Draft Minutes
March 29, 2006

By:

Jorge E. Pagán-Ortiz

AASHTO TECHNICAL COMMITTEE ON HYDROLOGY AND HYDRAULICS MEETING
October 25- October 27, 2005
Sioux Falls, South Dakota
AGENDA

Tuesday October 25, 2005

8:00 am – 8:15 am	Dave Henderson – Call Task Force Meeting to Order, Housekeeping and Introductions
8:15 am – 8:30 am	Welcome – Richard Phillips, SDDOT
8:30 am – 9:30 am	Jorge Pagan – FHWA Perspective
9:30 am – 10:00 am	Tim Hess – NCHRP Update
10:00 am – 10:15am	Break
10:15 am – 11:00 am	NCHRP Proposals & Priorities
11:00 am – 11:45 am	Open Discussion, AASHTO Final HDG Review & MDM activities
11:45 pm – 1:00 pm	Lunch
1:00 pm – 2:00 pm	Technical Presentation, USGS EROS Center
2:00 pm – 2:30 pm	Norm Schips – MDM Chapter 1, Introduction
2:30 pm – 3:00 pm	Jim Richardson – MDM Chapter 2, Legal
3:00 pm – 3:15 pm	Break
3:15 pm – 3:30 pm	Norm Schips – MDM Chapter 3, Policy
3:30 pm – 4:00 pm	Glenn Decou – MDM Chapter 4, Documentation
4:00 pm – 4:30 pm	Mike Fazio – MDM Chapter 5, Planning & Location
4:30 pm – 5:00 pm	Lotwick Reese – MDM Chapter 6, Data Collection

Wednesday October 26, 2005

8:00 am – 8:30 am	Brooks Booher – MDM Chapter 8, Channels
8:30 am – 9:00 am	Te Ngo – MDM Chapter 9, Culverts
9:00 am – 9:30 am	Roy Mills – MDM Chapter 10, Bridges
9:30 am –10:00am	Richard Phillips – MDM Chapter 11, Energy Dissipators
10:00 am – 10:15 am	Break
10:15 am – 10:45 am	Merril Dougherty – MDM Chapter 12, Storage Facilities
10:45 am – 11:15 am	Bill Bailey – MDM Chapter 13, Storm Drainage Systems
11:15 am – 12:00 pm	Dan Ghere – MDM Chapter 14, Pump Stations
12:00 pm –1:00 pm	Lunch
1:00 pm – 1:45 pm	Mark Miles – MDM Chapter 15, Surface Waters
1:45 pm – 2:15 pm	Dave Henderson – MDM Chapter 16, Erosion & Sediment Control
2:15 pm – 3:00 pm	Karuna Pujara – MDM Chapter 17, Bank Protection
3:00 pm – 3:15 pm	Break
3:15 pm – 4:00 pm	Rick Renna – MDM Chapter 18, Coastal Zone
4:00 pm – 4:30 pm	Mike Fazio – MDM Chapter 19, Construction
4:30 pm – 5:00 pm	Kelley Rehm, AASHTO Update

Thursday October 27, 2005

8:00 am – 8:30 am	New Assignment – MDM Chapter 20, Maintenance
8:30 am – 9:30 am	TBD – Chapter 21 Wetlands
9:30 am – 10:00 am	Karuna Pujara – MDM Chapter 22, Ground water
10:00 am – 10:15 am	Break
10:15 am – 10:45 am	Technical Committee Business Session
10:45 am – 12:00 pm	Concerns of the States
12:00 pm	Dave Henderson – Adjourn Technical Committee

TECHNICAL COMMITTEE MEMBERS	STATE	JOINED	REGION
Bill Bailey	Wyoming	1994	4 (absent)
Brooks Booher	Arkansas	2002	2
Glenn DeCou	California	1994	4 (absent)
Merril Dougherty	Indiana	1994	3
Hani Farghaly	Ontario	2004	3 (absent)
Mike Fazio	Utah	2001	4
Preston Helms	South Carolina	2001	2 (absent)
Dave Henderson, Chair	North Carolina	2000	2
Andrea Hendrickson	Minnesota	2005	3
Rae Van Hoven	New Mexico	2004	4 (absent)
Mark Miles, Vice Chair	Alaska	2000	4
Roy Mills	Virginia	1999	2
Te Ngo	Oklahoma	1991	4
Matt O'Connor/Bob Dawe	Illinois	2001	3
Jorge Pagán-Ortiz, FHWA/Secretary	Wash., D.C.	2003	1
Karuna Pujara	Maryland	2005	1
Richard. Phillips	South Dakota	2002	4
Lotwick Reese	Idaho	1996	4
Rick Renna	Florida	2001	2
J. Richardson	Kansas	1996	3 (absent)
N. Schips	New York	2002	1 (absent)
Duc minh Tran	Quebec	1999	1 (absent)

WELCOME AND INTRODUCTION:

1. Chairman Dave Henderson welcomed members and friends of the AASHTO Technical Committee on Hydrology and Hydraulics (TCHH) to the Fall 2005 meeting and thanked Richard Phillips for arranging this meeting in Sioux Falls, SD. Chairman Henderson highlighted the fact that this was our meeting number 69.
2. Richard Phillips welcomed the group and highlighted that Sioux Falls got its name for the falls in the city and that if there was anyone interested in visiting the falls he could arrange for a Wednesday evening visit. Also, he highlighted that Sioux Falls is about 75 miles of Sioux City where the I-70 bridge failure occurred and that Sioux Falls built flood controls (levees) for the Big Sioux River in the 1950-60's. He informed the TCHH that we will have a technical presentation by Bruce Worstell, of the Center for Earth Resources Observation and Science (EROS), USGS Data Center, which is located about 25 miles from Sioux Falls. He asked the group about the hotel facilities and received a favorable response from the group. He responded to a question from Chairman Henderson regarding to where does the White River drains – it drains into the Missouri River.
3. Chairman Henderson reported that the new AASHTO representative, Ms. Kelley Rehm, will join the technical committee meeting in the afternoon of Tuesday, October 25th. He informed the committee members that Ms. Karuna Pujara has been confirmed as an official member of the committee and that hopefully we will hear soon about the status of Ms. Andrea Hendricks.

