Consortium of Accelerated Pavement Testers
CAPT
TPF-5(127)

January 2009 Webinar

Webinar Overview

1. Review of Financials
2. Selecting a Lead Agency
3. Prioritization on Goals to Accomplish
   - One-at-a-time or multiple simultaneous?
4. Meetings Forecast (electronic and face-to-face)
5. TRB Meeting Agenda Items

Financial Breakdown (1/4)

Partner Commitment by Number

Report run on: December 31, 2009 9:57 AM

Number	Agency Name	Year	Commit Dollar
TPF-5(120)	VA	2008	$ [illegible]
	[illegible]	[illegible]	[illegible]
	WI	2008	[illegible]
TPF-5(127)	AL	2006	$12,500
	AL	2007	$12,500
	CA	2007	$12,500
	CA	2008	$12,500
	IL	2006	$25,000
	KS	2006	$12,500
	KS	2007	$12,500
	LA	2006	$12,500
	LA	2007	$12,500
	MN	2006	$12,500
	MN	2007	$12,500
	NY	2006	$12,500
	NY	2007	$12,500
	OH	2006	$12,500
	OH	2007	$12,500
	TX	2006	$12,500
	TX	2007	$12,500

Σ $225,000

Financial Breakdown (2/4)

Total Commitments	$	225,000.00
Total Amont Obligated from Total Committed	$	162,500.00
Total Spent of Obligated	$	61,210.50
Total Obligated "Untouched"	$	101,289.50
Available commitments that could eventually add to Obligations ($62.5k) + $25k Tentatively from Indiana in new system	$	87,500.00

Financial Breakdown (3/4)

State	Summary of Needed Action / Information for each State
 Alabama	$17348.69 of H560 funds remain to be transferred into new pooled fund accounting system
 California	No funds were spent because committed funds wer not obligated. These entire funds can be transferred over to the new pooled fund accounting system
 Illinois	$9,697.38 of "0860" funds remain to be transferred into new pooled fund accounting system
 Indiana Complete	Please be prepared to commit and obligate 25k into the new pooled fund accounting system
 Kansas	We need to determine which accounting code was obligated in which year. It appears funds were succesfully obligated in '06 and '07 but there is not enough information to determine how H550 and H560 were distributed. Nevertheless, what remains to be transfered is a full obligation of $12,500.00 and $4,848.89 remainign from the other obligation

Financial Breakdown (4/4)

State	Summary of Needed Action / Information for each State
 Louisiana Not Yet Complete	$4,848.69 remains from H550 funds to be transferred into the new pooled fund accounting system
 Minnesota	$17,348.69 of H560 funds remain to be transferred into new pooled fund accounting system
 New York	$17348.69 of H560 funds remain to be transferred into new pooled fund accounting system
 Ohio Complete	$17348.69 of H560 funds remain to be transferred into new pooled fund accounting system
 Texas	While no funds were obligated and charged against. There are two commitmentts of 12.5k that can be transferred over into the new pooled fund accounting system.

Selecting a Lead Agency

AL DOT as Lead Agency…

Alabama DOT has expressed interest in becoming lead agency and is considering

- –Larry Locket (ALDOT)
- –Jeff Brown (ALDOT)
- –NCAT
  - •Buzz Powell
  - •Richard Willis
  - •NCAT Staff

FHWA as Lead Agency…

Steps forward if it remains with FWHA as Lead Agency

1. Prioritize Goals
2. Assemble Panel
3. Write SOW
4. Consult with Acquisition Office on recommended contract vehicle (existing or new)
5. Advertise
6. Technical & Cost Review
7. Make an Award

Prioritization of Goals to Accomplish

"DotMocracy"

