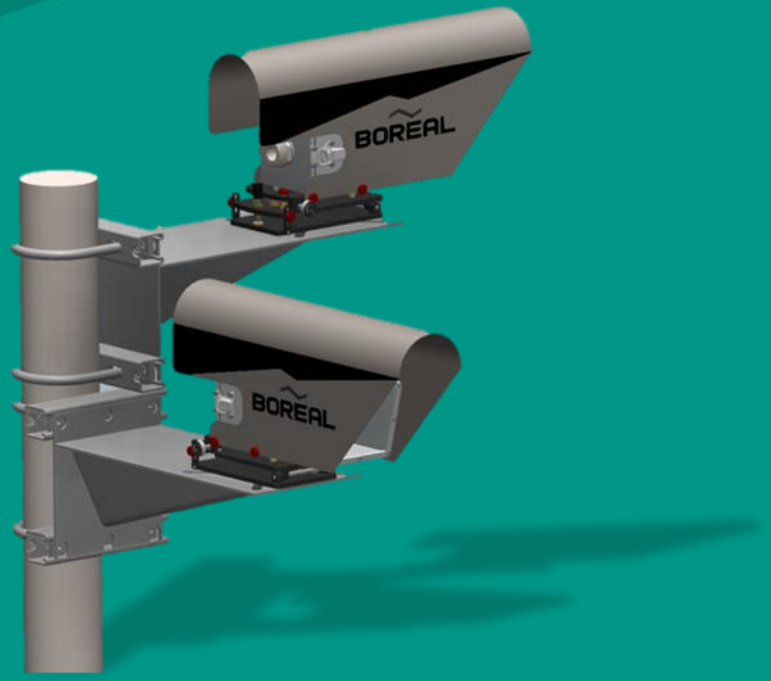


TECHNICAL WALK-THROUGH:

DESIGN CONSIDERATIONS FOR AN OPEN PATH (OPX) HEAD – MOUNTING STRUCTURE

DESIGNING A SUPPORT STRUCTURE

BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

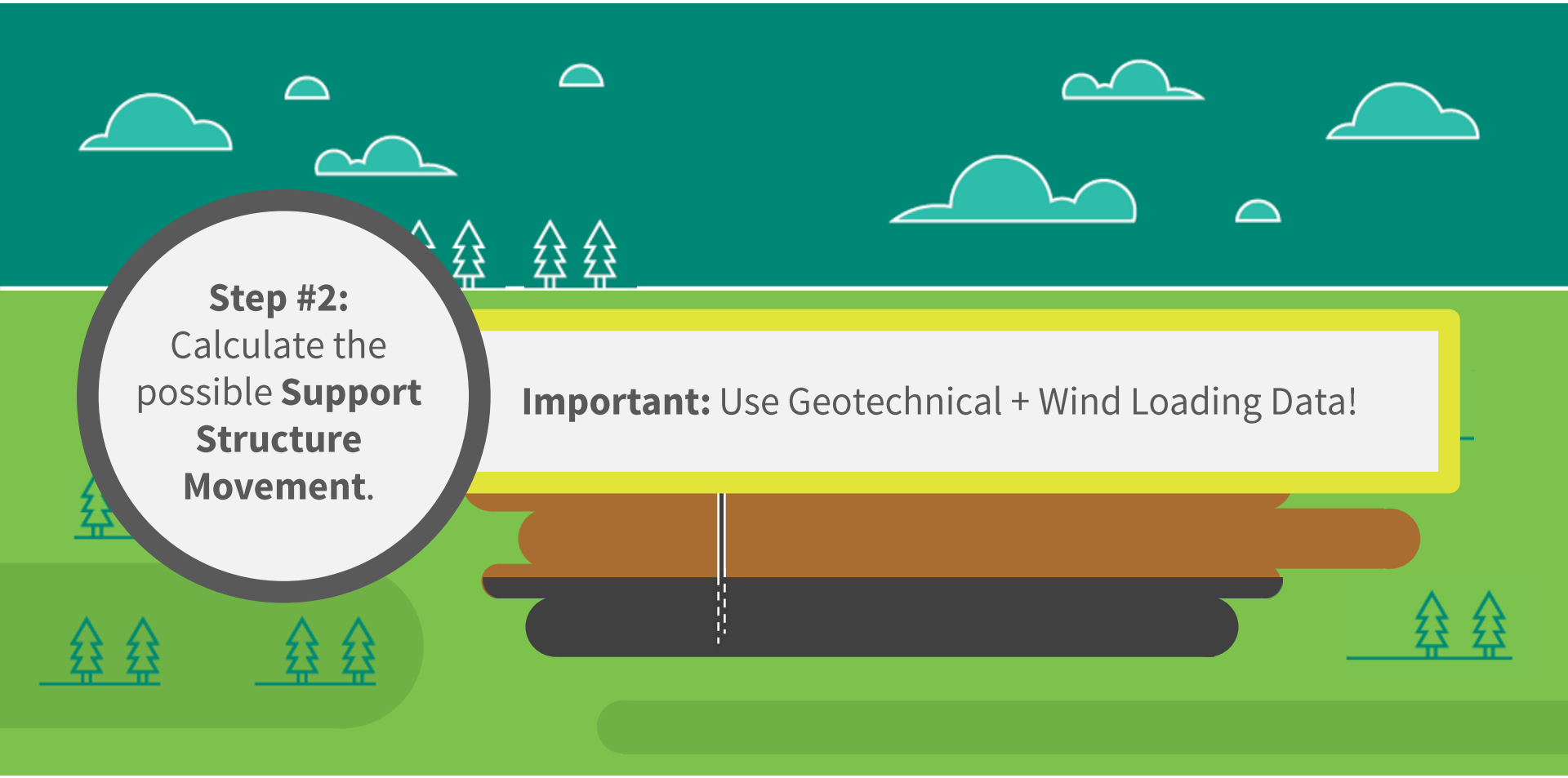
DESIGNING A SUPPORT STRUCTURE

BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

DESIGNING A SUPPORT STRUCTURE

BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

DESIGNING A SUPPORT STRUCTURE



Step #2: Calculate the possible **Support Structure Movement**.

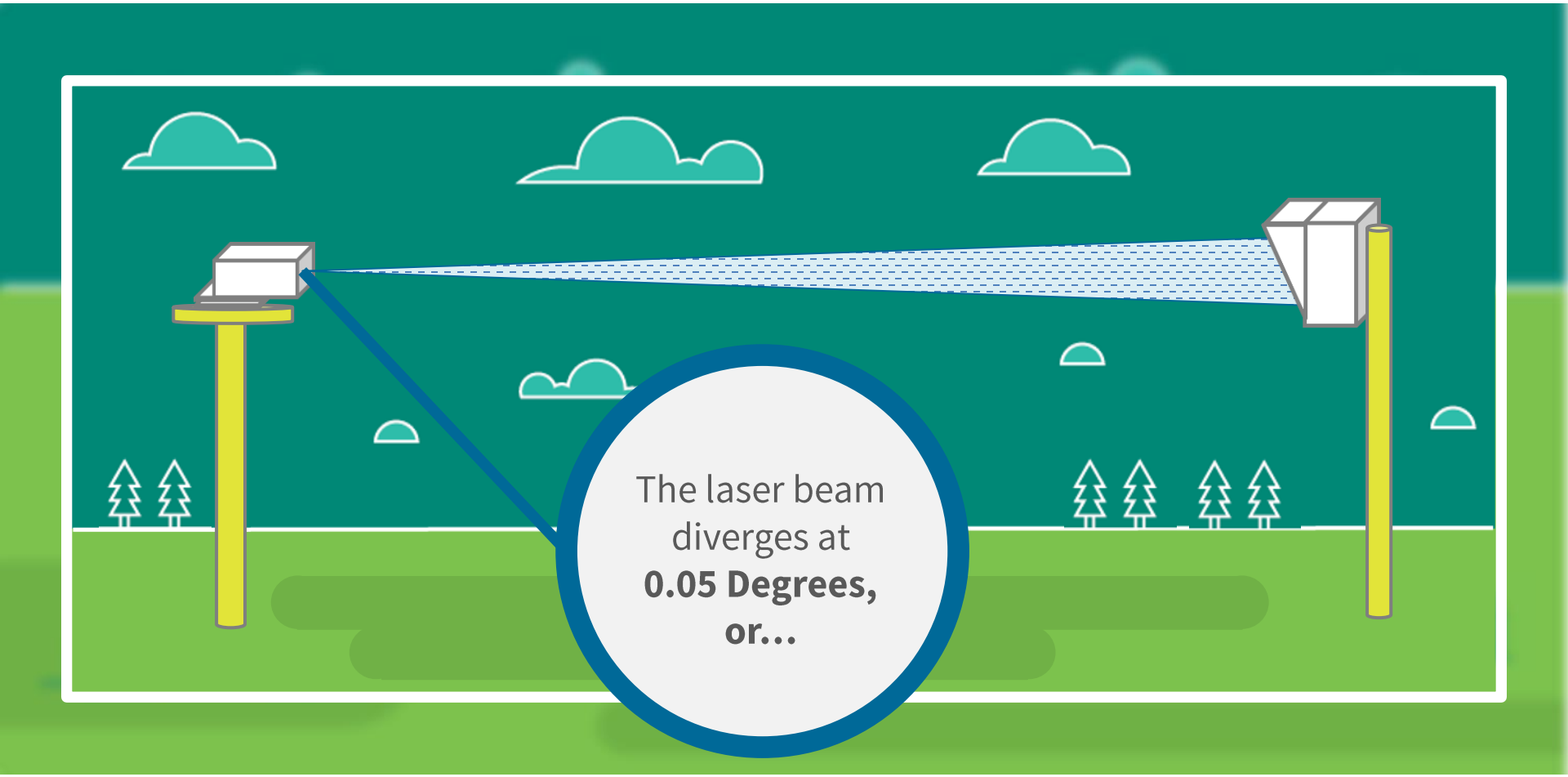
Important: Use Geotechnical + Wind Loading Data!

BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com

DESIGNING A SUPPORT STRUCTURE

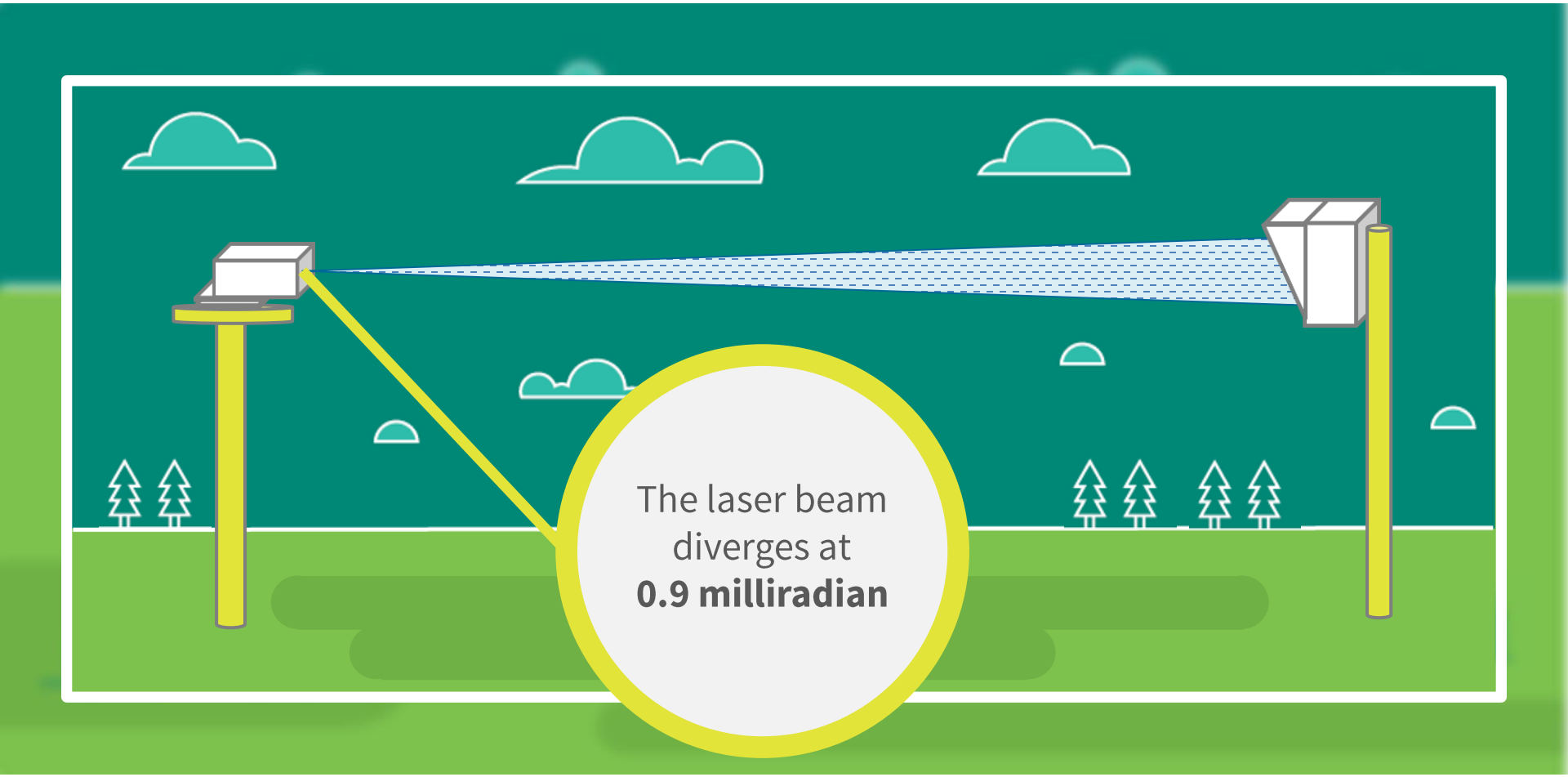
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #1: LASER DOT SIZE



