2011 Synthetic Turf Council Membership Meeting

Technical Issues - Sports Field Irrigation
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Technical Issues - Sports Field Irrigation

- Topics
  - Why Irrigation on Synthetic
  - Methods of Irrigation
  - Typical Installations
  - Warning Systems
  - Studies
    - Measurement of the effect of irrigating synthetic fields on the micro climate
    - Friction on synthetic when dry vs. wet
  - Various photos from sites
Why Irrigate Synthetic?

- Grass will turn brown without water
- Cooling surface and air temperature
- Cleaning surface
- Safety, less abrasive
- Field Hockey regulations
Methods to Irrigate

- Golf Sprinklers
  - In ground sprinklers
  - Throw between 80-115’
End Gun Sprinklers

- Connected to various Quick Couplers
- Manually connect one at a time, then carry from QC to QC
- Throw approx. 150’
Traveling Sprinklers

- Travel down center of field, generally in one to two passes
Large Radius Sprinklers

- In ground sprinklers placed outside of playing area
- Throw between 125’- 175’ radius
Don’t just install ANY irrigation
Typical Design
Sprinkler Design from Lateral Line

4" LATERAL w/ 90° BENDS
CONTROL VALVE
Design with Sprinkler & Quick Coupler
Highlands Park

- The upgraded field features the only world class organic Infill Pro GEO turf system - the only City field of its type on the West Coast. This infill consists of **coconut husks**, cork and sand and runs cooler than traditional virgin or recycled rubber infill based fields.
Santa Clara University
Warning Systems
University of IOWA
University of IOWA
University of IOWA
Study on Temperature & Humidity

- TUV SUD American Inc. is a globally recognized testing, inspection and certification organization offering the highest quality services for a wide range of industries worldwide.

Choose certainty. Add value.
Test Specifics

- Aug. 20\textsuperscript{th}, 2009
- Sunny, clear sky
- Max. temperature 97 degrees
- Tests were performed between 10:00 and 4:00
- At 1:00 and 3:00, four sprinklers were each activated one after another for 2 minutes
- Field divided in two
- ½ field Dry
- ½ field irrigated
- Air and humidity were set up at varying heights in four areas.
Irrigated Section -- Temperature

- Lowered Granulate temperature around 40 degrees with first irrigation
- Lowered temperature at 2” approx. 13 degrees
- Lowered temperature at 40” approx. 5 degrees
Non Irrigated Section--Temperature

- All areas stayed the same or increased in temperature
Heat Index

- is an index that combines **air temperature** and **relative humidity** in an attempt to determine the human-perceived equivalent temperature — how hot it feels, termed the **felt air temperature**.
Compared to the non-irrigated side, the irrigation reduces the heat index.
Friction Testing

- Dynamic Friction
  - Testing for skin abrasion
- Linear Friction
  - Testing grip during sprints and quick turns
- Rotational Friction
  - Testing grip during rotations
Dynamic Friction (skin abrasion)

- Measured horizontal and vertical forces
- Measured when surface temperatures were 68 and 140 degrees
- Friction coefficient increased 50% when turf was dry @ 68 degrees and 63% @ 140 degrees.
Linear Friction

- Shoe with studs serving as pendulum
- Measured the swinging of pendulum
- Friction coefficient increased between 7-25% when turf was dry
Rotational Friction

- Large washer with studs on bottom
- 100 lbs load
- Friction torque increase between 12-22% when turf was dry.
Various Photos of Irrigation
Whittier College
San Jose State University
Heidenheim Germany
Heidenheim Germany
Heidenheim Germany
Heidenheim Germany
2006 Hockey World Cup Germany
2006 Hockey World Cup Germany
2011 Hockey World Cup India
2011 Hockey World Cup India
2011 Hockey World Cup India
2008 Olympics China
2008 Olympics China
2008 Olympics China
Thank You!!

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