Stormwater Management using Porous Asphalt Pavements

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REGION 10 REGIONAL ROUNDTABLE – 10/2/18
1) Porous asphalt QUANTITY—ability to attenuate stormwater, and effect of maintenance on infiltration rates

Attenuates peak flows, absorbs a LOT of rainfall

2) Porous asphalt QUALITY—pollutant treatment in general, effect of drain depth

Great for particulate matter!
Pavements – WSU, Puyallup
Permeable Pavements

Pervious Concrete

Porous Asphalt
Porous Asphalt Experiment

Street dirt applied

Impervious

Porous Unmaintained

Porous Maintained

Porous
Porous asphalt outflow
Results – Relative Runoff

Average lag = 54min
Rainfall → surface runoff

Average lag = 196min
Rainfall → subsurface runoff

Porous Asphalt – water quality

Porous asphalt

- Concrete weir (6")
- Surface drain
- Pervious asphalt (3")
- Elevated drain
- 22.7 liter sampling container
- Aggregate subbase (18")
- Impermeable cell liner
- Tipping bucket flow-gauge
- Native soil

Automated Sampler
Porous Asphalt – water quality
Metals

Analyte

- Total Zn
- Total Pb
- Total Mg
- Total Cu
- Total Cr
- Total Cd
- Total Ca
- Diss. Zn
- Diss. Pb
- Diss. Cu
- Diss. Cr
- Diss. Cd

Median Removal on a per storm basis (%)
Petroleum Hydrocarbons

Median Removal on a per storm basis (%)

- Motor Oil
- Analyre
- Diesel H.

Location
- Elevated
- Under
PAHs

- Pyrene
- Phenanthrene
- o-Terphenyl
- Naphthalene
- Fluorene
- Fluoranthene
- d14-Dibenzo(a,h)anthracene
- d10-2-Methylnaphthalene
- Chrysene
- Benzo(a)pyrene

Graph showing median removal on a per storm basis (%), with categories for elevated and under locations.
Performance Goal: The Basic Treatment Menu facility choices are intended to achieve 80% removal of total suspended solids for influent concentrations that are greater than 100 mg/l, but less than 200 mg/l. For influent concentrations greater than 200 mg/l, a higher treatment goal may be appropriate. For influent concentrations less than 100 mg/l, the facilities are intended to achieve an effluent goal of 20 mg/l total suspended solids.
- Phosphorus Treatment: 50 percent removal of TP for influent concentrations ranging from 0.1 to 0.5 mg/L.
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Thank you!  
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