

Final Minutes
By
J. Sterling Jones
July 20, 2005

Vice chair Mark Miles on behalf of chair Dave Henderson, who was not able to attend the meeting, called the meeting to order at 8:00 a.m. on May 10, 2005. See attachment A for the attendance list for this meeting. The following members were present unless noted absent or resigned. (See attachment B for addresses of Technical Committee members with changes noted at the meeting):

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

VISITORS PRESENT (see attachment C for addresses)

Joe Krolak, FHWA Office of Bridge Technology
Dan Ghere FHWA, Resource Center
Cynthia Nurmi FHWA, Resource Center
Bart Bergendahl FHWA, Federal Lands
Larry Arneson FHWA, Resource Center
J. Sterling Jones FHWA, R&D
Kornel Kerenyi FHWA, R&D
Tim Hess NCHRP
Jeremy Fissel AASHTO staff
Hani Farghaly Ministere du Transports du Ontario, Canada

6. Rick Renna described the I10 Escambia Bay Bridge failure. Florida was battered by four hurricanes in 2004 – Charlie, Francis, Jeann, and Ivan. Ivan caused the I10 bridge failure. The eye hit west of Florida, but the most destructive winds and rain were on the fringe. There was one fatality (truck driver) .One family rode out the storm in a car trapped on the bridge but they survived. The bridge was “closed by common sense” but was not barricaded. Ivan was considered a 200 year event at that site based on the following comparisons:

	<u>100 yr event</u>	<u>500 yr event</u>	<u>Ivan</u>
Still water elevations	10.69'	12.30'	
Max wave elevations	20'	24'	22'
Max. wave heights	11.63'	13.79'	12.6'

Lessons learned and reactions:

- Coastal engineers are needed in design
- Coastal hydraulics council was formed including Phil Donpe, Mark Gosselin, Max Sheppard, and Joe Krolak
- Florida will sponsor research on drag and lift forces caused by waves. Sterling Jones suggested that Kornel Kerenyi will be a good FHWA contact for that research study.

Florida almost lost another bridge due to contraction scour. The HEC-18 procedures for contraction scour do not seem appropriate for contraction scour at coastal bridges

7. Jeremy Fissel, AASHTO materials engineer, expects the transportation bill to be signed in June or July. Upcoming AASHTO events include the subcommittee on design meeting in June '05 and the full annual meeting in Nashville, TN in Sept '05. Jeremy indicated that AASHTO was missing chapter 15 “Consultants Guide” for the HDG. He said he would check with Jim McDonnell since the committee minutes indicate that the chapter was sent to AASHTO. When questioned about AASHTO taking on support of H&H software, Jeremy responded that he did not believe that AASHTO would be a cost effective option and that he did not think AASHTO had H&H expertise to take on that software. Glen Decou asked about AASHTO responsibility for materials specs for culverts and other drainage structures. Jeremy indicated he would confer with Jim McDonald on that question. Cecil Jones is chair of the technical committee on materials.
8. Tim Hess gave an update on NCHRP projects. See attachment G for a list of projects discussed by Tim. The status of all NCHRP projects can be checked on the NCHRP website which is www4.nas.edu/trb/crp.nsf. Project numbers listed in attachment 3 facilitate the web search for specific projects that are of interest to H&H. Project 24-27 was cancelled because the panel did not like either of the proposals that were submitted, but it will be reinstated with a different approach. The project will be split into seven functional areas and each portion will be sole sourced separately. The proposed task for special project 20-07 to conduct a survey of drainage practices was not selected for FY '06. NCHRP is soliciting nominations for panel members for the new FY '06 projects by May 31, 2005. Send nominations for H&H projects to Tim.

9. Kornel Kerenyi presented results of TFHRC lab study on Scour at Bottomless Culverts, Phase II. All experiments were clear water scour. The basic assumption in the data analysis was that pre-scour unit discharge near the corners at the entrance remains constant during the scour process. Lab experimental data was used to adjust the equilibrium flow distribution scour depth for the effects of secondary currents. Outlet scour is almost as high as the entrance scour but it was always located well downstream of the culvert. Smooth curved downstream wingwalls reduce large scale roughness and reduced outlet scour considerably. 45° wingwalls do not reduce outlet scour; 8° wingwalls with smoothed corners work much better.

10. Larry Arneson reviewed the survey form that is proposed for the Nationwide Drainage Review. The survey form can be filled out electronically. FHWA runs into a OMB obstacle in conducting surveys. NCHRP was considered to be an option, which is the reason the proposed task to conduct the survey was submitted for NCHRP special project 20-07, but it was not selected.

Discussion by committee:

- Checking boxes on a survey form takes answers out of context and is often misleading.
- Some states have several districts that are autonomous and varied in organizational structure.

