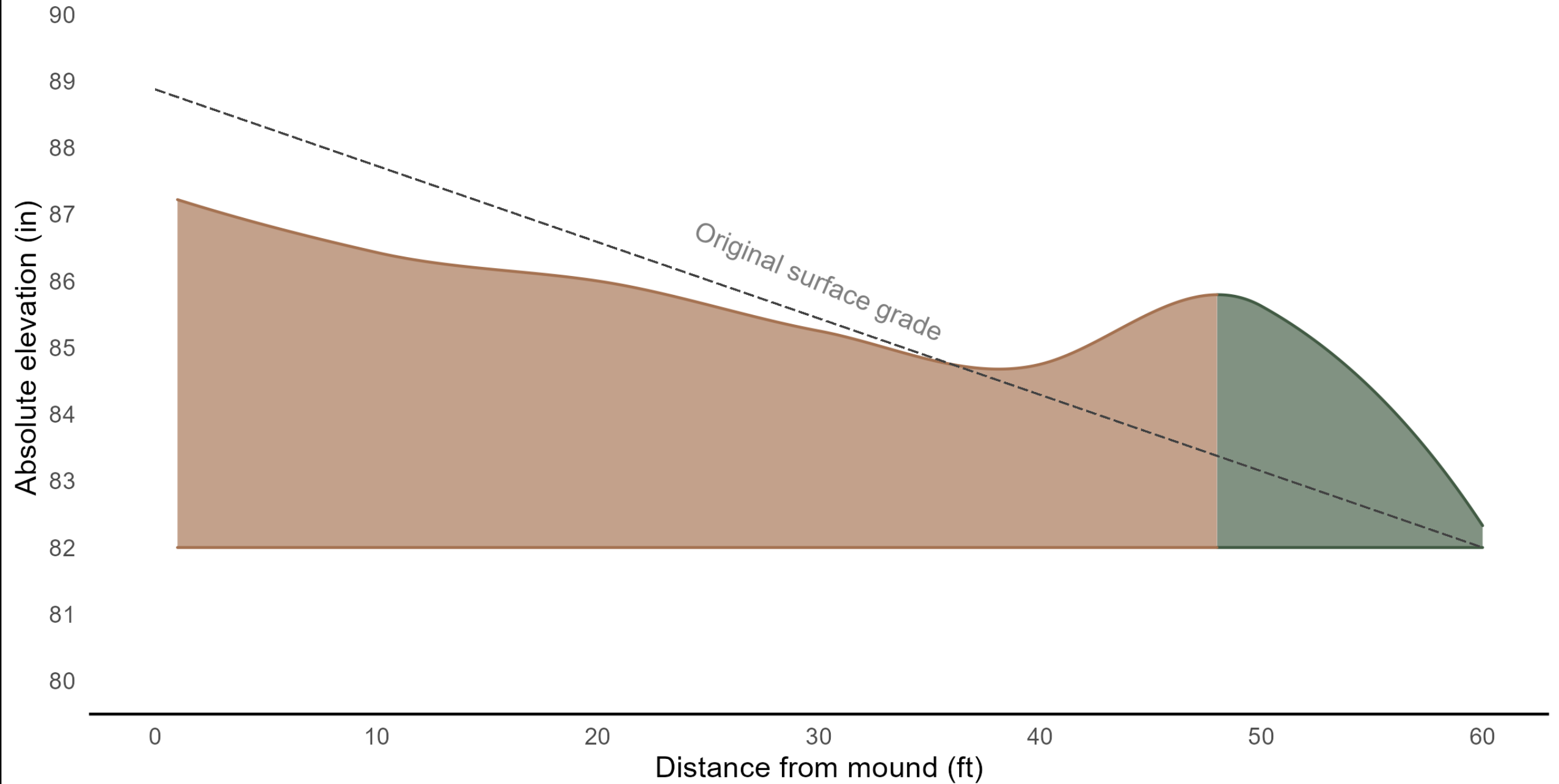


Subsurface drainage takeaways

- Pipe will likely never see a drop of H₂O
- Risk of contamination w/ gravel
- Bottom line - don't do it!!