FHWA PERSPECTIVES:

4. Jorge E. Pagán-Ortiz presented an overview of the FHWA's National Hydraulics Program and activities:
   a. New Legislation -- SAFETEA-LU -- The Safe, Accountable, Flexible, Efficient Efficient Transportation Equity Act: A Legacy for Users
      1. Provides $201.621 Billion in Federal-aid Highway Authorizations for FYs 2005-2009
         a. 20 Percent funding increase over TEA-21.
         b. 14.8 Billion for over 6,000 "High Priority Projects" (earmark).
         c. 16 Percent short because more projects were approved that money allocated.
         d. $21.6 Billion for the Highway Bridge Program -- keep in mind that these funds have not been appropriated, yet!!!
   b. Section 1114 of SAFETEA-LU -- Highway Bridge Program
      1. Allows bridge owners to use Federal-aid funds for countermeasures used to address the potential or observed scour condition at the bridge foundation without regard to whether the bridge is eligible for replacement or rehabilitation. This means that while FHWA will continue to encourage bridge owners to be consistent in coding Items 60 (Substructures) and 113 (Scour Critical), a bridge coded 1-3 for Item 113 is eligible for Federal-aid funds for scour countermeasures for systematic preventive maintenance – estimated scour condition (code 3) and for installation of scour countermeasures – observed scour condition (codes 1 and 2).
   c. Emphasis of the FHWA National Hydraulics Program Continues to be on:
      1. Conduct of Research -- (FHWA Hydraulics Lab, NCHRP, State DOTs, Universities).
      2. Develop/Update Policy and Guidance
      3. Continue to Provide technical assistance, Deploy technology, and Develop/Update/Provide training.
   d. Focus of the Program includes:
      1. Expand, implement, disseminate and promote guidance for developing a plan of action for each scour critical bridge.
      2. Develop, implement, disseminate and promote guidance for managing bridges with unknown foundations.
      3. Continue monitoring the State DOTs' progress towards reducing the number of scour

vulnerable bridges.

4. Refine draft policy and guidance for designing bridges in the coastal environment through research, workshops and input from the hydraulics and coastal engineering community.
5. Continue developing state-of-the practice culvert and bridge hydraulics software.

e. Functional Areas

1. Scour Technology, Bridge Hydraulics, Culvert Hydraulics, Highway Drainage, Hydrology, Environmental Hydraulics
   a. Scour Technology
      1. First Edition of HEC-25 (completed) – It is currently available on the FHWA's Hydraulics web site and will be distributed to State DOTs on CD's.
      2. Second Edition of HEC-25 (ongoing) -- Contractor is University of South Alabama (Dr. Scott Douglass). NHI Course is being developed parallel to second edition of HEC-25. Joe Krolak, Senior Hydraulics Engineer, FHWA Office of Bridge Technology, is leading this Task.
      3. HECs 18, 20 updates (delayed) until FYs '08 and '09)
      4. HEC 23 Update (FY 07)
      5. Rapid Stream Stability Assessment (research completed) -- Report reviewed by FHWA National Hydraulics Team –ready for distribution and posting in Hydraulics web site.
      6. Abutment Scour Databa -- Being maintained by the USGS (Stephen Benedict).
      7. Scour and Protection of Bottomless Culverts Phase II
         a. Research conducted for MDSHA -- Just about finished!!!
      8. Particle Image Velocimeter Pressure Flow Scour Study (FY '06)
         a. Task order proposal request has been prepared
         b. Completion expected in FY '07.
      9. Select Exposed Foundation Scour Test (FY '06)
         a. Testing the effect of having a footing below streambed.
         b. Research to be conducted at FHWA hydraulics lab and at the University of New Zealand (Max Sheppard).
      10. Wave Load Synthesis Study (FY '06)
         a. Research to be conducted at the University of South Alabama (Scott Douglas) and TFHRC Hydraulics Lab.
         b. Expected results include a summary of literature review and wave force equations, laboratory testing to determine wave forces order of magnitude and a geotechnical analysis of wave forces to determine if these forces would jeopardize the stability of bridge foundations.
         c. Technical Support on Katrina (Ongoing task order contract)
   b. Bridge Hydraulics
      1. Module on Plan of Action for Scour Critical Bridges
         a. Contactor is Ayres Associates.
         a. Outline developed.
         b. Draft POA Template under review by FHWA.
         c. Cynthia Nurmi, Hydraulics Engineer, FHWA Resource Center, is leading this Task.
      2. Unknown Foundation Summit
         a. Khamis Haramy, Geophysics, FHWA Central Federal Lands. , is leading this Task.
         b. Scheduled for November 15-16, 2005 in Lakewood, CO.
         c. Program finalized – includes participation from FHWA, Industry and State DOTs.
         d. Over 77 people registered so far (as of 10/24/05).

3. Unknown Foundation Synthesis
    a. Contractor selected – Scott Sabol, Associate Professor, Vermont Tech.
    b. Cynthia Nurmi, Hydraulics Engineer, FHWA Resource Center is leading this task.
4. HEC-9 Update
    a. Finally completed!!!
    b. Working on HTML conversion -- should be posted on FHWA's website soon.
5. Develop new algorithms for FST2DH (ongoing)
    a. Dr. Larry Arneson, Principal Bridge Engineer – Hydraulics, FHWA Resource Center, is leading this Task.
6. New HDS-7 on Hydraulics of Bridge Waterways (FY '06)

c. Culvert Hydraulics
1. HEC-14 Update (ongoing)
    a. Contractor is Kilgore Consulting and Management.
    b. Draft being reviewed by FHWA.
    c. Cynthia Nurmi, Hydraulics Engineer, FHWA Resource Center, is leading this Task.
2. Develop HY8 Graphical User Interface (ongoing)
    a. Contract awarded to EMSI.
3. HDS-5 Update (FY '07)
4. South Dakota Culvert Study Effects on Inlet Geometry (research completed)
    a. Report being reviewed -- added example problem as an appendix.

d. Highway Drainage
1. Develop new FHWA Storm Drain Software (FY '07)
2. Develop new algorithms for WMS (FY '06)
3. HEC-22 Update (FY '08)
4. Particle Image Velocimeter Junction Loss Study
    a. Ongoing research – expected completion in Spring '06.

e. Hydrology
1. Univ. of South Alabama-Coastal Transportation Research Center (Task Order Contract -- ongoing research)
    a. Coastal hydrology, storm surge high, water quality.
2. Pooled-Fund studies to upgrade rainfall maps
    a. Announcement has been posted at the Texas Transportation Institute who send it out to all states research engineers.
    b. Could be a regional pooled-fund or national pooled-fund depending on number of states participating.
    c. Decision to start this project will be made this year.

f. Environmental Hydraulics
1. HEC-15 Updates (ongoing)
    a. Completed!!!
    b. Working on the HTML conversion.
    c. Dan Ghere, Hydraulics Engineer, FHWA Resource Center, lead this Task.
2. HEC-26 on Fish Passage (ongoing)
    a. Contractor is Dr. Rollin Hotchkiss (now with BYU).
    b. Bart Bergendahl, Senior Hydraulics Engineer, FHWA Central Federal Lands, is leading this Task.
3. HEC-11 Updates (FY '06)

f. Hydraulics Engineering Website
1. One FHWA Website in Hydraulics Engineering -- www.fhwa.dot.gov/engineering/hydraulics.
2. Serves as our "Community of Practice".

