TPF 5-(127)
Consortium of Accelerated Pavement Testers CAPT
Spring 2007 Meeting
Gainesville, Florida

Meeting Minutes

Session 0
The attendees list is included as Appendix A at the end of the meeting minutes. Nelson Gibson led the meeting in the absence of Ted Ferragut.

Session 1 – Construction Current Practices
The group reviewed a presentation from Richard Willis from the exploratory APT construction survey. RW's results indicated very broad and different practices by each APT facility that was quite difficult to condense because of the nature of the different facilities, e.g. test track, outdoor facility, or indoor facility. Other classifications could be imagined. The differences in practice ranged from the bidding, acceptance, and type of tests, etc. See the presentation that will be included/posted on the pooled fund website.

The presentation was also moderated during and after the presentation to obtain group input in order to (a) renew the direction and (b) extract more detailed desires and topics to be synthesized.

- The synthesis document will be tentatively titled "Current APT Construction Practices." The document can be used to assist in planning and improving future experiments as a resource for others to review, such as avoid building very fictitious pavements.
- Common construction practices that have been identified in the first survey will be synthesized in a matrix format for those which are simple to summarize in this format.
- Part of RW's presentation of the construction survey stimulated a notable discussion during the moderation, it was identified that many facilities grappled with unbound soil properties of their pavements' supporting layers with different methods and devices for ways to measure uniformity, correct inhomogeneity, acceptance, measuring engineering properties for mechanistic analyses, etc.
    - Density has always been an issue.
    - How many states have gotten rid of or looking to get rid of Nuclear Gauges and have been looking to their APT program to assist in the decision making process?
    - How many states want to integrate design with FWD and also have looked to their APT program to assist in the decision making process?
    - Interestingly this was a strong, common theme that facilities were already independently making comparisons of density and stiffness engineering properties between different devices such as FWD, Resilient Modulus M_R, Clegg hammer, Geogauge, CPT, Humboldt Stiffness Gauge, etc. – this is definitely an area to be harvested specifically for the construction synthesis – unbound engineering properties. For example, Texas has tried the PQI device and moving to less fines in their bases. FHWA has looked at Geogauge, Nuclear, and FWD. MnRoad has looked at lightweight falling weight deflectometers LWD and developed specifications.
- The following were identified and then questions were articulated with group consensus as major topics to be included in Current APT Construction Practices Synthesis which will require input from each CAPT member and follow-up from NG and RW:
    - Please provide your facility's project-specific or site-specific methods and thought processes such as altered mixture design, pavement design software, design

equations, past experimental experience, etc. that are used to design the pavement structures to achieve the desired response, distress, or failure.
  - Where does past experience eliminate or modify certain construction practices and, most importantly, why?
  - What are some shortcomings or non-realities in your APT construction practices that you recognize relative to real construction? Are there some you would like to improve and, most importantly, why?
  - Where do you feel construction has influenced a specific measurement such as stress or strain primary response or the manner a certain distress develops and most importantly, why do you feel that way?
  - How is consistency in each layer achieved as best as possible in your test cell, site, pit, etc.?
  - What needs drive experimental design? Basic Research? Sponsor? Industry? Combination?

Session 2 – Instrumentation Current Practices & Pavement Instrumentation Rodeo

The group also reviewed a presentation from RW from an exploratory survey on instrumentation. Firstly and importantly, the different types of instrumentation used by each group was determined and established. NG and RW utilized the direct presence of the group members to elicit and articulate more detailed desires for the Instrumentation Rodeo and also a tentatively titled "Current APT Instrumentation Practices and Experiences" document. NG felt it was important firstly for the group to answer "Why do we instrument?" Answers were provided from the CAPT members:

- For the validation and development of pavement models
- At times APT cannot take pavements to failure thus rely on measured primary responses to "dovetail" with models that can simulate or predict the pavements' failure. In other words; to link APT performance (distress) and primary response (stress-strain)
- To qualitatively and quantitatively check construction
- Monitor hardening and maturity of PCC
- To determine the threshold of loads
- Assist in operating APT facilities
- Distress mechanism verification such as how cracking is inducedf or rutting develops