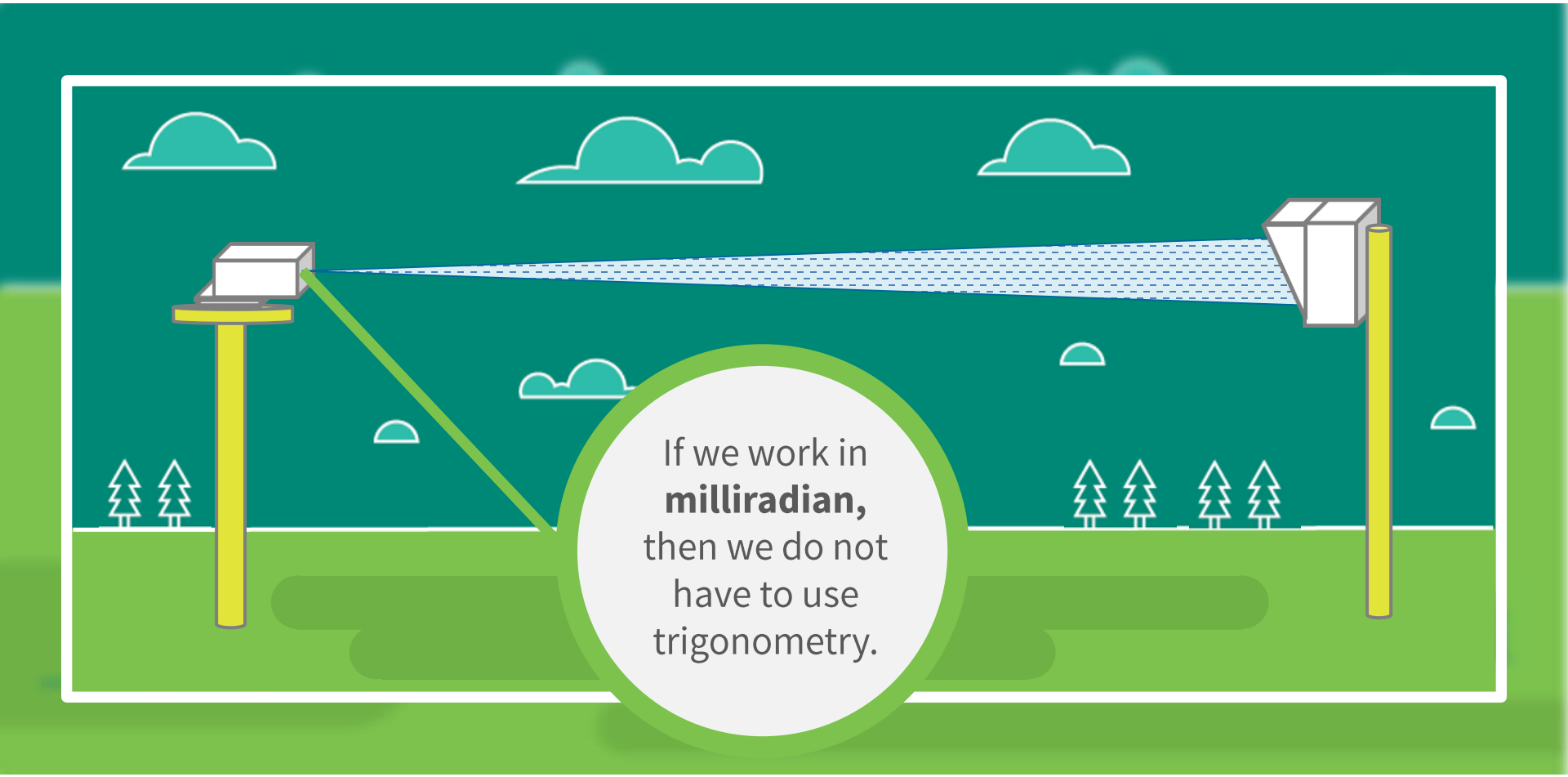
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #1: LASER DOT SIZE



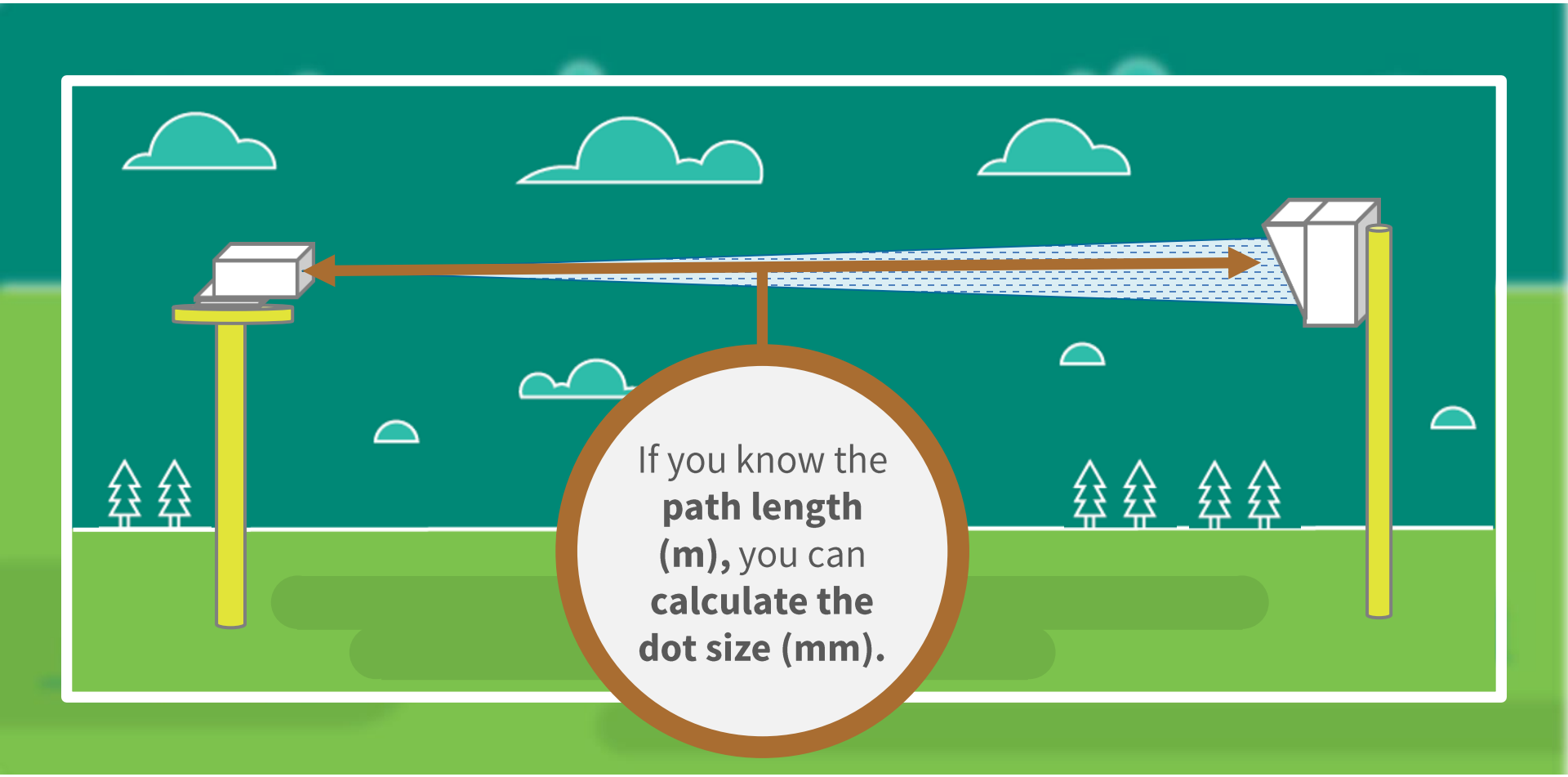
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #1: LASER DOT SIZE



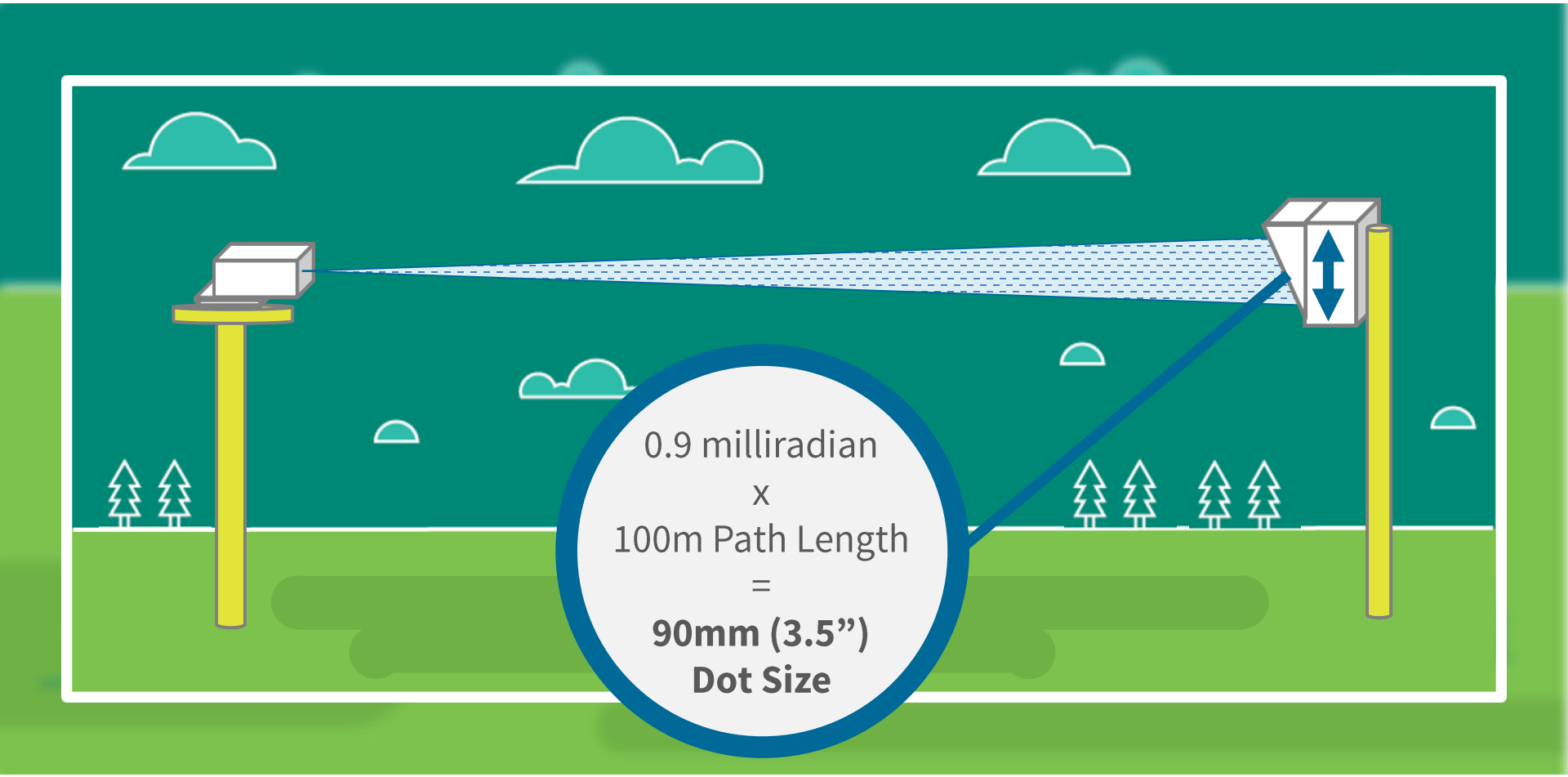
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #1: LASER DOT SIZE



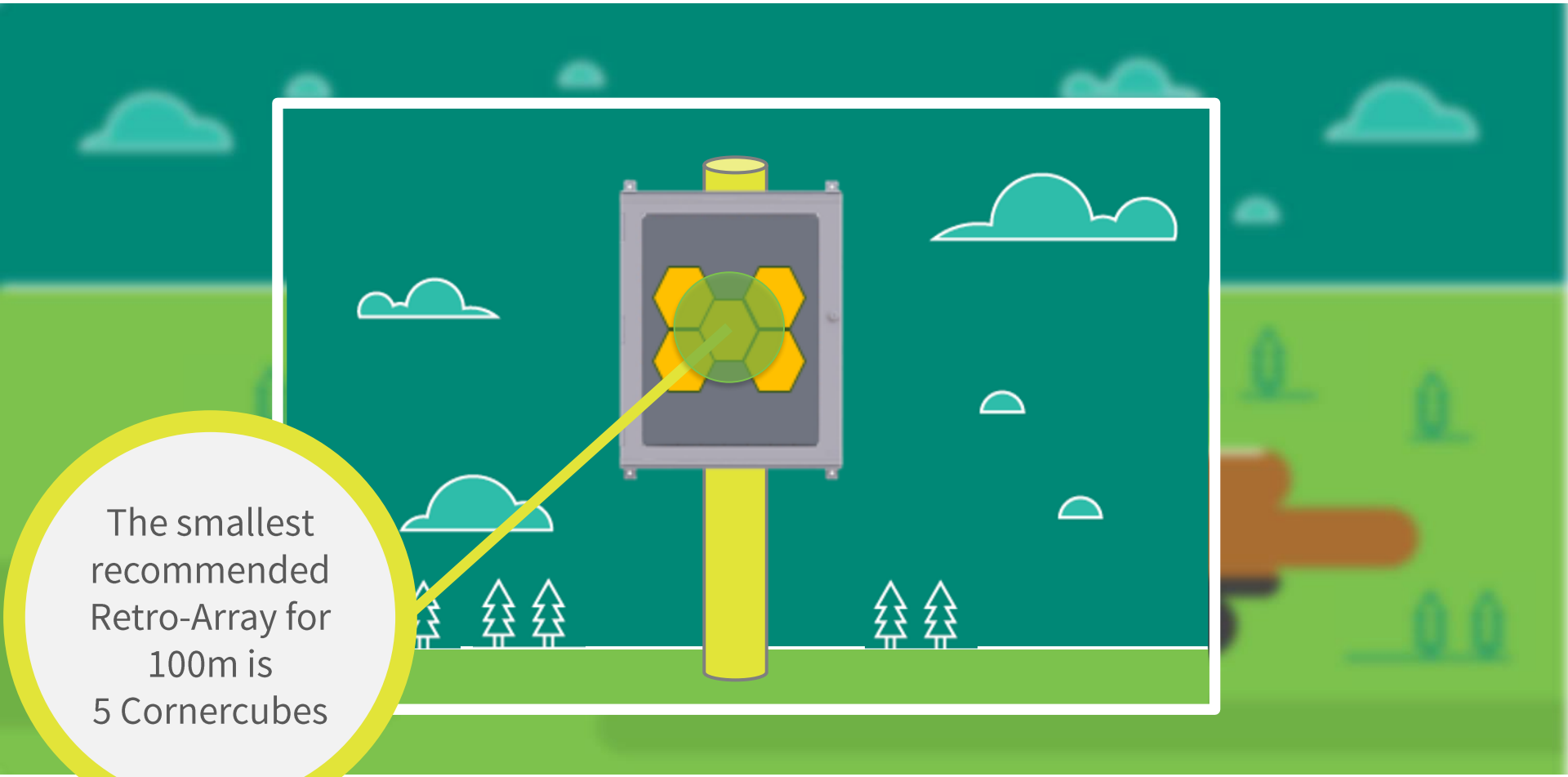
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #1: LASER DOT SIZE



