

# CASE STUDY

## Methuen Readiness Center Methuen, Massachusetts

<b>Storage Provided:</b>	11,052 CF
<b>Area:</b>	69,000 SF
<b>Models:</b>	Recharger 180HD
<b>Number of Units:</b>	300
<b>Tons of Stone:</b>	573 Required
<b>Installed:</b>	June 2009
<b>Project Engineer:</b>	Nitsch Engineering, Inc Boston, MA
<b>Contractor:</b>	Merrill Excavating Salem, NH



The Massachusetts Army National Guard (MAARNG), stationed in Methuen, Mass., needed to redesign its existing Methuen Readiness Center to meet the MAARNG mission, readiness and training requirements. The facility was inadequate in size and did not meet the current Anti-Terrorism and Force Protection (AT/FP) requirements.

Redesigned by OMR Architects, the new Readiness Center consisted of a new 69,000 square-foot, two-story facility that included an assembly hall, administrative, training and support spaces, and kitchen and maintenance bays. In addition to the new building, the 5.5-acre site featured about 3.4 acres of military and civilian parking area.

When it came to designing a stormwater management system for the project, Boston, Mass.-based Nitsch Engineering, Inc., was faced with a number of onsite challenges, including land constraints, 148-foot AT/FP site boundary setback and related stand-off distances and proximity to nearby wetlands. Additionally, the project occurred within the 100-year flood plain of the Merrimack River.

As the redesigned site featured an increased number of impervious surfaces, the MAARNG stormwater plan needed to limit the post-development rate of runoff from the site to no greater than pre-development levels. To achieve that, as well as solve the challenge of space constraints, the engineers selected CULTEC Recharger® 180HD underground chamber system, a Best Management Practice. Specific to the MAARNG site, the system was designed to detain runoff onsite during small storm events and retain it during larger storm events.

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# Methuen Readiness Center

## Methuen, Massachusetts *(continued)*

“Granted, with limited space and the absence of a municipal connection, an underground solution was the only way to go,” said Anthony Donato, P.E., LEED A.P. at Nitsch Engineering, Inc. “We know CULTEC as a reliable and economic solution. The arch chamber design ensures the system’s structural integrity, and the heavy duty models work well in high traffic applications, as in this case, where the system is located under the parking lot.”

The engineers used HydroCAD modeling software to design the stormwater system; CULTEC also offers a free HydroCAD CULTEC edition, that allows constructing basic watershed models of up to five nodes, including storage, runoff, and routing calculations for the company’s chambers.

To address the facility’s stormwater runoff storage needs, CULTEC retention and detention system provided 11,052 cubic feet of storage. The project required 300 Recharger 180HD units, which were installed in a 6,530 square-foot bed and backfilled with 573 tons of stone. The CULTEC system installation began with excavating a bed, laying CULTEC non-woven polypropylene filter fabric along the sides and the bottom of the bed and then adding a six-inch layer of crushed stone. The chambers were arranged in the bed, fed using CULTEC unique internal manifold feature, and covered with six inches of crushed stone and a layer of filter fabric. The entire system was installed in about two days.



### CULTEC, Inc.

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