11. There was open discussion about support and maintenance of H&H software in view of the decision at FHWA headquarters not to continue to provide this support as it has in the past. At stake are the future of programs like HY-8 “Design of Highway Culverts”, HYDRAIN “Integrated Drainage Design System” and continued licensing of SMS “Surface Modeling System” and WMS “Watershed Modeling System”. Some of these programs are “bread and butter” tools used routinely by drainage designers; others are future tools that are essential to training support to upgrade our technology. Several options have been suggested. One is to turn the H&H software over to AASHTO for distribution and support along with PONTIS, VIRTIS/OPIS and other AASHTO software. Another suggestion is to set up a continuing pooled fund study with each State contributing \$2K or \$3K to hire a contractor to distribute, maintain and provide user support for H&H software much like the user support task that we used in the final stages of the HYDRAIN pooled fund study. The following remarks were made by various technical committee attendees:

- History has been a good working relationship between FHWA and State Highway Agencies (SHA's) in H&H software support.
- States prefer open source code; prefer not to have AASHTO proprietary software for routine design work. (Bill Bailey)
- Technical support has been a major role for FHWA (Lotwick Reese)
- The technical committee can help justify continued support.
- Need to involve organizations like the Assoc. of County Engineers. (Cynthia Nurmi)
- HEC-RAS is on the web for use; training is available. Main interest is HY-8. (Te Ngo)
- State DOT's are more on front end of H&H software than industry is. Most software supports NHI training. (Mark Miles)
- Software development is very costly.

- HY-8 software has been totally responsive. Recommend anything the committee can do to encourage continued support of that software. (Lotwick Reese)
- Why not AASHTO?? (Glen Decou)
 - Software become proprietary
 - Not responsive improvements in technology
 - RDS was not a success for AASHTO
 - FHWA has technical expertise in hydraulics; AASHTO does not
 - The technical committee does not have time or resources to develop AASHTO software.
- Need to differentiate between enhancements and user support. HEC-RAS is a good management model. (Bart Bergendahl).
- A motion was made for the technical committee to prepare a letter asking for FHWA to continue support of H&H software. Mark Mile, Karuna Pujara and Mike Fazio volunteered to draft a letter for the committee to endorse.

12. Mark Miles led a discussion about developing a Policy Manual from the Model Drainage Manual (MDM). The following remarks were noted:

- The Green Book is policy
- Policy should specify Min sizes
- Omit example problems from the policy manual
- Difficult to agree on a national policy. States will ignore policy that does not follow state operating procedures (Glenn Decou)
- Canada adopted national standards but allowed local exceptions
- AASHTO standards could save lawsuits (Mark Miles)
- Green book sells like hot cakes, MDM sales like mud pies (Te)
- FL would not be threatened by a national policy (Rick Renna)
- Policy format should specify acceptable ranges rather than the double parenthesis format currently on the MDM (Norm Schips)
- Spread criteria for pavement drainage are needed. States can tighten criteria
- Policy should not change often (Bill Bailey)
- A policy manual will get a high level of scrutiny during AASHTO balloting
- Federal Lands could utilize policy that specifies acceptable ranges. Commentary would be helpful (Bart Bergendahl)
- Suggest looking at 4 or 5 examples during technical discussion of each chapter to find a good format and level of detail for the policy manual (Glenn Decou)
- Suggested titles for the isolated parts of the MDM:
 - Level 1 “Policy on Drainage Structures”
 - Level 2 “ Recommended procedures”
 - Level 3 “List of web-based procedures”
- AASHTO does have standards on titles

13. The following MDM Chapter assignments were decided after a little informal horse-trading:

- Norm Schips, Chapter 1, Introduction
- Jim Richardson, Chapter 2, Legal
- Norm Schips, Chapter 3, Policy
- Glenn De Cou, Chapter 4, Documentation
- Mike Fazio, Chapter 5, Planning and Location
- Lotwick Reese, Chapter 6, Data Collection
- Rae Van Hoven, Chapter 7, Hydrology
- Brooks Booher, Chapter 8, Channels
- Te Ngo, Chapter 9, Culverts
- Roy Mills, Chapter 10, Bridges
- Rich Phillips, Chapter 11, Energy Dissipators
- Merrill Dougherty, Chapter 12, Storage Facilities
- Bill Bailey, Chapter 13, Storm Drain Systems
- Dan Ghere, Chapter 14, Pump Stations
- Mark Miles, Chapter 15, Surface Water
- Dave Henderson, Chapter 16, Erosion and Sediment Control
- Karuma Pujara, Chapter 17, Bank Protection
- Rick Renna, Chapter 18, Coastal Zone
- Mike Fazio, Chapter 19, Construction
- Dave Henderson, Chapter 20, Maintenance
- TBD, Chapter 21, Wetlands
- Karuna Pujara, Chapter 22, Groundwater

13. The bulk of this committee meeting was devoted to the status of the committee initiative to revise the Model Drainage Manual (MDM) and separate it into two parts; namely a Policy (Drainage) Manual and a Procedure (Drainage) Manual. Discussion at this meeting focused on what could go in the policy manual, which is perceived to be a relatively thin document. Chapter chairpersons led discussions for each chapter. Most chapter chairpersons provided a handout to facilitate discussion. Those handouts will be turned over to Jorge Pagan, Committee Secretary, but they are not attached to these minutes. Highlights of discussion for chapters 1 thru 20 and the glossary are described below.

