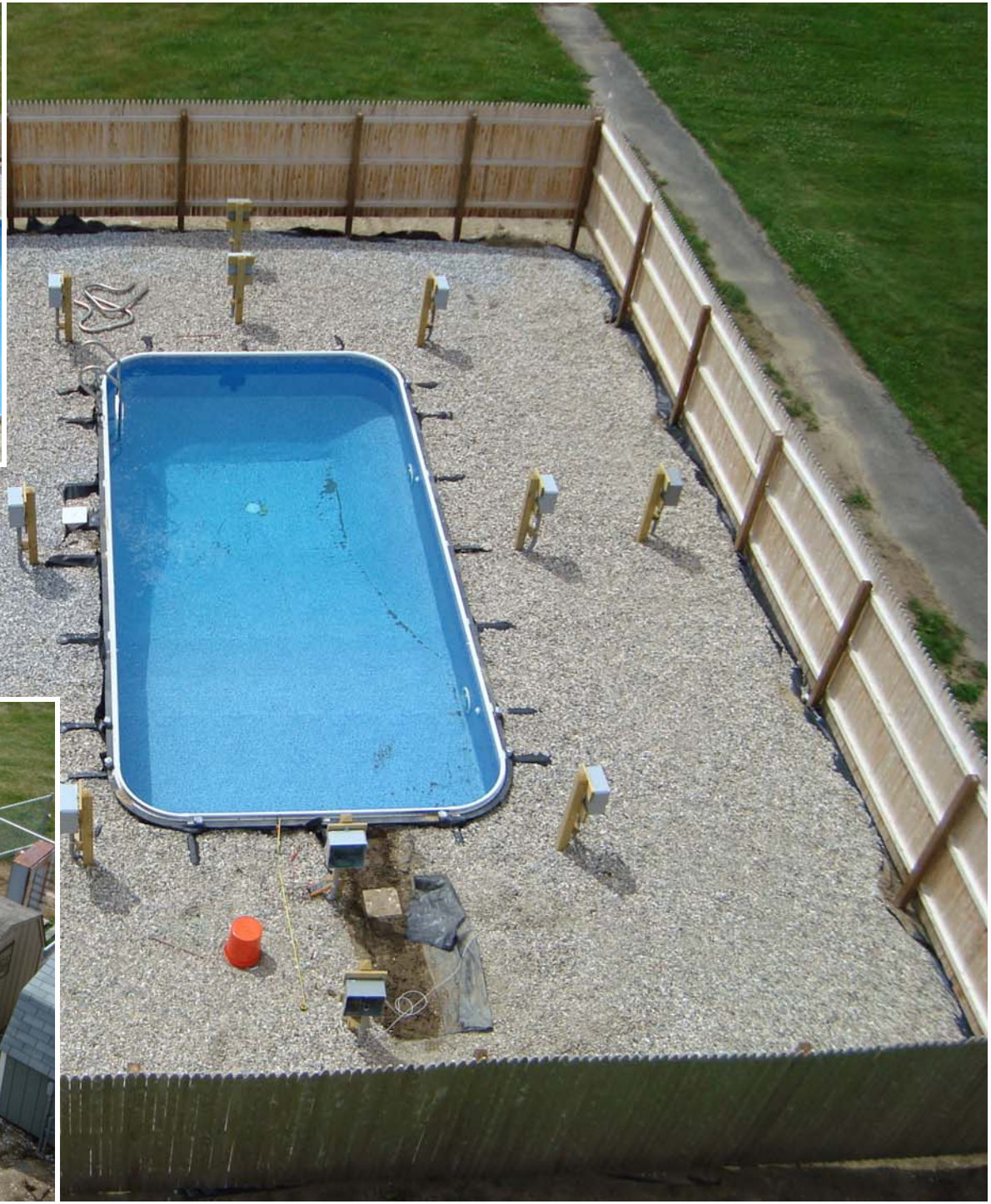
Fault Test Plans

Evaluation of Grounding and Bonding Around Swimming Pools and Spas – August 2009

Discussion Topics

- Effect of inner ring vs outer ring
- Effect of ring combinations
- Effect of vertical vs angled ground rods
- Effect of multiple ground rods
- Effect of horseshoe vs full ring
- Effect of depth of ground ring
- Effect of load resistor
- Follow on test schedule



