



Workshop: A to Z of Program Set Up

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Summary

- Program initiation
- Facility
- Supporting equipment
- Database
- Training
- Staffing
- Budgeting
- Project identification
- Test track construction
- HVS testing



Program Initiation

- **APT is a long-term program**
 - Cost of the machine is negligible compared to operation
- **Get involved with identifying strategic direction of road agency**
 - Research to support this strategy
 - Minimize risk/accelerate implementation of new technologies
 - APT is not fast LTPP



Program Initiation

- **Sustainable funding important, cyclical funding a challenge**
 - Key staff take time to learn/gain experience, cannot layoff and re-employ
 - Client staff move on



Facility

■ Test track or actual road?

- Advantages and disadvantages
- Test track = more construction control, higher cost
- Actual road = staffing expensive + safety issues
- Dependent on focus areas and available funds

■ Indoor /outdoor?

- Advantages and disadvantages

■ Nice to haves:

- Two or more independent tracks
- “Tub” to control subgrade conditions

■ Supporting infrastructure

- Control room
- Tool/store room
- Workshop
- Tire and oil store
- Offices for project engineers



Overview – Major Milestones



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Facility

■ Power

- HVS
- Heaters/coolers
- Instrumentation
- Control room

■ Water

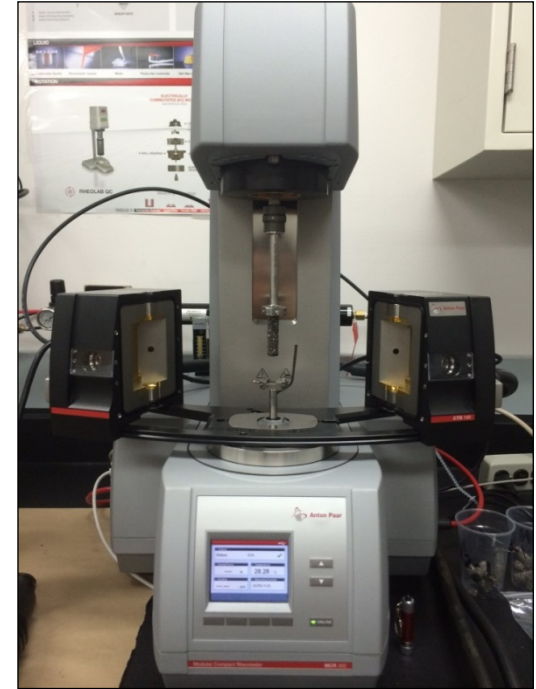
- Construction
- Environmental control

■ Storage for materials

- Construction and testing

■ Laboratory

- Test whatever materials will be tested on test track
- Allow for laboratory expansion
- Get certified (e.g., AMRL [expensive/time intensive])



Supporting Equipment

- **Dependent on facility and research goals**

- **Examples**

- FWD
- GPR
- Nuclear gauge
- Core rig and saw
- Forensic investigation equipment
- Backup generator
- WIM



Database

- **Data is most important deliverable**
- **Project reports are just one time interpretation of the data**
- **Data in format that can be used after project is complete**
 - Reanalysis using different methods/supporting testing
 - Calibration of ME models
 - Sensitivity analyses for other investigations
- **Include construction data, lab test results, forensic investigation, etc.**
- **Update and backup**
 - Test access

Training

- **A long term vision requires:**
 - Continuity of staffing
 - Buy-in to the vision
- **APT involves a lot of skills**
 - Pavement knowledge
 - Mechanical
 - Data acquisition
 - Data analysis
- **Ensure continuity of knowledge**

Facility Manual

- **A to Z of HVS testing operations**
- **Write like a laboratory certification**
- **Clear line of responsibility**
 - Test track access/activity
- **Include forensic evaluation procedure**
- **Update regularly**
- **All individuals involved in program need to read it**
 - Including students

Staffing

- **Dependent on facility**
- **UCPRC maintains 24 hour staffing**
 - Previously Dynatest subcontract due to offsite testing
 - Could not justify because most testing at UCD
 - Switched to UCD staff (2) + students (20)
- **Day staff (measurements and maintenance)**
- **Night shifts – student supervision (stop button)**
- **Project engineer(s) – might be PhD student (under guidance)**

Project Identification

- **Plan ahead**
 - Be prepared for “emergency testing” (e.g., Bay Bridge)
- **Appoint project engineer (read the manual) and client project manager**
 - Set up communications matrix
- **Set clear objectives**
- **Agree with client, don’t allow scope creep**
- **Output should be something implementable**
 - Guideline, specification language, design criteria, software, etc.
 - Detailed report to back up recommendations (nobody will read it)

Project Identification

- **Study should be in phases**
 - Literature
 - Modelling/sensitivity analysis
 - Lab testing
 - ALT if justified
 - LTPP
- **Pavement/section design**
 - Minimize variables
- **Order instruments/equipment well ahead of time**
- **Identify contractor**
 - Beware appointment/sole source issues
 - Discuss design/construction well ahead of time
- **Identify all stakeholders**
 - Industry associations
 - Contractors
 - Materials suppliers
 - Instrument manufacturers, etc.

Budgeting

- **Facility dependent**
- **Staffing – crew plus project engineer(s)**
- **Construction (industry involvement/cost sharing)**
- **HVS operation (electricity, diesel, spares, upgrades, etc.)**
 - UCPRC actual operation cost relatively low
- **Instrumentation**
- **DAQ and DAQ updates**
- **HVS maintenance and repairs**
- **Lab testing**
- **Associated field work**

Construction

- **Test track plan**
 - Instruments, DAQ, etc.
- **Be flexible on dates**
- **Pre-construction meetings**
 - Contractor
 - Stakeholders
 - Information sheet
- **Develop construction schedule**
 - Work with contractor
 - Build in contingency time
 - Know how long it takes for every task (density, sampling, instrumentation)

Construction

- **Develop responsibility matrix**
 - Make sure everybody knows what they should be doing on the day
 - One person makes decisions
- **Have enough resources to accomplish all duties**
- **Practice instrument installation before hand**
- **Monitor/document everything**
 - Take photographs with time stamp
 - May need to explain why section behaved the way that it did
- **Manage observers**
 - Set out a viewing area

HVS Testing

- **Develop comprehensive standard format test plan for operators**
 - Consider the full study, not section by section (performance comparisons)
 - Reissue as necessary, but think before changing
 - Use as checklist – operator signs off each task
- **Measurements**
 - Data is most important output
 - Have data check system
 - Operator first level – compare to previous day. Repeat if necessary
 - Project engineer – daily plots to check for problems
 - Database manager

Thank-you