3. Structured by the "Functional Areas" previously presented and Resources
4. Identifies FHWA contacts by Functional Area
5. Please visit it . . . and . . . your input is welcomed!
    a. Contacts:
        1. Dr. Eric Brown, Hydraulics Engineer, FHWA Resource Center (currently in Lakewood, CO; reporting to Baltimore, MD in May 31, 2005).
        2. Ms. Michelle Cribbs, Highway Engineer, FHWA Office of Bridge Technology, Washington, D.C.

g. NHI Training Courses
    1. 13 active courses
        a. 135027 River Engineering for Highway Encroachments
        b. 135027 Urban Drainage Design\
        c. 135028 Stormwater Pump Station Design
        d. 135041 HEC-RAS, River Analysis System
        e. 135046 Stream Stability and Scour at Highway Bridges
        f. 135047 Stream Stability and Scour at Highway Bridges for Bridge Inspectors
        g. 135048 Countermeasure Design for Bridge Scour and Stream Instability
        h. 135056 Culvert Design
        i. 135065 Introduction to Highway Hydraulics
        j. 135067 Practical Highway Hydrology
        k. 135071 Surface Water Modeling System with Flo2DH and SMS
        l. 135080 Hydrologic Analysis and Modeling with WMS
        m. 135081 Introduction to Highway Hydraulics Software
h. NHI Courses to be Developed
    1. 135082, Tidal Hydrology, Hydraulics and Scour at Bridges (ongoing)
        a. Kilgore Consultant Management.
        b. Expected to be completed in FY '07.
        c. Joe Krolak, Senior Hydraulics Engineer, FHWA Office of Bridge Technology is leading this Task.
    2. 135083, Tidal Hydrology and Hydraulics Modeling (FY '07)
    3. 135084, Sediment Transport (FY '07)
i. National Bridge Scour Evaluation Program
    1. Evaluations Completed: Over 344,000
    2. Scour Critical bridges: Over 26,000
    3. Unknown Foundations: About 86,000
        a. Includes 161 interstate bridges.
    4. Tidal Bridges: Over 900
        a. Includes 91 interstate bridges.
    5. Scour Susceptible: Over 26,000
j. Impact of Updated Regulation on the Program
    1. Updated Regulation, 23 CFR 650.313.e.3, requires bridge owners to develop a Plan of Action for each bridge identified as scour critical bridge during the national bridge scour evaluation program.
        a. Rule effective on January 13, 2005.
        b. Target date for compliance with the updated rule (i.e., POAs developed and implemented) is January 13, 2006.
k. Hydraulics Process Reviews
    1. Re-established in the FHWA National Hydraulics Program
        a. Drainage Reviews" conducted for many years.
        b. Useful interaction between FHWA/State DOTs.

   c. Helped identify needs (research, technology and training).
2. Tied to FHWA's Bridge Program strategic plan
3. FHWA will welcome State DOTs requests through FHWA Divisions

l. Focus States
   1. Identified by HIBT (Office of Bridge Technology) as states that FHWA will work with to reduce percent of scour vulnerable bridges during Calendar Year '06
      a. These states have been working diligently towards completing their bridge scour evaluations and/or are actively working towards developing and implementing Plan of Actions (POAs) to reduce the number of scour critical bridges.

m. Conferences
   1. Unknown Foundations Symposium
      a. Targeting diverse disciplines: structures, hydraulics, geotechnical, geophysics, maintenance.
      b. November 15-16, 2005; Lakewood, Colorado
   2. Wave Load Impact Workshop
      a. First week of December 2005.
      b. Kornel Kerenyi is leading this Task.
      c. Ongoing efforts in Florida, FHWA, Others.
   3. National Hydraulics Engineering Conference
      a. San Diego, California; Spring 2006.

n. FHWA National Hydraulics Team
   1. Headquarters:
      a. Jorge E. Pagán-Ortiz, Sterling Jones, Joe Krolak, Kornel Kerenyi, Larry Jones (NHI)
   2. Resource Center:
      a. Peter Osborn, Dr. Larry Arneson, Cynthia Nurmi, Dan Ghere, Dr. Eric Brown, Veronica Ghelardi
   3. Federal Lands Highway Program:
      a. Bart Bergendahl, Brian Beucler, Abbi Ginsberg, Dave Dajc, Peter Sletten, Dr. Thiet Nguyen, Dr. Mark Browning, Sven Leon
   4. Division Office:
      a. Steve Toillion, Kansas

NCHRP UPDATE:

5. Tim Hess, NCHRP Program Officer who handles hydraulics, geotechnical and construction engineering, provided an update of NCHRP project activities related to hydraulics (**bolded** material below has been updated; other has been provided at earlier meetings):
   a. Background - TRB is a unit of the National Academy of Sciences, which is the operating arm for the National Academies. TRB has 5 Divisions. The two divisions of most interest to the technical committee are Division A Technical Activities and Division D Cooperative Research Council. NCHRP started in 1962 and the Transit CRP started in 1992. NCHRP has 13 FTEs that administers 160 active panels with 1100 panel members. The CRP homepage is trb.org.
   b. Financial support is from State DOTs, which provide a 5.5% contribution from their State Planning and Research Federal-aid funds. The contribution is voluntary and comes through FHWA. The funding was $3.5M in 1968, $8.5M in 1991, $15.3M in 1992 and $17.7M in 1997. TEA21 increased funding to $31 in 2004, **and SAFETEA-LU should increase it to approximately 36M.**
   c. Division B synthesis projects are provided funds by SCOR through project 20-5 which is managed by Jon Williams (JWilliams@nas.edu).
   d. Problem Statements - Ideas come from States, AASHTO and FHWA.