Chapter 1.” Introduction”

This was a new assignment chapter. After some discussion it was assigned to Dave Henderson since he wasn’t there to resist. Norm Schips preferred some other chapter rather than the introduction.

Mark Miles suggested that the committee needed to establish some definitions of ‘Policy’ and ‘procedures’ for the discussion. Rae Van Hoven offered the following definitions that were used by Smith Engineering for one of their projects:

- Policy is a plan of action designed to influence.
- Guideline is a statement of policy or procedure.
- Criterion is a standard upon which judgment is based.

The general consensus was that these definitions would not work for the AASHTO publications

Chapter 2. “Legal”. Assigned to Jim Richardson.

This chapter is appropriate for a level 1 Policy Manual as is.

Joe Krolak agreed to get a legal opinion about limited use deeds when property is purchased for FEMA right-of-way.

Mark Miles recommended omitting “Agency” throughout most of this chapter.

Chapter 3. “Policy.” Assigned to Norm Schips.

This chapter is not appropriate for a Policy Manual. Most of the information on this chapter can be split between the introduction and legal chapters. Norm and Jim Richardson agreed to go through chapter 3 to determine where information should be moved. Norm recommended that definitions on chapter 3 be moved up front of the manual.

Chapter 3 will be disbanded but several replacement topics were suggested including:

- Culvert rehabilitation
- Culvert material selection
- Ground water recharge

Karuna Pujara (MDSHA) agreed to scope out a new chapter on ground water recharge

Chapter 4 “Documentation.” Assigned to Glenn Decou.

Glenn focused on what to do, not how to do it. The policy portion of this chapter was reduced from 8 pages to 1 ½ page. The checklist was omitted. Discussions like data source and storage media belong in this procedures document; not in the policy document.

Mark Miles questioned whether the checklist should be split among various chapters or presented as one big list in the procedures document.

The consensus was to drop documentation sections from each chapter on the level 1 policy document and move them to the level 2 procedures document.

Chapter 5 “Planning and Location.” Assigned to Mike Fazio.

Mike separated policy from procedures.

Rick Renna suggested that planning should account for stream stability, scour resistance and other major cost items.

The general consensus about sections 5.1.3.3 is that is guidance on when H&H Planning reports are needed; it is not a documentation section. (No handouts were provided for their discussions)

Chapter 6 “Data Collection.” Assigned to Lotwick Reese.

95% of the material on this chapter belongs on the procedures manual. Lotwick pulled out a small portion for policy.

Discussion:

- Concerns about appendices 6A and 6B (Mark Miles)
- Recommend combining bullets on the general section of chapter 6 with 1.1.3 “Drainage Survey” (Te Ngo)

- Suggest elevating portion dealing with private and public property facilities (Mark Miles)
- Note that mat'l is written for Hydraulic engineers (Glenn Decou)
- Lotwick will rework this chapter based on discussion.

Chapter 7 “Hydrology.” Assigned to Rae Van Hoven.

Rae sent e-mail to committee members. Changes are shown on red on handout that was provided for discussion.

Discussion:

- Refer to FIRM (Flood Insurance Rate Maps as well as Flood Hazard Maps. (Te Ngo)
- Just refer to available FEMA maps (Mark Miles)
- Need consistency on tone of manual specially on use of “shall”, “should”, “must” (Glenn Decou)
- Joe Krolak agreed to get legal interpretation of that terminology
- A good role is to use “should” unless there is a conscious reason to use “shall”, “will” or “must”
- Policy really should address minimum criteria
- Delete “for routine urban designs”
- Reorder hydrologic methods on hierarchical order (Mark Miles)
- Unresolved issues:
 - What really belongs on policy vs. procedures
 - When to use “should”, “shall” etc
 - How far to go on policy

Chapter 8 “Channel Design”

Assigned to Brooks Booher. Relatively minor changes are anticipated to make this chapter into a policy chapter

Discussion and suggestions:

- Omit “Agency”
- Modify bullets 2 and 3 of section 8. 2. 1
- Omit the section 8.3 tables including “n” value table from the policy manual. They belong on the procedures manual with reference to them on the policy manual

Chapter 9 “Culverts.” Assigned to Te Ngo.

