MRI SITE PLANNING

& INSTALLATION GUIDE

Everything You Need to Know Before the Magnet Arrives

Medical Imaging Equipment Buyer's Guide | AmberUSA.com

Before you sign on that great deal for a high-field MRI scanner, the most important question is not the price tag — it is whether your facility is ready to house the magnet. Room configuration, shielding, environmental controls, cryogen logistics, electrical service, chilled water, and access route planning all need to be locked in long before delivery day, and skipping any of these steps tends to turn a clean install into a costly delay.

A thoughtful site plan, built early and reviewed by a qualified MRI installation specialist, is the single best protection against scope creep, change orders, and missed go-live dates. This guide walks through every major site planning consideration for a high-field MRI installation — what to inspect, what to design around, and what to coordinate with your engineering, facilities, and IT teams before the truck arrives.

WHY THIS MATTERS

Industry data shows that roughly one in three MRI projects misses its original go-live date — and the vast majority of those delays trace back to site readiness issues that should have been caught during planning. The cost of fixing a shielding problem after the magnet is in the room is dramatically higher than catching it on the drawing board.

1. Site Layout & Room Design

Every MRI installation starts with a detailed site drawing that captures the magnet room, control room, equipment room, and the access route from the receiving area to the final position. This drawing is not a suggestion — it is the master reference that every trade involved in the project, from electricians to general contractors to RF shielding installers, will work from.

What the Site Plan Must Show

A complete MRI site plan includes:

- Magnet isocenter location and orientation, with the 5-gauss fringe field overlay marked
- Workstation position in the control room with clear sight lines into the magnet room
- Equipment room layout including the system cabinet, RF cabinet, gradient cabinet, and cooling water cabinet.
- RF coil storage cabinet location (typically inside or adjacent to the magnet room).
- Helium gas exhaust pipe routing from the magnet through the building to the exterior.
- Patient support table position, operator console placement, and patient access path.
- Door swing directions, especially the RF shielded door which must open outward from the magnet room for pressure equalization.
- Floor drains, sub-floor penetrations, and any conduits that route through the shielded envelope.

Magnet Room Location Within the Building

For practical reasons, the MRI scan room should be positioned near the exterior of the building wherever possible. The magnet is the single largest and heaviest piece of equipment that will ever pass through your facility, and the closer the magnet room sits to a loadable exterior wall, the simpler — and less expensive — delivery day becomes.

Buildings where the MRI lands several corridors deep into the floor plan often require temporary wall removals (a "knockout panel") just to get the magnet to its final position, which adds significant cost and complexity to the install. Exterior placement also makes future magnet replacement easier when the time comes — a consideration most buyers do not think about until they are 12 years in and looking at an upgrade.

Operator-Patient Sight Lines & Communication

The relationship between the control room and the magnet room is one of the most underappreciated parts of MRI site design. Your technologist needs to maintain continuous visual contact with the patient throughout every scan, and the patient needs to feel that they are not alone in the room.

A few elements that support this:

- A large RF-shielded observation window between control room and magnet room, positioned for a direct line of sight to the patient's head while they are in the bore.
- RF window construction is typically two layers of copper mesh or perforated copper sheet laminated between safety glass panels.
- A two-way intercom system with clear microphone and speaker placement on both sides of the wall.
- An emergency stop button accessible to the technologist at the operator console.
- Adequate space in the control room for the operator console, a second technologist or trainee, and service access to the equipment cabinets.

Patient Screening Protocols

The room layout should also support the safety screening process that every patient must pass through before entering the magnet room. Even small physical design choices — the placement of changing rooms, the location of the metal-detection wand station, the line of sight from the screening area into the magnet room — can make the screening process either smooth or chaotic.

Screening protocols guard against the most serious safety risks in MRI: ferromagnetic objects being pulled into the bore, implanted medical devices being disrupted, and electronic devices being damaged. A facility designed to support proper screening discipline catches these risks before they become incidents.

