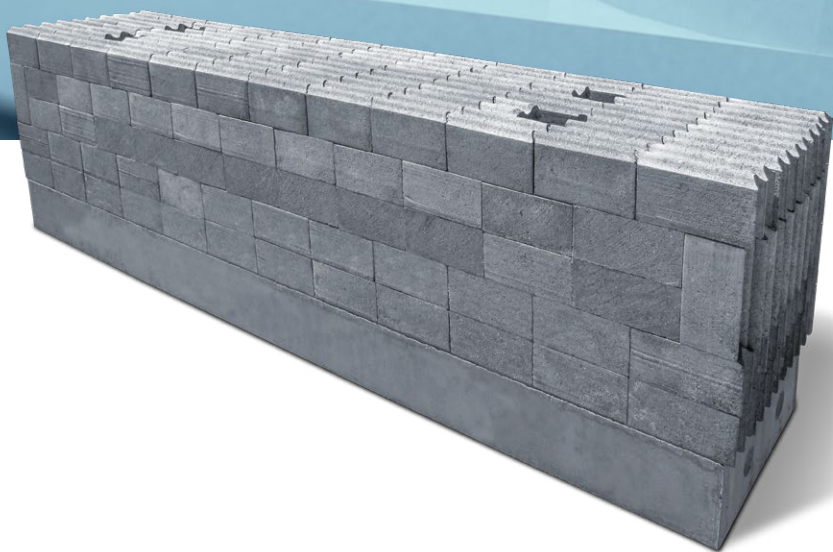


Veritas VeriShield®  
Modular Radiation  
Shielding for Proton  
Facility Construction



Save time. Save space. Save lives.

**veritas**  
Medical Solutions

# Replace mass-concrete construction with the benefit of a Veritas shielding package

Veritas has developed a pre-engineered, modular package that replaces concrete in the construction of proton facilities. Incorporating proven Veritas materials — shielding, door and optional interior finish systems — Veritas provides a fully-shielded facility that can be constructed faster than using concrete. Lab-tested and proven in a wide range of applications, Veritas modular proton facilities are a proven alternative to time-consuming, mass-concrete construction.

- VeriShield® modular shielding
- SmartDoor® shielded door systems
- SmartSuite™ pre-engineered interior packages

Our dedicated team focuses on the successful completion of complex projects using a modular approach to not only construct the facility, but with the associated services that are integral to a trouble-free project.

- Physics
- Design
- Project management
- Installation
- Customer support
- Preventative maintenance



# Construction with the single-source package.

## VeriShield – proven modular shielding

VeriShield is the world's premier modular shielding, having proven its effectiveness in radiation shielding applications around the globe. Its unique features and proprietary blend of aggregates makes VeriShield the perfect alternative to concrete or other modular shielding materials.

Providing unmatched attenuation, VeriShield can be incorporated into proton facilities to provide **100% guaranteed shielding** along with significant space and time savings.

## VPAC® – perfect for rapid proton facility construction

Designed to dramatically reduce the time to construct radiation-shielded rooms, Veritas has engineered VPAC, a pre-assembled shielding unit that combines individual VeriShield blocks into a single structural element.

The VPACs interlock to form a solid homogeneous shielding structure and



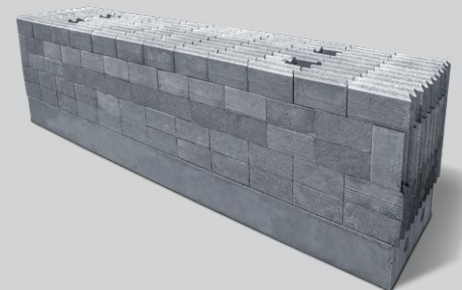
retain the inherent radiation attenuation and physical characteristics of the individual VeriShield modules.

VPACs are quickly craned onto prepared foundations, greatly simplifying and speeding the overall construction process.