e. TRB committees can submit statements through AASHTO subcommittees.
f. Problem statements **for FY 2007** must be submitted by September **15**, 2005 in order to be considered at the **March 31, 2006 Standing Committee on Research meeting**. Both Research Advisory Committee and SCOR rank projects and then a combined ranking is prepared. **The AASHTO TC on Hydrology and Hydraulics can still submit problem statements until November 1, 2005.**
g. NCHRP solicitation for panel members -- May 31, **2006** is the deadline for submitting panel members. **Chairman Henderson encouraged the TCHH members to step up and volunteer to participate in NHCRP panels.**
h. Most awards go to consultants or universities. About 90% of projects are published.
i. Problem statements should be submitted via e-mail to **nchrp@nas.edu**.
j. Tim Hess manages the NCHRP project activities in the areas of Hydraulics, Geotechnical and Structures. Also, he advised that NCHRP panels are comprised by representatives from State DOTs, FHWA, other Federal Agencies (such as the USGS), consultants and the academia.
k. Tim Hess provided a handout with the status of NCHRP projects. **Tim Hess agreed to e-mail his handout to the TCHH members as requested by Chairman Henderson.**
l. NCHRP Project Status Reports for Hydrology and Hydraulics -- current status can be found at **http://www4.trb.org/trb/crp.nsf/NCHRP+projects**. **Reports are free for FHWA and DOTs won't get charged for reports.**
   1. 21-5(2), Unknown Foundation Instrumentation - research has stopped, final report is complete and will not be printed. Report will be made available as an agency report.
   2. 24-7(2), Pier Scour Countermeasures - $450k Ayres Associates will include partnering with states for field verification. Phase 1 report is available for loan. Phase 2 guidelines started 4/01 for 3 years to 10/2004. Panel requested and got approval for $350k for continuation of this project. Estimate completion 10/05. **Report is due in 06/06.**
   3. 24-14, Scour at Contracted Bridge Sites - $500k Art Parola/Dave Mueller - interim report, complete June 2003. USGS is matching with $500k. Final report submitted in 6/2004. **Final report available from NCHRP (Web Doc 83).**
   4. 24-15, Bridge Scour in Cohesive Materials - $350k TX A&M. The project is completed and final report is available from NCHRP (**Report 516**). The panel received $400k in continuation of funds, **NCHRP 24-15(2)**, to study abutment scour in cohesive soils. **Completion expected in 06/07.**
   5. 24-16, Channel Migration - $550k Ayres, Pete Lagasse. Project completed. Final report available from NCHRP **(Report 533, Web Doc 67, CD-48 and CD-49).**
   6. 25-12, Wet Detention Pond Research - $580k by David Young of WSU. Final report will not be published. **The unedited final report is available for loan by contacting NCHRP at NCHRP@nas.edu.**
   7. 21-07, Development of Portable Scour Monitoring Equipment - $300k Ayres, Jim Schall, started 4/00 and is complete. Final report is available from NCHRP (Report 515).
   8. 24-8, Scour at Bridge Foundations Research Needs - FY 98 -- three projects were funded from list: 24-14, 24-15 and 24-16. No projects funded in FY 99 or 2000, and 2 in FY 2001, 1 in FY 2002, 2 in 2003, and 1 in 2004.
   9. 15-23, Technical support for MDM and HDG - $283k, $79k added in FY 2003. Project is completed.
   10. 24-18, Countermeasures to Protect Bridge Abutments - #12 on 24-8, $500k, Brian Barkdoll, Michigan Tech University, August 2003. Estimated completion is **03/2006.**
   11. 24-19, Environmentally Sensitive (Non-structural) Channel & Bank Protection - $350k, John McCullah, Redding, CA -- awarded 6/2001. Project completed. F**inal report available (NCHRP 544).**
   12. 24-20, Prediction of Scour at Bridge Abutments - $500k, contract awarded 4/2002 to Robert

Ettama, University of Iowa. **$200k added**. Project is limited to sand material **and unprotected abutments. Effect of overtopping is being considered. Expected completion is 04/2007.**

13. 20-07(146), Development of Software Verification Protocol for the Hydrologic and Hydraulic Models **for Highway Planning and Design** - $100k, panel members are: Saeed (chair), Barry, Te, Mark, Bill and Joe Krolak. Awarded to Univ. of SC for $100k. **Project almost completed.**
14. 15-24, Hydraulic Loss Coefficients for Culverts (FY 2003) - $325K project awarded to Utah State University. Added $500k and its completion is expected in 2007.
15. 24-23, Riprap Design Criteria, Specifications, and Quality Control (FY 2003) - $350k project awarded to Ayres Associates. **Completion expected on 03/2006.**
16. 24-24, Criteria for Selecting Hydraulic Models (1D/2D) (FY 2004) - $175K project awarded to Ocean Engineering Associates (Dr. Max Sheppard). **Completion expected on 06/2006.**
17. 24-25, Risk-based Guidelines for Determining the Need for Investigation of Unknown Bridge Foundations (FY 2004) -- $200K project awarded to GKY & Associates. **Completion expected on 06/06.**
18. 24-26, Effects of Debris on Bridge-Pier Scour (FY 2004). Funding increased from $300k to $600k to cover for research test at laboratory and report. Project started in 06/2004. **Completion expected on 10/2007.**
19. 20-07-(162), Synthesis-of-Practice: Correlation of Bench-Scale and Large-Scale Testing on Rolled Erosion Control Products. Awarded to CSU, $50k. Project to be completed in Spring 2005. TCHH needs to decide what to do with this project. Revised final report being reviewed by the panel – please let Tim Hess know if anybody is interested in the report.
20. 20-07(178), Evaluation and Update of NCHRP 24-08: Scour at Bridge Foundations-Research Needs Study. Ayres Associates, 25k – this project will help to update 24-08:
    - 24-08 -- the contractor compiled scour research from all over the World. The contractor identified 39 problem statements, which were then prioritized. Priorities have been pretty much followed during the last several years to conduct research on stream stability and scour at highway bridges.
    - 20-07(178) will consist on assessing the current knowledge in the areas of stream stability and scour technology through the conduct of a literature review, identify gaps in these areas, assess where research has taken us this far. An expert panel will be assembled to work in this scope. Funds approved for Phase I were $25K.
21. 24-27, **Evaluation of Bridge-Scour Research. Project funded for 2005 at $350k.** A panel of experts will be selected to identify needs to fill the gaps and advance current technology on stream stability and scour, and make recommendations to AASHTO Technical Committee on Hydrology and Hydraulics. Panel met **and proposals were received and evaluated, but no selection was made – project has been broken into 3 parts – abutments, piers and geomorphology. NCHRP will be re-advertising on a limited solicitation basis. Coastal engineering has been separated from this project and expanded because will be using University of South Alabama earmark funds.**
22. **24-29, Scour at Bridge Foundations on Rock. Project funded for $750k. Proposals are due on 11/15/05.**
23. **15-36, Estimating Joint Probabilities of Design Coincident Flows at Stream Confluences. Project funded for $$400k – it is the first hydrology project funded. Will Thomas is the chair. Proposals due on November 1, 2005.**
24. **36-02 Synthesis, Practices for Monitoring Scour Critical Bridges, $30k awarded to Hardesty and Hanover. Completion expected in Spring 2006.**
25. **25-25(8), Developing performance data collection protocol for stream restoration, $50k awarded to GKY and Associates.**

26. 25-9(1), Environmental Impact of Construction and Repair Materials on Surface and Ground Waters – Outreach and Training, $100k awarded to Oregon State University. Completion expected on Fall 2005.