After this, the questions were asked "Can it be measured? Is it right or wrong to measure it? Is what you are measuring realistic?" This was a good lead in to the session where NG and RW used the group to articulate questions and elicit more detailed desires for the Instrumentation Synthesis and Rodeo. The members' general desires for the Synthesis were to catalog and share the following:

- What is your most prized way or "bread and butter" of measuring a certain response with instrumentation?
- What are the pros and cons with your instrumentation?
- What are your desires for new technologies and cutting edge instruments, sensors, systems. (smaller, cheaper, faster, better)
- Share the capabilities of each facility instruments' resolution, precision and range.
- Summarize any repeatability or comparison studies which may have been completed.
- Establish or state how researchers understand what the instruments readings tell us – i.e. interpretation of strain gauge responses – more on this later.
- Experiences with vendor support
- Handling experiences such as fragility, robustness, survivability, lifespan, and durability; i.e. lead wire protection from the elements
- Special practices for verifying operation of instrumentation as-delivered and on-site calibration methods
- Experiences with signal interference and noise along with mitigation techniques
- The good and bad of installation experience.
- What are some instrumentation methods or instruments you may be aware of but not tried?
- Data analysis algorithms – peak picking (More on this later)

Instrumentation continued into the next day after the executive session but will not be separated. This further reinforced the need for the Synthesis document but also gave RW some necessary material so he can develop "kicking off points" to approach and engage vendors regarding the Rodeo. Taking input on instrumentation experiences from the group was a challenge, but very encouraging, because the members were so eager to share their experience. NG made a decision to use the group's time and obtain from each CAPT member a brief snapshot their Unique Instrumentation Experiences Practices that would be appropriate fodder for the Instrumentation Rodeo - This is included in Appendix B of the Minutes. The group is asked to review these issues and correct and expand as necessary. RW made a point that the CAPT group must get "buy-in" from the vendors for a successful Rodeo. Stating the objectives and goals of the Rodeo was dynamic and taking shape throughout the discussions at the meeting. The tentative objective of the rodeo that NG gleaned from the group is currently:

> *"The objective of the Pavement Instrumentation Rodeo is to establish state- of-the-practice and state-of-the- art instrumentation technical dialog between different instrumentation users and between instrumentation vendors and users in the areas of:*
>
> - *New technologies and cutting edge areas that may be known and not tried*
> - *Demonstrating that systems work and how they work*
> - *Understanding instrumentation operation in laboratory vs. field*
> - *Establishing feasible ranges for instrumentation users' needs*
> - *Installation practices and retrofit in place practices*
> - *Sensor protection*
> - *Interpretation*
>
> *The intent of the Rodeo is NOT to rate or rank specific technologies against one another, but to allow instrumentation users to improve what they do."*

The second was to assign a scope to the Rodeo as to what type of instrumentation was priority because RW identified the Rodeo could become unwieldy, "watered down", or a failure if too much was trying to be done at the Rodeo. The group decided to solicit two 2 votes from each CAPT facility as to which were the instrumentation with most critical needs. As the group proceeded deeper into the discussion it was identified there were basically three types of instrumentation pertinent for a Rodeo; (A) Environmental, (B) Primary Response and (C) Secondary Distresses. Furthermore, the group felt it was useful to designate a CAPT member to be a primary contact or expert for each instruments based on their experience or interest.

Each of the designated researchers were then asked to **provide after the meeting a one-half to one-page document that summarizes what they would like to be addressed at a Rodeo based on their knowledge on the state-of-the-practice, good and bad experiences, etc**. The results are below. Items without votes were offshoots of ones with votes that were deemed of enough importance for a separate write-up:

	Type	Votes	Designee
Environmental	Moisture	7	S. Sargand & G. Claros
	Temperature	4	B. Powell
Primary Response	Strain, (include next generation)	9	S. Sargand
	Shear Strain	-	I. Al-Qadi
	Pressure	6	B. Worel
	MDD include slippage, sealing, AC vs. DC	5	Z. Wu
	Surface Deflection	-	A. Gisi
	Tire Load (pressure dist)	2	D. Chen
Distresses	Automated Surface Crack Measurements	2	D. Jones
	Internal Crack mapping – needs and potential solutions – also include pumping	2	X. Qi

What will the Rodeo look like?

