New Technology for Asphalt Paving
Presented at Alaska Paving Summit 2007

Agenda
1. Introduce Topcon and GPS Alaska
2. Overview of Non-Contacting Systems for Asphalt Paving including the Sonic Averaging System
3. Current Status of GPS Technology
4. New Technology for Asphalt Paving … Millimeter GPS with Laser Zone
5. What’s Next?... Site Link

Topcon Statistics
- Began in 1932
- Major shareholder: Toshiba
- Topcon business units:
  - Topcon Positioning
  - Topcon Medical
  - Topcon Industrial & Optics
- Developed many "World’s First" products and technology

Topcon In The World Marketplace
- Major producer of vision testing, retinal cameras, surgical & electron beam microscopes.
- One of the world’s leading suppliers of optical lenses used for reading CD’s and DVD’s.
- Major supplier of lenses for camera phones.
Laser control

Laser transmitter produces laser beam as grade reference
Laser receiver attached to paver “sees” the grade reference

Slope Control

Electronic Level Sensor
Slope Control

Component Interface

Elevation Control

Sonic Tracker Control Selected

Slope Control

Slope Control Selected

Paving for Smoothness

Paving for Smoothness
Each Sonic Tracker™ measures and averages individually ...

...and System Five averages all of the Sonic Trackers™

For a 1” grade deviation at one Tracker...

...the balance point rises 1”
**Smoothtrac**

Proper Smoothtrac Placement

- Complete grade control from the back of the screed
- Safer for the crew than mechanical skis

**Smoothtrac**

- Set it to grade – Smoothtrac takes care of itself
- No stopping for maintenance of mechanical shoes
Current Status of GPS Technology

New Technology for Paving

Satellite Positioning Weakness: Vertical Accuracy

Millimeter GPS Components

PZL-1
(Positioning Zone Laser)

- Transmits Unique Lazer Zone Signal
- 2000 Foot Diameter
- Auto-Leveling
- 4 Channel Operation
- Alkaline Batteries, NiMH Rechargeable, & Ext Power

Millimeter GPS

- Multiple user RTK advantages with vertical precision of a laser
- Plug-n-Play system design can be added to existing systems
- More versatile than robotic machine control
- Customer can choose to use Lazer Zone on selected projects
- Perfect compliment to GNSS network rovers

MILLIMETER GPS Components

- Transmits Unique Lazer Zone Signal
- 2000 Foot Diameter
- Auto-Leveling
- 4 Channel Operation
- Alkaline Batteries, NiMH Rechargeable, & Ext Power

Millimeter GPS Components

PZL-1
(Positioning Zone Laser)
Millimeter GPS Components

**PZS-1** (Positioning Zone Sensor)
- Receives & Decodes the Laser Zone Signal
- +10° by 10° beam Detection Window
- 5/8x11 Standard Pole Mount

Millimeter GPS Components

**PZS-MC** (Positioning Zone Sensor for Machine Control)
- Receives & Decodes the Laser Zone Signal
- 360° beam Detection
- Rugged, Shockproof Design
- IPX6 Waterproof
- DC8V~DC32V Power Supply

**MILLIMETER GPS**
- Expands Applications for RTK GPS
- Adds precision vertical accuracy capability to existing systems
- Provides significant performance advantage over Robotic Systems
- Building block design offers customers the opportunity for future upgrade

**mmGPS Paving Technology**

**Millimeter GPS-Asphalt**
- Run any combination: mmGPS, sonic or cross slope
- Backwards compatible with System Four/Five
- Same GPS components used for grading
mmGPS Asphalt

mmGPS Paving

- PZS-MC w/ Sonic/Slope
- Compatible w/ System 5
- Same components as grading equipment
- Eliminate Stringlines
- Control Paver & rover at the same time
mmGPS Paving

- Simple J-box connects components to 9168
- Run mmGPS with sonic or cross slope
- Machine build

Additional mmGPS Machines
Site Communications Technology

The Connected Jobsite

Topcon SiteLINK™

The Future Office
Applications for IT Jobsite

Basic Monitoring
- Physical location
- On/off
- Hours of use

Machine Health
- Oil & hydraulic pressures
- Temperatures
- Engine RPM’s
- Fuel levels & usage rates
- Engine idle time
- Real time warning alert

Real-time planning
- Production/percent complete
- Maximize equipment usage
- Deliver materials when needed
- Performance by operator or machine
- Predict service before failure

Applications for IT Jobsite

From the cab/office
- Download updated project file
- Aware of other machine locations
- Aware of other machine production
- email

From Topcon customer service
- See system status
- Remote troubleshooting
- Update firmware