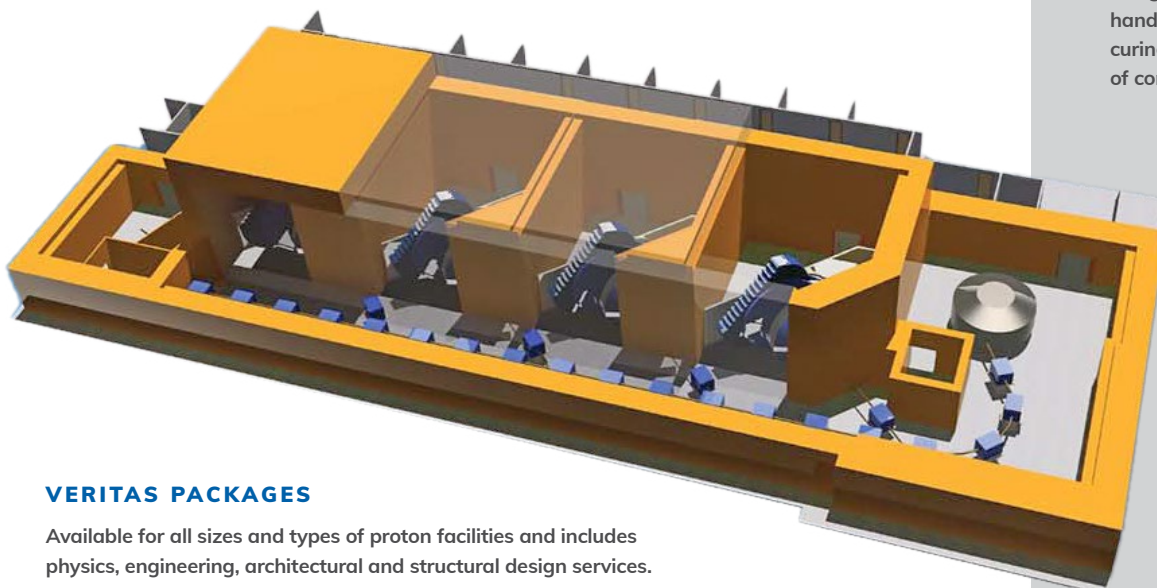
### VERISHIELD MODULES

Dry-stacked VeriShield Modules feature a patent pending sine-wave design to provide enhanced attenuation levels. No other shielding method provides the blend of protection, convenience and affordability of VeriShield.



### VPAC STACKABLE MODULES

Install over 350 VeriShield modules per VPAC, craned and placed into position using a minimal-sized crew. No manual handling of individual blocks. No curing time. Ready for the next stage of construction.



### VERITAS PACKAGES

Available for all sizes and types of proton facilities and includes physics, engineering, architectural and structural design services.

# Fully-vetted and proven constructable to m

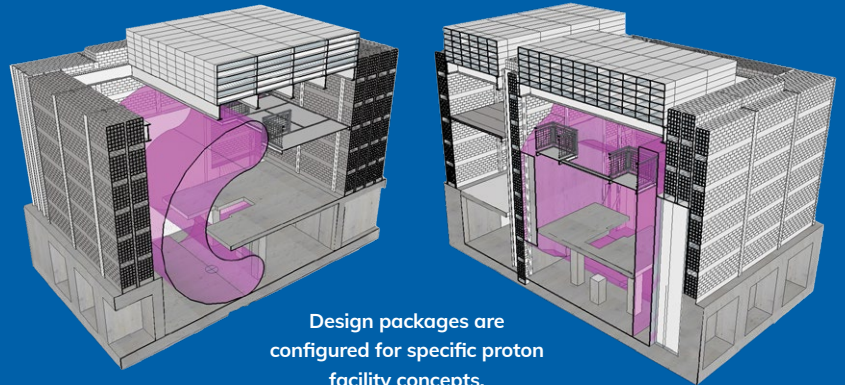
## Fully-vetted engineering and physics

Veritas offers single-source responsibility for physics, architectural support, construction management and structural engineering. In-house physics capabilities provide the assurance of optimum shielding design and functionality, along with a 100% guarantee of shielding effectiveness and integrity.