- The general consensus was to conduct the Rodeo at MnRoad before construction in early 2008. The issue of rain was brought up thus an indoor Rodeo may be desired. A further vision of the rodeo is for each facility with unique "do-hickeys" equipment or practices for verification, pre-test, calibration they would like to share and demonstrate. Furthermore, it was discussed that perhaps the Rodeo would have an after-component where instrumentation could be left and installed on the future roadway.
- Who are the audiences? Instrumentation Users, Vendors, Pavement Design and Material Engineers.
- Will we collect money? Not yet determined but perhaps a university will help if we have to.
- Will we have posters? Not yet decided.
- Guidelines for participation or Ground-rules need to be established. No decision yet.
- Advertising for Rodeo? TRB Newsletter. Can we ask Buzz and Bouzid to assist with this when materials are developed? Pass plans to 1-40B panel. We will ask Andy to assist with this when materials are developed.

Session 3 – Data Acquisition

In response to the desire from the last meeting a session was put together on Data Acquisition. The group heard from Minnesota, Florida and NCAT on their data acquisition infrastructure. In general wireless is done for safety as well as convenience. Rates of collection need to be tailored or optimized due to speed of wheel or axle or truck. One which started at 2000 pts/sec now 1200 pts/sec. Peak point picking is first level of data check with strain measurements. Weather, moisture and animals can be enemy of enclosures or cabinets – a desiccant or heaters can help. An algorithm for point picking is critical. What is the best sealant and method of sealant for temperature probes? Wireless systems need to be secured from nefarious external intruders etc. It is possible to be too grounded with some instruments such as TDRs or grounding systems because they take the brunt of lighting strikes. There can be a split between systems for environmental and dynamic types of data acquisition as well as manual (dipstick) and automated. Large databases such as MnRoad's are managed and utilize a loader program to automate entries into larger SQL database

Session 4 – Executive Session

Travel for Future Meetings–

Most attendees do not mind paying travel for themselves upfront for later reimbursement because they have control over types of flights and layovers etc. Alternatives are desired. Woodward had some bad experiences with late reimbursement after the initial meetings. Gratitude goes to NCAT for this meeting. Future meetings cannot readily use NCAT because FHWA took advantage of an existing cooperative agreement to spend the pooled fund's money, but this agreement ended after the spring 2007 meeting.

The first option for the fall meeting is to investigate what NCHRP uses for their travel – Expedia or Experian. Second is Kansas and California looking into their university or DOT for assistance with travel. The last option is to go back to Woodward.

Model for Work

NG was concerned with how to spend money outside of travel because the pooled fund does not have a formal awarded contactor like a classical pooled fund with a lead agency DOT. The group basically reassured that we can cross that bridge when get to it such as spending money to move equipment from point-a to point-b for the Rodeo.

Financials –

Appendix C displays the summary given to the group with the interpretation to the far right. Let's be honest; FMIS on FHWA's side and States DoTs' side is not the greatest in terms of reporting what really is going on. NG needs to review and understand what the commitements were over which period. Could each state characterize whether they gave $25k in a single year and which year or if they gave it or if they gave $12.5k over two years and over which years? The way NG interprets what FMIS is giving is the group has sufficient funds for the fall meeting.

Session 5 – Business Session

Round the Room Current Activities - Appendix D

This is important but eats up a lot of time during the meeting. Instead of doing this from scratch each time – the current activities were recorded and will be simply updated.

California Warm Mix

California plans to do a warm mix project where larger quantities will be produced than past demonstration projects. Asphalt rubber is mandated by the State and requires high temperature thus WMA will be used to reduce temperature of asphalt rubber mixture.