Room Dimensions

Most high-field MRI systems require a magnet room with the following minimums, though always defer to your specific OEM's siting documentation:

Space	Typical Minimum Requirement
Magnet Room — Interior	Minimum 22' x 25' (clear of shielding) for most 1.5T systems
Magnet Room — Ceiling Height	Minimum 9'-6" clear under suspended ceiling; 10'-0" preferred
Control Room	Minimum 10' x 12'
Equipment Room	Minimum 8' x 12', adjacent to magnet room
Access Route — Width	Minimum 8'-0" clear width along entire delivery path
Access Route — Ceiling	Minimum 9'-0" clear height along entire delivery path

ACCESS ROUTE REALITY CHECK

Walk the access route from the exterior loading point all the way to the final magnet position, with a tape measure. Every doorway, every elevator, every turn. We have seen $1.5M MRI projects sit on a loading dock for weeks because a single hallway corner was 2 inches too tight.

Flooring Considerations

Avoid carpet in the magnet room, control room, and equipment room. Carpet creates problems on multiple fronts — dust accumulation that can interfere with cooling air paths, static electricity that becomes a safety issue with sensitive electronics, infection control concerns, and difficulty moving the magnet during installation.

The standard recommendation is a thin, non-conductive vinyl tile (VCT) or sheet vinyl flooring. This gives you a clean surface for the magnet skid during install, easy ongoing cleaning, no static buildup, and a long service life. Some facilities also specify epoxy-coated concrete in the equipment room.

2. RF Shielding

RF shielding is what allows the MRI scanner to do its job. The detection coils inside the magnet are extraordinarily sensitive to radio frequency energy in the operating bandwidth — and the world is full of RF noise. Cell towers, radio broadcasts, fluorescent ballasts, computer monitors, even the building's electrical system all emit RF that can degrade image quality if it reaches the magnet.

The RF shield is a continuous, electrically conductive envelope built around the magnet room that blocks external RF from getting in and prevents the MRI's own RF transmissions from getting out. Done right, it is invisible to everyone except the engineers who built it. Done wrong, it shows up as ghosting, banding, and structured noise in every clinical image.

Construction Standards

Standard RF shielding for a high-field MRI is built from continuous copper or galvanized steel sheets, with all seams clamped and soldered or welded to maintain electrical continuity. The shield must be:

- Insulated from all building grounds — the shield is grounded at a single dedicated point, never multiple.
- Continuous across walls, ceiling, and floor, with no gaps or unsealed penetrations.
- Fitted with an RF-shielded door that uses finger-stock contacts and a pneumatic seal.
- Equipped with an RF-shielded observation window built from two layers of copper mesh or perforated copper sheet laminated between safety glass panels.

Penetrations Through the Shield

Every wire, pipe, hose, or conduit that crosses the RF shield must be handled correctly or it becomes an antenna for external RF noise. Specifically:

- Electrical lines (power, signal, network) must route through RF low-pass filters mounted in the shield wall.
- Non-conductive supply lines such as oxygen, medical gases, anesthesia gases, and water must route through RF-sealed waveguides — typically a length of copper or brass tubing sized to attenuate RF at the imaging frequency.
- HVAC supply and return must enter and exit the room through honeycomb waveguides.
- Fiber optic cables can pass through small waveguides, which is why most modern MRI installations use fiber for control and data connections.

RF Door

The RF shielded door is the highest-stress part of the shield system. It opens dozens of times a day, the seals wear, and any compromise in the door's contact surfaces creates a leak that degrades imaging. A few critical design points:

- The door must open outward from the magnet room — this is required for pressure equalization during a quench event.
- The door's RF contact strips (finger stock) require periodic cleaning and replacement as part of preventive maintenance.
- Door hardware must be non-ferromagnetic — typically brass or aluminum components, never steel.
- An interlock that prevents the magnet from operating with the door open is standard on most platforms.

RF Shield Testing

The RF shield must be tested twice — first before the magnet is delivered, to verify the shield meets specification before any equipment is at risk, and again after magnet placement to confirm nothing was compromised during installation. The standard test is a swept-frequency attenuation measurement performed across the MRI's operating bandwidth.

Most OEMs require a minimum shielding effectiveness of 90 to 100 dB across the imaging frequency range, with copies of the test report retained for the life of the system.

3. Magnetic Shielding & Fringe Field Management

Where RF shielding deals with what comes in, magnetic shielding deals with what goes out. A high-field MRI magnet generates a powerful three-dimensional fringe field that extends well beyond the magnet itself — and that fringe field has to be managed carefully to protect patients, staff, and equipment in adjacent spaces.