This chapter drew considerable discussion and discussions suggestions including the following:

- Retain the “commercial end section” material on section 9.1.2. Add HPDE prefab end sections
- Change title of section 9.2 from “policy” to general
- Table of design frequency vs. class of road belongs in policy
- Table 9.1 belongs in procedures
- Section 9.3.2.2, delete 2nd bullet reword reminder
- Section 9.3.2.3, delete 3rd bullet. Add “incorporate provisions for thawing ice if necessary”

- Section 9.3.2.4, add bullet regarding fish passage
- Section 9.3.3.4, edit 3rd bullet, remove parenthesis. Add bullet for down stream reservoir conditions
- Section 9.3.3.5 Change title from “Max velocities” to abrasion but it belongs in procedures, not policy
- Need a table of minimum velocities for policy
- Section 9.3.3.7, storage, add a bullet to consider unsteady flow analysis

The consensus of the group was that further comments should be sent to Te by e-mail.

Chapter 10 “Bridges.” Assigned to Roy Mills.

Roy was not at the meeting but he distributed this chapter for review by e-mail

Chapter 11 “Energy Dissipaters.” New assignment to Rich Phillips.

Previously this chapter was assigned to Barry Newman, Te Ngo, and Phil Thompson. Mark Miles agreed to make a copy of Barry Newman’s write-up for Rich

Chapter 12 “Storage Facilities.” Assigned to Merrill Dougherty (absent)

Mark Miles agreed to ask Merrill to distribute copies of this chapter for review by e-mail

Chapter 13 “Storm Drain Systems.” Assigned to Bill Bailey.

Discussion items:

- Section 13.1.2, “Cooperative Projects”
Joe Krolak agreed to provide federal rules regarding use of federal aid funds for cooperative projects. Generally local governments pay for excess capacity for future growth
- Section 13.2. 1 “Design Frequency”
 - Design spread vs. Roadway classification came directly from previous version
 - Design storm frequency (return interval) was added
 - Need ADT to characterize high volume roads
 - Table headings should read minimum return interval and maximum spread
- Joe Krolak and Dan Ghere agreed to examine HEC-22 for return interval and spread criteria and try to find origin of the criteria
- Need to consider duration as well as return interval since most storm drain systems are designed using the rational equation to estimate runoff
- Bill likes to list a few of the alternate hydrologic methods. After extensive discussion Mark Miles tabled decision about when to list hydrologic methods
- Section 13.5 “Outfall Policy” is a rewrite of Bill Hulberts version. It is somewhat political. Their section will be received by e-mail
- Section 13.4 “Hydraulic Methods” needs an introduction
- Junction loss is still a problem. Current procedures do not apply for rapid flow where they are most needed
- Section 13.6 “Water Quality” much of their section should be moved to chapter 15 “Environment”

Chapter 14 “ Pump Stations.” Assigned to Dan Ghere.

- Hydraulic Institute criteria are referenced
- Use caution about use of “shall” that suggests using this procedure even if it varies from accepted procedures
- Norm Schips agreed to add a paragraph to the introduction chapter indicating that existing accepted procedures by an agency take precedence over the policy manual in cases of conflict
- Return intervals in the policy manual are considered minimums
- Dan Ghere will look into questions about explosion proof pumps and spill containment systems

Chapter 15 “Surface Water Environment.” Assigned to Mark Miles.

- Reduced chapter from 96 to 20 pages for the policy manual
- Deleted “cognizant” throughout
- Omitted “wetlands” and ground water” there are candidates for separate chapters
- Most so called mandates are negotiable
- There are various techniques for determining ordinary high water boundary (OHW), using the annual peak runoff Q2.33 is not appropriate for determining jurisdictional or property boundary line.

Chapter 17 “Bank Protection.” Karuna Pujara agreed to take this chapter.

Karuna’s committee membership has not been processed, but no need to let a little detail like that hinder a good volunteer.

Chapter 18 “Coastal Zone.” Assigned to Rick Renna.

- Chapter is written for H&H Engineers with enough detail to communicate with coastal engineers
- Coastal engineers must hold M.S. or Ph.D. (or equivalent experience)
- HEC – 25 will help
- Design strategy for coastal roadway is to use low roadways and expect overtopping. Removing excess sand from the road is cheaper than reconstruction of an elevated embankment
- The storm surge manual dated back to 1986
- Multiple storm surge peaks from hurricanes is a problem
- Migration of deep water channels coastal zones is a major problem
- The simplified contraction scour procedure on HEC-18 is not appropriate for coastal waterways.
- A 2-D sediment transport model is more appropriate

Chapter 19 “Construction.” Michael Fazio agreed to take this chapter.

This chapter was previously assigned to Norm Schips. Norm led the discussion

- Policy part can probably be reduced to one page and will come mostly from what is now the introduction chapter
- Most of this chapter belongs in Procedures

Chapter 20 “Maintenance.” Assigned to Dave Henderson (absent)

“Glossary.” Assigned to Norm Schips

- Norm will get the electronic glossary file from Jim McDonald
- Norm will split the glossary and send parts to various chapter chairs for review
- The glossary belongs in Procedures
- Rick Renna will add coastal glossary

14. Bart Bergendahl gave an update on Fish Passage

- HEC-26 is being developed at Washington State University. Rollin Hotchkiss is the P.I.
- Survey is posted on the web at Washington State University
- A summit meeting is scheduled for October 2005 in Pullman, WA
- Glenn DeCou noted that California is considering research on hydraulics of baffles

15. Mike Fazio gave a presentation on the 2005 Utah Flooding

Utah experienced five years of drought followed by hard rains over a heavy snow pack. The Santa Clara in the South West corner of Utah experienced 200 year flooding. Four bridges failed. Debris and very dense flows contributed to problems.