APT and Preventive Maintenance

California Dave Jones solicited input on using APT and preventive maintenance to follow-up from a TRB session organized by John Harvey.

International Accelerated Pavement Testing Conference Madrid 2008

- Ben will update reactivated Pooled Fund website
- Project has been re-activated and extended.
- When to end solicitation?
  - *Conference in October 2008 thus will specify February 2009 to allow any necessary follow-up*
- Reason to be given as to why extended?
  - *1st and 2nd IAPT Conferences were successful in providing peer review and research results dissemination. State DOT sponsored APT research continues strong in the US. State DOT facilities have research result to share internationally and knowledge to gain from contemporary international researchers.*
- Currently funds existing from California, Georgia, Louisiana, Minnesota, Ohio, Texas and FHWA approx enough for 10 attendees at this time. The best
- Angel Correa will be point of contact from Tom Harman's Resource Center Pavement Materials Technical Service Team to assist Minnesota the current Lead Agency or transfer Lead Agency to FHWA Resource Center.

Wide-base tire workshop

Currently still taking shape. FHWA will be leveraging resources from Western Research Institute Pavement Research Consortium to make up for scant resources at NG's office. The technical lead will remain with FHWA and Illinois as originally planned because it was Imad Al-Qadi's original concept. Also Illinois expressed interest in spinning off a new polled fund from CAPT for wide base tire study. The current vision would be to use the Workshop as a kickoff to Illinois's potential pooled fund.

Strain Pulse Interpretation Round Robin

This is an activity that has generated much excitement in the group during the instrumentation session. Much discussion occurred over how facilities interpret the measure strain pulse with different algorithms and more importantly with multiple axles and strain directions (vertical, transverse, lateral, etc.). What is it telling us?

There will be a session at the next meeting. Each APT group will provide to RW a sample strain pulse file. The raw will include two columns chronological time and strain or voltage or whatever. Meta data should be included as to units (milliseconds, seconds, micro-strains, strain, volts) type of strain being measured, how many axles or wheels, etc. RW will then blindly pass a pulse to each facility for their analysis and later discussion session in the fall meeting.

Session 6 – Review of the Strategic Plan

The group felt it was best not to “tackle” or take on any more topics in the Strategic Plan and “hunker” down to focus on the syntheses of instrumentation and construction and make the Rodeo happen. The Vision was updated as well as the different areas that are related to the Construction Practices Synthesis and the Instrumentation Practices Synthesis and Rodeo. It was further decided to delete the lead names form the different sections since they were not relevant any more.

Session 7 Next Meeting Tentative Dates and Preliminary Agenda

Goals – (A) focus on the Rodeo planning , (B) have a detailed technical session on strain pulse round robin
Location – Louisiana Transportation Research Center
Dates – October 16-17 or October 23-24.

ACTION ITEMS

1) Nelson Gibson:
   a) Alter annual performance plan to expand on duties for CAPT
   b) Provide more continuity and consistency for the CAPT
   c) Develop strategy for fall travel - TRB/Expedia or Experian – rules, rules, rules…
   d) Fall Invitational letter
   e) Update website
   f) Continue CAPT financials with Bill Zachaningno
   g) Gently sustained contact with CAPT members - Provide regular (bi-weekly) updates with feedback to facilitate Fall Meeting and Rodeo

2) Richard Willis
   a) Identify what members have in terms of reports or studies on the topic of unbound material properties such as stiffness, density, comparison of devices all for unbound material properties.
   b) Revised survey for construction practices synthesis and draft
   c) Revised survey for instrumentation practice synthesis and draft
   d) Organize ½ pagers on instrumentation from each designer
   e) Draft a flyer for the Rodeo for circulation to the group
   f) Collect and re-distribute blind strain pulse response round robin.

