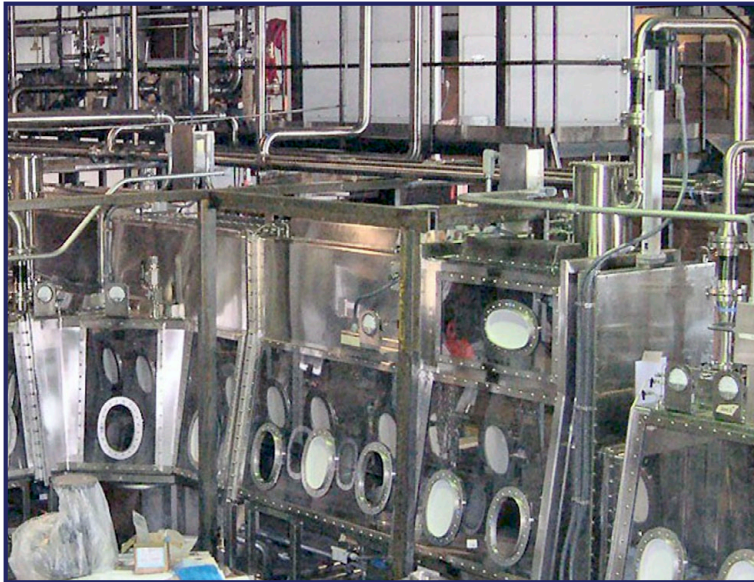


■ ENGINEERING ■ ARCHITECTURE ■ DESIGN-BUILD ■ GEOSPATIAL SOLUTIONS ■ SURVEYING



Merrick & Company provided specialty design engineering services for a glovebox suite for this confidential client. Design services included mechanical, process and instrumentation, electrical, and control system design. Additional tasks included the design and specification of a glovebox atmosphere conditioning system capable of maintaining a low oxygen and moisture environment, and fabrication support.

The 45 ft long glovebox suite consists of five glovebox modules, three airlocks, and six vertical doors. Strict control of the glovebox inert atmosphere, along with ergonomic considerations, added complexity to the project. Merrick designed this seismically qualified inert glovebox suite on a very aggressive schedule. Beginning with contract award in mid-March 2002 and finishing with a final design submittal in August 2002, Merrick successfully delivered 150-plus drawings for a build-to-print design package.

The glovebox utilizes an inert nitrogen atmosphere supplied and maintained by a gas purification unit. Moisture and oxygen content within the glovebox environment is limited to 35 ppm and 200 ppm, respectively. The glovebox houses utilities such as vacuum lines, pneumatic tools (operated by compressed nitrogen), and small hand tools. It is equipped with three airlocks: one entrance airlock to admit tools and other supplies, and two exit airlocks to remove items. Each airlock is isolated from the facility and from the glovebox by two vertical sliding doors.

Merrick also provided the design for two prototype airlock doors for testing. One design met the performance requirements for leak testing, but was expensive to manufacture. The other design had the potential to be less costly to fabricate, but was untested in the inert-atmosphere, low-moisture environment required for this glovebox suite. Material handling within the glovebox will be performed via an electric hoist with electric trolley, and several transfer carts located at multiple locations along the glovebox line. Internal glovebox equipment included a manually operated turntable and a custom-designed machine tool.