PRESENTATION BY USGS ON TOPOGRAPHIC SCIENCE PROGRAM:

6. Mr. Bruce Worstell, of SAIC, a contractor firm for the USGS' Center for Earth Resources Observation and Science (EROS) made a presentation on the Topographic Science Program. EROS has been in Sioux Falls since 1971.
   a. EROS products and services include cartographic product holdings (digital line graphs, digital elevation models, digital raster graphics and digital orthophoto quads) and aerial photography products. Applications of these products and services include fire danger monitoring and forecasting, post fire mapping, and fire fuels assessment and analysis. Also, EROS satellite imagery products could be used for predicting future scenarios caused by flooding. Satellite imagery was used on the Northeast South Dakota Flood Project to understand inundation and lake levels .
   b. Multi-Resolution Land Characteristic Consortium – funds two tasks: acquire L-7 imagery for the U.S. and develop a national land cover database.
   c. EROS Topographic activities – national elevation dataset development for multi-resolution and high resolution.
   d. Elevation Derivatives for National Applications--it is an elevation derivative database, which could be useful for environmental and hydrologic modelers who need to characterize landscape and drainage processes. It provides flexibility to delineate watersheds above any location in the U.S. It has been used for estimating average annual streamflows and power potential for the conterminous U.S., Alaska and Hawaii and as a watershed tool for Lake Michigan monitoring and assessment.
   e. Future Activities – develop 10-m resolution where available, improve capabilities for accommodating multi-resolution EDNA so that 30m and 10m can coexist, drainage line enforcement (10m resolution) for navigation flow in low relief areas, and develop additional flow accumulated layers.

INTERACTION BETWEEN ASSHTO TCHH AND TRB COMMITTEE AFB60:

7. Chairman Henderson led a discussion on this subject
8. The TCHH needs to assign a liaison for the TRB Committee AFB60 on Hydrology, Hydraulics and Water Quality. Both, the AASHTO TCHH and the TRB Committee AFB60 need to meet periodically (twice a year) face to face to discuss issues on projects that each committee is working on.

OPEN DISCUSSION:

9. Rick Renna is working with the University of South Alabama on the subject of isolated hurricane rainfall, which is quite different in time distribution. He informed the committee that there is a prediction model developed at the University of Miami. Rick encouraged anyone interested in this topic to contact him.
10. Final review of the AASHTO Highway Drainage Manual has to be done before it goes to print before December 23, 2005 – HDG needs to be reviewed within 30 days and Chairman Henderson asked each chapter chair to complete their chapter review without involving other committee members. Chair Henderson passed around copies of the HDG chapters to chairs for their review and advised chapter chairs not to be critical on their review unless there is something really critical.
11. Big revisions to the Level 1 and Level 2 manuals should be distributed quickly to committee members

to give them a chance to read.

12. An asterisk should be placed next to action items or move action items to a special section of the minutes.
13. E-mails should be sent out to remind chapter chairs to send their corresponding chapters out for review.
14. Rick Renna advised that the coastal chapter is a totally different chapter than the bridge chapter.
15. The October 26, 2005, conference call worked out very well. A member of the committee asked if we could use conference calls when one cannot make it to a TCHH meeting. The problem with this is that the re has to be a control (quite) room, and have one person speaking at a time.
16. One of the comments made by AASHTO was why can't technical committees do business via teleconference – the answer was that there is a need to do face to face meetings.
17. Assignment of Chapter chairs for HDG is presented in the following table:

HDG

Chapter	Title	Chapter Chair
1	Planning	Fazio
2	Hydrology	Van Hoven
3	Erosion	Henderson
4	Culverts	Ngo
5	Legal	Richardson
6	Channels	Booher
7	Bridges	Mills
8	Restoration	Fazio
9	Storm Drains	Bailey
10	Environmental	Miles
11	Coastal	Renna
12	Stormwater	Dougherty
13	Training	Phillips
14	Culvert Materials	DeCou
15	Consultants	Pujara
	Glossary	Schips

18. Assignment of chapter chairs and team members for the Policy (Level 1)/Procedures (Level II) Manuals is presented in the following table:

Policy (Level I)/Procedures (Level II) Manuals

Chapter	Title	Chapter Chair	Team Members		
1	Introduction	Schips	Henderson	Mills	Booher
2	Legal	Richardson	Schips	Miles	Ghere
3					
4	Documentation	DeCou	Bailey	Fazio	Mills
5	Planning	Fazio	Richardson	Tran	O'Connor
6	Data Collection	Reese	Hendrickson	Helms	Pagan
7	Hydrology	Van Hoven	Fazio	Krolak	Bailey
8	Channels	Booher	Arneson	Nurmi	Farghaly
9	Culverts	Ngo	Phillips	O'Connor	Miles
10	Bridge	Mills	Arneson	Phillips	Pagan
11	Energy	Phillips	Ngo	Helms	Ronnfeldt

12	Storage	Dougherty	Bailey	Henderson	Hendrickson
13	Storm Drains	Bailey	Reese	Dougherty	Kerenyi
14	Pump Station	Ghere	DeCou	Reese	Bergendahl
15	Environment	Miles	Henderson	Renna	Pujara
16	Erosion and Sediment	Henderson	Dougherty	Van Hoven	Pujara
17	Channel Bank Protection	Pujara	Bergendahl	Farghaly	Booher
18	Coastal Zone	Renna	Henderson	Miles	Krolak
19	Construction	O'Connor	Ngo	Richardson	Ronnfeldt
20	Maintenance	Henderson	Booher	O'Connor	Dougherty
21	Wetlands	Hendrickson	Bailey	Nurmi	Henderson
22	Groundwater	Pujara	Renna	Miles	Fazio