Source
XF

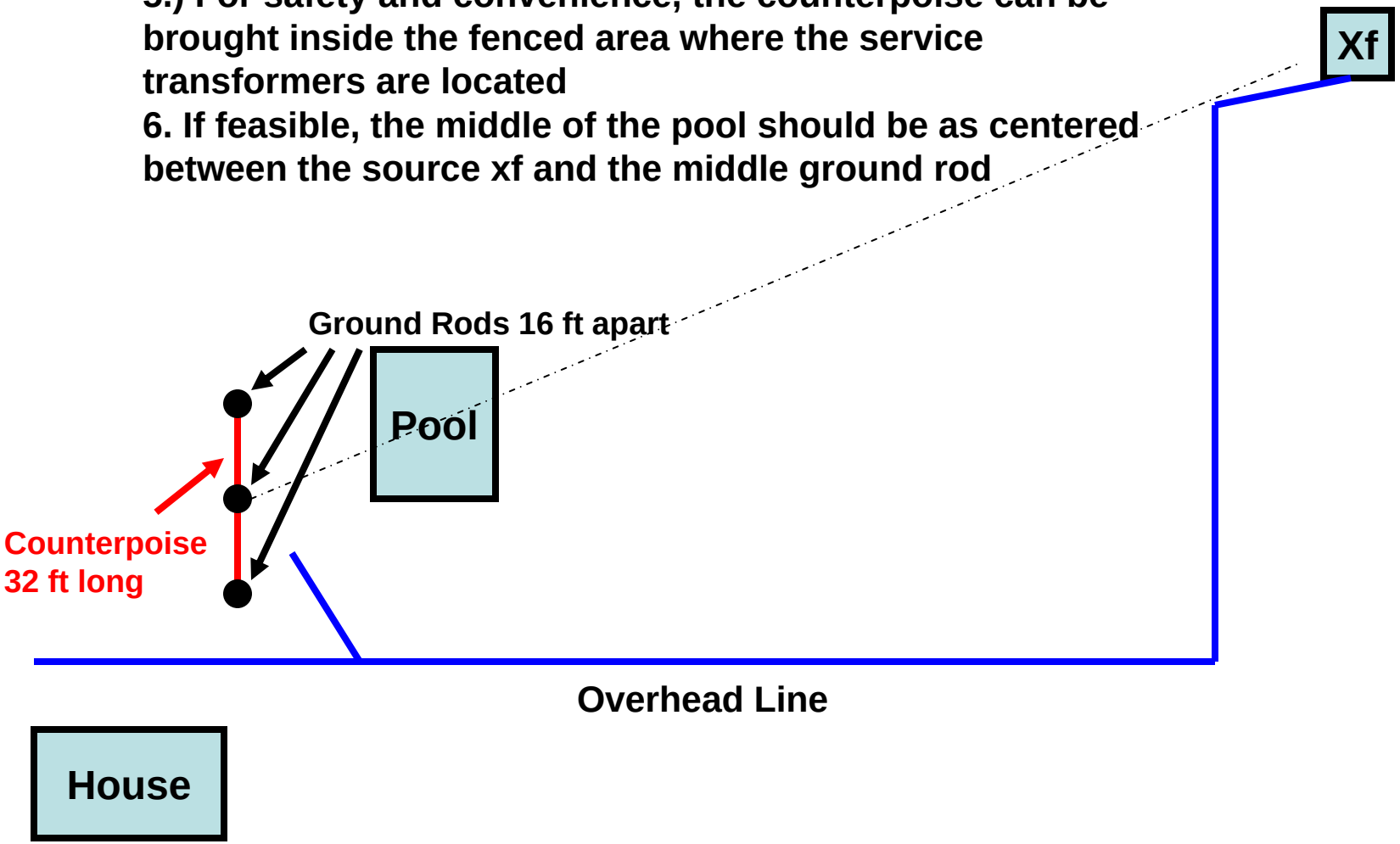
Overhead Line

Fault
Point 1

Remote
Fault Point 2

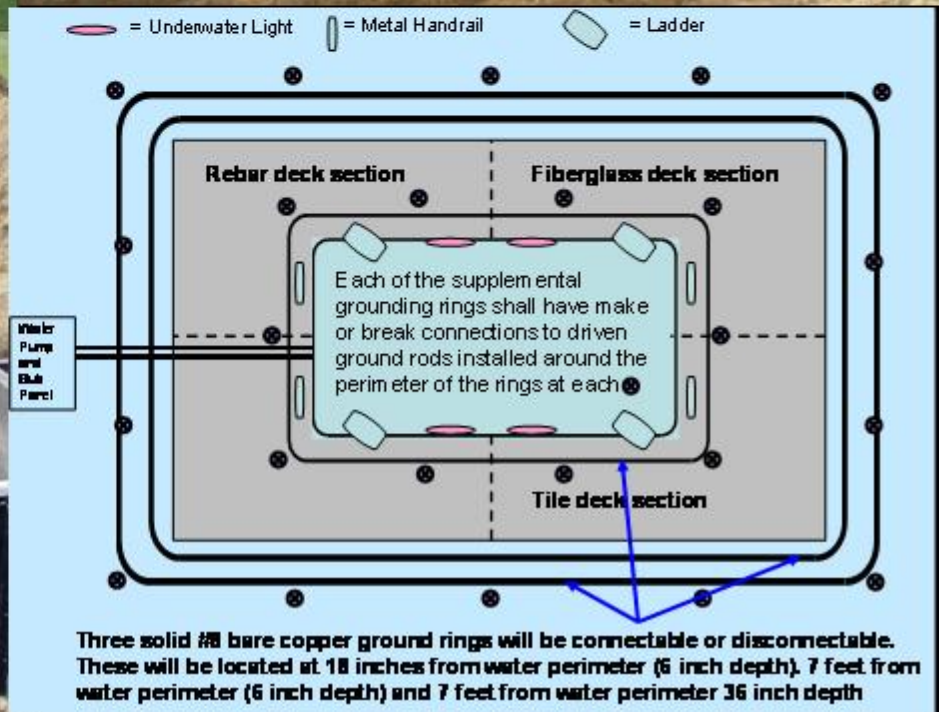
EMI
House

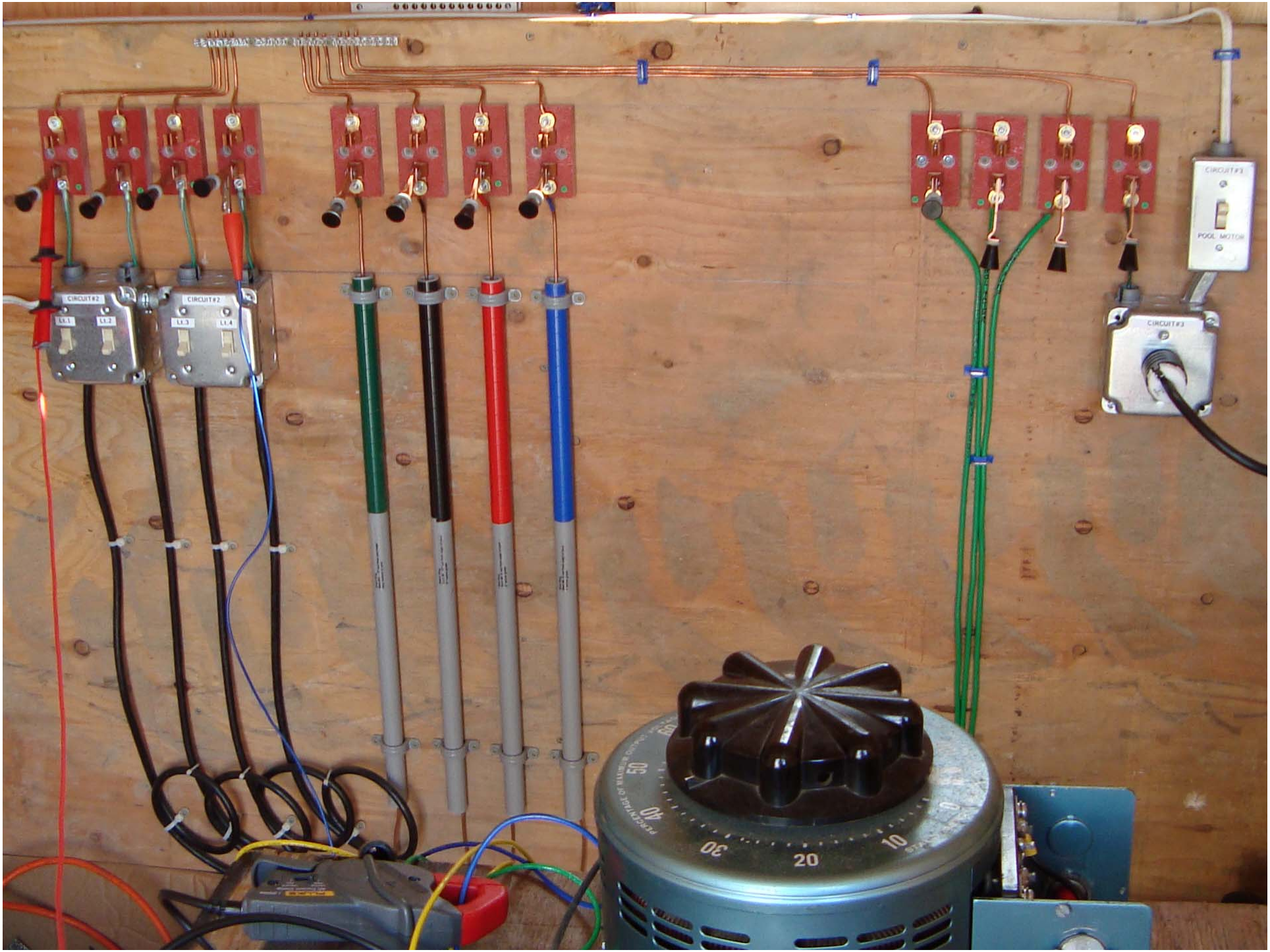
1.) Red Line indicates location of trench for counterpoise
2.) Specifications: 1 ft deep, 1 ft wide, 32 ft long
