

# Y-12 NATIONAL SECURITY COMPLEX DEMOLITION OF BUILDINGS 9769 & 9211

OAK RIDGE, TN



## PROJECT HIGHLIGHTS

- » D&D of two 1945 era structures and equipment at a DOE/NNSA National Security Complex
- » Segregation, packaging and transportations of LLRW and hazardous wastes in support of D&D operations
- » Demolition, packaging and hauling approx. 23,000 cubic yards of radiologically contaminated debris for disposal at the DOE's EMWMF landfill
- » Recycling approx. 200 tons of metals and hauling/disposal of over 1100 cubic yards of clean construction debris

Structural demolition with LVI's ultra high-reach equipment



(2) Multi-Story Steel Frame Structures Totaling 103,020 SF



May 2010 - January 2011



\$2,428,195 (Original)  
\$2,487,070 (Final)



B&W Technical Services, LLC



Structural Demolition



Nuclear Decontamination



Hazardous Material Abatement



Salvage & Asset Recovery



Zero OSHA Recordable Injuries

LVI performed demolition of radiologically-contaminated Buildings 9769 and 9211 to slab, site restoration, and waste disposition of all associated material and debris at the Department of Energy (DOE) and National Nuclear Security Administration (NNSA) Y-12 National Security Complex. Funded by the American Recovery and Reinvestment Act of 2009 (ARRA), the project was the largest ARRA demolition project awarded at Y-12.

Building 9211 was an approximately 83,500 square foot, four-story steel frame structure with masonry walls built in 1945. The facility was renovated, modified and altered numerous times since its original construction with a major Biomedical Laboratory addition occurring in 1980. The original building was constructed on concrete piers, which supported the first floor. A 3-foot to 7-foot tall crawl space was present under the original building footprint. The crawl space floor consisted of a concrete mud mat approximately 4 inches thick. With the exception of exterior mechanical systems, exterior electrical systems and the walkway connecting Building 9211 to Building 9207, the facility was considered radiologically-contaminated. The exterior of the building was coated with asbestos-containing paint. LVI's scope of work included the demolition of the walkway between Building 9211 and Building 9207.

 **ZERO OSHA RECORDABLE INCIDENTS**

Building 9769 was a 19,520 square foot, three-story steel frame structure with masonry walls constructed in 1945. The building façade consisted of metal panels over hollow core block. The hollow core block exterior surface was coated with asbestos containing paint. A majority of the areas in the facility were considered radiologically contaminated with the exception of: exterior mechanical systems, exterior electrical systems, a single story addition on the northeast corner, Building 9770-03 and the stairwell/entry way on the south side of the building.

**ASBESTOS-CONTAINING MATERIAL DISPOSAL**

A majority of the hazardous materials were abated from both structures under a separate contract and left behind for final disposition under this contract. Friable asbestos was bagged and stored in various rooms/locations inside each building. LVI's scope of work included the removal and disposition of remaining universal waste and hazardous materials, including the bagged asbestos. LVI was required to remove, package and transport the bagged friable asbestos to the DOE's Environmental Management Waste Management Facility (EMWMF) landfill for disposal. In addition, LVI had to remove, package and transport 498 metal doors (presumed to contain asbestos) for disposal at the Y-12 Industrial Landfill.

**INNOVATIVE DEMOLITION TECHNIQUES**

A primary goal of the project was to preserve the first floor slabs of both buildings over the crawl space areas, in order to avoid contacting potential radiological contamination under the slabs and exposing the underlying soils. This prevented the contractor from tracking heavy demolition equipment on the slabs. LVI solved this problem by utilizing one of its ultra-high reach demolition (UHD) machines. LVI employed a track-mounted 140,000 lb. Hitachi EX-550LC excavator custom fit with a Jewel 140 ft. heavy duty high-reach boom and MP-20 shear/processor. This unique UHD machine and attachment allowed LVI to reach in, shear and process the higher elements and remove them in sections to the ground. This approach created less dust and allowed the debris to be pulled out, processed, and removed from the site after each building segment was dropped. As a result, LVI was able to limit the damage from demolition operations and preserve the first floor slabs of both structures, thereby satisfying the Owner's stated goal. Additionally, the reach and capacity of this UHD machine minimized the amount of manual labor that was required to perform this work, an added safety benefit.

LVI utilized between three to five excavators with a variety of attachments to assist the UHD machine. These machines typi-

cally included a minimum of two to three 100,000 class excavators with shears and multi-processors to cut and size reduce the building debris.

As the UHD machine sheared and processed the higher elements of the structure to the ground, the assist excavators were used to safely grab, remove and size debris for load-out. The 100,000 lb. excavators were the perfect machines to assist the high reach, because they had the power and capacity to grab portions of the steel structure, cut steel members and separate them from the wreckage while keeping a safe distance. A smaller excavator with grapple attachment was used to separate debris into piles for waste load-out.

**METAL SALVAGE & RECYCLING**

LVI recycled approximately 200 tons of metals and equipment from the clean areas of each facility.

**SUBCONTRACTOR COORDINATION**

LVI awarded a subcontract to Hubbard Trucking, Inc., an SDB and Hub-Zone Small Business, to provide waste transportation support services. Hubbard provided 21 cubic yard tri-axle trucks with approved lift gates to haul building debris and LLRW to the approved landfills. Absorbent pads and pigs were added by LVI personnel to all loads destined for the EMWMF landfill.

LVI thoroughly inspected the structures prior to demolition to insure removal of universal and hazardous wastes. The work force was trained in "anomalous waste detection" to observe the debris during building demolition and waste load-out to stop and remove any unacceptable items. The project management team included a Waste Management Specialist who verified that each shipment met the waste acceptance criteria (WAC) for EMWMF. LVI transported over 1200 loads to the EMWMF landfill representing approximately 23,000 cubic yards of radiologically contaminated building debris, which was size reduced, packaged and shipped for disposal. In addition, LVI transported 63 loads of non-radiological demolition debris/waste to the Y-12 Industrial landfill.

LVI subcontracted approximately \$450,000 to small businesses primarily for waste management, structural engineering and ES&H support.

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