Adding material

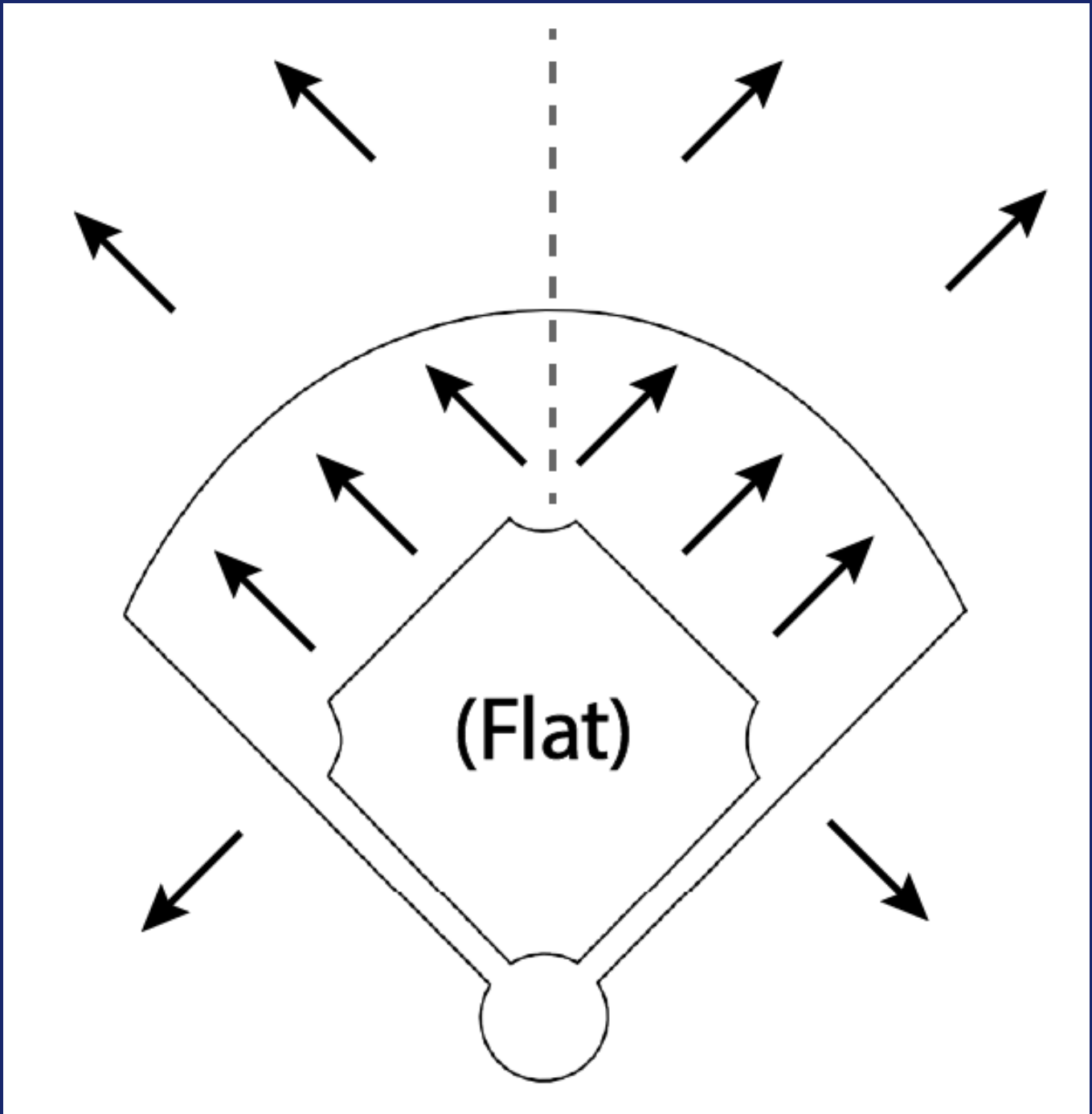
Remove lips to "harvest" infield material!