3.) In the center and at each end, there will be one 8ft vertically driven ground rod clamped on to the counterpoise
4.) The preferred wire size for the counterpoise is #4 copper
5.) For safety and convenience, the counterpoise can be brought inside the fenced area where the service transformers are located
6. If feasible, the middle of the pool should be as centered between the source xf and the middle ground rod

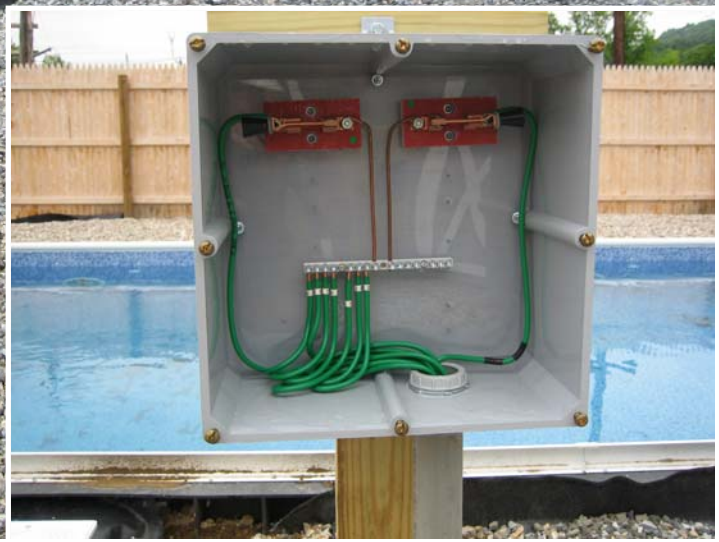


Swimming Pool Testing to Be Conducted at the EPRI Lenox, MA Outdoor Test Facility

