

# Milling Vital to “Fast Track” Process

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The use of “Fast Track” Hydrodemolition is a proven means for quickly rehabilitating bridge decks. By definition, it involves the single pass of a calibrated water jet to selectively remove all weakened or deteriorated concrete, while at the same time, leaving a very roughened and bondable surface, which is ideal for the attachment of a latex modified concrete overlay.

There is a secret though to the process – up front milling ahead of the hydrodemolition. Without it, you cannot achieve the single pass removal, and speed desired in “Fast Tracking.”

Milling provides two very important functions. First it removes an initial desired amount of concrete (and wearing surface, if applicable) from the deck surface. And quicker than what hydro blasting will. Second, it opens up the concrete deck surface to allow the waterjets to engage immediately with the cutting process. If the top of the original surface is not milled, the jets will initially ricochet off the top of the deck surface. This means more passes of the jet, more time, and more water usage. And, time means money to the contractor.

There are some who have concerns that the mill will do more damage to the bridge deck, and while milling might possibly induce some localized micro cracking into the top surface of the slab, its affects can be minimized by limiting the size of the mill used. You really don't want the big pavement millers on the bridge deck. Also, any microfracturing that may be left in the surface after milling will be eliminated with the hydrodemolition operation. That is part of what hydrodemolition is efficient at – pressurizing and blowing apart micro fractures and delamination's.

Owners should allow for milling in conjunction with hydrodemolition in

order to allow the contractor to provide the most efficient and cost effective process. It will speed up the construction work, and eliminate the amount of water usage and collection required for the hydrodemolition operation. Plus, it does nothing to diminish the quality of the final surface preparation. That will be achieved with the hydrodemolition.



So how much milling is necessary? Generally, a ½" minimum cut should suffice, but it may require more depending on the project scope and deck condition.

The milling also needs to be uniformly administered over the entire deck surface. Areas where the mill teeth do not penetrate down into the deck and leave a noticeable smoothness on the surface, will affect the hydrodemolition cut.

There are two approaches owners take to the “Fast Track” process. One is to do a minimal amount of removal on a better quality deck, or one with “high steel,” and then build up the overlay thickness on the deck. This requires only a shallow mill into the deck to basically roughen up and break open the surface. A common specified depth is ½". Then a ½" Fast Track Hydrodemolition cut is generally specified. The corresponding overlay will raise the final deck grade and will require

adjustment of joints and final approach transitions. Often this is only about an extra one inch of added height, depending on the desired overlay thickness. The added dead load should also be evaluated to verify the structure does not require adjustment to the load posting.

For more deteriorated decks it may be more advantageous to mill material deeper. In some cases, owners will specify a mill depth all the way down to the top mat of reinforcing steel to get as much deteriorated deck surface out as possible. It is also possible with deeper milling to inlay the overlay back to the roadway surface so that no adjustment is necessary for joints or the approach ride.

The trick with deeper milling is to identify the depth of the reinforcing steel to insure that the mill does not entangle with it and cause damage. Contractors should verify steel depths in the field before beginning their milling operation. This can be done with a pachometer or ground penetrating radar equipment.

Many agencies like to use “Fast Track” Hydrodemolition with an inlaid surface to do rapid restoration work over a weekend (or in some extreme cases, overnight) in high traffic impact areas. With high production hydrodemolition equipment, up to 1000 square yards of Fast Track can be achieved during a weekend operation. But milling is a key component to achieving that high production rate. And, time is money, for the contractor. Milling helps reduce the amount of time on the job site, meaning less exposure to traffic, which in turn makes for a safer project.

So, now you know the secret to “Fast Track” Hydrodemolition: mill ahead of the hydrodemolition. And, mill for depth. Get the bulk of the concrete out first by milling. That will be the fastest and cheapest way to remove concrete. Then, hydro blast for the desired surface texture and selective removal.



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