- 3 Votes each
- Use all on one or distribute on multiple

Goals to Select for Priority

Newly Developed

1. Instrumentation "How To"
   - Calibrate,
   - Install
   - Understand and analyze,
   - Unique programming and data logging
2. Strain Data
   - common terminology,
   - transverse versus longitudinal
3. Moisture characteristics
   - Indoor facility simulation versus natural field moisture
4. Accounting for wall/confinement effects for APT in test pits
5. Relating APT performance to field performance
6. Perfecting the way APT benefits are quantified and documented for those who make funding decisions

List from Past Strategic Planning

1. APT versus field performance
2. Web-based communication
3. APT/Test Track facility and equipment advances
4. Standard terminology and test procedures
5. Construction site practices and procedures at APT facilities
6. APT condition evaluation and techniques
7. Gaps and needs in APT instrumentation of pavement, bases, and subgrades
8. Data acquisition, storage, and sharing methodologies
9. APT experimental design and loading methodologies
10. APT versus theoretical models
11. Performance relationships
12. Training, education, outreach, economics

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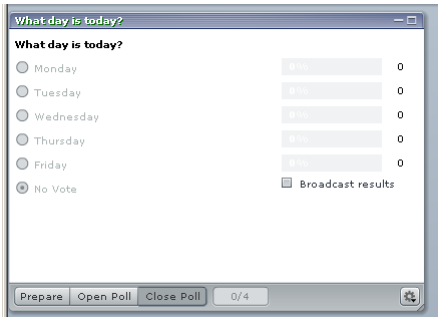
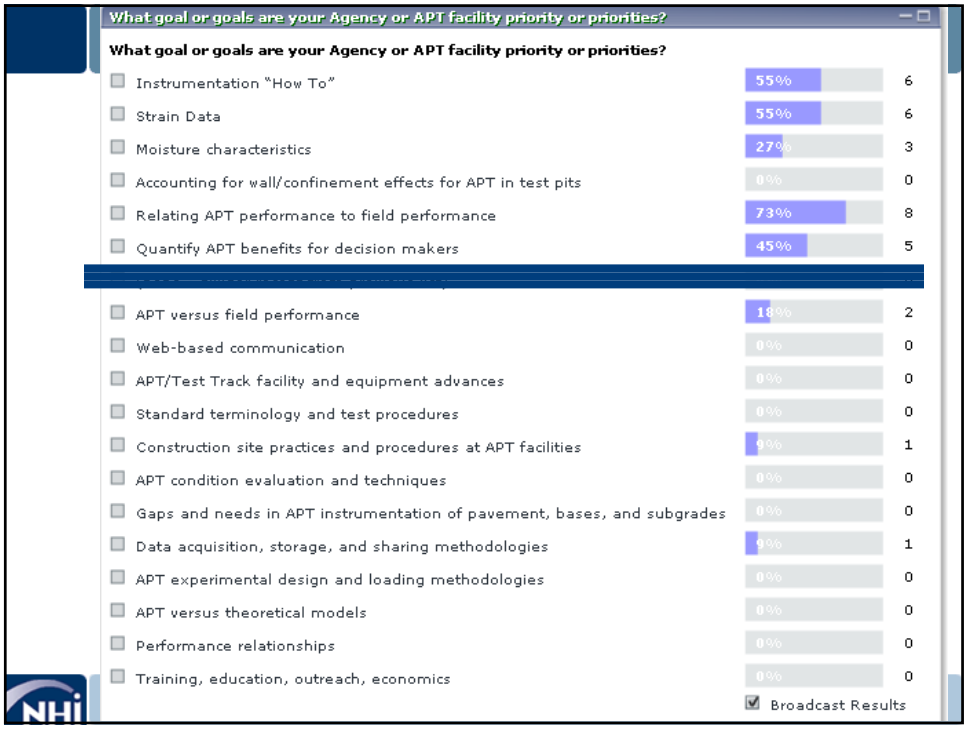
Put to vote with polling option window…





http://www.pooledfund.org/projectdetails.asp?id=358&status=4

A Synthesis of Construction Practices for Accelerated Loading Facilities in the United States