16. Joe Krolak noted that FHWA has used a memo that reiterates FHWA statement that States have expertise and authority to select culvert materials

17. Sterling Jones presented results of the culvert study conducted at the FHWA Hydraulics lab. The FHWA partnered with SD DOT to investigate effects of bevels, corner fillets, multiple barrels, span to rise and skewed inlets. Revised final report has been submitted to the SD DOT

18. Open discussion about updating rainfall maps. Glenn DeCou questioned look of final product. The expectation is that the product will feature a map of the U.S. with click and zoom capability to pull up IDF curves. The challenge is going to be coordinating funding from Federal Agencies, State DOTs and local agencies.

19. Larry Arneson gave a status report on WMS and SMS

- Digital data sources available via the internet have expanded considerably
- Version 9 of SMS is still a Beta version. It has a new graphics library.
- FESWMS is now called FST 2DH
- User manuals are available from Larry
- SMS and WMS have user groups that one can subscribe to.
- The training course for 2D Modeling is NHI 135071

20. Mark Miles reported that the ad hoc group had drafted a letter appealing for the FHWA to continue supporting hydraulic software. HY-8, SMS and WMS are critical programs and critical

to the success of hydraulics units of State Highway Agencies. Larry Arneson suggested that it would be best to keep the letter on hold for now. A better approach might be acknowledging benefits of past support. The consensus was to polish the letter but not submit it yet.

21. Problem Statements are listed on Page 12 of the minutes for the Fall '04 meeting in Austin, TX. In the interest of time, Mark Miles decided to prioritize problem statements by e-mail. Rick Renna suggested two new problem statements:

- 1) Routing overland flow and detention pond outflow on one package
- 2) Wave forces on bridges

Larry Arneson will work on a revised 20-07 statement on "Survey of Drainage Practices". Sterling Jones agreed to send electronic files of current problem statements as well as TRB Committee AFB60 problem statements to AASHTO task Committee members for review and modification/merging

The target dates for writing new problem statements and modifying current statements was set for June 20. This target date will be delay because electronic files. The target date for balloting is August 15.

22. Business Meeting

Future Meetings

- Fall 05 will be in Sioux Falls, SD
October 25 – 27, 2005
Lodging will be the Radison at \$60.00/night meeting rooms will be \$150/day
- Spring 06 meetings will be in Buffalo, NY on late April or first week of May 2006
- Fall 06 meeting will be in Albuquerque, NM on October 11 –13, 2006

Treasures Report

\$3,225 balance from Dave Henderson
\$1,900 fees collected for this meeting
\$5,125 TOTAL

Minutes from this meeting should summarize chapter assignments

23. Wrap up Session - Concerns and Issues

CA is going back to the English system. The SF/Oakland Bay bridge project resulted from the 1989 earthquakes that took out one span. The estimate for seismic retrofits was \$1 B; the estimate for a new bridge was \$1.2 B. The current estimate is \$6.1 B driven in part by dramatically increased costs for steel and concrete.

Canada is developing its own design standards. They are developing pipe selection criteria based on life cycle costs. They will assume a standard life of a project will be 75 years. The estimated life of concrete pipe is 75 years, of steel is 25 years, of coated steel is 50 years and of plastic is 75 years.

Wyoming is adamant against using plastic pipe. Hydraulics is often overpowered by other issues, such as environmental constraints.

Arkansas has a contract with the University of Arkansas to develop new IDF curves and peak flow rate regression equations. Arkansas has several emergency repair projects that they are working on with the Corps of Engineers under section 14. They have been successful getting exemptions for small maintenance projects.

New York is coming to terms with state permits requirements.

Maryland has experience getting permits and special exemptions for maintenance projects.

Kansas is going back to the English system. Updated design manuals will go on-line but they are struggling with 508 compliance requirements.

Florida uses the Florida pier score equation rather than HEC-18 equation. They have love bed score test results from New Zealand experiments to augment complex pier score procedures. They have developed a test apparatus for measuring rate of scour for rock samples. Pavement designs and high ground water tables are an issue. Florida is testing drop inlet storm water interceptors devices. Most of these devices do not work well for full range of flow.

New Mexico is revising drainage manuals into three volumes-hydrology, drainage criteria and drainage (procedures). They would like to get drainage criteria from other states. They don't have much experience with HPDE culverts but are having some problems. Design/build projects have been relatively successful.

Idaho has the scour manual posted on a website. They are working with the USGS regarding use of "Streamstats" for delineating drainage basins, calculating regression equation parameters and reoccurrences interval flows for $Q_{1.5}$ through Q_{500} . The website address for "Streamstats" is <http://streamstats.usgs.gov/cdstreamstats>.