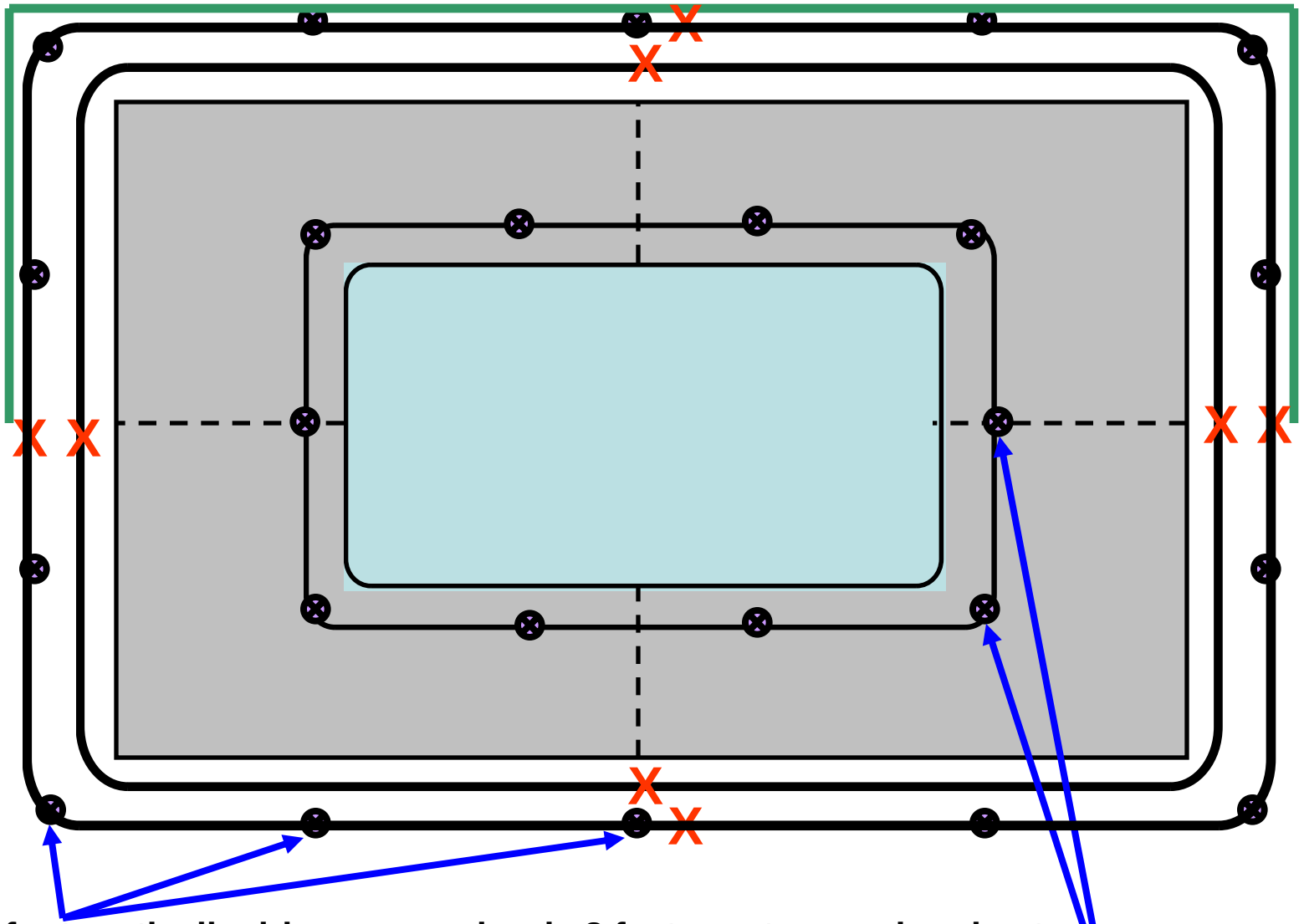
To support the project objectives, we have constructed a controllable test area at the Lenox, MA facility
Can vary: Distribution Configurations, Neutral impedances, grounding configurations, NEV sources....