Paper Submitted to
International Conference on Accelerated Pavement Testing, 2008
Madrid, Spain

February 29, 2008

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Organization and Outcomes from a United States Consortium of Accelerated Pavement Testers

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A Synthesis of Practical and Appropriate Instrumentation Use for Accelerated Pavement Testing in the United States

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Instrumentation Experiences – By Facility

Appendix B - Unique experiences with Instrumentation Practices

Texas's experience from MLS program

- Strain gauge survivability was an issue
- Interested in the optimal location and orientation for strain gauges
- Used MDDs but had experienced issues with changing water table similar to Louisiana
- Measured temperature also to assists with operating decisions because the MLS device generated unwanted heat
- TDR variability
- Potatoes used recently for temperature because of durability and data acquisition aspects

NCAT

- Notices differences with thermistor measurements when installed vertical or horizontal – which is more correct installation?
- Apparent nonsingless TDR measurements
- CTL strain gauge and Geocomp pressure plates require verification of operation before installation, same issues, please elaborate in your own words
- Utilize contact and non contact measurements for rutting – similarities?
- Safe operation of track and weather (lightning) have influenced the type of instrumentation used over the years
- Lateral position sensor laser system successfully developed with vendor in cooperation
- Observes hashing with surface cracks closing up
- Uses only DC instrumentation because of a lot current and noise in gage signals

Indiana

- Asphalt -CTS strain gauges – same problems – please elaborate in your own words
- Asphalt - Geocomp pressure cells some good and some bad – please elaborate in your own words
- Asphalt – Utilize contact vs. non contact rutting. As an APT community how do we recognize the two
- Concrete – Japanese strain gauges vs. vibrating wire - use for different experiments and purposes
- General – Experience a lot of electrical interference and altered conditioning
- Has evidence of hashing (?)

California

- Asphalt – use MDD and digital Benkelman beam for road surface deflection
- uses a linear profiler
- uses thermocouples
- Concrete – Joint Deflection Measuring Device is homebrew with LVDTs – good experience
- Research workplan directly determines type of instrumentation used
- Mostly use homebrew devices – intimate knowledge?
- Similar experiences with strain gauge and pressure cells – need for verification – please elaborate in your own words
- Spurious results from TDRs
- ESI has a moisture age that comes from or has experience in New Zealand
- Ground water table cannot be controlled in California – thus they measure if they cannot control – but groundwater table affects MDD instrumentation
- Recycled building waste materials appears to re-cement with changes in ground water table
- Utilizes digital images for crack distress measuring – looking at technology from Dynatest
- California observes cell phones may cause signal issues

- Concerns about strain gauge influenced distresses when cracking appears above installed strain gauges
- Lighting protection shaped decision to go with wireless
- Use homebrew surface foil gauges outside the wheel path – top down cracking (?)
- Measures brought up a fiber optic rag sensor.
- Measure axle loading forces vs. passes using pressure cells in airbags for dynamic loads
- Potential topic to exploit - Strain gauge type selection which type for which application
- Strain gauge experience similar- please elaborate – fairy happy with survivability and repeatability
- Use different thermocouples for temperature control and data acquisition
- Has a somewhat homebrew contact profilers concerned about cost of new devices
- Uses manual crack mapping – experimented with digital images, but unable to get all cracks with resolution.
- Uses a lot of vibrating wire strain gauges – do other facilities do so? Yes. Ohio ***this is a potential topic to exploit - Strain gauge type selection which type for which application
- Follow up instrumentation with FWD. Do others do this?
- The dynamic deflection basin is of interest because of low volume roads. How can be measured
- Utilizes a homebrew non contact rutting profile device (John Deere) can also measure curling and warping
- Experience with thermal crack tops used on shoulders
- Is there an algorithm available for rut depth on cross slopes and super elevations???
- Lateral positioning uses high speed camera but looking at GPS because less hands-on
- Measures solar radiation because the ALF creates shading and do not use temperature control
- Interested in more advanced profiling capabilities
- Utilizes a van for cracking distress measurements

up by Texas and California that South Africa has this measured

Instrumentation Experiences – By Device

Vignettes of Accelerated Pavement Testing in the U.S.A.