3) For each facility:
   a) Financials - Could each state characterize whether they gave $25k in a single year and which year or if they gave it or if they gave $12.5k over two years and over which years? The way NG interprets what FMIS is giving is there the group has sufficient funds for the fall meeting.
   b) Unbound Materials - Provide to RW answers in your own words. Has your facility has made comparisons between unbound soil density, moisture content and stiffness. What was the motivation for making the comparison? Has your facility made cross comparisons (correlations for lack of a better word) between different devices? What were the lessons learned or any change in your State's construction practices or new or modified specifications? For detailed follow-up – provide a report and its reference in NCHRP format.
   c) Construction - Review the minutes and be prepared to answer the other items that were identified for construction practices for NG and RW to follow – design thought processes, shortcomings between APT and real construction, eliminated construction practices, shortcomings/non-realities, construction-practice-influenced response or distresses, methods to achieve consistency.
   d) Instrumentation - Just like the unbound materials studies, if your facility has done any cross comparisons of instrumentation please provide in your own words to NG and RW. For each CAPT Facility and even those not listed in the section Unique Experience with Instrumentation Practices experiences in Appendix B, NG and RW ask you to clarify, correct and expand on your section and provide to NG and RW.
   e) Strain Pulse Round Robin - Each APT group will provide to RW a sample strain pulse file. The raw will include two columns chorological time and strain or voltage or whatever. Meta data should be included as to units (milliseconds, seconds, micro-strains, strain, volts) type of strain being measured, how many axles or wheels, etc.

4) Angel Correa and (Tom Harman) - work with Ben and provide a potential strategy for international travel coordination.

5) German Claros – What was the program Texas has for measuring tire stress distribution, which is different and not TireView?

6) Shad Sargand and German Claros – Provide a ½-page to 1-page discussion on what you would like to be addressed at an Instrumentation Rodeo between Vendors and Users regarding – moisture measurement and instrumentation including but not limited to TDR.

7) Shad Sargan - Provide a ½-page to 1-page discussion on what you would like to be addressed at an Instrumentation Rodeo between Vendors and Users regarding – strain measurements and instrumentation especially what would be desired in the next generation strain gauge.

8) Buzz Powell –
   a) Please provide support in the area of travel reimbursement with NCAT staff
   b) Provide a potential solution to advertise the Rodeo through TRB with Bouzid
   c) Provide a ½-page to 1-page discussion on what you would like to be addressed at an Instrumentation Rodeo between Vendors and Users regarding – temperature measurement and instrumentation.
   d) Provide Data Acquisition PowerPoint to NG for posting on web.

9) Imad Al Qadi – Provide a ½-page to 1-page discussion on what you would like to be addressed at an Instrumentation Rodeo between Vendors and Users regarding – how one could measure or instrument for shear strain measurement and instrumentation.

10) Ben Worel –
   a) Provide a ½-page to 1-page discussion on what you would like to be addressed at an Instrumentation Rodeo between Vendors and Users regarding – stress or pressure measurement and instrumentation.
   b) Provide Data Acquisition PowerPoint to NG for posting on web.

11) Zhong Wu – Provide a ½-page to 1-page discussion on what you would like to be addressed at an Instrumentation Rodeo between Vendors and Users regarding – instrumentation for pavement deflection at multiple layers including but not necessarily limited to MDD.

12) Zhong Wu, George Crosby, and Bill King – provide a tentative plan for hotels, meeting spaces, meals, etc for Fall CAPT meeting.

13) Andy Gisi –
   a) Provide a ½-page to 1-page discussion on what you would like to be addressed at an Instrumentation Rodeo between Vendors and Users regarding – instrumentation for pavement surface deflection measurements.
   b) Investigate alternative for travel arrangements through at KSU or KDOT or other.
   c) Assist with Rodeo advertising with NCHRP 1-40 panel.

14) Darhao Chen – Provide a ½-page to 1-page discussion on what you would like to be addressed at an Instrumentation Rodeo between Vendors and Users regarding – characterization of APT wheel loads and tire pressures along with static and dynamic.

