

Northampton, MA Interstate 91 & Railroad – 66” DuroMaxx

The Massachusetts DOT and the railroad had an emergency work order released in mid-2015 for a failing culvert structure underneath Interstate 91 and the railroad.

What was the problem?

This culvert was approximately 560 linear feet of combination 78” diameter MultiPlate and Tunnel Liner Plate. The upstream portion of the work began in a supermarket (Big Y) in Northampton and exited at the Connecticut River. Upon investigation, there were some very large areas of section loss in the host pipe. Sinkholes had formed in the road shoulder from backfill loss.

What was the solution?

Even though the host pipe was originally installed at 78” diameter, the failing structure had areas where the tight areas were closer to 69 inches. Therefore, any 66” liner would require a thin wall profile. 66” DuroMaxx by Contech Engineered Solutions was selected as the proper liner pipe. With its smooth interior, DuroMaxx offers a manning’s coefficient of 0.012. Grout ports were provided in the liner pipe wall such that the installer could provide proper grouting throughout the entire length.

Did you know?

HDPE pipe is offered all the way to 132 inches in diameter. The DuroMaxx pipe is offered up to 120 inches diameter and only weighs ~ 100 lbs/LF. Its lightweight nature allows single segments to be brought to its final resting location with great ease.

This culvert has 50 feet of cover on it as well. HDPE liner pipes are considered AASHTO LRFD direct bury pipes and do not rely on the host pipe or the grout for structural strength.



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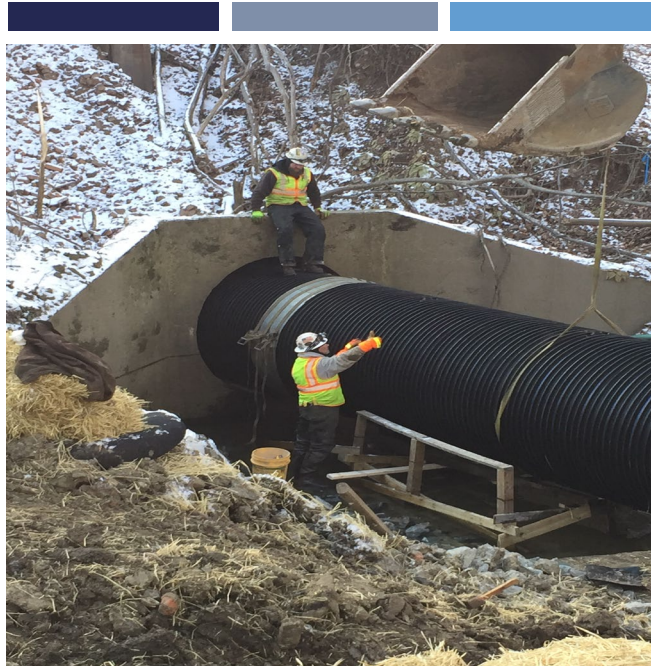


More info on DuroMaxx®

DuroMaxx® by Contech Engineered Solutions is a steel reinforced HDPE. The steel is contained within encapsulated rib sections. The steel ribs are 80ksi steel and offer the structural capacity of the pipe whereas the HDPE offers the corrosion and abrasion resistance often crucial to offering 100-year service life.

Perfect timing

The DuroMaxx pipe was provided in 24 foot lay lengths and the job was completed within 2 months' time. The day after the downstream headwall was poured, the Connecticut River rose to the top of the headwall. Travis and his crew de-mobilized at the perfect time.



A High Density Polyethylene (HDPE) pipe for 100 year service life

C.L.H. & Son was the selected bidder. With nearly half his life spent in relining culverts, Travis Stearns (owner of C.L.H.), tackled this culvert with great knowledge. There were plenty of challenges including the access road working alongside the railroad in harsh conditions.



“We had some tight spots in this culvert. It was even tough to reline some of the pipe without some minor modifications to the host. DuroMaxx stood up to the challenge.” – Travis Stearns, C.L.H. & Son

Lessons to keep in mind

Give us the challenging projects. We want the tough jobs. Here's what we like to keep in mind:

- 1.) Section loss in host pipe leads to host pipes losing its original geometry. What started at 78" in clearance, was 69" in many areas. Coatings and thin wall liners will NOT reinforce hoop strength. Be sure the liner can withstand live and dead loads on its own.
- 2.) Grouting of the annulus helps to fill voids. Be sure the grout is extremely pumpable and flowable. The grout utilized here was a low density cellular concrete.
- 3.) So many culverts and bridges are "out of sight". Do not allow them to be "out of mind". Keep these key pieces of infrastructure on your asset management program such that these do not become emergencies.