

# Airfield Maintenance

Pavement Markings & Runway Rubber



Hello everybody my name is Jon Friday and I'm very excited to be here today. I'm here to talk about Airfield Maintenance and specifically, within airfield maintenance, how your pavement markings and runway rubber build up is best maintained and I trust this will have value for you and your airport.

The product that Waterblasting Technologies manufactures for the marking removal and maintenance and for runway rubber removal is called the, "Stripe Hog".

I think it's pretty cool that in May 2004, right here in Knoxville Tennessee, my brother Dave Friday started to market the, "Stripe Hog" & now that system has been sold into 51 countries and is world famous so I'm also excited to share a little about that story as well.

# Touchdown!

Jumbo jets leave about 1.5 lbs of rubber on the pavement with each touchdown!



Let's start with the airplanes that land everyday on your runways...

Did you know that with every landing a jet lays on average about a pound and a half of rubber? And depending on the number of landings that rubber builds up fast and when it gets to a certain point it can be very slippery and dangerous when it rains and gets wet.

There are also other contaminants like dust particles, jet fuel, oil spillage, water, snow, ice, and slush, all cause friction loss on runway pavement but the most persistent problem is the rubber deposits left from the tires of landing jet aircraft.

# Friction Testing Guide

Number Of Daily Minimum Aircraft Landings Per Runway	Minimum Friction Testing Frequency
Less than 15	1 year
16 to 30	6 months
31 to 90	3 months
91 to 150	1 month
151 to 210	2 weeks
Greater than 210	1 week



To determine how frequent runway rubber removal needs to be performed, you first need to determine how frequently the runway friction levels should be tested. Each runway should be evaluated individually using the use of a test device according to this guide.

# Friction Testers



Here are a few options that airports use to measure the friction values.

You can see in the picture on the right that water is being sprayed in front of the tire to simulate a wet surface and then that tire is used to measure the friction value.

# FAA Standard

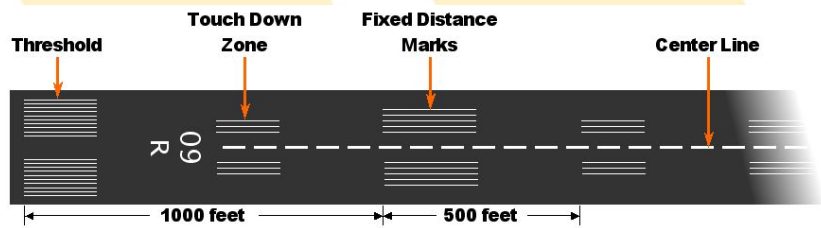
Restoration of runway coefficient of friction is critical!

Measured coefficient	Estimated braking action	Code
0.40 and above	Good	5
0.39 to 0.36	Medium to good	4
0.35 to 0.30	Medium	3
0.29 to 0.26	Medium to poor	2
0.25 and below	Poor	1



This chart will give you an idea of the friction value that a friction tester will show you and how that is viewed compared to the braking action of the airplanes landing at your airport.

## Need to be FAA Compliant



We all understand the need to not only provide a safe friction value on the runway for pilots to land but the pavement markings also need to be compliant with the latest FAA regulations.

## **Need to be FAA Compliant**

**Removing pavement markings from runways, aprons, gates, taxiways and the numerous paved surfaces around an airport complex has long been challenging, time intensive, and expensive.**

**Correct removal of pavement markings from runways, aprons, gates, taxiways and the numerous paved surfaces is absolutely critical to safety. Compliance is mandated by the Federal Aviation Administration (FAA), of the US Department of Transportation: Standards for Airport Markings Date: 9/27/2013 in AC No: 150/5340-1L**



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## Methods Used Before Waterblasting

- Grinding (milling) Pollution Source
- Shot blasting (steel pellets) Pollution Source
- Sand blasting (silica) Airborne particulates
- Soda blasting is a Pollution Source
- Gas Torching
- Chemicals (Environmental Compliance)



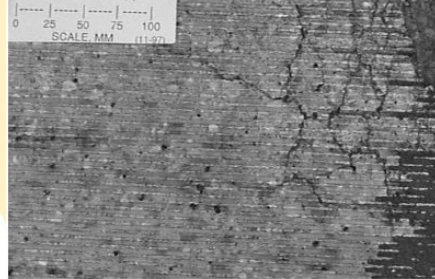
Here are a list of methods used before the Waterblasting method became the standard...