South Dakota is also looking at "Streamstats".

Alaska is struggling with permit process. The coast guard often asks for information that is not pertinent. They have a big turnover in environmental analysts. The Hubbard Glacier may dam a large fiord causing the loss of a large steelhead sportsfish and commercial salmon fishery, and the economic destruction of the town of Yakutat.. The Corps of Engineers has embarked funds for monitoring the glacier. They have a vigorous spring break-up this year. There is a need a better prediction tool to deal with potential "pile-ups" vs. weather patterns.

24. The meeting was adjourned at noon on Thursday May 12, 2005.

ATTACHMENT A

AASHTO TECHNICAL COMMITTEE ON H&H 10-12 MAY 2005 SACRAMENTO, CA Attendance List

Name	Organization	E-mail
Joe Krolak	FHWA-Office of Bridge Technology	joseph.krolak@fhwa.dot.gov
Dan Ghere	FHWA-Resource Center	dan.ghere@fhwa.dot.gov
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Cynthia Nurmi	FHWA-Resource Center	cynthia.nurmi@fhwa.dot.gov
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Hani Farghaly	MTO (Ontario)	hani.farghaly@mto.gov.on.ca
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Karuna Pujara	MDSHA	kpujara@sha.state.md.us
Bart Bergendahl	FHWA/FLH	bart.bergendahl@fhwa.dot.gov
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Te Anh Ngo	ODOT	tngo@odot.org
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Tim Hess	NCHRP	tim.hess@nas.edu
Kornel Kerényi	FHWA	kornel.kerényi@fhwa.dot.gov

ATTACHMENT B

AASHTO TECHNICAL COMMITTEE ON HYDOLOGY AND HYDRAULICS MEMBERS/MEMBER'S REPRESENTATIVES		
MEMBER	ADDRESS	TELEPHONE
Mr. Bill Bailey Hydraulics Engineer	Wyoming Transportation Department 5300 Bishop Blvd., Cheyenne, WY 82009	(307) 777-4045, FAX 777-4279 william.bailey@dot.state.wy.us
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Dr. Hani Farghaly Senior Hydrotechnical Engineer Highway Design Office	Ontario Ministry of Transportation 301 St. Paul St, 2nd Floor North St. Catherines, Ontario L2R 7R4	(905) 704-2244 FAX 704-2051 hani.farghaly@mto.gov.on.ca
Mr. Glenn DeCou Headquarters Hydraulic Engineer State Highway Drainage Design	CALTRANS, 1120 N Street, Room 2206, Sacramento, CA 95814, P.O. Box 942874 Sacramento, CA 94274-0001	(916) 653-1302 FAX 653-1446 Glenn_S_DeCou@dot.ca.gov
Mr. Merrill E. Dougherty Hydraulics Engineer Supervisor	Indiana Department of Transportation 100 North Senate Avenue, Rm N642 Indianapolis, IN 46204-2228	(317) 232-6776 FAX 233-4929 mdougherty@indot.state.in.us
Mr. Mike Fazio Hydraulic Engineer	Utah Department of Transportation 4501 South 2700 West Salt Lake City, Utah 84119	(801) 957-8556 FAX 965-4564 mfazio@utah.gov
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Mr. David Henderson, Chair State Hydraulics Engineer	NC DOT, 1590 Mail Service Center Raleigh, North Carolina 27699 1020 Birch Ridge Rd., 27610 (deliveries)	(919) 250-4100 FAX 250-4108 dhenderson@dot.state.nc.us

**AASHTO TECHNICAL COMMITTEE ON HYDROLOGY AND HYDRAULICS
MEMBERS/MEMBER'S REPRESENTATIVES**

MEMBER	ADDRESS	TELEPHONE
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Mr. Te Anh Ngo Roadway Drainage Engineer Roadway Design Division	Oklahoma Dept. of Transportation 200 N.E. 21 st Street Oklahoma City, Oklahoma 73105	(405) 521-6772 FAX 522-4519 tngo@odot.org
Mr. Matt O'Connor Hydraulics Engineer	Illinois Department of Transportation 2300 S. Dirksen Parkway Springfield, Illinois 62764	(217) 782-2704 FAX 782-7960 occonnormr@nt.dot.state.il.us
Mr. Richard Phillips Bridge Hydraulics Engineer Office of Bridge Design	South Dakota Department of Transportation 700 East Broadway Pierre, South Dakota 57501	(605) 773-3285 FAX 773-2614 rich.phillips@state.sd.us
Karuna Pujara (membership pending)	Maryland State Highway Admin. 707 N. Calvert St., MS C-201 Highway Hydraulics Div. Baltimore, MD 21202	(785)368-8292 FAX (785)296-4302 kpujari@sha.state.md.us
Mr. Lotwick I. Reese Hydraulics Engineer	Idaho Transportation Department P.O. Box 7129, Boise, Idaho 83703 3311 West State Street Boise, Idaho 83707-1129	(208) 334-8491 FAX 334-8040 lotwick.reese@itd.idaho.gov
Mr. Rick Renna State Drainage Engineer	Florida Department of Transportation 605 Suwannee Street M.S. 32 Tallahassee, Florida 32399-0450	(850) 414-5261 FAX 414-4351 rick.renna@dot.state.fl.us