15) Dave Jones –
   a) Provide a ½-page to 1-page discussion on what you would like to be addressed at an Instrumentation Rodeo between Vendors and Users regarding – measurement technologies for surface cracking in automated manner.
   b) Investigate alternative for travel arrangements through at UC or Cal DOT or other.

16) Xicheng Qi - Provide a ½-page to 1-page discussion on what you would like to be addressed at an Instrumentation Rodeo between Vendors and Users regarding – needs and potential solutions to measure internal cracking in pavements before the cracks appear at the surface.

17) Tom Byron – Provide Data Acquisition PowerPoint to NG for posting on web.

Appendix A – Spring 07 Attendee List

Name	E-mail	Phone#
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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 assiste with operating decisions becue the MLS device generated unwanted heat
- TDR variability
- I-buttons 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 meaningless 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 healing with surface cracks closing up
- Uses only DC instrumentation because of a lot current and noise in gate 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 healing (?)

California

- Asphalt – use MDD and digital Benkelman beam for road surface deflection
- uses a laser 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 appearst 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

Florida

- Thermocouples
- Stress cells and strain gauges – similar experience – please elaborate in your own words
- Laser profiling is custom as is homebrew analysis software allows state of the art 3D profile to be developed
- Very interesting in what to do with strain gauge measurements – interpretation – what is appropriate – depends on the question that is being answered
- 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 (?)
- Minnesota brought up a fiber optic rag sensor.

Ohio

- Similar strain gauge and stress cell issues – please elaborate in your own words
- Single depth deflectometer - feels gives better results – is this homebrew?
- Utilizes contact rutting measurements
- 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

FHWA

- Differential survey plates between asphalt and base because want asphalt layer rutting only without trenching.
- The survey plate appears to be locally influencing permanent deformation development
- Recommended to use aluminum foil between lifts to allow GPR to – what about sprinkling iron filings?
- Poor experience with TDR algorithm
- MDD compare well with differential survey plates
- 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.

Minnesota / Illinois

- TDR provides an excellent frost depth measuring device
- Observes noise in signals with little support form vendors how to solve
- California observes cell phones may cause signal issues
- Is moisture influencing cable – infiltrating and affecting signals
- Illinois/Al-Qadi is interested in dynamic horizontal strain which can be valuable
- Freezing of LVDT based equipment in unbound material can be irritating and troubling – when melts they appear to return to normal
- Moisture content is important in Minnesota because of perched water tables – understand can be critical because of the thaw in spring
- See NCAT comment on DC signals
- 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 tape 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

- Similar strain gauge experience – please elaborate in your own words
- Also like Illinois / Al-Qadi interested in shear stress with tire motion - Was brought up by Texas and California that South Africa has this measured

Louisiana

- Similar experience with Japanese strain gauge – what was that experience? please elaborate
- Noticed Geocomp pressure cell has a calibration problem – please elaborate in your own words.
- MDDs seem to be influenced by localized failure - is this an installation issue???
- Measures solar radiation because the ALF causes shading and do not use temperature control
- Interested in more advanced profiling capabilities
- Utilizes a van for cracking distress measurements

Appendix C – CAPT Pooled Fund Finical Status

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	2006		Pro Rated Staff Eng.	Fall '06 Mtg.	2006 Balance	Proj. for 2007 in 2006		FMIS Update, 2007	
	Committed	**Obligated**				**Commited**	**Obligated**	**Under Agreement**	**Interpretations**
Alabama	$12,500	$25,000	-$7,711	-$7,592	$9,697	$12,500	$0	$25,000	Obligated from '06 is set aside
Illinois	$25,000	$25,000	-$7,711	-$7,592	$9,697	$0	$0	$25,000	Obligated from '06 is set aside
Kansas	$12,500	$12,500	-$3,855	-$3,796	$4,849	$12,500	$0	$25,000	$12.5k additional from '07 set aside with that from '06
Louisiana	$12,500	$0	$0	$0	$0	$12,500	$0	x	?
Minnesota	$12,500	$0	$0	$0	$0	$12,500	$0	x	?
New York	$12,500	$12,500	-$3,855	-$3,796	$4,849	$12,500	$0	$25,000	$12.5k additional from '07 set aside with that from '06
Ohio	$12,500	$25,000	-$7,711	-$7,592	$9,697	$12,500	$0	$25,000	Obligated from '06 is set aside
Texas	$12,500	$0	$0	$0	$0	$12,500	$0	x	?
Indiana	x	x	x	x	x	x	x	$0	?
Total		**$100,000**			**$38,790**			**$86,211**	**??? Needs verification**