Understanding the 5-Gauss Line

The 5-gauss line is the standard safety boundary for the magnetic fringe field. Inside the 5-gauss line, the field is strong enough to interfere with cardiac pacemakers, implanted devices, and ferromagnetic equipment. The 5-gauss line must be entirely contained within a controlled-access area — meaning it cannot extend into a public corridor, an adjacent occupied office, or an unsupervised space.

Unshielded, the 5-gauss line on a typical 1.5T system extends roughly 5 meters from the magnet center in the radial direction and 9 meters in the axial direction. On a 3T system, those distances roughly double. Active and passive shielding designs are used to compress the 5-gauss line into a smaller footprint that fits within the magnet room.

THREE DIMENSIONS

Fringe fields are three-dimensional. The space above and below the magnet room — including floors above and below in a multi-story building — may need shielding evaluation. A magnet on the second floor of a hospital has a fringe field that extends down into the first floor and up into the third. Treat your site plan as a 3-D problem, not a 2-D one.

Sources of Magnetic Field Disturbance

The magnet's homogeneity is also at risk from external sources. Moving ferromagnetic mass changes the local magnetic environment, and changes in the local environment show up as image artifacts. The most common offenders to evaluate during site selection are:

- Elevators (especially traction elevators with steel counterweights).
- Vehicles passing nearby, including parking garages on adjacent floors.
- HVAC chillers, air handlers, and other large rotating equipment.
- Electric railways, light rail, and subway systems within several hundred feet.
- Steel structural elements (beams, rebar, decking) close to the magnet.
- Wheelchairs, gurneys, and other mobile ferromagnetic equipment in adjacent spaces.
- Active power lines carrying large or fluctuating currents.

Vibration

Mechanical vibration coupling into the magnet causes image artifacts and, in extreme cases, can damage the cryostat. The site plan should identify and design around vibration sources — adjacent mechanical rooms, loading docks, gymnasiums, traffic-bearing structures. Vibration isolation pads and reinforced structural slabs are common mitigation strategies.

4. Electrical Requirements

A high-field MRI is one of the most electrically demanding pieces of equipment in any healthcare facility. The system pulls significant continuous power for cooling, and short, sharp current spikes during scan acquisition. The electrical service must be sized for both, with appropriate isolation from the rest of the building.

Code Compliance

All MRI site electrical work must comply with the National Electrical Code (NEC) along with any applicable state and local amendments. This is not a place for shortcuts — incorrect grounding, undersized conductors, or non-compliant disconnects can damage the system, create life-safety risks, and void the system's warranty. A qualified electrical contractor experienced specifically with imaging equipment installations should perform the work.

Typical Electrical Specifications

Item	Typical Requirement
Main Service	480V or 208V three-phase, dedicated service from main switchgear
Continuous Load (1.5T)	Approximately 50–80 kVA
Continuous Load (3T)	Approximately 90–150 kVA
Peak Load (Scanning)	Up to 3x continuous load during gradient activity
Power Quality	Dedicated transformer or power conditioner recommended
Emergency Power	UPS for the host computer; generator backup for full system optional
Grounding	Dedicated isolated equipment ground separate from building ground

Typical Electrical Contractor Scope

The electrical contractor's scope on a typical MRI installation includes:

- MRI sub-panel installation in the control or equipment room, sized for full load.
- Copper panel feeder sized for the required voltage level and current draw.
- Branch circuit wiring for the system, accessories, and room lighting.
- Safety disconnect at the system, accessible to facility staff.
- Lighting and lighting controls in the magnet, control, and equipment rooms.
- Equipment grounding system, isolated from building ground per OEM specification.
- Wireways, surface raceways, and wiremolds for routing cables outside the envelope.
- UPS installation when included in the project scope.

Power Quality & Isolation

MRI systems are sensitive to power quality issues — voltage sags, harmonics, and transients from elsewhere in the building can cause scan interruptions, image quality problems, and in worst cases, hardware damage. Most installations specify a dedicated step-down transformer or active power conditioner upstream of the system to isolate it from building-wide disturbances.

A UPS for the host computer is strongly recommended for facilities located in areas with frequent lightning storms, brownouts, or utility power instability. Generator backup for full system continuity is optional and depends on the facility — most hospitals connect at minimum the host computer to emergency power, while outpatient imaging centers often skip the generator and accept brief downtime during utility outages.

Planning for Future Upgrades

A practical tip that pays off years down the road: install electrical service sized for a higher-performance gradient package than your initial purchase. Gradient upgrades are a common path for facilities that want to add advanced imaging capabilities — neuro, cardiac, or research — over the life of the magnet.