**AASHTO TECHNICAL COMMITTEE ON HYDROLOGY AND HYDRAULICS
MEMBERS/MEMBER'S REPRESENTATIVES**

MEMBER	ADDRESS	TELEPHONE
Mr. James R. Richardson Road Design Leader	Kansas Department of Transportation Bureau of Design, Road Section 700 SW Harrison St. Topeka, Kansas 66603-3754	(785) 368-8292 FAX 296-6946 jimr@ksdot.org
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Mr. Jorge E. Pagán-Ortiz Senior Hydraulics Engineer (Secretary)	FHWA, HIBT-20 400 7th Street, SW., Room 3203 Washington, D.C. 20590	(202) 366-4604 FAX 366-3077 jorge.pagan@fhwa.dot.gov
Dr. Duc minh Tran	Ministère des Transports du Québec 930 Chemin Sainte-Foy 7è étage Ville Québec Province Québec, Canada G1S 4X9	(418) 644-0894 FAX 646-5415 mdtran@mtq.gouv.qc.ca
AASHTO HIGHWAY SUBCOMMITTEE ON DESIGN OFFICERS		
Dr. Kam K. Movassaghi (Chair) Secretary, LA DOT & Development	P.O. Box 94245 1201 Capitol Access Road Baton Rouge, LA 70804-9245	(225) 379-1200 FAX 379-1851 kammovassaghi@dotd.state.la.us
Mr. Dwight Horne (Secretary) Director, Office of Program Administration	FHWA, (HIPA-1) 400 7th Street, SW., Room 3134 Washington, D.C. 20590	(202) 366-5530 FAX 366-7298 dwight.horne@fhwa.dot.gov
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ATTACHMENT C

Visitor Address Information for the May 2005 meeting in Sacramento, CA		
Joe Krolak	Hydraulics Engineer Federal Highway Admin. Office of Bridge Technology HIBT-20 400 7th Street, SW. , Room 3203 Washington, DC 20590	Phone: (202) 366-4611 Fax: (202) 366-3077 Email: joe.krolak@fhwa.dot.gov
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Larry Arneson	FHWA Resource Center Senior Hydraulics Engineer 12300 West Dakota Ave, Suite 340 Lakewood, CO 80228	Phone: (720)963-3200 Fax: 720.963.3232 Email: larry.arneson@fhwa.dot.gov
Bart Bergendahl	FHWA Central Federal Lands Highway Division, 12300 W. Dakota Ave., Suite 210 Lakewood, CO 80228-2583	Phone: (720)963-3754 Fax: 720-963-3752 Email: bart.bergendahl@fhwa.dot.gov
Kornel Kerenyi	FHWA , Office of Infrastructure R&D HRDI-07 6300 Georgetown Pike McLean, VA 22101	Phone: (202)493-3142 Fax: (202)493-3442 Email: kornel.kerenyi@fhwa.dot.gov
J. Sterling Jones	FHWA , Office of Infrastructure R&D HRDI-07 6300 Georgetown Pike McLean, VA 22101	Phone: (202)493-3043 Fax: (202)493-3442 Email: sterling.jones@fhwa.dot.gov
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ATTACHMENT D
AGENDA

Tuesday May 10, 2005

8:00 am – 8:15	M. Miles for Dave Henderson – Call Task Force Meeting to Order, Introductions, & Housekeeping
8:15 am – 8:30 am	Welcome – Glenn DeCou
8:30 am – 9:15 am	Jorge Pagan – FHWA Perspective
9:15 am – 10:00 am	I-10, Escambia Bay Bridge Failure
10:00 am – 10:15 am	Break
10:15 am – 10:45 am	Jim McDonnell/Jeremy Fissel – AASHTO Update
10:45 am – 11:15am	Tim Hess – NCHRP Update
11:15 am – 12:00 pm	Larry Arneson – Nationwide Perspective of State of Practices
12:00 pm – 1:00 pm	Lunch
1:00 pm – 1:45 pm	Sterling Jones – Bottomless Culverts Update & South Dakota Culverts Research
1:45 pm – 2:15 pm	T. C. – Support & Maintenance of Software, Future needs
2:15 pm – 3:00 pm	T. C. – Open Discussion on Direction of MDM
3:00 pm – 3:15 pm	Break
3: 15 pm – 3:30 pm	New Assignment – MDM Chapter 1, Introduction
3:30 pm – 3:50 pm	Jim Richardson – MDM Chapter 2, Legal
3:50 pm – 4:10 pm	Norm Schips – MDM Chapter 3, Policy
4:10 pm – 4:30 pm	Glenn DeCou – MDM Chapter 4, Documentation
4:30 pm – 4:50 pm	Mike Fazio – MDMChaper 5, Planning & Location