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Soda blasting is a Pollution Source  
Gas Torching  
Chemicals (Environmental Compliance)



# Methods Used Before Waterblasting

Often creates significant scarring



Can leave behind FOD



Some of these methods can create significant scarring and leave behind FOD. (Foreign Object Debris)

# Methods Used Before Waterblasting

Can be very slow and time-consuming.



Can cause reduced visibility



Can be very slow and time-consuming and again an example of FOD

# Methods Used Before Waterblasting

Can contribute to breathing hazards/silicosis



Environmental impact



Actually some of these methods can cause real personal injury including..

## Methods Used Before Waterblasting



Getting burned w the chemical that is used for rubber removal. If it removes the rubber imagine what it does to your skin. We been given reports from PIT where their guys have been burned pretty severely.

So the chemical is first sprayed onto the rubber and then brooms are used to agitate the chemical then large amounts of water are used to wash the chemicals and rubber off the side of the runway.

## Methods Used Before Waterblasting



Chemical removal of rubber can result in a large amount of the rubber and chemical mix washing off of the runway.



Not a good idea anywhere... but certainly wouldn't be here.

# Why Is Waterblasting The Preferred Method?

Water blasting provides a quick, clean, efficient, cost-effective and environmentally friendly method of removal.



Read text then...

The water blasting method uses up to 40,000 psi needle sharp water jets that reach down into the pores of the surface and effectively remove the markings or runway rubber while leaving the pavement surface in tact and undamaged.



# Waterblasting Is Clean!

The Stripe Hog Waterblasting System incorporates simultaneous vacuum recovery of debris and water!



Also very important with proper water blasting is all the water and debris is simultaneously vacuumed up and contained.

## Waterblasting Is fast and safe!



Shutdown & Vacate  
Rate of 45 Seconds!



When a Stripe Hog is on a runway working whether removing a marking or runway rubber it can shut down and vacate the runway in 45 seconds in the case of an emergency landing.



## 2008 - PIT Was the First!



So, in 2008 Pittsburgh airport was the first airport to buy a Stripe Hog Waterblasting System.

This picture was taken last year at an Airfield Marking Symposium w Donna Speidel when it was 8 years old.

Once PIT bought airports have been dropping like flies buying their own Stripe Hog. There are now more that 45 airports in North America that have bought since 2008!

# Stripe Hog Waterblasting System

- 85% of US Airports that own a waterblaster own a Stripe Hog Waterblasting System!
- The ONLY Waterblasting System in the world with repeat airport sales.



Here's a few other fun facts...

\* 85% of US Airports that own a waterblaster own a Stripe Hog Waterblasting System!

\* Waterblasting Technologies is the ONLY Waterblasting System in the world with repeat airport sales.

# How PIT Uses Their Waterblaster?

Multiple uses with one system

## PAINT REMOVAL



## STATEMENTS FROM PIT TEAM

"We have four runways here and we go over each two or three times a year, so it saves us millions of dollars."

**Ed**

"A lot of the equipment I purchase for the airport is not nearly as reliable as the Stripe Hog when it comes to completing their intended jobs"

**Jim**



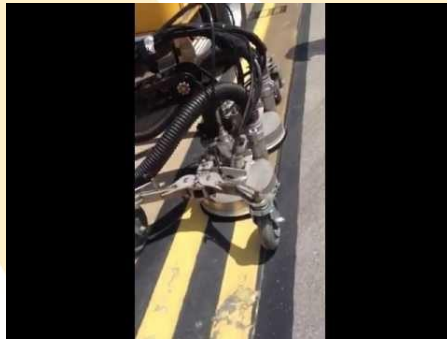
Here's a few ways that PIT uses their Stripe Hog...