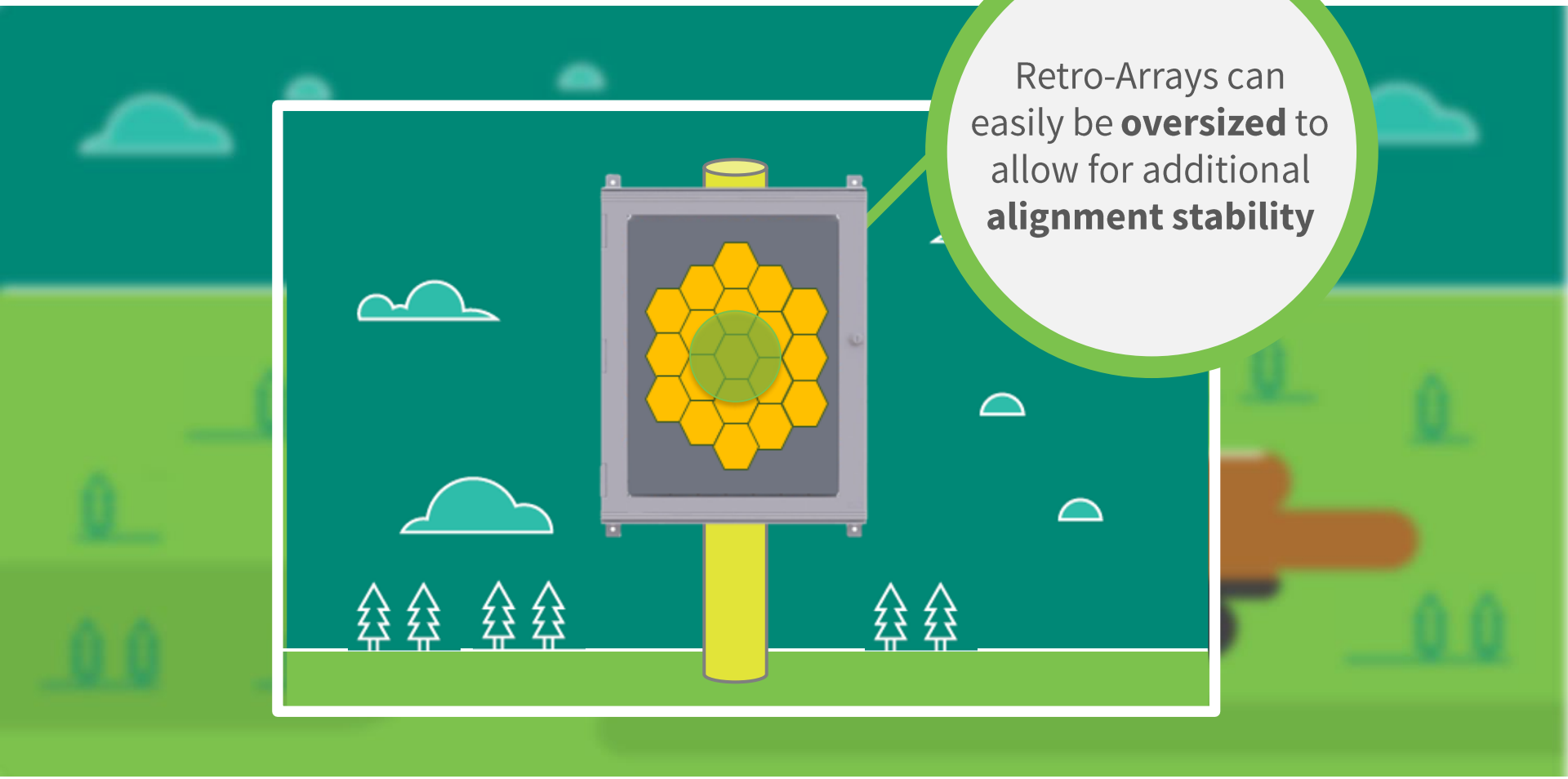
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #1: LASER DOT SIZE



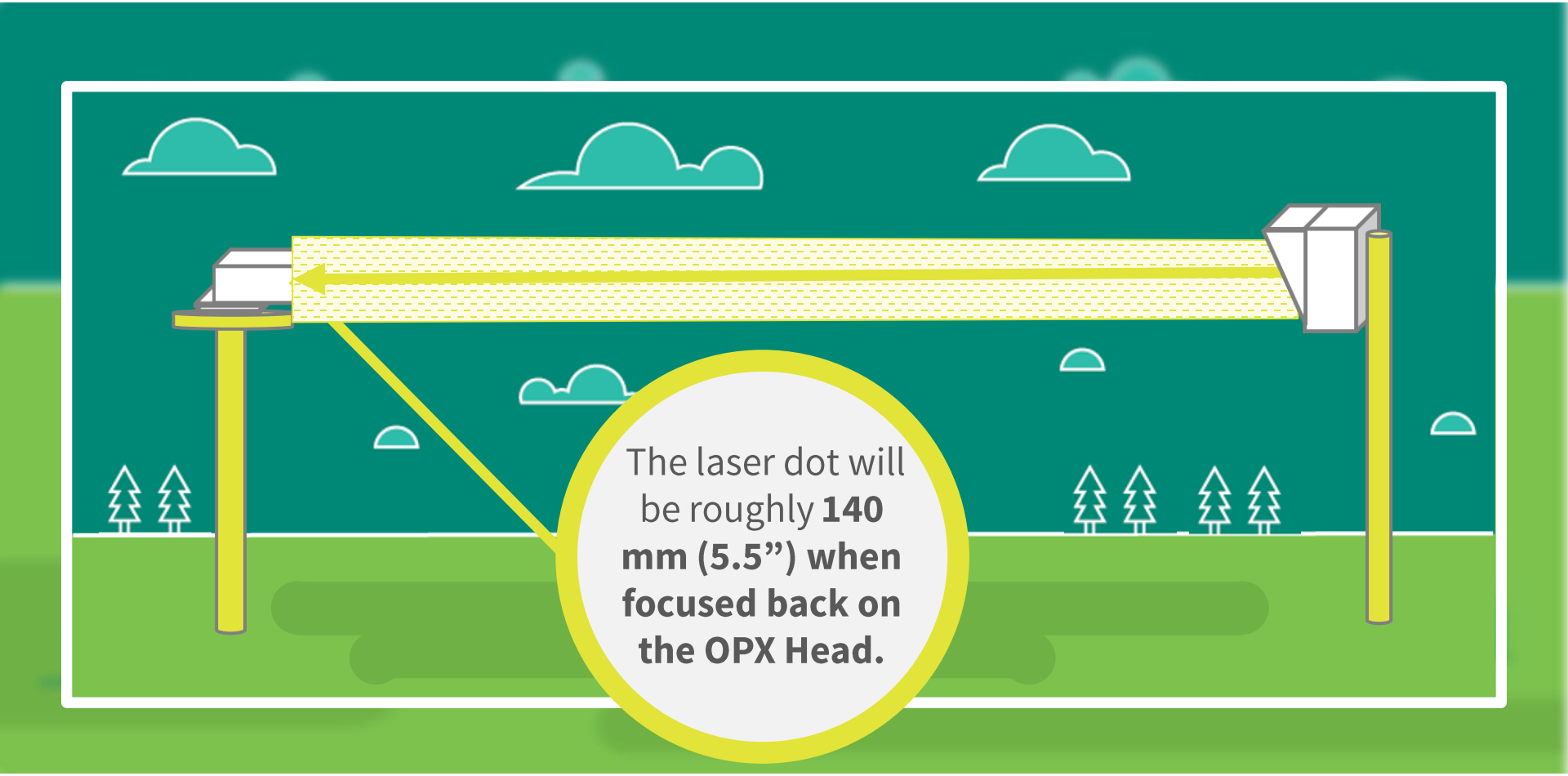
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #1: LASER DOT SIZE



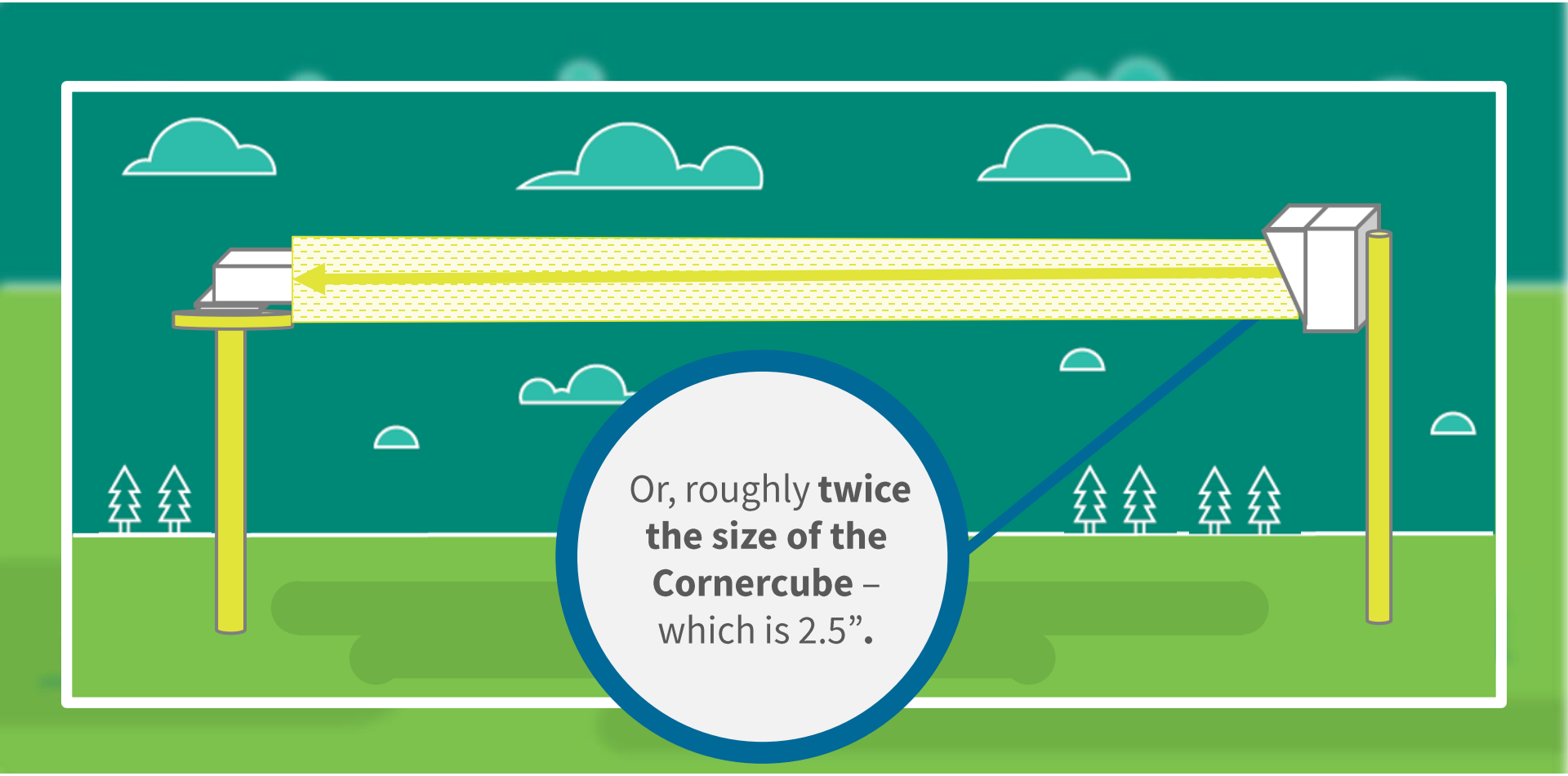
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #1: LASER DOT SIZE



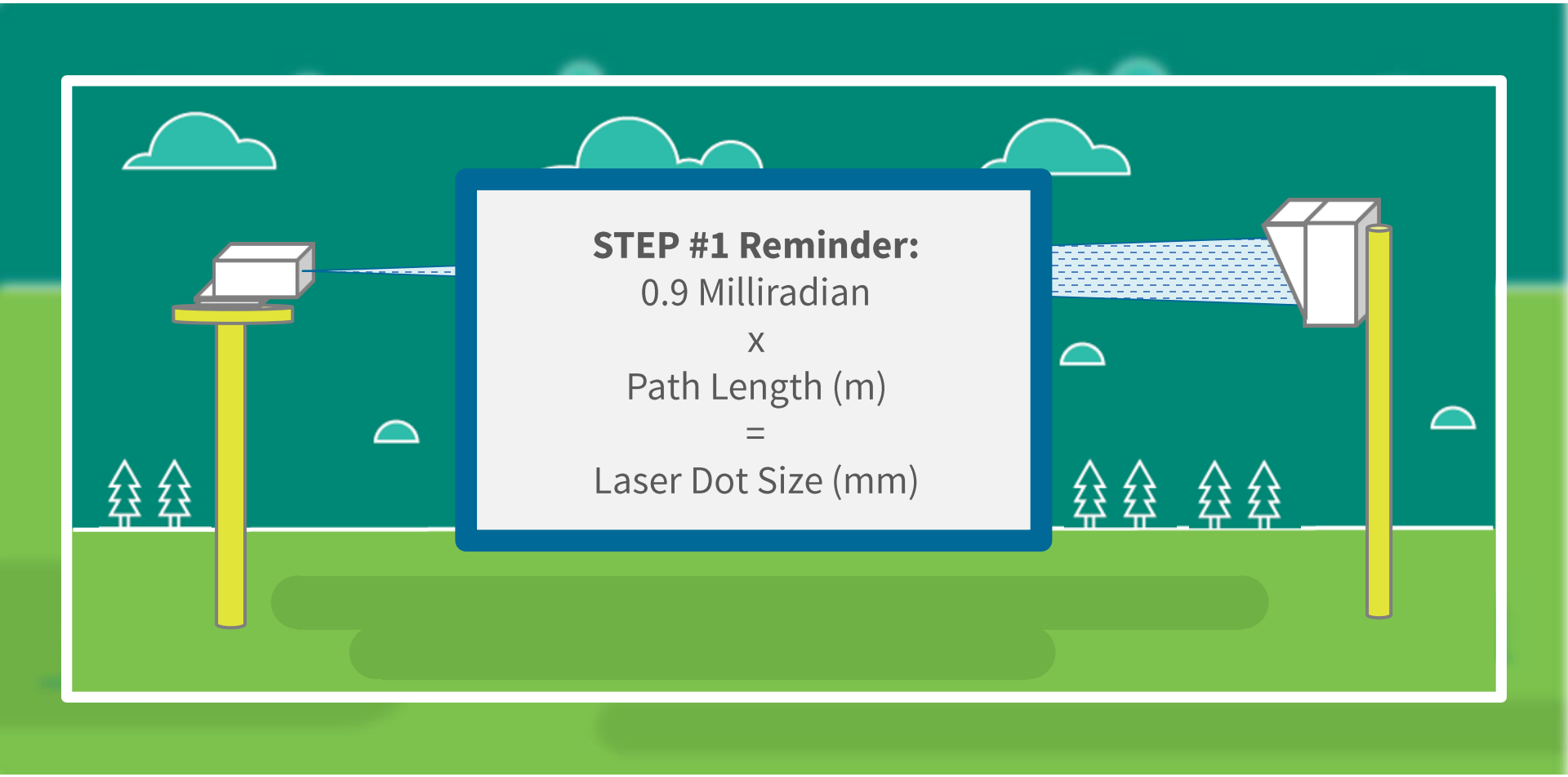
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #1: LASER DOT SIZE



BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #1: LASER DOT SIZE



BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

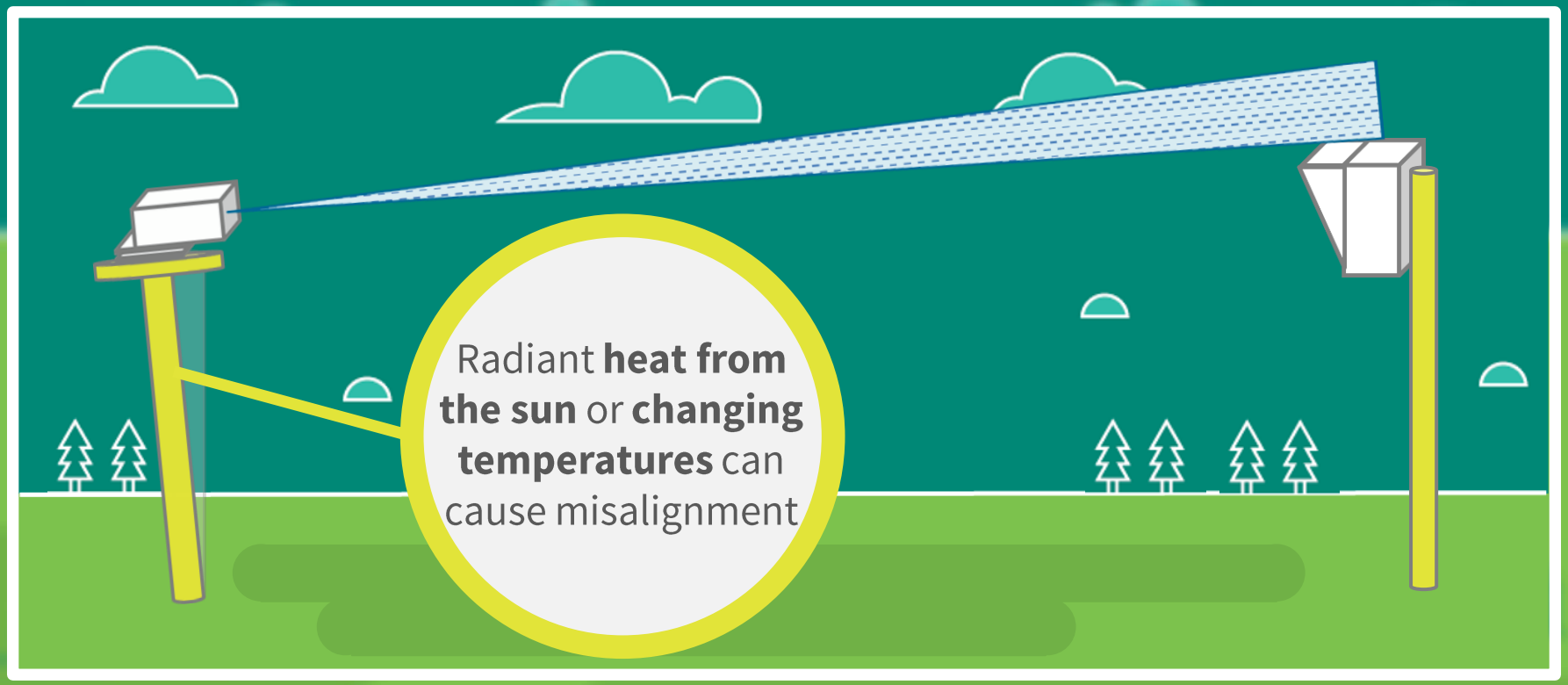
STEP #2: STRUCTURE MOVEMENT

BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #2: STRUCTURE MOVEMENT

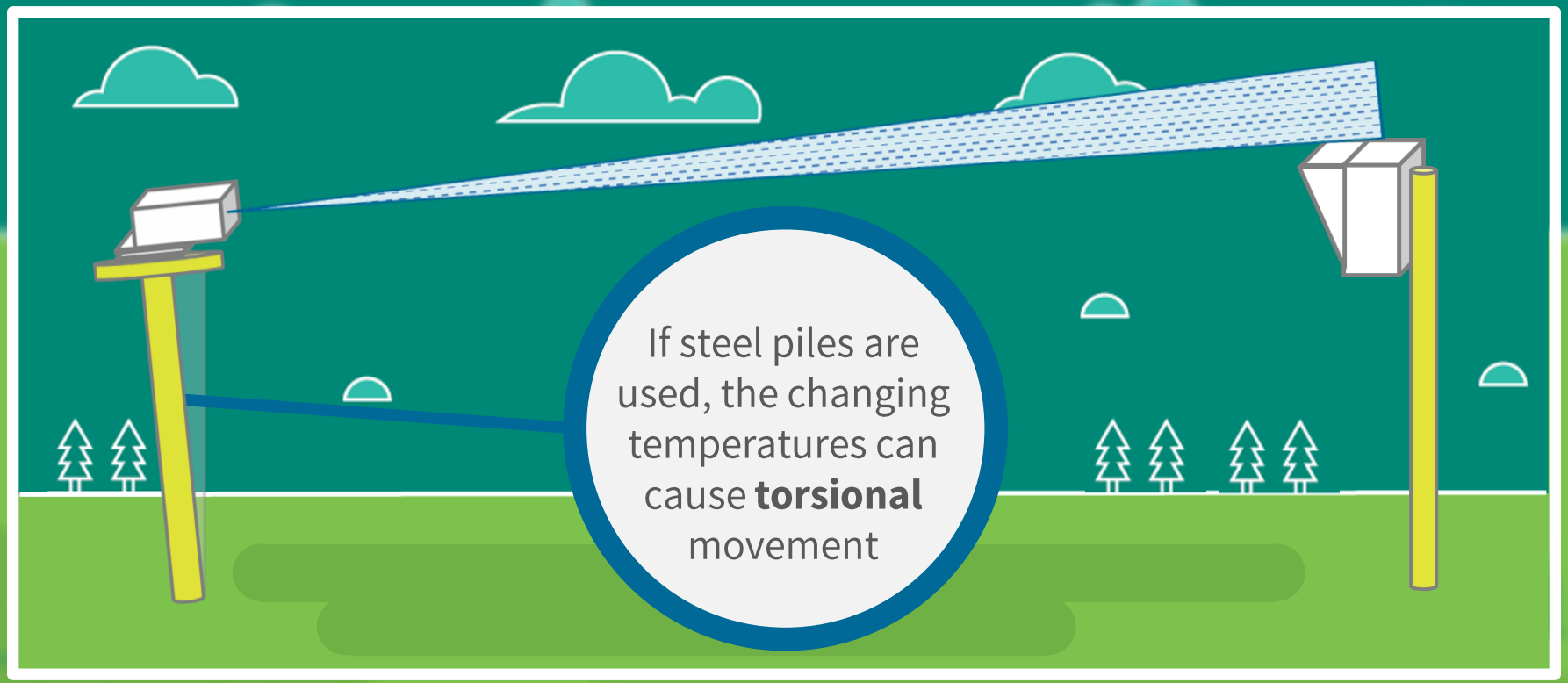
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #2: STRUCTURE MOVEMENT



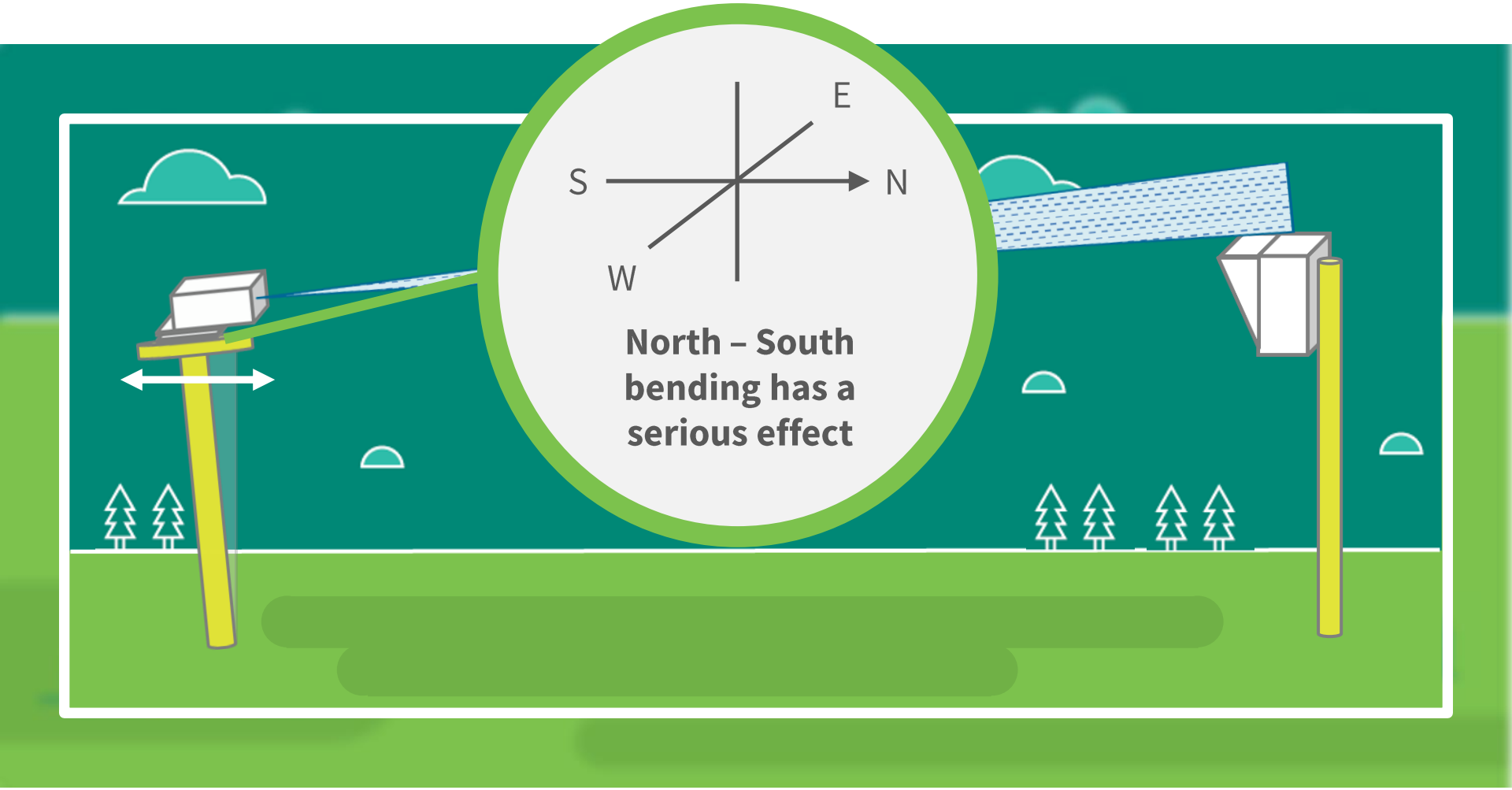
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #2: STRUCTURE MOVEMENT



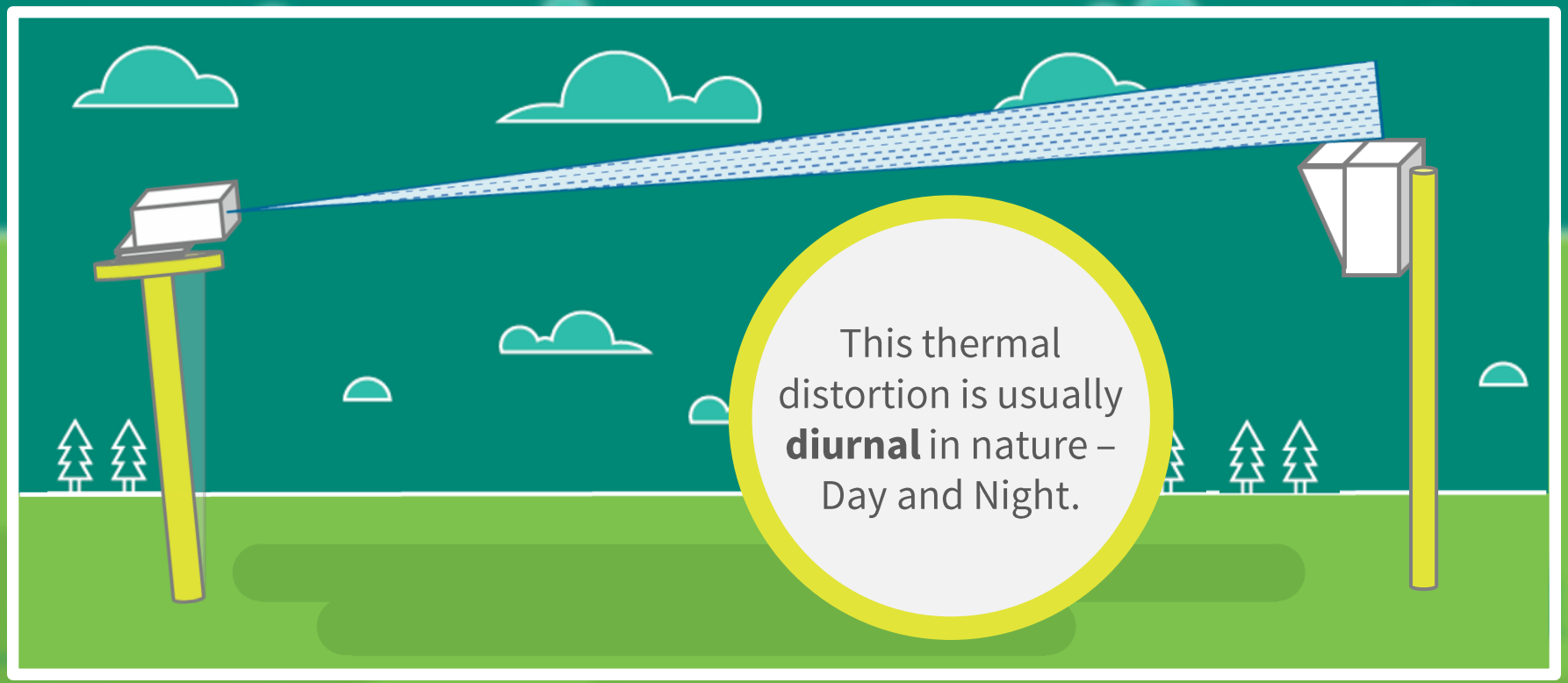
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #2: STRUCTURE MOVEMENT