The incremental cost of installing larger service at the time of initial construction is a fraction of what it costs to upgrade the electrical service later, which often requires re-pulling conductors, replacing the sub-panel, and disturbing the RF shield. Build in headroom now.

QUENCH PIPE TIED TO ELECTRICAL PLANNING

If a quench occurs, the electrical safety disconnect should be coordinated with the building emergency response — typically the disconnect kills power to the system but never to the cold head until coolant is restored. Verify this sequence with the OEM and your electrical contractor during the design phase.

5. HVAC & Facility Environment

Heating, ventilation, and air conditioning requirements apply to every room in the MRI suite — especially the magnet room — and must be maintained 24 hours a day, seven days a week. Loss of HVAC for even a few hours in the equipment room can lead to thermal shutdown of the gradient cabinet, and prolonged loss of cooling to the magnet itself can result in helium boiloff or quench.

Each room in the MRI suite should have its own dedicated thermostatic control and humidity sensor, allowing facilities staff to monitor and adjust conditions for the magnet room, control room, and equipment room independently.

Magnet Room Conditions

Parameter	Recommended
Temperature	65°F – 75°F, ±2°F stability
Relative Humidity	30% – 60%, non-condensing
Air Changes	Minimum 6 air changes per hour
Positive Pressure	Slightly positive relative to corridor (cleanliness)
Air Filtration	MERV 13 or better at the AHU
Noise Level	NC-40 or quieter for patient comfort

Equipment Room Conditions

The equipment room contains the MRI's heat-generating cabinets — the system cabinet, gradient amplifier, RF amplifier, and cooling water cabinet. This room runs cooler and tighter on humidity than the magnet room:

Parameter	Recommended
Temperature	60°F – 70°F, ±2°F stability
Relative Humidity	30% – 60%, non-condensing
Heat Load	Plan for 30,000–60,000 BTU/hr depending on system
Redundancy	Backup HVAC strongly recommended
Critical Cooling	Some equipment rooms tied to emergency power

Helium Exhaust Considerations

Beyond the dedicated quench pipe, the magnet room HVAC system also needs to handle small amounts of helium gas that may be released during routine cryostat maintenance. The general exhaust air return should be positioned a specified distance above the finished floor — typically near the ceiling — to capture helium gas, which is lighter than air and rises rapidly. This exhaust must be ducted directly out of the building.

Critically, the general magnet room exhaust point must be located well away from the quench vent exhaust point. Combining or co-locating them creates a risk that a quench event could pressurize the room's general exhaust ducting beyond its design limits, with serious safety consequences.

Fresh Air Supply

Fresh air supply registers must be positioned to deliver air to the magnet room without blowing directly onto the magnet itself or deflecting into another room through RF-shielded penetrations. Direct airflow onto the magnet can introduce mechanical vibration and thermal fluctuations that show up as image artifacts. Most installations specify ceiling diffusers that disperse air gently across the room without creating directional jets.

Chilled Water Supply for Magnet Cooling

Most modern high-field MRI systems require continuous chilled water supply to the RCA (Refrigerant Compressor Assembly) cabinet, which feeds both the cold head circuit that maintains magnet superconductivity and the gradient amplifier cooling circuit. This chilled water must be available 24 hours a day, 365 days a year — interruption for even a few hours can result in helium loss and, in extreme cases, magnet quench.

Typical chilled water specifications for a 1.5T system:

Parameter	Typical Requirement
Flow Rate	5–15 GPM depending on system and modality
Supply Temperature	45°F – 50°F at the RCA cabinet inlet
Return Temperature	80°F maximum
Allowable Temperature Variation	±2°F under steady-state load
Pressure	40–80 PSI at the RCA cabinet inlet
pH (Acidity)	6.5 – 8.5
Hardness	Below 100 ppm as $CaCO_3$
Glycol Concentration	25–40% propylene glycol where freeze risk exists

Chiller Redundancy

For facilities that cannot tolerate downtime, a redundant chiller — sized to carry the full MRI cooling load on its own — is strongly recommended. Adding a secondary chiller at original construction is dramatically less expensive than retrofitting one later when the primary chiller eventually fails. The cost of a backup chiller is also far less than the cost of a magnet quench and re-fill, which can run six figures and take the system offline for weeks.