19. Rick Renna led a discussion pertaining to pipe selection and the recent federal policy on competition for culverts. Te Ngo stated that it is up to the State highway Department to come up with the condition and the engineer with the type of material. Mike Fazio indicated that there is a need to provide guidelines as of the service life of a culvert. They are currently going through expensive procedures for replacing culverts. Rick Renna stated that under the procedures manual, the TCHH could provide guidance based on experience and that the policy will be based on the FHWA memorandum on culvert materials. Bart Bergendahl inquired about any models available that would aid to predict if coating added to culverts would add service life to culverts. He suggested that this could be a good NCHRP research topic. Chairman Henderson said that the industry is bypassing the hydrology and hydraulics sections in North Carolina and they are lobbying upper management to allow all types of culvert materials. Rick Renna stated that it seems like vendors are not doing research on their products. Jorge Pagan stated that the policy manual should have a statement about the need to consider various culvert materials on Federal-aid highway projects. The procedure/guidance manual should have a statement that support the use of specific types of culvert materials based on research and environmental considerations of the site. Kelly suggested the TCHH to consider a 20-07 synthesis project on this topic – this will help the TCHH in determining what direction we should go with regards to culvert materials – need to come up with the synthesis by March 2006. Mike Fazio, Rick Renna and Karuna Pujara agreed to work on this synthesis. Andrea Hendricks, and chairman Henderson will be assisting them. The objective of the synthesis is to gather information on the state-of-the-art on culvert materials to assist the AASHTO TCHH on what direction it should go for recommending policy and procedures.

AASHTO UPDATE:

20. Kelley Rehm is our new AASHTO representative. She stated that printing our publications is taking longer than anticipated because AASHTO is currently working on the LRFD specifications and due to last minute problems with figures. She indicated that issues pertaining to outstanding membership have not been resolved, yet – the TCHH needs representatives from Region 1, 3 and 4. Chair Henderson indicated that we have received confirmation for Karuna Pujara, and that we have recommendations for Regions 3 and 4, Andrea Hendricks of Minnesota DOT and Amy Ronnfeldt of Texas DOT, respectively.
21. Kelley informed that AASHTO sent out copies of the AASHTO's MDM CDs. Also, she stated that AASHTO sent out chapters of the HDG for review – reviews are due on November 30, 2005 at AASHTO.
22. Kelley reported that the subcommittee on Design would be meeting in Nashville, TN. She stated that the chair of the TCHH shall be a member of this subcommittee. She indicated that the TCHH is the only technical subcommittee that does not have a representative in the subcommittee on design. If the

TCHH would like to protest this, then a letter needs to be sent to the subcommittee on design chair with courtesy copy to the standing committee on highways chair and vice-chair. The TCHH will be working between now and the Spring 2006 meeting on the language for a resolution and share it with the TCHH members before sending the letter out.

23. Kelley passed around the TCHH work plan for 2005 and indicated that we need to have a work plan submitted to AASHTO for calendar year 2006 by January 2006.

LEVELS 1 AND 2 MANUALS UPDATE:

24. Chairman Henderson led a discussion pertaining to the status of chapters for the Level 1 Manual (A policy on Drainage of Transportation Facilities) and Level 2 Manual (Recommended Procedures for Drainage Design of Transportation Facilities). Chapter chairs reported as follow:
    a. Chapter 1 – No report
    b. Chapter 2 – No report
    c. Chapter 3 – No report
    d. Chapter 4 – No report
    e. Chapter 5 (Mike Fazio) -- work on policy is done; will be starting to work on procedures.
    f. Chapter 6 (Lotwick Reese) – work on policy is done; will be starting to work on procedures.
    g. Chapter 7 – No report
    h. Chapter 8 (Brooks Booher) – doing a final pass on the policy chapter and feels that there should not be a whole lot of work on the procedures chapter.
    i. Chapter 9 (Te Ngo) – expressed having some problems with this chapter.
    j. Chapter 10 (Roy Mills) – original chapter on the MDM is heavy on policy and would need help from his team members to sort thing out; the procedure chapter will be heavy on the FHWA's HECs guidelines and procedures.
    k. Chapter 11 (Richard Phillips) – has completed a draft policy chapter and need to start working on procedures chapter.
    l. Chapter 12 (Merril Dougherty) – need to finish out policy; not working on procedures, yet.
    m. Chapter 13 – No report
    n. Chapter 14 – No report
    o. Chapter 15 (Mark Miles) – most of the policy work is in draft final stages – can have a quick table reading in Spring 2006 and start concentrating in working on the procedures. Mark also suggested (as a general comment) that there are some areas of overlapping in various chapters that would have to be cross checked to ensure that we are consistent with what we are saying.
    p. Chapter 16 (Dave Henderson) – most of his work so far has been on the policy chapter.
    q. Chapter 17 (Karuna Pujara) – still working on the policy aspects.
    r. Chapter 18 (Rick Renna) – work on policy is done; will be starting to work on procedures – material for procedures chapter may come out of a contract that Florida has – procedures should be written by coastal engineers.
    s. Chapter 19 (Mike Fazio) – just starting to work on the policy chapter.
    t. Chapter 20 – No report
    u. Chapter 21 – No report
    v. Chapter 22 –No report
25. General comments:
    a. Need to define a format to use for references.
    b. Policy should be very general whereas guidance should be more specific.
    c. With regards to the use of "shall" and "should" it was decided to use "should" in all policy chapters – we shall not use "shall."
    d. Need to look for an AASHTO standard that could be used to help the TCHH in sorting out policy – Kelley will be looking into this.

e. Need to check with Norm Schips is he would like to continue being the chair of Chapter 1 – chairman Henderson will following up with Norm.
f. Chapter 19 was shifted from Mike Fazio to Matt O'Connor.
g. The TCHH will be looking to ask Amy Ronnfeldt to chair a chapter once she gets official approval to join the committee as a member.
h. As a general note, it was agreed to e-mail correspondence to all friends of the TCHH.
i. Each chapter chair will develop own table of content and numbering will be to 4 digits.
j. Avoid use of "etc.".