Paint Removal

# How PIT Uses Their Waterblaster?

Multiple uses with one system

## PAINT REMOVAL



Here is a clip from PIT back in 2008 when they were just starting their marking maintenance program. This clip shows paint removal of 17 years worth of layers of paint build up.

The major problem with painting layer after layer is eventually it will flake off and large chunks of paint flying around airplane engines are not a good idea.

# How PIT Uses Their Waterblaster?

Multiple uses with one system

## RUBBER REMOVAL



Here you'll see a clip of rubber being removed.

Here we are removing at a rate of 40,000 sq ft per hour. A typical touch down zone is 2000' x 50 which is 100,000 sq feet so about a 2 ½ hour job for one person.

# How PIT Uses Their Waterblaster?

Multiple uses with one system

## PAINT CLEANING



This marking had lost its reflectivity and most people would think that it would need to be repainted but we set up this Stripe Hog for cleaning and you'll see here that it almost looks like it's painting a new line but the cleaning restored the reflectivity and 3 years later now it has still lasted.

# How PIT Uses Their Waterblaster?

Multiple uses with one system

## SURFACE PREPARATION



For all pavement marking materials, the pavement surface must be clean and dry to achieve proper bonding. Proper pavement surface preparation is absolutely critical to achieve maximum durability & performance.

Here are two examples of areas where surface prep was done before the markings were applied.

You can see that where the proper prep was done the markings are still in tact!

## STRIPE HOG MODELS



### SH8000

Rubber Removal Rate: 40,000 sq. ft./ hr.  
6 in. Thermoplastic Line: 6,500 linear ft./hr.  
Operating Pressure: 40,000 psi  
Flow Rate: 12 gpm  
Freshwater Capacity: 3,150 gallons



### SH7500

Rubber Removal Rate: 30,000 sq. ft./ hr.  
6 in. Thermoplastic Line: 5,557 linear ft./ hr.  
Operating Pressure: 40,000 psi  
Flow Rate: 9 gpm  
Freshwater Capacity: 1,220 gallons



### SK3000

Rubber Removal Rate: 20,000 sq. ft./ hr.  
6 in. Thermoplastic Line: 4,615 linear ft./ hr.  
Operating Pressure: 40,000 psi  
Flow Rate: 6 gpm  
Freshwater Capacity: 1,050 gallons



I won't go into all the Stripe Hog models but we have 5 models from small to big.



## STRIPE HOG MODELS



### SK2000

Rubber Removal Rate: 12,000 sq. ft./hour  
6 in. Thermoplastic Line: 4,332 linear ft./hour  
Operating Pressure: 40,000 psi  
Flow Rate: 5 gpm  
Freshwater Capacity: 600 gallons



### SH1000

Rubber Removal Rate: 10,000 sq. ft./hour  
6 in. Thermoplastic Line: 4,166 linear ft./hour  
Operating Pressure: 40,000 psi  
Flow Rate: 2.5 gpm  
Freshwater Capacity: 250 gallons



These are our two smallest and ones that are really popular right now for those airports that have limited paint and rubber removal but still want to save the money of contracting it out and / or want to control when the work is done and not rely on a local contractor.

# Why Waterblasting Technologies?



This is the last thing I'll share is that we have a proven success system for airports and contractors that buy a Stripe Hog.

It starts with a truck in good working order and we have the maintenance matrix's to make sure that your trucks maintenance is being kept up with.

The 2<sup>nd</sup> is a training and even licensing program for your operators to ensure they achieve maximum productivity with no damage to the surface.

Next is a spare parts inventory SYSTEM. This insures you always have on hand what is needed to never be down and not able to change out a maintenance item.

Lastly is our 24/7/365 customer support hotline.(we guarantee a response time of 10min. or less even through the night, because we know thats when the majority of stripe hog operations are taking place).

Thank you so much for your time and attention today.

## For More Info:



**Dave W. Friday**

*VP, Sales & Marketing*

3170 SE Slater St.

Stuart, FL 34997 USA

dave@waterblasting.com

waterblastingtechnologies.com

Office: 1-772-214-1714

Mobile: 1-865-389-2668

Fax: 1-772-223-5461



For more info pls contact my brother Dave Friday