6. Cryogen Management & Quench Pipe

Superconducting MRI magnets are cooled by liquid helium held at approximately 4 Kelvin (−452°F). Under normal operation, modern zero-boiloff magnets recapture nearly all helium continuously, with only minimal refills required every few years. But the room must still be designed to handle a quench — the rare event where the magnet loses superconductivity and rapidly boils off its entire helium reservoir.

Understanding a Quench

During a quench, the magnet's stored energy is dumped into the helium, which converts almost instantly from liquid to gas — expanding roughly 750-fold in volume. The expanding helium gas must be vented safely out of the building through a dedicated quench pipe, or it will displace breathable air in the magnet room within seconds and asphyxiate anyone inside.

CRITICAL SAFETY

The quench pipe is not optional and is not an area for value engineering. Every superconducting MRI magnet requires a dedicated, OEM-specified quench exhaust pipe routed from the magnet to a safe exterior discharge point. This pipe must be sized, routed, and supported exactly to manufacturer specification. Any deviation creates a life-safety risk.

Quench Pipe Requirements

- Diameter and material per OEM specification (typically 8"–12" stainless steel or aluminum)
- Pitched continuously toward the exterior discharge point to prevent condensate pooling.
- Discharge point must be at least 10 feet above grade, away from windows, air intakes, and pedestrian areas.
- Discharge point must be screened against birds, insects without restricting flow.
- Pipe must be supported to handle the thermal contraction and shock of a quench.
- Indoor sections traversing occupied spaces must be insulated and inspected for leaks.

Helium Refill Logistics

Even zero-boiloff magnets eventually need helium top-offs — typically every 3 to 7 years depending on use. Site planning should account for the access path a helium dewar must travel from the building exterior to the magnet. A 500-liter dewar is roughly 60 inches tall and weighs around 600 pounds full, so the access route needs to accommodate that load.

Oxygen Monitoring

An oxygen monitor in the magnet room is standard practice — it triggers an audible and visual alarm if oxygen levels drop below safe limits during a quench or other helium release event. The alarm should be visible at the magnet room entry door, at the operator console, and ideally tied into the facility's central alarm system so that off-hours events do not go unnoticed.

7. Rigging & Delivery Day

The day the magnet arrives is the single most logistically intense moment of the entire project, and it is the day on which the most expensive mistakes can be made. A high-field MRI magnet weighs as much as a small car — between 8,000 and 15,000 pounds for most 1.5T systems, and 18,000 pounds or more for 3T platforms. Getting that mass from a truck on the loading dock to its final resting position on the magnet pad requires specialized equipment, experienced crews, and careful coordination with every member of the installation team.

Hiring a Qualified Rigger

The customer is typically responsible for hiring and paying the rigging contractor, unless rigging is specifically called out in the OEM's or vendor's installation contract. The rigger you select should be specifically experienced with MRI magnet handling — this is not general-purpose equipment moving. Specialized MRI rigging firms understand:

- The fragility of the cryostat and the magnet's sensitivity to vibration during transit
- Proper sling angles and rigging hardware ratings for the load
- The handling sequence required to keep the cold head connected to its temporary power.
- Non-ferromagnetic tooling required for the final approach into the magnet room
- Insurance and bonding requirements for a load of this value.

Pre-Delivery Site Walk

The rigger should walk the entire delivery route at least 4 to 6 weeks before the scheduled delivery date. This pre-delivery inspection accomplishes several things at once:

- Verifies the access route is clear and meets the required dimensions.
- Identifies any temporary wall removals, knockout panels, or door modifications needed.
- Confirms the loading dock or street-level staging area can receive the delivery truck.
- Documents floor load capacity along the route, especially over structural beams or elevated slabs.
- Locates structural attachment points for any required rigging hardware (overhead lift points, anchor points).
- Establishes the protective measures needed to safeguard floors, doorways, and finishes along the route.

Cold Head Power Continuity

A critical and often overlooked detail: the magnet's cold head must remain powered throughout the entire delivery process. Loss of power to the cold head allows the magnet to begin warming, which causes helium to boil off — and a fully boiled-off magnet requires a complete re-cool and re-fill that adds significant cost and weeks of schedule delay.

During rigging, the cold head is typically powered by a portable battery or generator unit that travels with the magnet. The OEM or installation team's service engineer should be on site throughout the rigging day to oversee the power-source transitions — from truck power, to portable rigging power, to final permanent facility power — ensuring continuous cooling without interruption. This is one of the most important reasons to have a qualified engineer present alongside the rigger, not just the rigging crew alone.

