MICHIGAN CONCRETE ASSOCIATION

SPECIAL INNOVATIVE STRUCTURAL

IONETIX CYCLOTRON EXPANSION

6424 WESTLAND WAY, LANSING, MI

Concrete Contractor: Christman Constructors, Inc.
Concrete Supplier: Shafer Redi-Mix
Project Owner: Ionetix
QC Consultant: Metro Consulting Associates

The cyclotron expansion project for Ionetix involved the construction of a highly specialized concrete vault facility designed to meet strict Nuclear Regulatory Commission (NRC) requirements in support of advanced medical manufacturing operations. The structure was engineered to provide radiation shielding and operational safety for Ionetix – Targeted Alpha Therapy, where they produce critical alpha isotopes used in cancer treatments, making the facility both technically complex and nationally significant.

The concrete scope of work was extensive and highly constrained. NRC compliance dictated exceptionally massive sections, including walls up to 8 feet thick and a concrete ceiling slab measuring 6 feet thick. Reinforcing steel required a minimum of 8 inches of clear cover, and the design prohibited construction joints within the vault itself. As a result, the structure was placed in four primary pours: the base slab, two wall placements, and the ceiling. The largest single placement totaled approximately 872 cubic yards and was successfully completed in just over eight hours, requiring precise coordination, quality control, and placement sequencing.

During the conceptual and value engineering phases, the team explored multiple design options to maximize usable manufacturing space within the constraints of the site. Strategic refinements, including the addition of an extra target room, effectively doubled production capacity without a significant increase in cost. Additional constructability improvements reduced the overall project schedule timing by approximately 20 percent.

Another major challenge was managing the immense weight of the concrete structure and its impact on an adjacent existing building. This was resolved by lowering the entire vault and underpinning the existing structure. The completed facility delivers exceptional durability, operational performance, and long-term value, supporting life-saving cancer treatments and medical innovation.