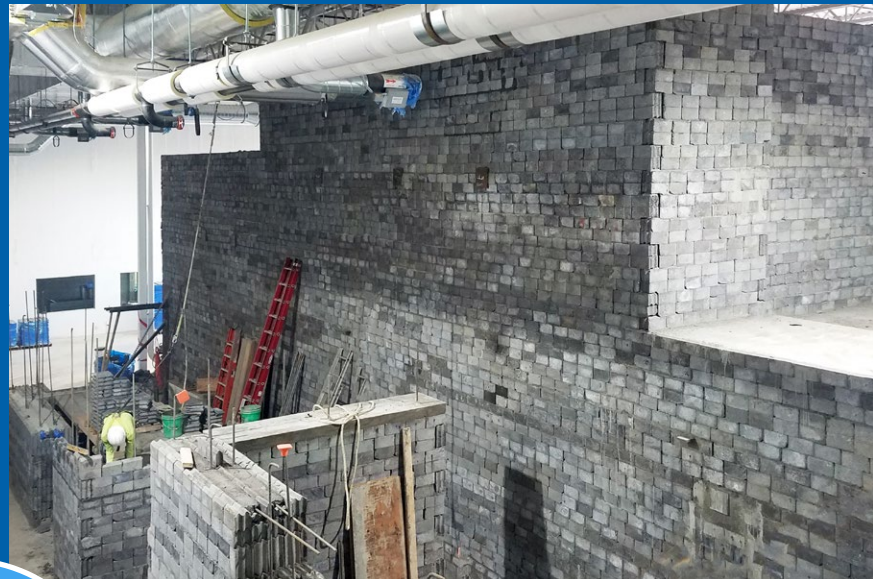
Using standard construction techniques, Veritas has engineered a shielding system that can be quickly installed while maintaining structural strength and the critical tolerances required for the varying equipment installations.

The engineered shielding system incorporates pre-assembled VPACs, pre-cast elements and individual VeriShield modules, all designed for maximum shielding effectiveness and installation efficiency.

**Each Veritas proton facility is a pre-engineered package, fully designed for specific equipment, not a conglomerate of individual parts.**



Design packages are configured for specific proton facility concepts.



**8**  
**LINAC ROOMS**  
Traditional method  
350,000 blocks  
10 weeks

**12**  
**LINAC FACILITY**  
Our current method  
500,000 blocks  
12-14 weeks

**PROTON CENTER**  
Pre-assembled wall sections (JIT delivery)  
700,000 blocks  
14-16 weeks  
Goal: 10-12 weeks

## Proven construction speed

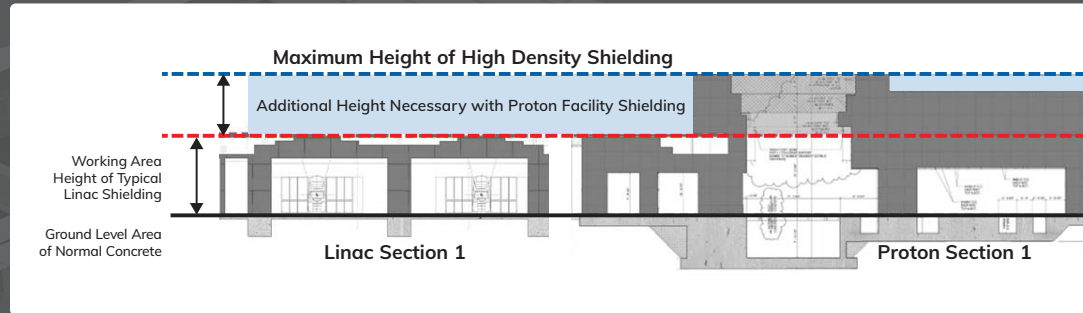
Typical concrete proton facilities require more than two million lbs. of rebar, massive formwork, on-site QA testing, and approx. 17,500 cubic yards of concrete (or 1,936 time-sensitive concrete truck deliveries). In addition, 350,000 cubic feet of earth must be excavated for foundations — more than 14,000 truckloads.