with Focus on

Instrumentation and Cracking in Asphalt Pavements

Table 1. Ranked Interest in Instrumentation for Pavement Condition and Response

Instrumentation Category	Pavement Condition or Pavement Response Type	Votes
Environmental	Moisture	7
	Temperature	4
Primary Response	Strain	9
	Shear Strain	-
	Pressure	6
	Multi-Depth Deflectometer	5
	Surface Deflection	-
	Tire Load (pressure dist)	2
Distresses	Automated Surface Crack Measurements	2
	Measuring Cracking not at the Surface	2

2.1.1 Strain, ε_{ij}

Strain is a very popular response to measure. Typically different gauges/sensors are used in either rigid concrete pavements or flexible asphalt pavements. Strain in unbound pavement layers is generally inferred from deflection measurements.

H-bar strain gauges are very popular for measuring bottom-of-asphalt strain. Orientation is both longitudinal and transverse. Vibrating wire gauges and the like tend to be embedded in fresh concrete. A Japanese manufactured strain gauge has caught attention of concrete researchers. Depending on gauge and facility and method of construction, the construction survivability experience is scattered; mostly good, none poor, but a desire for more durable sensors. General experience with strain gauges indicates a need to verify the correct operation of gauge upon recipient and before installation.

There is a large desire to develop a methodology that will provide guidance for selecting the optimum location for strain gauges in pavements. There is also a desire to have a clear, established practice for matching the strain gauge type to the scenario, pavement or response of interest.

NCHRP 10-66

Predicting In-Service Performance of Flexible Pavements from Accelerated Pavement Testing

The panel recognized that accomplishing the project objective will depend on finding sufficiently compatible pairs of APT and in-service test sections (i.e., similar structural design, materials, and performance data). Because of concerns about data availability, practicality of the proposed research approach, and the likelihood of producing implementable results, the panel requested that this research not be pursued at this time and suggested that a similar effort may be considered in a few years if relevant data become available.

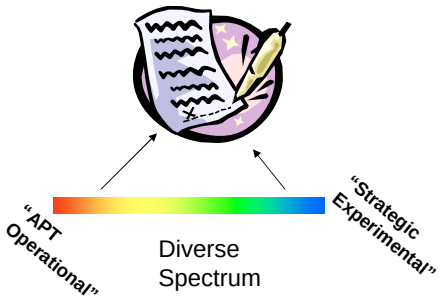
Role of Advanced Modeling?

Improvements in State-of-Art since 10-66 suspended?

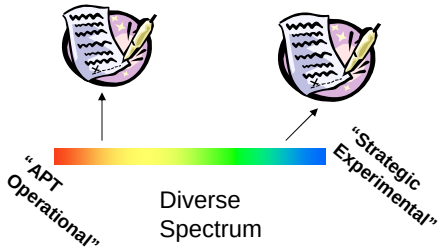
Nature of Goals

Single Contractor – Single Goal

Single Contractor – Multiple Goals



More than one contractor



- **At this point we can only speculate on what FHWA HQ Contracting Office would *recommend*.**
- **They will work with us.**
- **We will make the ultimate decision.**

Meeting Targets

2 meetings per year

2010

- Summer: Electronic webinar
  - Discuss one topic
  - Multiple presenters
- Fall: Face to face meeting
  - Louisiana is next on list followed by Illinois
  - One or two topics

Agenda Items for TRB Meeting

1. Revisit the webinar to take additional votes
2. Begin crafting statement or statements or work
3. Dates for Electronic face to face meetings.

Question, Comments, Concerns?

Questions?

Comments?

Concerns?