Achieva 1.5T MRI – Site Planning Guide (Summary)

System Overview

- System Name: Philips Achieva 1.5T
- Magnet Type: Superconducting
- Field Strength: 1.5 Tesla
- Magnet Bore Size: 60 cm
- System Weight: ~11,000–12,000 lbs (5,000–5,500 kg) for the magnet
- Cryogen Type: Liquid helium (Zero boil-off design on newer versions)

Room Requirements

- Magnet Room (Scan Room): Recommended Minimum: 24 ft (L) × 16 ft (W) × 10 ft (H). Allows for patient table travel, quench pipe, penetration panel, and service access.
- Control Room: Typically 10 ft × 12 ft (minimum), adjacent to scan room, with visibility to the patient.
- Equipment Room: Size: Minimum 8 ft × 10 ft. Can house: RF cabinets, chiller connections, UPS (if used), gradient power amplifiers.

Power Requirements

- Voltage: 480V or 400V, 3-phase, 50/60 Hz (varies by region)
- Power Consumption: Approximately 45–60 kVA
- Dedicated electrical panel required for system-only use
- Grounding: Dedicated ground and bonding to RF shield

RF Shielding

- Required: Yes
- Shield Type: Copper or galvanized steel RF cage
- RF Penetration Panel: Required for cable entry between rooms

Cooling Requirements

- Water-cooled gradients: Requires chilled water system or dry cooler
- Flow rate and pressure depend on model year, typically: ~6–8 gallons/min at 40–60 psi
- Heat load: Around 17,000–25,000 BTU/hr (varies with configuration)
- Proper HVAC design needed for all rooms, especially equipment and scan rooms

Magnetic Shielding

- Passive shielding may be required depending on:
- - Site layout
- - Neighboring areas
- - Proximity to public zones

Other Planning Considerations

- Quench Pipe: Must be installed to safely vent helium gas outdoors. Designed per site-specific route and local codes.
- Access Path for Installation: Minimum width: 48 in (1.2 m). Floor load capacity: Minimum 5,500 kg over area of magnet base. Door height clearance: Typically ≥84 in (7 ft).
- Floor Loading Requirements: Magnet base: ~350–450 lbs/sq. ft. Reinforced slab typically required.