CUSTOMER RESPONSIBILITY

Unless your contract explicitly states otherwise, the rigger is hired and paid for by the customer. Build this cost into your project budget early — rigging for a 1.5T installation typically runs $15,000 to $40,000 depending on site complexity, and second-floor or rooftop installations requiring crane work can add another $20,000 to $60,000.

Knockout Panels

If your magnet room is not directly accessible from an exterior wall, the site plan will often call for a "knockout panel" — a temporary opening in an interior or exterior wall, sized just large enough to slide the magnet through. The knockout panel is built during the construction phase but designed to be removable on delivery day. After the magnet is in position, the wall is rebuilt, the RF shielding is patched, and the post-installation RF shield test verifies that the patch holds to specification.

Floor Loading

The magnet pad must be engineered to handle not only the static weight of the magnet but also the dynamic loads applied during rigging. A point load from a roller assembly or rigging dolly can briefly exceed the magnet's resting load by several times. Structural engineering verification of the floor system along the entire delivery path — including any elevated slabs the magnet crosses — is part of standard site planning, and should be completed and signed off before rigging day.

Crane and Boom Considerations

Magnets installed above ground level often require crane placement onto an upper-floor pad. This adds significant cost (crane rental, permits, sidewalk and street closures, building department coordination) and weather risk — cranes do not operate in high winds or thunderstorms. Site planning for upper-floor installations should account for crane staging requirements at least six weeks in advance, and the rigging day should include weather contingency provisions in case the lift cannot proceed as scheduled.

8. MRI Safety Zones — The ACR Framework

The American College of Radiology defines a four-zone framework for MRI safety that should be reflected in the physical layout of your facility. Each zone has progressively more controlled access, and the boundaries between zones should be clearly marked, physically delineated, and enforced by trained staff.

ZONE I	**Unrestricted Public Area** Freely accessible to the general public — waiting rooms, reception, lobbies. No MRI safety screening required for entry. This zone is outside the magnetic field of influence entirely.

ZONE II	**Reception & Screening** Interface between Zone I and the controlled MRI environment. Patients are screened here for contraindications and metallic objects. Dressing rooms, intake areas, and consultation rooms typically live in Zone II. Limited public access permitted under supervision.

ZONE III	**Controlled Access — Operator Area** Includes the operator console, control room, and immediate surrounding spaces. Free access is restricted to MR personnel only. Non-MR personnel may enter only when supervised and after screening. Physical barriers and access control should enforce this boundary.

ZONE IV

The Magnet Room

The scanner room itself, containing the active magnetic field. The most restricted zone in the facility. Access is limited to screened patients, MR-safe equipment, and trained MR personnel. Visual signage at every entry point must indicate the active magnetic field.

9. Acoustic Considerations & Patient Experience

MRI gradient activity is loud — peak sound pressure during certain sequences exceeds 110 dB inside the bore. Acoustic treatment in the magnet room reduces sound transmission to adjacent spaces, and patient hearing protection is required for every scan.

Magnet Room Acoustic Treatment

- Sound-absorbing wall and ceiling treatments help dampen reverberation inside the bore.
- Sound transmission class (STC) rating of STC-50 or better is typical for the magnet room.
- Doors, observation windows, and pass-throughs need to be specified for acoustic performance, not just RF performance.
- HVAC silencers reduce duct-borne noise that would otherwise transmit between rooms.

Patient Comfort Features

Patient experience drives scan completion rates, repeat business, and reputation. A few site planning considerations that materially improve comfort:

- Wide-bore magnet selection (70 cm) substantially reduces claustrophobia-driven cancellations.
- Ambient lighting in the magnet room — color-changing LED systems are widely used.
- Mirrored prism glasses for prone patients to see out of the bore.
- In-bore audio and video systems for music or visual distraction.
- Quiet ventilation that does not amplify the sense of enclosure.

10. Project Timeline — What to Expect

A typical refurbished MRI installation, measured from signed contract to first patient scan, runs 8 to 16 weeks. A few of those weeks are equipment work, but the majority is site preparation. Below is a representative timeline for an outpatient imaging center installing a refurbished 1.5T.