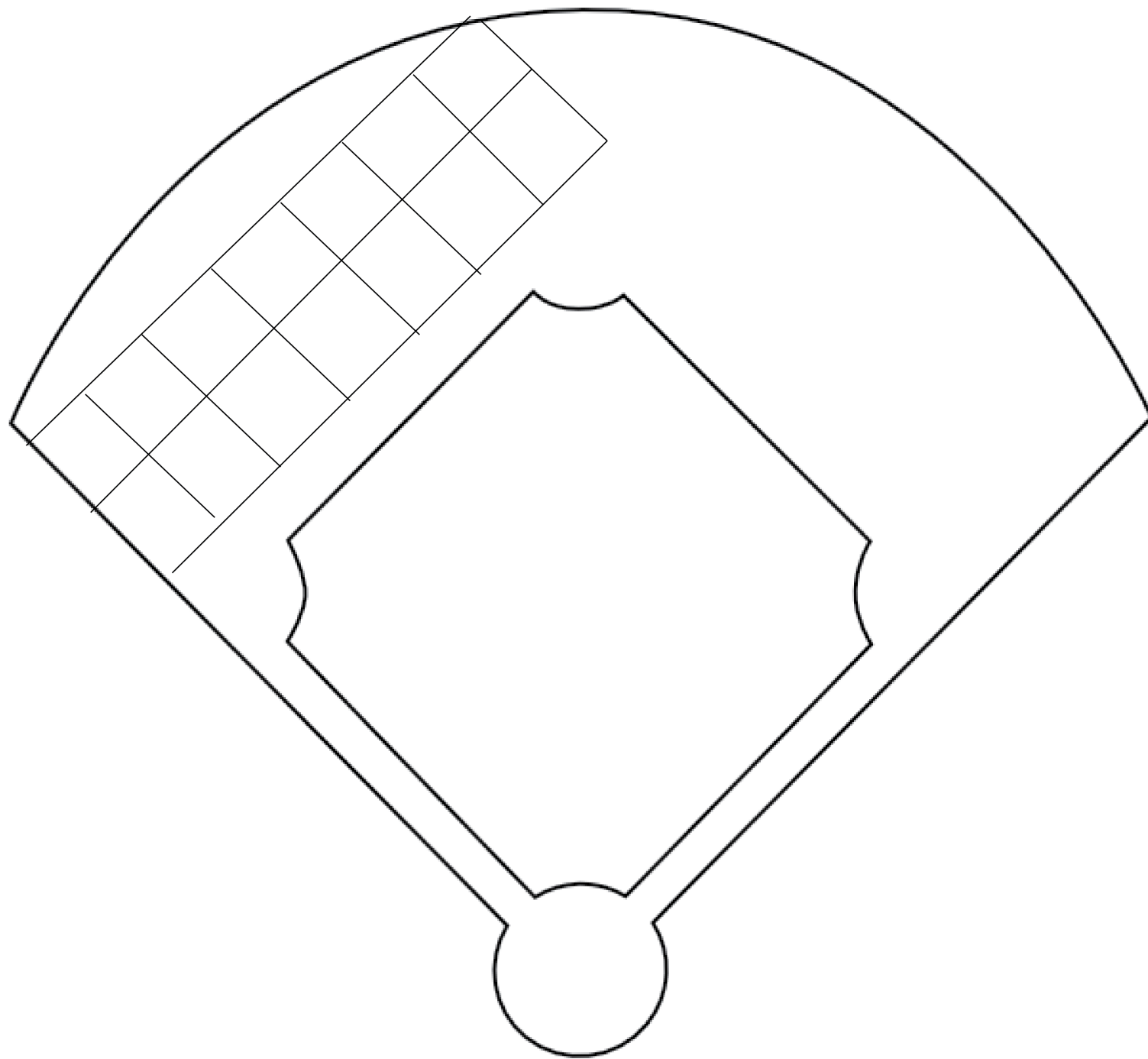


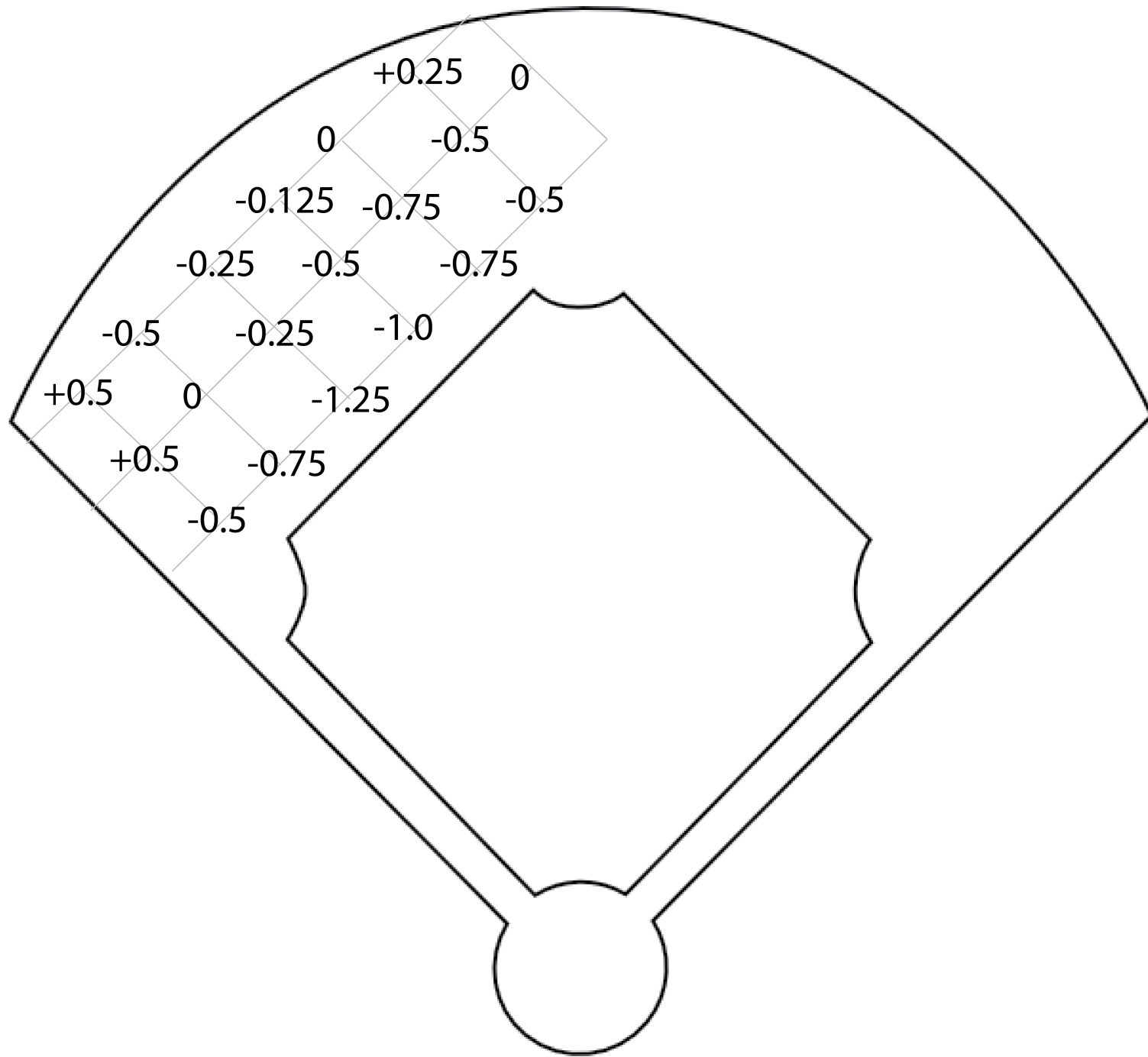
Survey



Credit: Dan Douglas (Reading Fightin' Phils)







$$\frac{0.5 + (-0.5) + (-0.25) + (-0.125) + 0 + 0.25 + 0.5 + 0 + (-0.25) + \dots}{19}$$

$$\frac{0.5 + (-0.5) + (-0.25) + (-0.125) + 0 + 0.25 + 0.5 + 0 + (-0.25) + \dots}{19}$$

$$= \frac{0.336 \text{ in}}{\text{depth}} \times \frac{1 \text{ ft}}{12 \text{ in}} = 0.028 \text{ ft depth}$$

$$\frac{0.5 + (-0.5) + (-0.25) + (-0.125) + 0 + 0.25 + 0.5 + 0 + (-0.25) + \dots}{19}$$

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$$= \frac{0.028 \text{ ft}}{\text{depth}} \times \frac{5,000 \text{ ft}^2}{\text{area}} \times \frac{1 \text{ yd}^3}{27 \text{ ft}^3} = 5.2 \text{ yd}^3$$

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$$= \frac{0.336 \text{ in}}{\text{depth}} \times \frac{1 \text{ ft}}{12 \text{ in}} = 0.028 \text{ ft depth}$$

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$$= \frac{5.2 \text{ yd}^3}{\text{job}} \times \frac{1.5 \text{ tons}}{\text{yd}^3} = 7.8 \text{ tons for this half of the infield}$$

Reverse-tine till



Finish laser grade



Basepaths, cutouts, edges and home plate require hand work



Credit: Dan Douglas (Reading Fightin' Phils)

Roll



Soak to settle



Thank you !

ecm200@psu.edu
evan-soil.io