**This can equate to years of construction. We'll build it in months.**

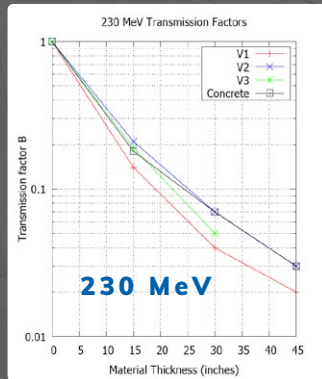
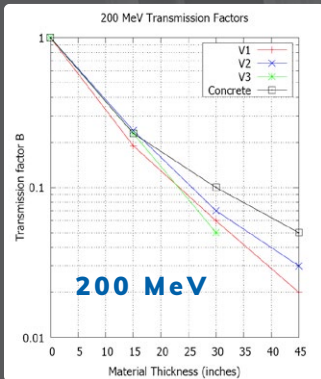
# Maximize savings and efficiencies

## Proven constructible

There is no question that modular masonry construction can be utilized in proton facilities to replace massive amounts of concrete shielding. The ability to mobilize and install large quantities of individual VeriShield blocks (comparable to that required by a typical proton facility) has been proven in multi-room projects such as an 8-room complex constructed in Dublin, Ireland.



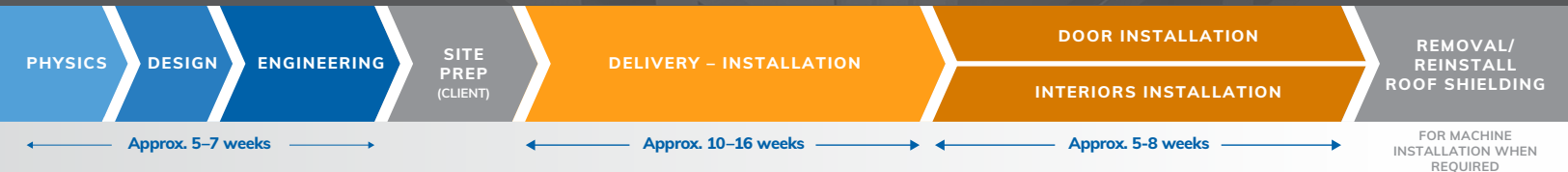
### Transmission curves VeriShield V1, V2, V3 and concrete



## Proven attenuation

To assess the viability of using VeriShield modules in the construction and shielding of proton therapy facilities, the neutron attenuation of a range of VeriShield compositions has been tested. The testing was performed using a 230 MeV proton synchrotron at the MIT Bates laboratory. Shielding barriers made of varying compositions and layerings of materials were tested.

Cut months off the construction timeline for typical five room facility with a pre-engineered, packaged system.



### SUPERIOR RESULTS = REDUCED FOOTPRINT

The results show that VeriShield provides superior attenuation when compared to concrete and also suggest that shielding thicknesses can be reduced through a suitable choice of material layering. This allows the wall thicknesses and overall footprint of proton shielding to be significantly reduced. The positive results of this testing allow the construction of the world's first direct-entry door system for shielded proton rooms.



# Direct-entry proton doors



## Eliminate entry mazes — save space and reduce costs

Veritas SmartDoor Systems have set the standard for radiation-protective entry doors. Their innovation and performance is unmatched in the industry. The exceptional attenuation properties of VeriShield allow the construction of a door system that can replace the need for thick, space-consuming maze entry. Veritas SmartDoors simplify the room layout and minimize overall space requirements.

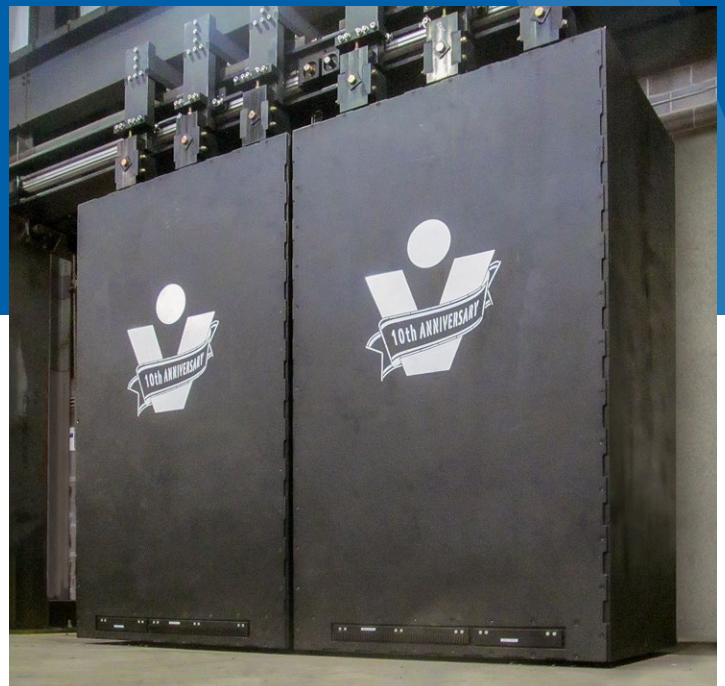


## SAFE AND BEAUTIFUL

Protective sliding glass safety doors, located both inside and outside the room, feature your choice of finishes and/or graphic image. Safety doors are independent of the shielded doors and prevent access during door movement.