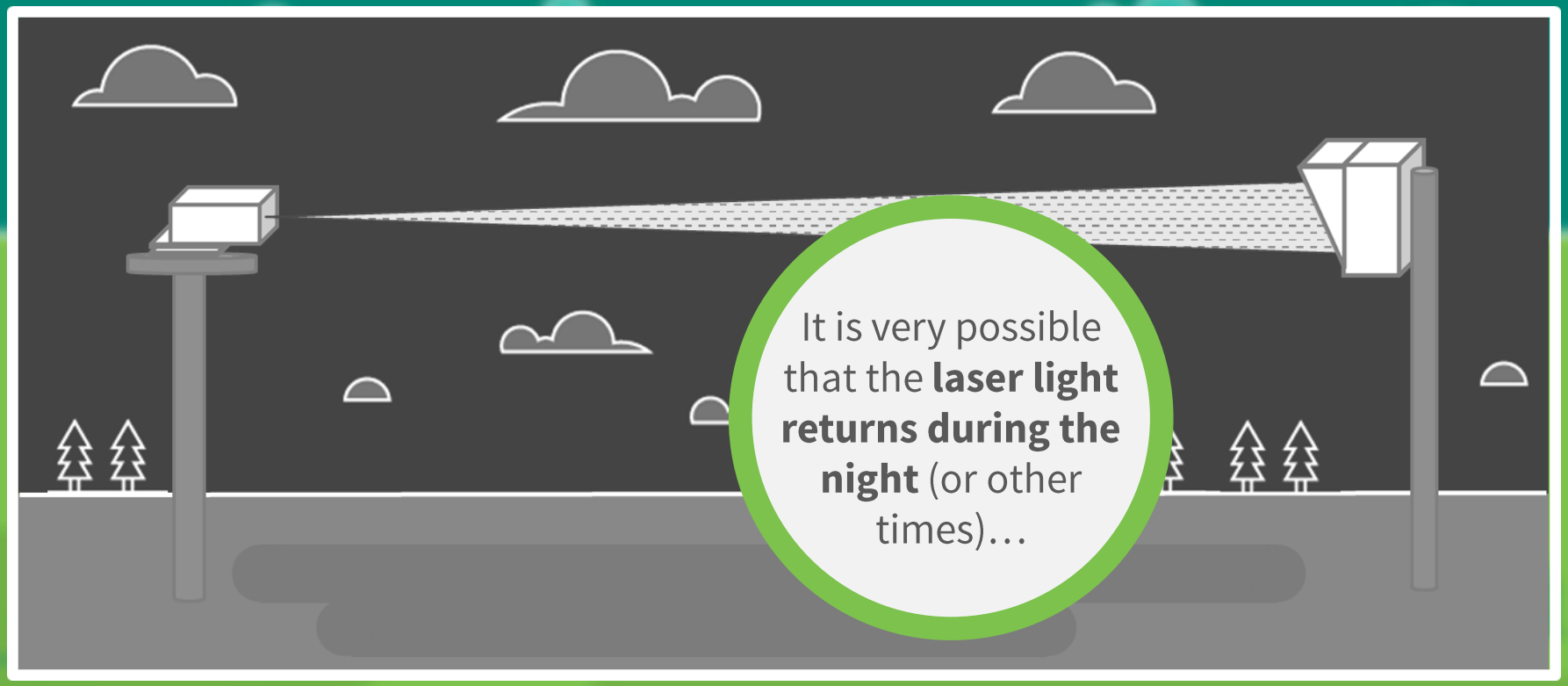
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #2: STRUCTURE MOVEMENT



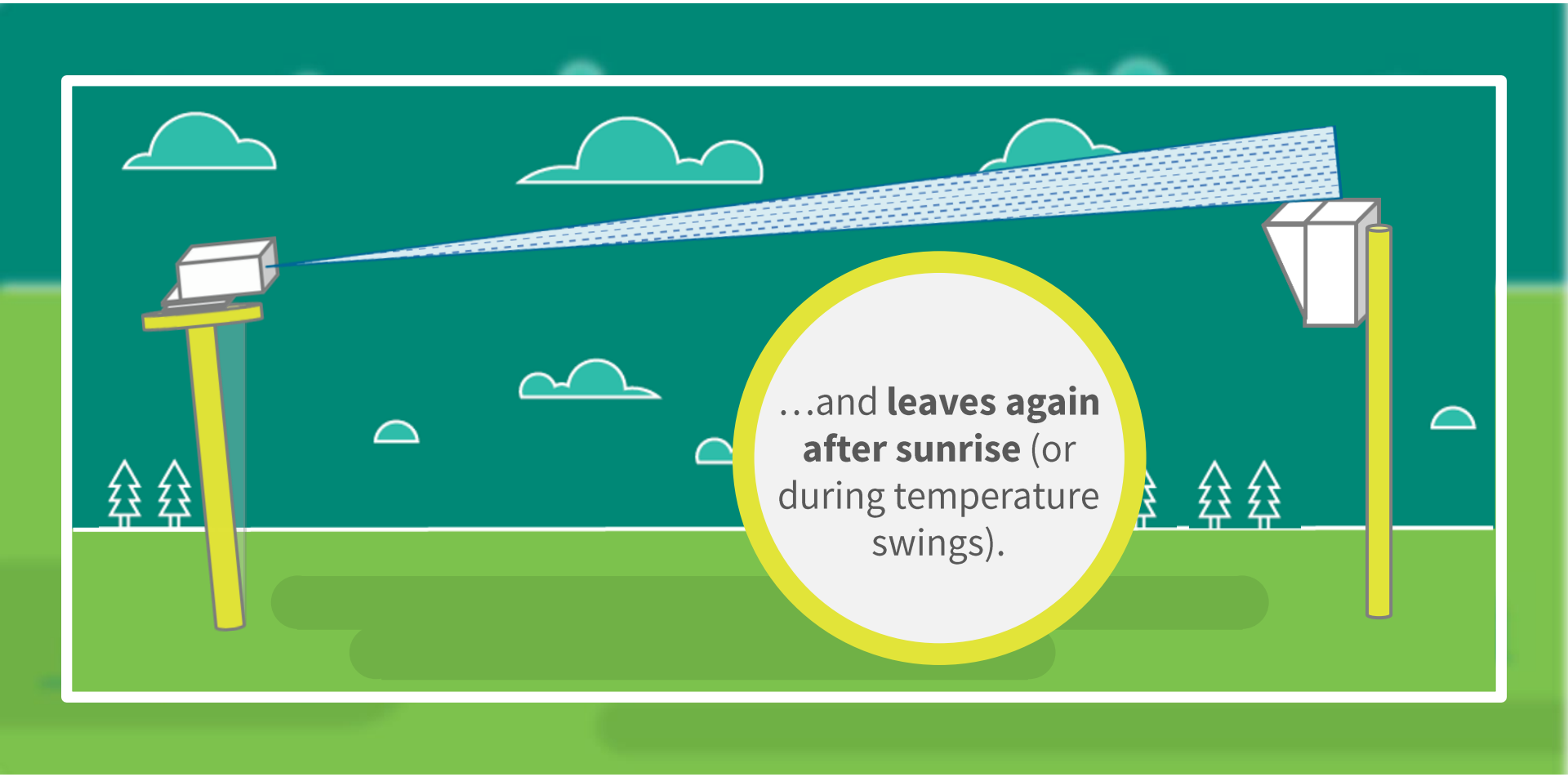
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #2: STRUCTURE MOVEMENT



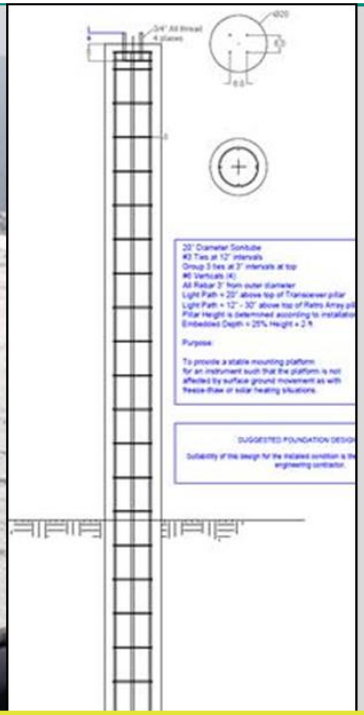
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #2: STRUCTURE MOVEMENT



BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

OTHER IMPORTANT NOTE

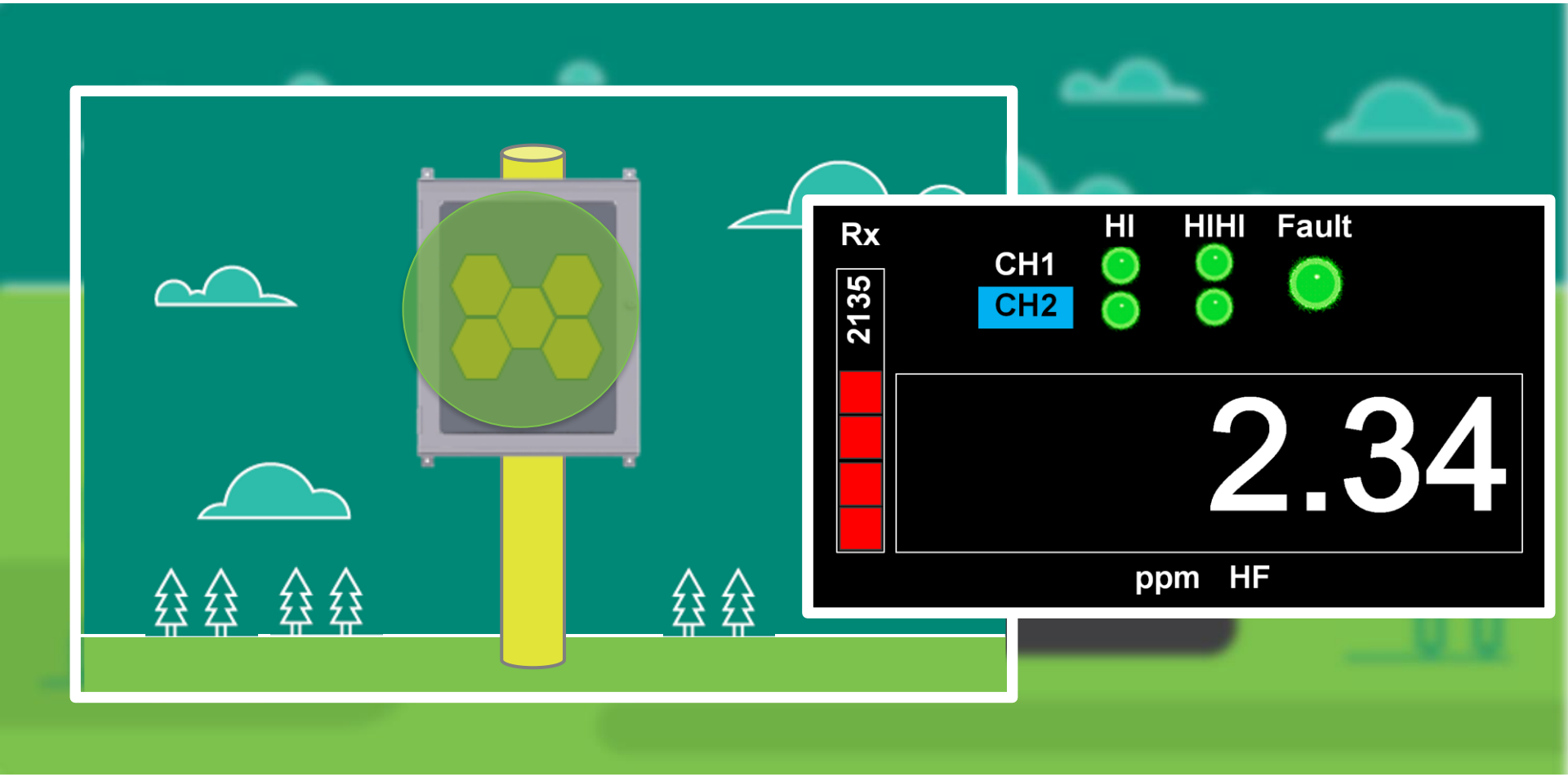


From our experience, these mounting structures often perform better:

- **Steel or Screw Pile:**
  - For best results, fill with cement and clad with pipe insultation.
- **Cement Pile:**
  - For best results, reinforce with rebar.

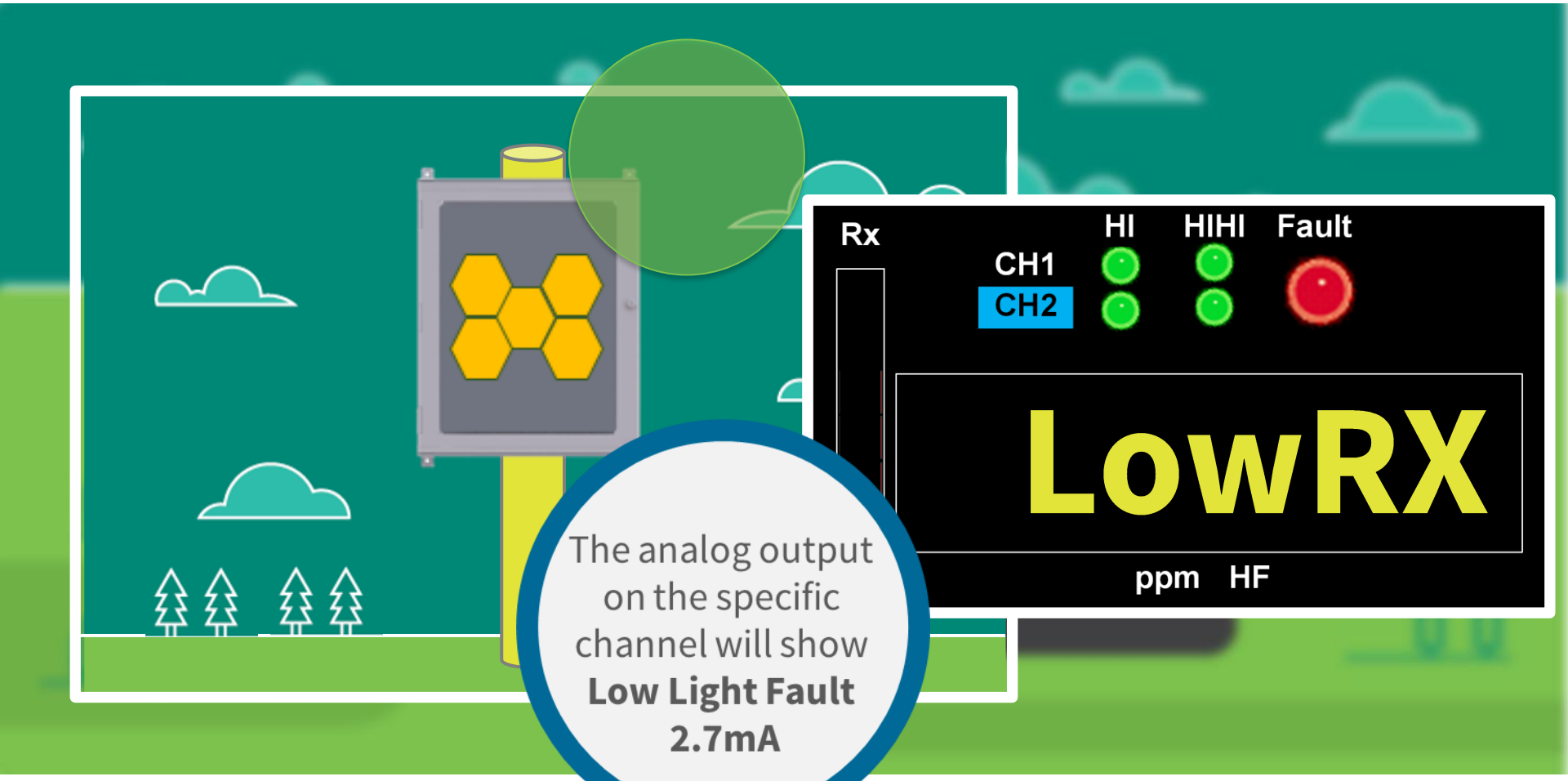
Important: Think about Geotechnical and Environmental Conditions. Consult an Engineer.