Staff Engineer	$30,842.50	-31%	Spring '07 Meeting Florida DOT funded from
NCAT Fall '06 M	$30,368.00	-30%	Carry over from Fall '06 + Other FHWA

Obligated is real money FHWA can write a Purchase Request and draw from
Commited is only projected or intent

Appendix D – APT Facility Current Activities

Alabama – Looking forward to NCAT Test Track results

NCAT – Construction right now, perpetual pavement and mechanistic empirical design, 45% RAP sections, evaluating air voids and loss of air voids, have been able to see top down cracking

Minnesota –Reconstruction slated for 2008, some cells in low volume road concrete and asphalt founded

Louisiana – evaluating different bases and sub bases, geogrid reinforced bases, interested in roller compacted concrete

Texas - looking for a pooled fund to participate in

New York – Partnering with Ohio, Instrumentation

Ohio – Testing warm mix asphalt from demonstration project in 2006 test section also concrete is being looked at joint spacing and influence on base performance

Kansas – Chemical stabilization of soils report coming out - fatigue type test, looking at neural network to predict soil strength. Pit section has pooled fund rutting and fatigue study

Indiana - finished ultra thin white topping,, fully booked with manhole study, State has increased allowable RAP in surface, study Looking at maintaining APT and building new pit.

California - Precast completed in reporting stage, modified binder test 18, State may be mandating fully permeable pavements in some areas for environmental reasons – this is a unique challenge, the state has developed a roadmap for California where pavement and APT has asserted itself

Florida - looking at composite pavements, fine vs. coarse and longitudinal top down cracking with aging capabilities

FHWA – completing fatigue lab and field, will be finalizing pooled fund with meeting planned for October/Nov developing work plan for accelerated aging to increase vague of unloaded polymer modified lanes

Appendix F. International Accelerated Pavement Testing Conference Pooled Fund Snapshot – do not consider as "Gospel"

TPF 5-(070)

State	Have to look at two sources	Under Agreement	Expenditure	Balance	Expend. Pre-2008 Conference	Estim. 2008 Available Funds	Estimated Number Attendees
California	FMIS	$25,000.00	-$14,057.07	$10,942.93	-$1,158.37	$9,784.56	2.0
Georgia	FMISM32A	$15,000.00	-$8,386.58	$6,613.42	-$700.07	$5,913.35	1.2
Louisiana	FMIS	$10,000.00	-$5,622.82	$4,377.18	-$463.35	$3,913.83	0.8
Minnesota	FMISM32A	$15,000.00	-$8,386.58	$6,613.42	-$700.07	$5,913.35	1.2
Ohio	FMISM32A	$5,000.00	-$2,811.41	$2,188.59	-$231.67	$1,956.92	0.4
Texas	FMISM32A	$15,000.00	-$8,386.58	$6,613.42	-$700.07	$5,913.35	1.2
Sub Total:		***$85,000.00***	***-$47,651.04***	***$37,348.96***	***-$3,953.60***	***$33,395.36***	
FHWA/Minnesota	FMISM32A	$25,000.00	$0.00	$25,000.00	-$2,646.40	$22,353.60	4.5
Combined Total		***$110,000.00***		***$62,348.96***		***$55,748.96***	11.1

Anticipated Future Expenditures		
coordination trip	$3,000.00	?
coordination trip	$3,000.00	?
Website support	$600.00	?
	$6,600.00	
	11%	