1	Week 1–2: Final site survey, engineering drawings completed, permits applied for. RF shielding vendor, general contractor, and rigging contractor selected.
2	Week 2–4: Demolition of existing space (if applicable), structural modifications, slab preparation. Long-lead items (RF shield panels, quench pipe, HVAC equipment, chiller) ordered.
3	Week 4–6: RF shielded enclosure constructed. Electrical rough-in, HVAC rough-in, chilled water piping, and quench pipe installation. Site is ready for magnet delivery once shielding passes pre-installation testing.
4	Week 6–8: Pre-delivery rigger site walk. Magnet delivery, rigging into final position, ramp-up and cryogen fill. System cabinets installed and connected. RF shield post-installation testing.
5	Week 8–10: Calibration, coil testing, and software validation. Phantom imaging, image quality verification, and ACR accreditation phantom scanning if required.
6	Week 10–12: Applications training for the technologist team. Workflow integration with PACS and modality worklist. Medical physicist inspection.
7	Week 12+: First patient scan. Ongoing service plan kicks in. Post-install support window with the installation team for any tuning or workflow adjustments.

11. Site Readiness Checklist

Before delivery, every project should pass through a final site readiness review. This is the punch list that catches the last few details before the magnet is on the truck:

STRUCTURAL & ARCHITECTURAL

- Access route measured and verified end-to-end, including all turns and doorways
- Magnet room dimensions verified against final site drawing
- Floor flatness and load-bearing capacity confirmed along delivery route
- All carpet removed from magnet, control, and equipment rooms
- Ceiling heights verified clear of obstructions
- Knockout panel built and ready to remove (if required by site layout)

SHIELDING

- RF shield installed and pre-tested to specification
- RF observation window installed with proper copper mesh layering
- Magnetic shielding evaluated and installed where required
- 5-gauss line fully contained within controlled-access area
- RF door operates smoothly and seals on all four sides

MECHANICAL & ELECTRICAL

- Dedicated electrical service installed, tested, and code-compliant.
- Sub-panel, branch circuits, disconnects, and grounding completed.
- HVAC running and maintaining specified temperature and humidity ranges.
- Chilled water supply active to the RCA cabinet, meeting all flow, temperature, pressure, and chemistry requirements.
- Backup chiller installed (if specified).
- Quench pipe installed, supported, and inspected per OEM specification.
- Oxygen monitor installed and alarmed.
- UPS or backup power provisions in place.

RIGGING LOGISTICS

- Rigging contractor selected, contracted, and insurance verified.
- Pre-delivery site walk completed by rigger.
- Service engineer scheduled to be present on rigging day.
- Cold head portable power supply arranged.
- Crane permits secured (if upper-floor installation).
- Weather contingency plan documented.

OPERATIONAL

- Safety zones marked with appropriate signage.
- Patient screening protocols documented and staff trained.
- Intercom system tested between control and magnet rooms.
- MRI safety officer designated.
- Cryogen supplier identified and helium delivery logistics confirmed.
- PACS and modality worklist integration tested with IT team.

Putting Together Your Site Plan

MRI site planning sits at the intersection of half a dozen specialties — radiology engineering, electrical, mechanical, structural, RF shielding, chilled water systems, rigging, and overall project management. The facilities that consistently hit their go-live dates do so by getting the right experts involved early, working from a single coordinated site plan, and treating the magnet delivery as the midpoint of the project rather than the start.

Because MRI technology is so complex and the magnet itself is so sensitive, the most reliable path to a successful install is to engage an experienced MRI specialist to oversee the entire process — from site survey through commissioning. Amber Diagnostics has installed hundreds of high-field MRI systems across North America, and our project management team works alongside your facilities, IT, and clinical staff from the first site survey through first patient scan. Whether you are buying refurbished, planning a renovation, or evaluating a new build, we are glad to be a resource at any stage of the process.

READY TO PLAN YOUR MRI PROJECT?

Our project management team will walk through your site with you, identify the considerations specific to your space, and build a realistic timeline and budget around your facility. If you have questions or need help with any aspect of your MRI project planning, do not hesitate to reach out. Contact us today at AmberUSA.com or call our Orlando headquarters at 407-509-6739 to schedule a site planning conversation.

All technical specifications in this guide are general reference figures and should be verified against the specific OEM siting documentation for your selected MRI system. Local building codes, regulatory requirements, and facility-specific conditions may impose additional requirements not covered here.