STEP #2: STRUCTURE MOVEMENT



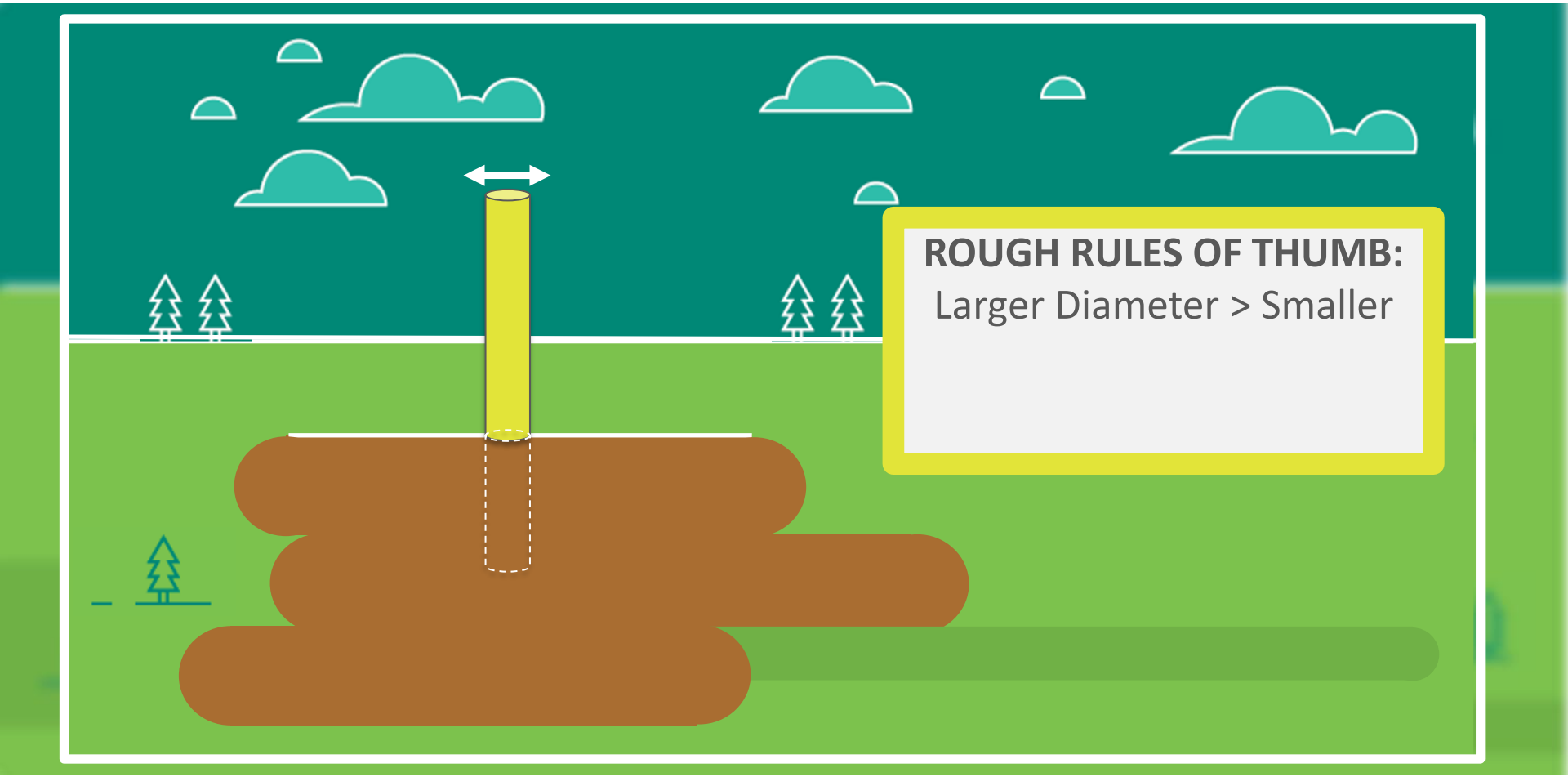
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #2: STRUCTURE MOVEMENT



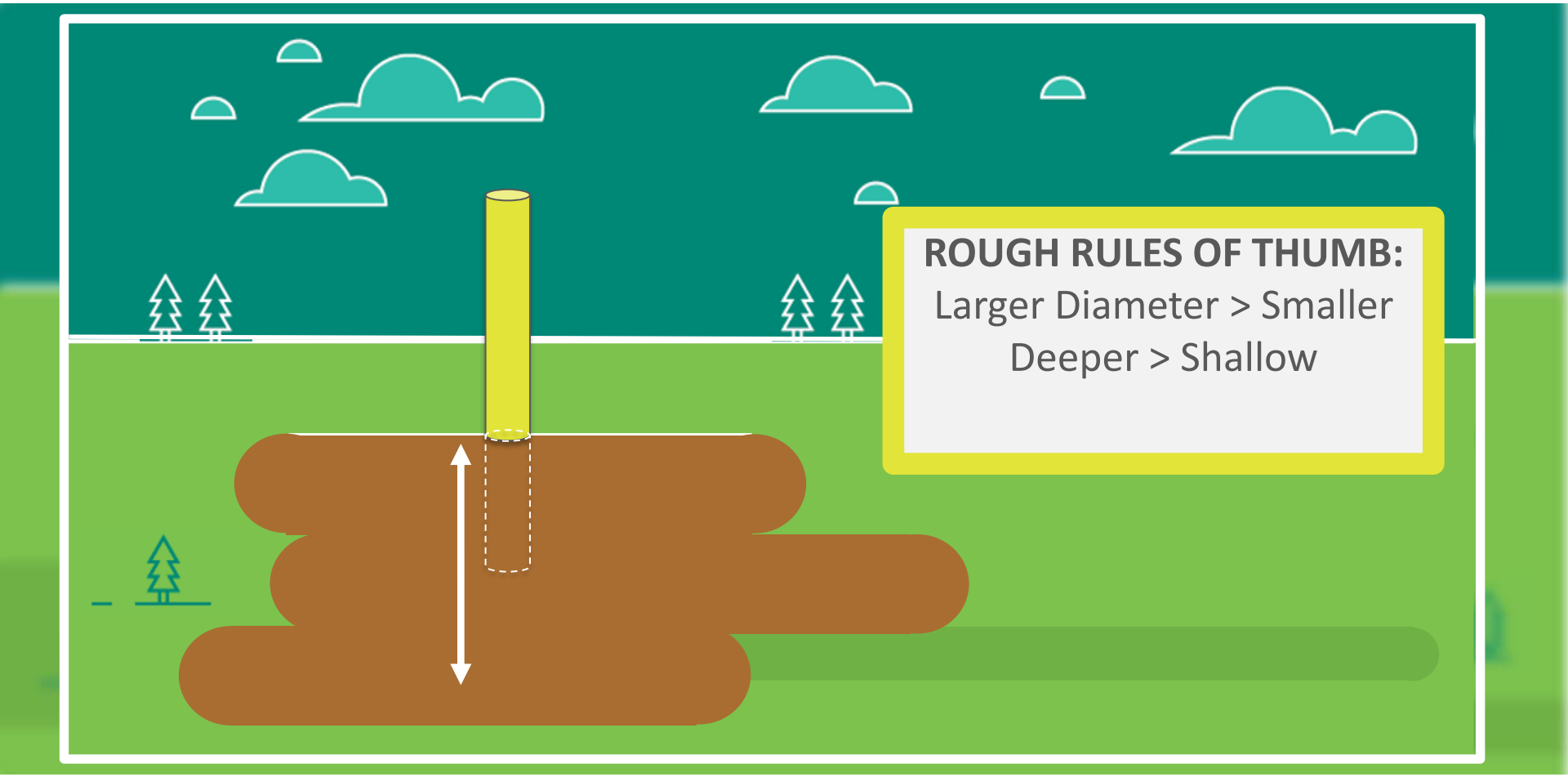
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #2: STRUCTURE MOVEMENT



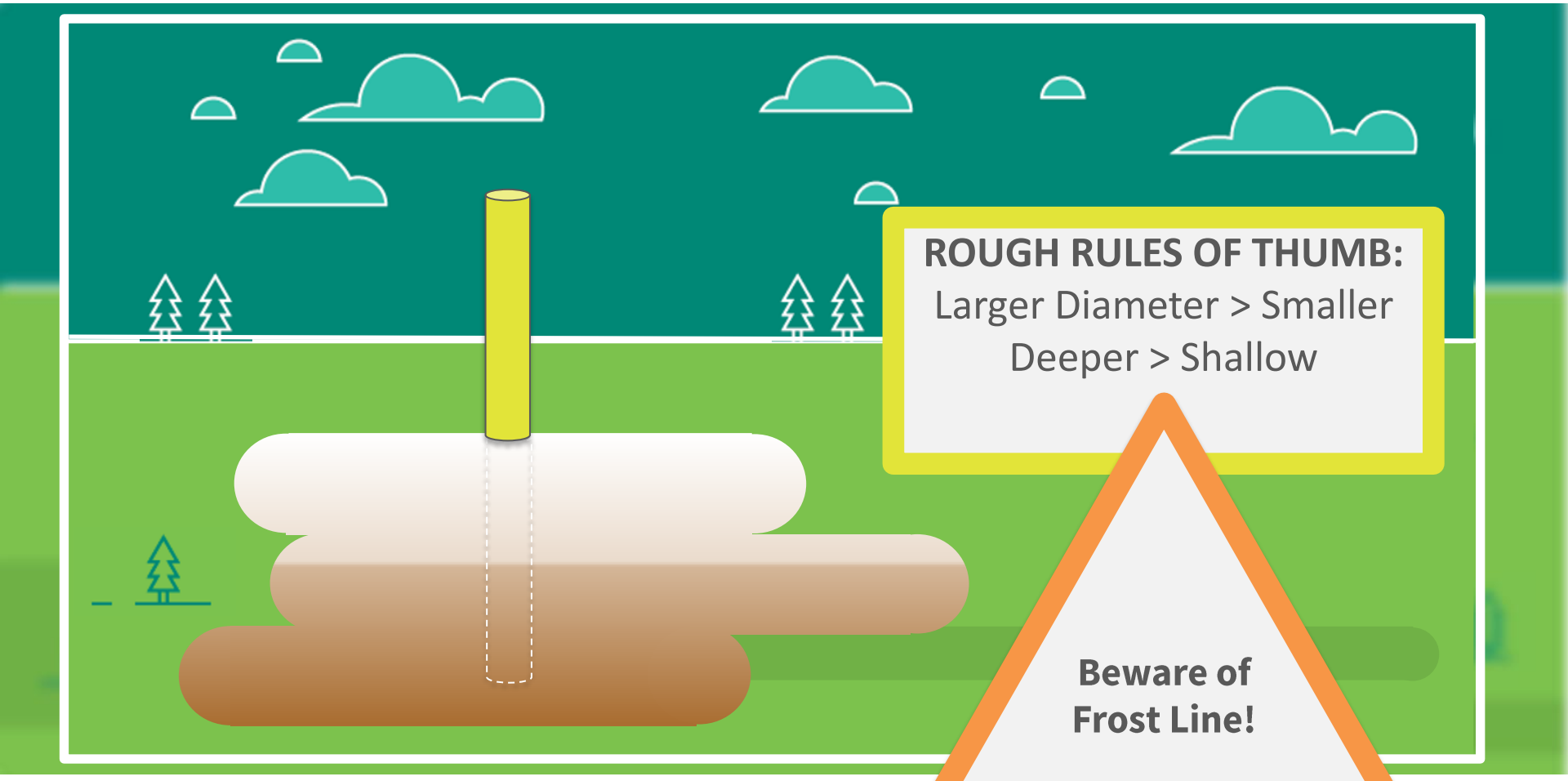
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #2: STRUCTURE MOVEMENT



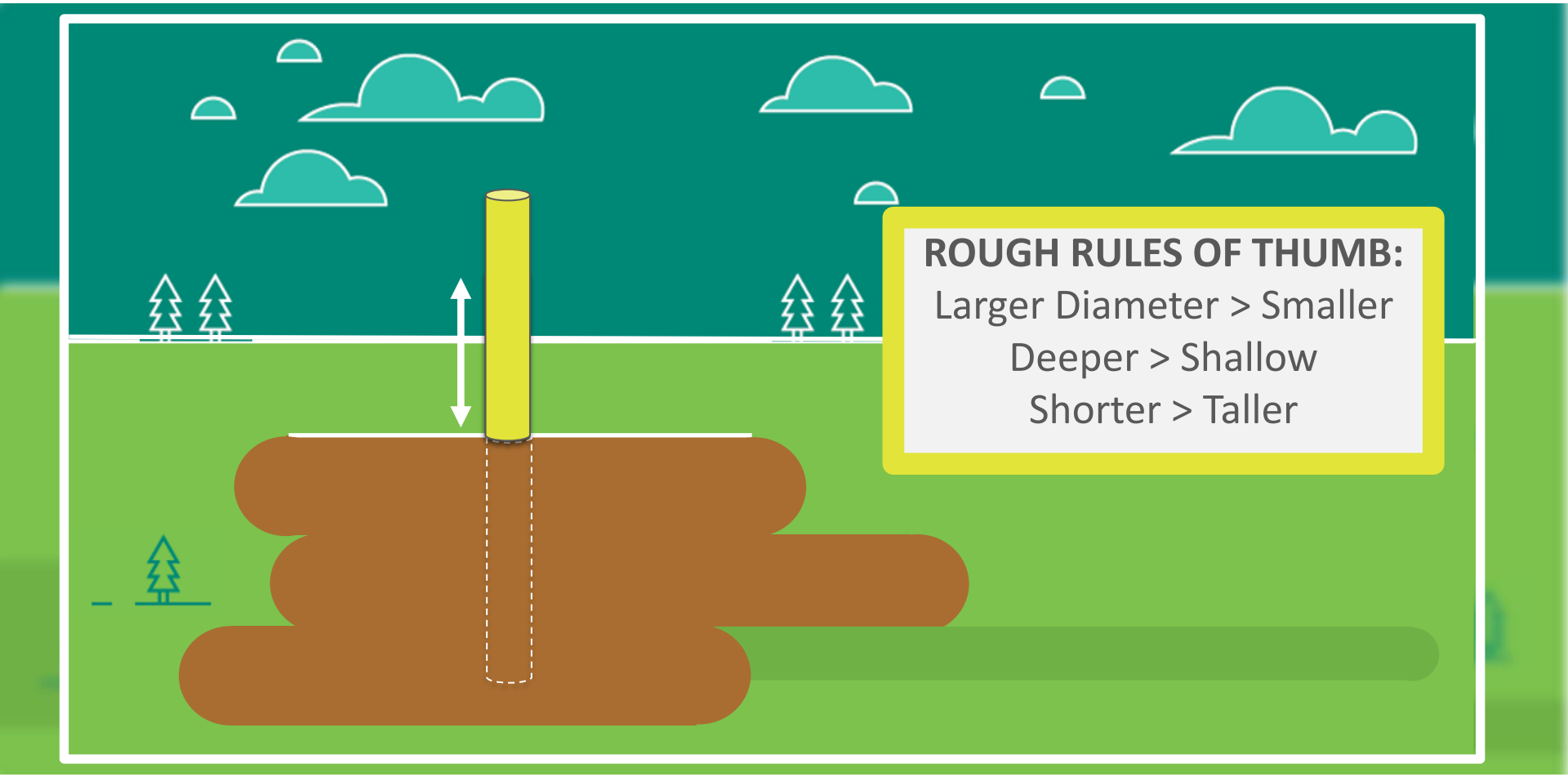
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #2: STRUCTURE MOVEMENT