26. Individual Chapter Reviews:
    a. Chapter 5 (Planning)
        1. Added two phases to planning: basin wide planning and project level planning.
        2. The initial project scoping estimate should involve the impact of a hydraulics engineer – this should be added to section 5.1.2
        3. Rick Renna informed that Florida includes coastal engineers during the planning stages of a project – a statement was added in Chapter 5 to highlight the need to involve coastal engineers during the planning stages of a project on a coastal state.
        4. Other changes made to this chapter are presented in Attachment A.
    b. Chapter 6 (Data Collection)
        1. Policy chapter:
            a. The MDM chapter is about 5 percent on policy and 95 percent on procedures. Therefore, policy chapter will be short on Level 1 Manual.
            b. Bullets where added to Section 1.1.2 based on input from the Spring 2005 meeting
                1. Added topography and bathymetry in parenthesis next to "Location Information."
                2. Added bullet "as-built information)
            c. Chapter chair agreed to look into the possibility of moving section 1.1.3 prior to section 1.1.2
        2. Procedures chapter:
            a. Chapter chair passed around a copy of this chapter and requested the TCHH members to review section 6.5 (Data Collection), subsection 6.5.5, and section 6.7 (Evaluations).
    c. Chapter 8 (Channels)
        1. Policy chapter
            a. Need to resolve the issue of whether or not we should give recommendations for design frequency for roadside channels.
            b. Editorial changes discussed during the meeting are presented in Attachment B.
    d. Chapter 9 (Culverts)
        1. Suggested to move the sixth bullet under section 9.2 to section 9.3.3.3 because "land-use" is not defined until later on in this chapter.
        2. Need to resolve issue with regards to the reference for Table 9-2.
        3. Lotwick Reese informed the TCHH that Bill Bailey is trying to find out if there is more work on the subject of Table 9-2.
        4. Suggested to edit last bullet of section 9.3.1.3 to read " . . .prevention or thawing features . . ."
        5. Suggested to edit first paragraph of section 9.3.1.4 to read "Debris Control Devices."
        6. Recommended that section 9.3.2.2 should follow FEMA regulations – TCHH recommended changing section title to "Regulated Floodplain.". Also, chapter chair indicated the he would need help from the TCHH with the paragraph under this section.
        7. Suggested that last bullet on section 9.3.2.3 be moved to the Level 2 Manual.
        8. The TCHH agreed to move table 9-2 to the hydrology chapter of the Level 2 Manual (Procedures), as well as the second and third sentences of bullet number 2 of section 9.3.2.4.
        9. Agreed to leave section 9.3.2.5 in the policy chapter.
        10. Edit second paragraph of section 9.3.2.5 as follows: riprap should be one word; edit sentence

to read "riprap and energy dissipators should be . . ." – should avoid using "etc."

11. Suggested to add to last bullet of section 9.3.2.6 "if the culvert design depends on the storage." Also, leave this section in policy chapter.
12. Suggested to edit last bullet of section 9.3.3.1 to read "Use pipe arch or oval/elliptical shapes when required by . . ."
13. Suggested to edit minimum sizes under section 9.3.3.1 as follows: 18 in diameter or equivalent for Interstate and Primary Arterial systems -- do the same for other sizes – the TCHH voted on the motion to use 18 in diameter as the minimum size for culvert diameter. The motion passed by a vote of 7 to 2.5 in favor of using 18 in minimum diameter.
14. Edit culvert types under section 9.3.3.5 as follows: Concrete pipe/box; delete vitrified clay pipes; Corrugated Steel pipes; Corrugated Steel Structural Plate pipes; all others to stay same.
15. Suggested to move up to the beginning of section 9.3.3.5 the sentence corresponding to the second solid bullet under that section that read "The material selected should be based on. . . " as well as the bullets below that sentence.
16. Delete fourth solid bullet starting with "Galvanized and Aluminum . . ." as well as four bullets below it from section 9.3.3.5. This was decided by a vote of 7 to 1.
17. The TCHH decided to delete Table 9-4 from section 9.3.3.6 and to add a reference to read "Refer to the FHWA's publication HDS-5 for guidance on Manning's "n" values. The values presented in HDS-5 were obtained in the laboratory and are supported by the provided reference. Actual field values for the culvert may vary depending on the effect of abrasion, corrosion, deflection and joint conditions.
18. Table 9-5 under section 9.3.4.5 will be deleted and a reference added to HDS-5 for information on entrance loss coefficients. Also, edit first paragraph, third sentence under this section to read " . . . should be considered using headwalls on the inlet end . . ."
19. Suggested to edit the second to last bullet under section 9.3.4.5 to read " Where applicable, aprons should extend at least . . ."
20. Need to check if we should define what is a cut-off wall in this chapter. if it is not defined in HDS 5, then we need to define it here.
21. Section 9.3.4.6 should be edited as follows:
    a. First bullet –edit to read "Small culverts (30 in diameter or less … or slope paving).
    b. Second bullet delete second "in".
    c. Second bullet, b – edit to read ". . . with a grate and/or a safety apron (90 degree windwall) if the . . . flooding hazard are less than . . ." Also, add at the end of this bullet "More information on the grade can be obtained from FHWA's HDS 5."
22. Section 9.3.4.8 – edit first sentence of first paragraph to read "Development of performance curves should be considered for evaluating the hydraulic capacity of a culvert where various headwaters, outlet velocities and scour depths are concerns."
23. Section 9.3.5.2 – edit first sentence to read "Care should be exercised in selecting the location of the culvert site to mitigate erosion, sedimentation and debris."
24. Section 9.4 – correct year for reference 4 to 2005.

e. Chapter 17 (Bank Protection)

1. Policy chapter
    a. This chapter will cover artificial channels.
    b. Chapter will be renamed to "Channel Bank Protection."
    c. Section 17.1.2 – chapter chair will be checking if we should insert "fluvial" before "hydro-geomorphology" on second sentence of first paragraph under this section. Also, chapter chair questioned whether the second paragraph under this section should be moved to the Level 2 Manual and the TCHH agreed that it should stay in the policy chapter. A note was added to this paragraph to refer the reader to the Data Collection chapter for more information.

d. A discussion took place about whether or not to remove check flood from section 17.3. The TCHH decided to leave it in.
e. Section 17.5.3 -- Chapter chair needs to check if word "reach" (used in the second paragraph under this section) is defined in the glossary.
f. Editorial changes discussed during the meeting are presented in Attachment C.

CONFERENCE CALL ON BRIDGES IN COASTAL ENVIRONMENTS:

27. Members and friends of the TCHH (Chairman Dave Henderson, Karuna Pujara, Amy Ronnfeldt, Bart Bergendahl, Kornel Kerenyi, Mark Miles, Roy Mills, Jorge Pagán-Ortiz and Rick Renna) participated in a conference call with Joe Krolak, FHWA Senior Hydraulics Engineer on 10/26/05. The purpose of the call was to bring the TCHH up to speed with regards to concerns that the U.S. Congress have with the number of bridge failures in coastal states during the last 12 months. Congress is very concerned with the bridge failure mode such as those that occurred in Florid and Mississippi. FHWA will sponsor a Wave Force Workshop at TFHWA from December 6-8, 2006 and technical expert from the U.S. and Europe will attend to share and discuss the latest guidance and procedures for estimating wave forces acting on a bridge and to share technology/ideas for retrofitting bridges that are vulnerable to the effect of hurricanes. The TCHH will circulate any information/communication provided on this subject area among its members and anybody interested is welcomed to join this effort.