CIRCUIT#2
CIRCUIT#2
CIRCUIT#3
POOL MOTOR
CIRCUIT#3
20
30
40
50
10

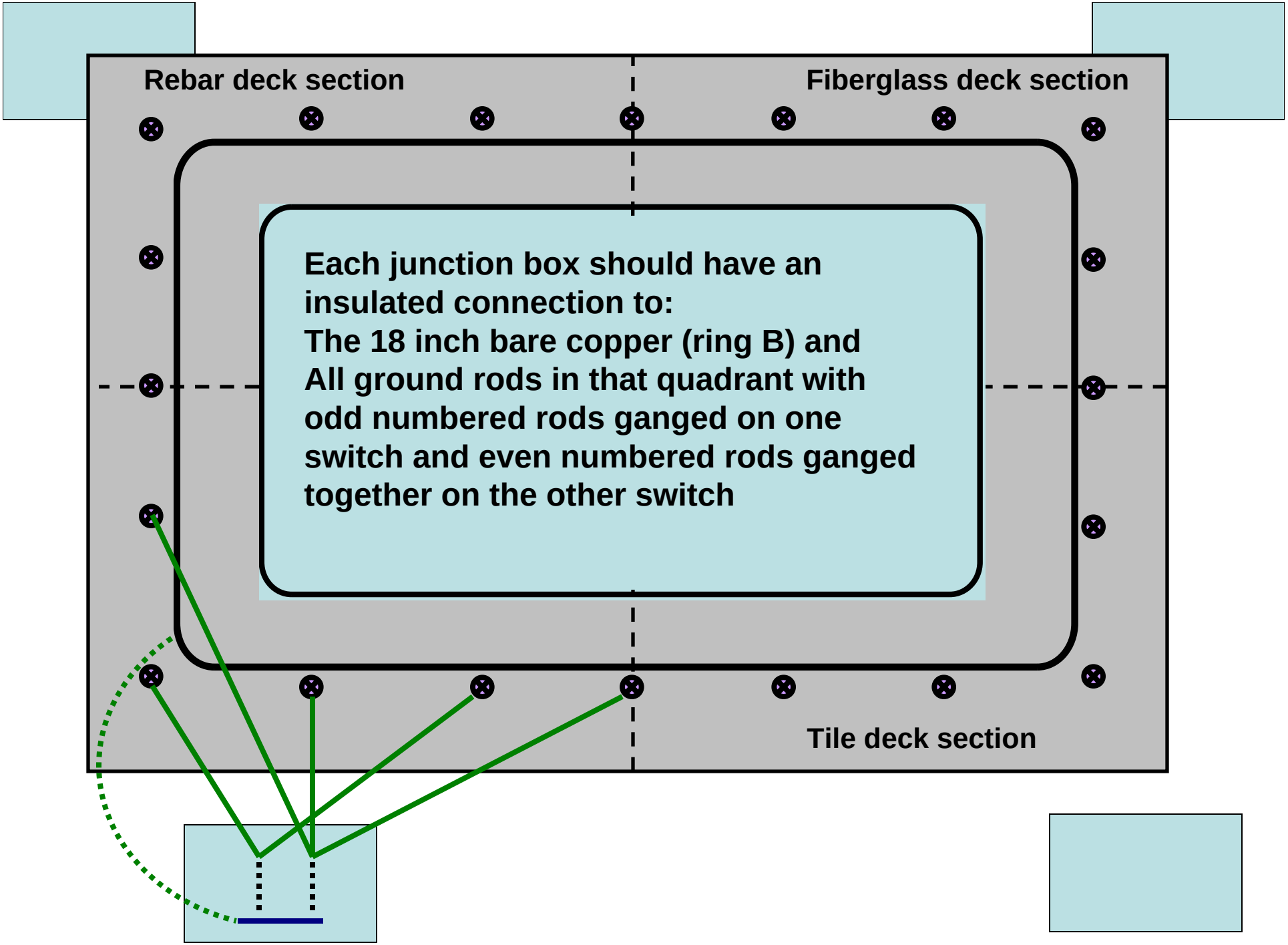


X indicates a make or break point of connection
Insulated green wire will allow a break in the outer ring to test horseshoe configurations



Eight foot vertically driven ground rods 8 feet apart around perimeter
9 rods vertical and 9 rods at 30 degrees

Four foot vertically driven ground rods 4 feet apart around perimeter
Total innner rods = 24


Rebar deck section
Fiberglass deck section
Each junction box should have an insulated connection to:
The 18 inch bare copper (ring B) and
All ground rods in that quadrant with odd numbered rods ganged on one switch and even numbered rods ganged together on the other switch
Tile deck section