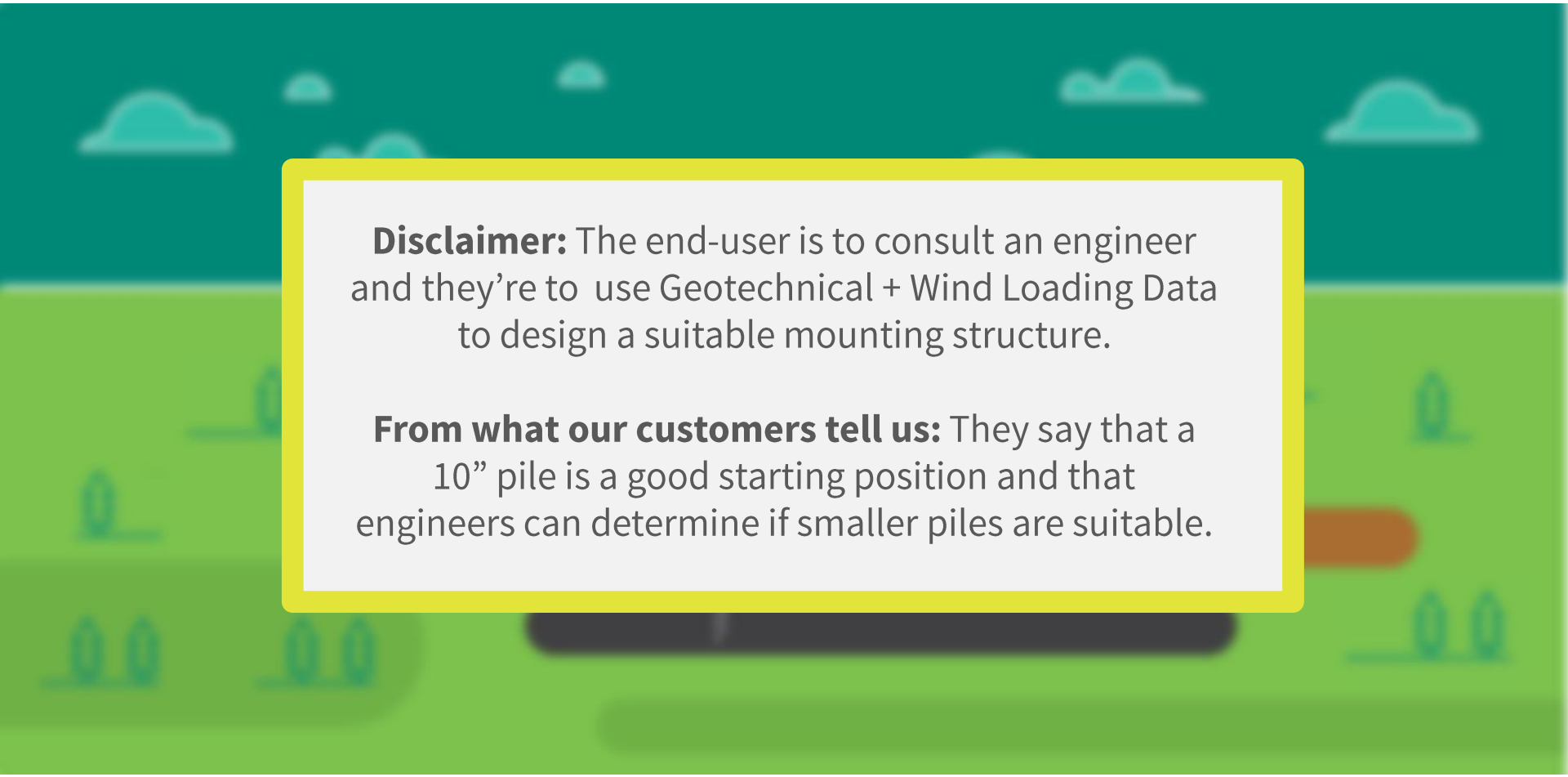


BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #2: STRUCTURE MOVEMENT



STEP #2: STRUCTURE MOVEMENT



Disclaimer: The end-user is to consult an engineer and they're to use Geotechnical + Wind Loading Data to design a suitable mounting structure.

From what our customers tell us: They say that a 10" pile is a good starting position and that engineers can determine if smaller piles are suitable.

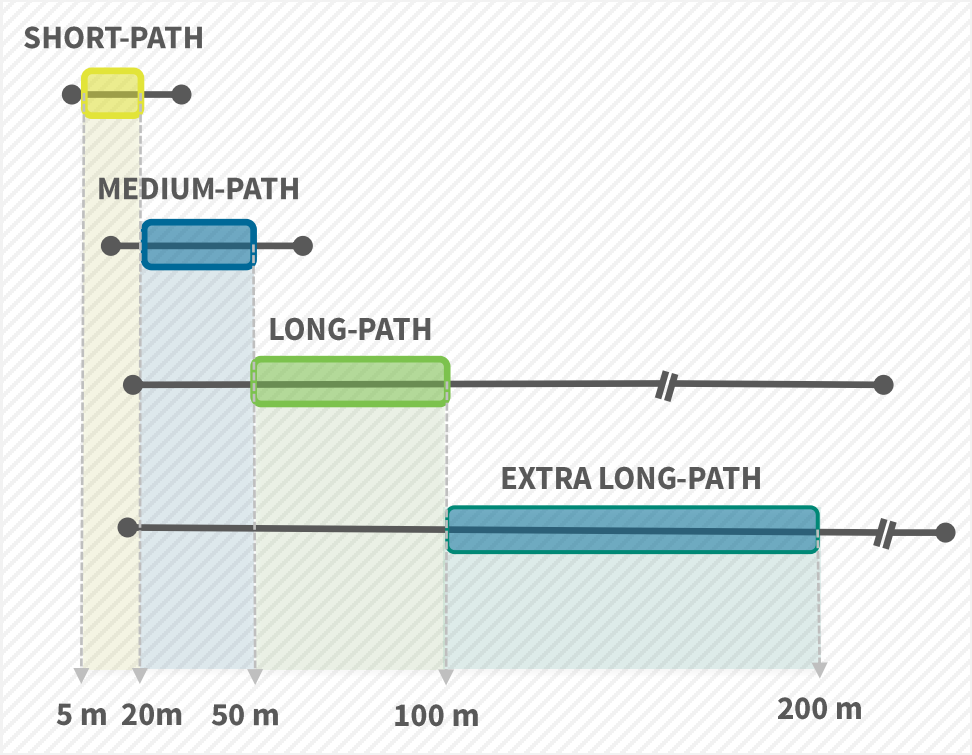
STEP #3: RETRO-ARRAY SIZING

BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #3: RETRO-ARRAY SIZING

Easy Retro-Array Selection

Determination is simply based upon Path Length



Optimal Path Length = Alignment Stability + Returned Laser Light.
Functional Path Length = Only Returned Laser Light.

Short-Path (IMOS)
Suggested Path Length: 5-20 m (15-60 ft)
Functional Path Length: 5-30 m (15-90 ft)

Medium-Path (Wafer)
Suggested Path Length: 20-50 m (60-150 ft)
Functional Path Length: 10-60 m (30-180 ft)

Long-Path (Cornercube)
Suggested Path Length: 50-100 m (150-300 ft)
Functional Path Length: 20-350 m (60-1,050 ft)

Extra Long-Path (Cornercube)
Suggested Path Length: 100-200 m (300-600 ft)
Functional Path Length: 20-500 m (60-1,500 ft)

STEP #3: RETRO-ARRAY SIZING

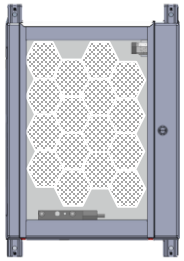
Overview of the Retro-Array Options

The Path Length Determines the Retro-Array Type and Quantity

Short-Path

5-20 m (15-60 ft)

The *Small Retro-Enclosure* will be fully populated with IMOS Retro-Arrays.

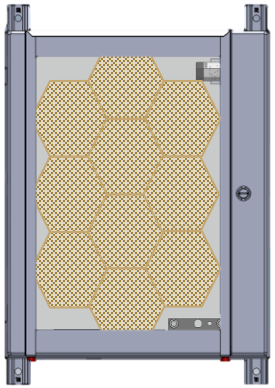


Mounting Structure:
Suggested Sizing
>4” Post @ 7’ Height
>6” Post @ 13’ Height

Medium-Path

20-50 m (60-150 ft)

The *Large Retro-Enclosure* will be fully populated with Wafer Retro-Arrays.

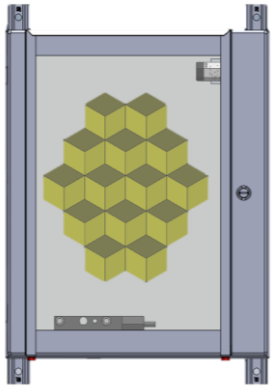


Mounting Structure:
Suggested Sizing
>6” Post @ 7’ Height
>8” Post @ 13’ Height

Long-Path

50-100 m (150-300 ft)

The *Large Retro-Enclosure* will be partially populated with Cornercube Retro-Arrays.

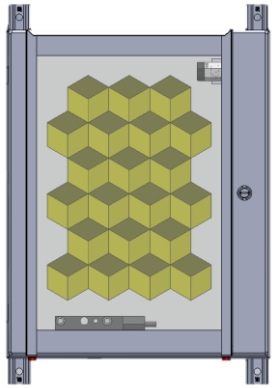


Mounting Structure:
Suggested Sizing
>8” Post @ 7’ Height
>10” Post @ 13’ Height

Extra Long-Path

100-200 m (300-600 ft)

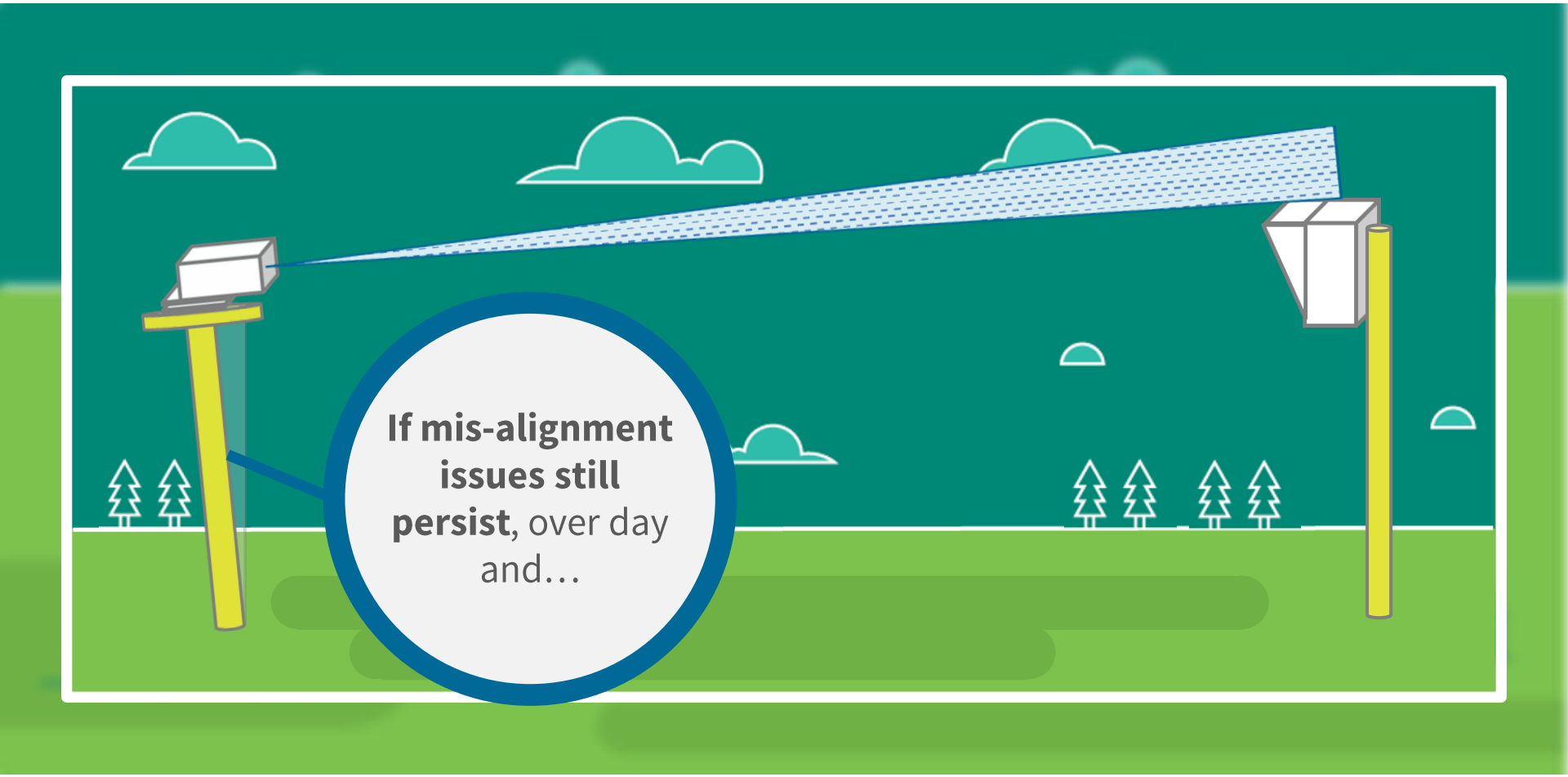
The Large Retro-Enclosure will be fully populated with Cornercube Retro-Arrays.