## Reliable, trouble-free operation

Operated by an advanced electromagnetic linear drive and computer interface, the Veritas SmartDoor bi-parting door system provides reliable, problem-free operation. Redundant safety systems ensure personnel safety and, in the event of a power failure or other system malfunction, the system allows the door to function manually without fear of drive damage or the entrapment of personnel within the room.



# Pre-fabricated modular interiors

## Complete your rooms with designer-quality interiors in half the time of stick-built room finishes

Designed to meet client requirements and specific to individual equipment, optional Veritas SmartSuite™ interiors can include:

- Unique Veritas modular wall panel system: a removable panel system providing design flexibility and access to services located behind the walls
- Audio/CCTV hookups
- Ceiling and flooring systems
- Finish hardware
- Lighting and electrical
- Casework, sinks and storage
- Graphics and ceiling treatments

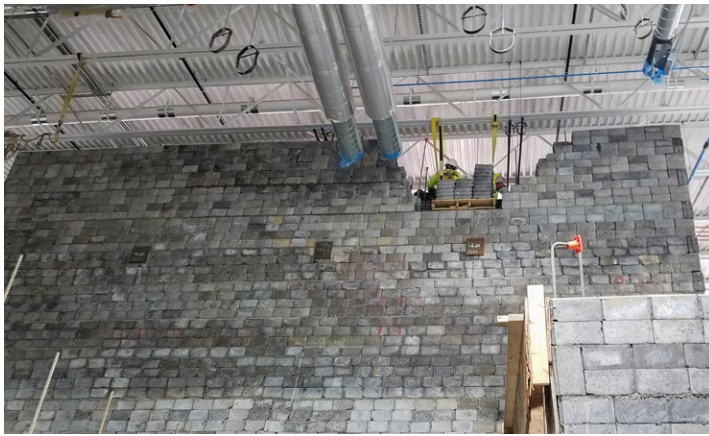


### MODULAR WALL PANELS

We created a unique modular wall panel system that allows quick, cost-effective installation, convenient access to electrical wiring and the ability to easily make adjustments to your room setup.







## Experience

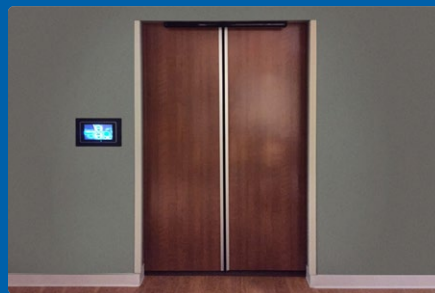
Veritas proton facility shielding represents the culmination of years of radiation shielding and healthcare facility design by Veritas personnel. With expertise in all aspects of high-energy particle treatment room shielding and construction, we are uniquely qualified to innovate proton shielding and its breakthrough technology.

In-house Veritas services include:

- Physics
- Engineering and architectural support
- Project management
- Manufacturing and installation services

Veritas is the world leader in radiation shielding, radiation protective door systems, and modular room interiors.

To learn more about the future of therapy engineering and construction, call **888-242-6760** or visit **veritas-medicalsolutions.com** today.



### SMARTDOOR® SHIELDED DOORS

With operating times as fast as 6 to 8 seconds, advanced Veritas radiation-shielded doors eliminate the need for doorless or maze openings.



### SMARTSUITE® INTERIORS

Veritas can work with your general construction team as a single-source provider for a radiation-shielded room solution with all the features you need to meet your exact requirements.



### SMARTVUE® WINDOWS

Get a vision for a therapy environment with window glass that lets patients see outside the room—then “frosts over” as radiation shielding moves behind the glass and lights dim as treatment begins.

**veritas**  
Medical Solutions

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