BUSINESS SESSION:

28. Norm Schips has not committed to a date for the Spring 2006 meeting in Buffalo, NY, but is looking at the following dates for our next meeting: April 25-27, or May 2-4.
29. The TRB AFB60 Committee on Hydrology, Hydraulics and Water Quality meeting will be in June 2006. They will probably meet in Seattle, WA.
30. Rae Van Hoven has already a hotel reserved for our Fall 2006 meeting in Santa Fe, NM. The dates for this meeting will be October 24-26.
31. Potential locations for the Spring 2007 meeting are: Option 1 – Alaska; Option 2 – Florida. Mark Miles will be looking into the possibility of hosting the Spring 2007 meeting in Alaska and will report to the TCHH in our Spring 2006 meeting in Buffalo, NY.
32. Jorge Pagán-Ortiz offered the possibility of meeting in Washington, D.C. in Fall 2007.
33. Chairman Henderson passed around a certificate that would be presented to Sterling Jones upon his retirement from the FHWA in November 2005. This certificate will be in recognition for his contribution to the hydraulics discipline. Chairman Henderson plans to assist the November 21, 2005, open house for Sterling. It was suggested that we present Sterling with a plaque; however, the TCHH bylaws state that for somebody to receive a plaque, he/she needs to have attended 10 or more meetings. Since the plaque will be more to recognize his contributions, the TCHH voted to present Sterling a plaque, which was approved by unanimous decision by the TCHH members present at the Fall 2005 meeting.
34. Chairman Henderson would like the TCHH to consider the following options for future meetings:
    a. Appeal to AASHTO to get special permission to have a 4-day meeting rather than a 2.5 day meeting.
    b. Try for next meeting (Spring 2006) -- at least 4 weeks in advance to have the chapter chairs to get their corresponding chapters to their team members and have them do a review and give back comments to chapter chair prior to the Spring 2006 meeting -- instead of going through each chapter during our meeting, if there are just editorial changes, the team members should give them to the chapter chair to consider implementing them in a chapter. We should try to concentrate in the content.
    c. Other idea discussed was to have a second note taker (a member of the chapter team) to serve as

note taker for their corresponding chapter.

d. The TCHH decided to have a full three-day meeting starting in Spring 2006.

PROBLEM STATEMENTS:

TCHH Vote on Problem Statement Priorities Fall 2005 Meeting, Sioux Falls, SD		
Problem Statement Number	2005 Rank	**Topic**
		AASHTO TCHH Topics
1	1	***Development of Design Methods for In-Stream Flow Control Structures, new problem statement assigned to Mark Miles*** ***Selection and design of in-stream flow structures in mitigating meander migration in channel bends (1)*** ***Design of in-stream grade control structures and stream habitat for degrading channels (2)***
2	3	***Time Rate of Scour at Wide & Skewed Bridge Piers*** ***Scour at wide and Skewer Piers (3)***
3	2	Evaluation of Long Term Performance of Stormwater BMPs
4	4	Effects of Riprap on Fish Habitat
5	9	Development of Bench Test Method for Determining Manning's "n"
6	5	Development of a Specification to Mitigate Hydroplaning Effects
7	8	Integration of Water Quality and Drainage Structure Design
8	14	In-Situ Scour Measuring Device
9	10	Development of a Prediction Model for Ice Jam Formation
10	16	Develop Hydraulically Efficient Bridge Rail
11	6	Multi-Parameter, Storm Model for Coastal Scour
		Revised 20-07 "Survey of Drainage Practice"
	TRB Subcommittee Rank	
		TRB AFB60 Hydrology Topics
12	7	Improvements in the Design Storm Approach for Estimating Peak Flows
13	17	Flood Frequency Analyses for Regulated Watersheds
14	19	Improved Procedures for Converting NEXRAD Reflectivity Data to Rainfall
15	17	Estimation of Long-term Continuous Hydrographs for Use in Scour Computations
16	18	Effects of Land-Use Changes on Channel-Forming Discharges
		TRB AFB60 Hydraulic Topics
17	13	Hydraulics and long-term environmental impacts and aquatic biology of culverts
18	11	Design of long and steep culverts for environmentally sensitive installations
19	12	Scour at bridges with unknown foundations
20	15	Field verification of scour prediction

COMMITTEE ACTIVITY SCHEDULE:

- 2004 Spring -- Separate MDM into Policy (Level 1) and Procedures (Level 2)
- 2004 Fall – First table readings on Policy outlines and chapters (Level 1)
- 2005 Spring – Table readings of Policy chapters (Level 1)
  -- Request NCHRP 20-07 funding to assist with new MDM; assistance to begin in 2006
- 2005 Fall – Table reading of Procedures (Level 2)
- 2006 Spring -- Continue Table reading of Procedures (Level 2)
- 2006 Fall – Final table readings of Policy (Level 1) and Procedures (Level 2)
- 2007 Spring – Table reading of HDG Updates
- 2007 Fall – Final review of HDG, Policy, and Procedures

- 2008 Spring – Develop additional Procedures (Level 3);
  Ballot HDG, Policy, and Procedures
- 2008 Fall – Publish new HDG, Policy, and Procedures;
  Develop plan for next 5-year update

Every Spring – Review NCHRP research needs/Assign problem statements/Submit by deadlines

FINANCIAL REPORT (As of October 27, 2005):

• Funds Available prior to Meeting:	$3,242,22
• Registration Fees from Fall 2005 ($95):	$1,800.00
+ Subtotal	$5,042.22
• Expenses (Food/breaks):	-$1,000.80
• Total Balance	$4,041.42

35. May consider a group dinner for Spring 2006 since we have $4,000. Also, may start reducing registration fee gradually after Spring 2006 meeting.
36. If Chairman Henderson begins attending other AASHTO Subcommittee meetings, then the TCHH could use surplus to cove his expenses.

TC FUTURE MEETING LOCATIONS:

- 2005 Spring Buffalo, New York
- 2006 Fall Albuquerque, New Mexico
- 2007 Spring Alaska or Florida (to be decided)
- 2007 Fall Washington, D.C. (to be decided)

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FALL 2005 MEETING
SIOUX FALLS, SOUTH DAKOTA
OCTOBER 25-27, 2005

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