Mounting Structure:
Suggested Sizing
>10” Post @ 7’ Height
>12” Post @ 13’ Height

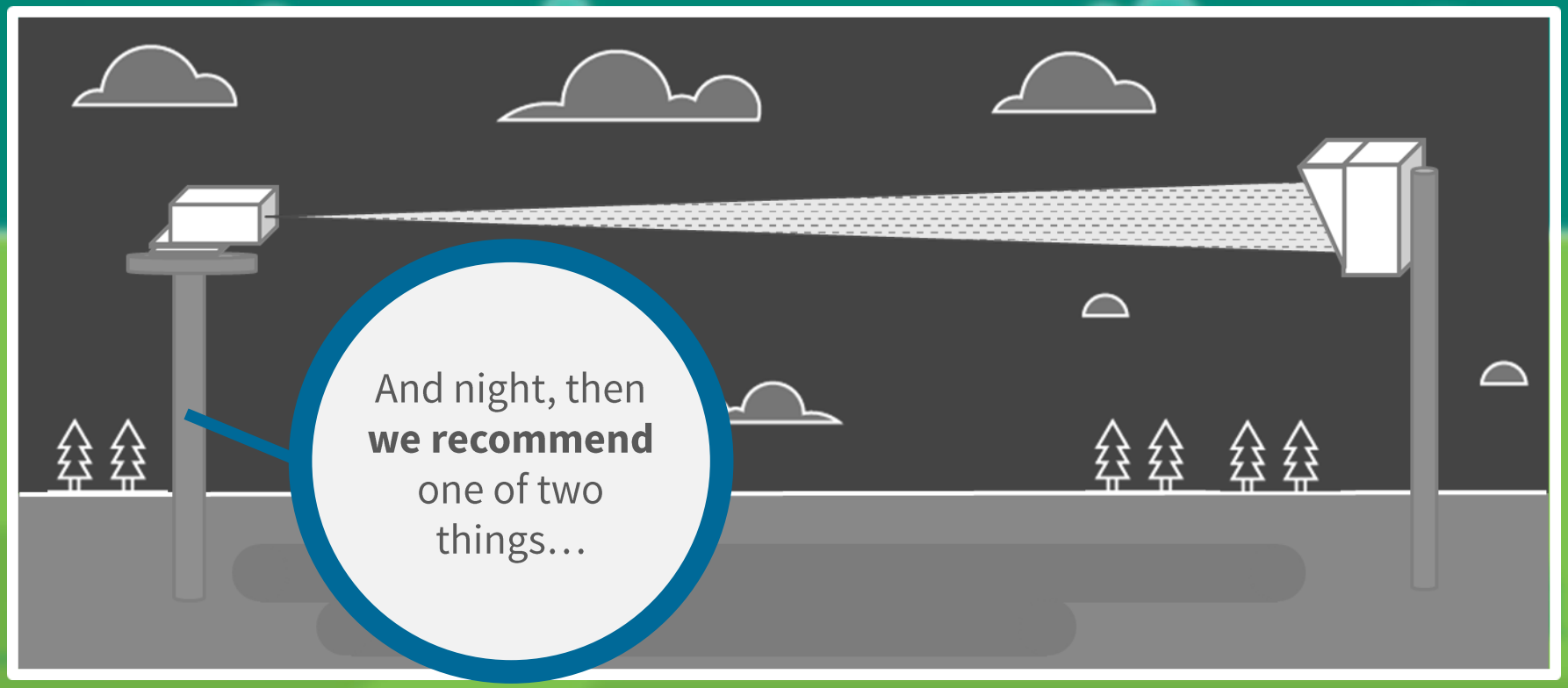
Suggested Mounting Structure: End-User to confirm the Mechanical Suitability with their own Geo-Technical and Wind-Loading Study.

STEP #3.5: TRICK OF THE TRADE



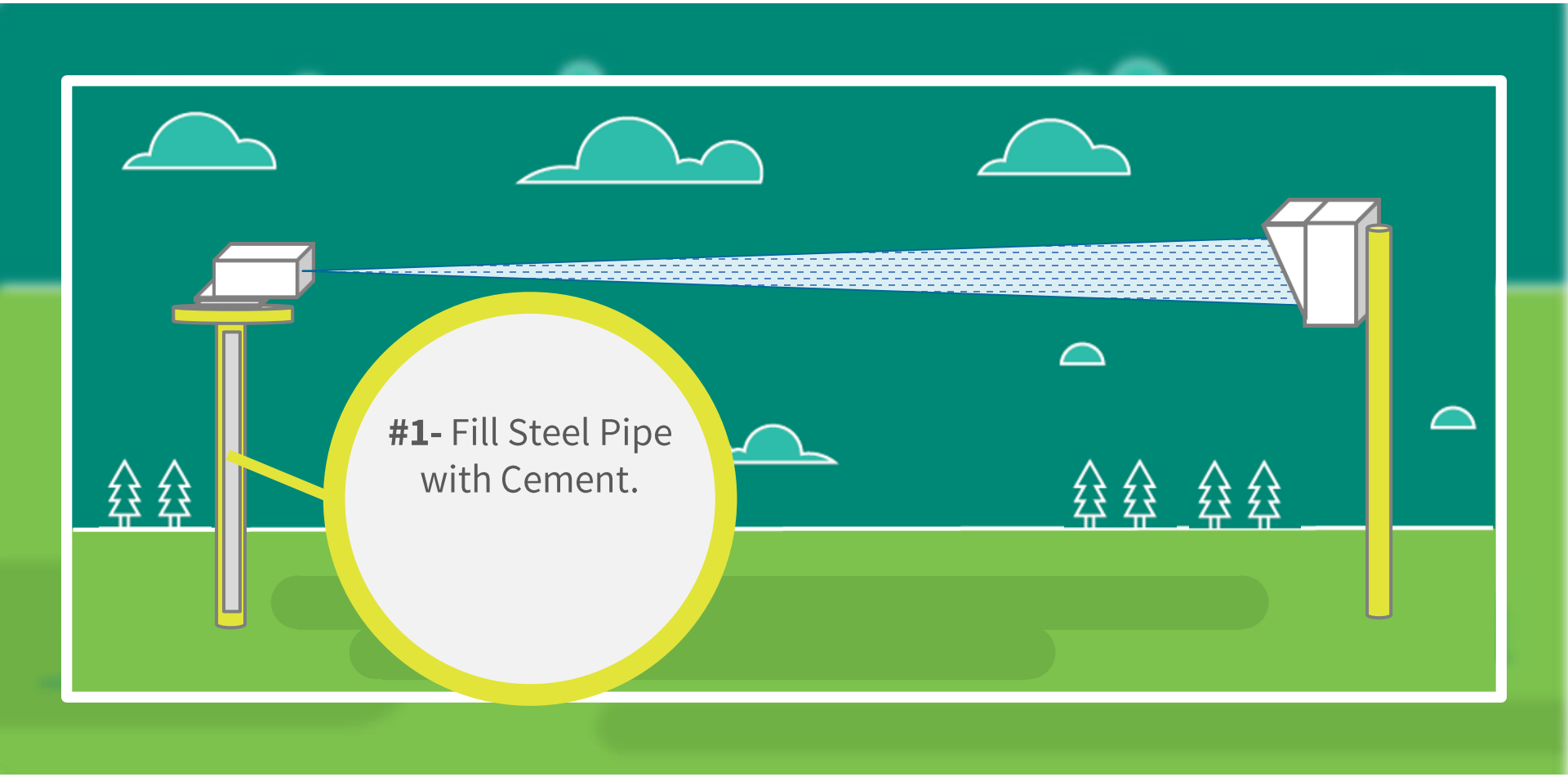
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #3.5: TRICK OF THE TRADE



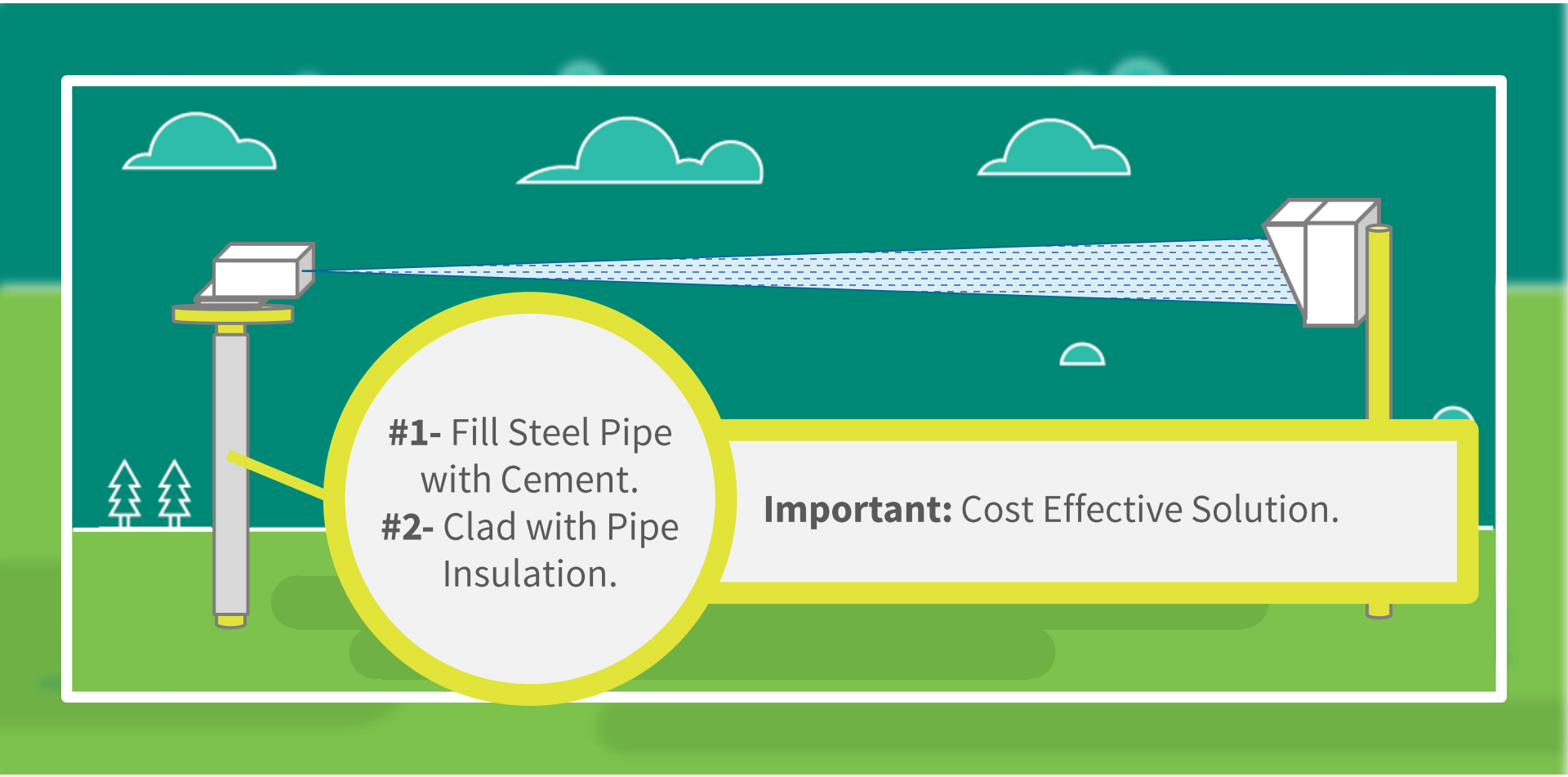
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #3.5: TRICK OF THE TRADE



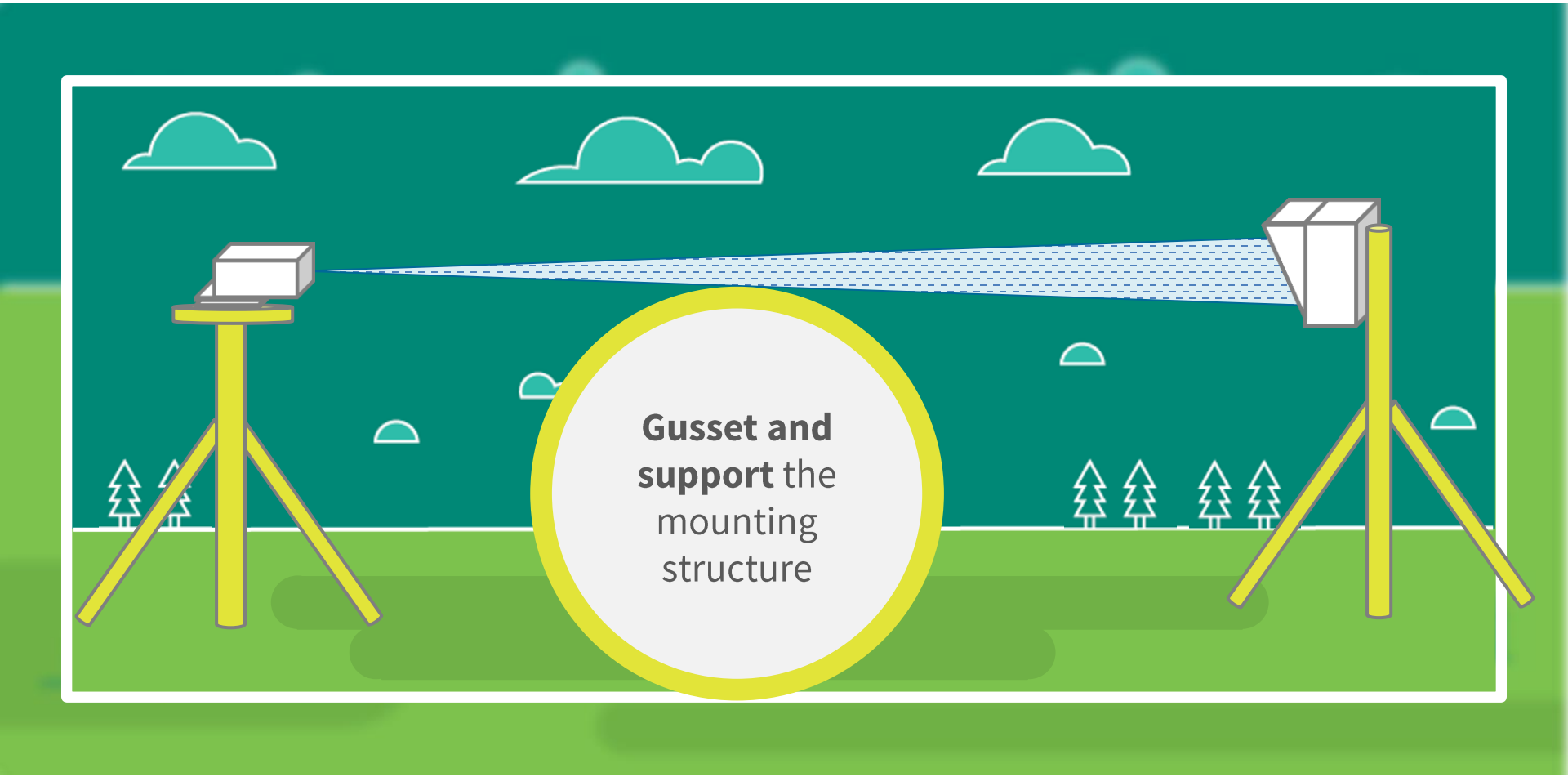
BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #3.5: TRICK OF THE TRADE



BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #3.5: TRICK OF THE TRADE



BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.

STEP #4: TRICK OF THE TRADE

BOREAL 12846-146street NW, Edmonton, AB, CA T5L 2H7 P +1.780.488.5173 F +1.780.488.0780 W boreal-laser.com REMOTE PRECISION. SURE DECISION.