Wednesday May 11, 2005

8:00 am – 8:20 am	Lotwick Reese – MDM Chapter 6, Data Collection
8:20 am – 8:40 am	Rae Van Hoven – MDM Chapter 7, Hydrology
8:40 am – 9:00 am	Brooks Booher – MDM Chapter 8, Channels
9:00 am – 9:20 am	Te Ngo – MDM Chapter 9, Culverts
9:20 am – 9:40 am	Roy Mills – MDM Chapter 10, Bridges
9:40 am – 10:00 am	New Assignment – Chapter 11 Energy Dissipators
10: 00 am – 10:20 am	Break
10:20 am – 10:40 am	Merril Dougherty – MDM Chapter 12, Storage Facilities
10:40 am – 11:00 am	Bill Bailey – MDM Chapter 13, Storm Drainage Systems
11:00 am – 11:30 am	New Assignment – MDM Chapter 14, Pump Stations
11:30 am – 12:00 pm	Mark Miles – MDM Chapter 15, Surface Water Environment
12:00 pm – 1:00 pm	Lunch
1:00 pm – 1:2 0 pm	Bart Bergendahl – Fish Passage Update
1:20 pm – 1:40 pm	Michael Fazio – Flooding, Saint George, Utah
1:40 pm – 2:10 pm	New Assignment – MDM Chapter 17, Bank Protection

2:10 pm – 2:25 pm	Break
2:25 pm – 2:55 pm	Rick Renna – MDM Chapter 18, Coastal Zone
2:55 pm – 3:25 pm	Te Ngo – MDM Chapter 19, Construction
3:25 pm – 3:55 pm	David Stolpa – MDM Chapter 20, Maintenance
3:55 pm – 4:30 pm	Norman Schips – MDM Glossary

Thursday May 12, 2005

8:00 am – 10:30 am	Technical Presentations (TBD)
10:30 am – 10:45 am	Break
10:45 am – 12:00 pm	M Miles for David Henderson – Task Force Business Meeting (Meetings Fall 05, Spring 06, select Fall 06)
12:00 pm Meeting	M Miles for David Henderson – Adjourn Task Force

ATTACHMENT E

FHWA PERSPECTIVE by Jorge Pagan; presented by J. Sterling Jones

FHWA Website for Hydraulic Engineering

www.fhwa.dot.gov/engineering/hydraulics

Serves as our “Community of Practice”. Integrated program for research and bridge technology

Summary of FHWA Initiatives

First Edition of HEC-25 “Coastal Hydraulics”

available on the FHWA Hydraulics website.

Second Edition of HEC-25

Contractor: University of South Alabama (Dr. Scott Douglas).

NHI Course to be developed parallel to second edition.

Joe Krolak, has lead responsibility

Update HECs 18, 20 and 23

programmed for FY ‘05-’06

Rapid Stream Stability Assessment

Will be published as FHWA-RD-05-072

Will be considered for the next edition of HEC-20.

Abutment Scour Database

USGS 140 existing scour hole field measurements for SC used to develop envelop curves

Database lacks hydraulic information and is speculative about infilling

Scour and Protection of Bottomless Culverts Phase II

FHWA lab study near completion

Kornel Kerenyi will present results

Pressure Flow Scour Study for Various Deck Shapes

FHWA lab study approved for FY-05

Will use PIV (particle imaging velocimetry) to develop effective flow area criteria

Select Exposed Foundation Scour Test

Proposed additional testing to be coordinated with Florida DOT for the complex pier procedure

Module on Plan of Action for Scour Critical Bridges

Contact: Ayres Associates.

Cynthia Nurmi has lead.

Unknown Foundation Synthesis

Proposals being reviewed by Panel

Sam Mansukhani, Geotechnical Engineer, FHWA Resource Center, has lead.

Unknown Foundation Summit

Scheduled for November 15-16, 2005 in Lakewood, CO.

Khamis Haramy, Geophysics, FHWA Central Federal Lands, has lead.

HEC-9 “Debris Control Structures”

Expanded scope to include debris at piers, scour effects and countermeasures

- Brian Beucler, Hydraulics Engineer, FHWA Eastern Federal Lands, has lead
- New algorithms for FESWMS 2D**
On going maintenance activity
Dr. Larry Arneson has lead.
- New HDS-7 “Hydraulics of Bridge Waterways”**
Update HDS-1 to reflect computerized technology, but HDS-1 will be retained as a classic
Programmed for FY '05-'06
- HEC-14 “Energy Dissipators for Highway Culverts”**
Contractor: Kilgore Consulting and Management.
Survey and literature review completed.
Cynthia Nurmi has lead.
- HY-8 Culvert Design Software**
RFP being prepared to develop Graphical User Interface
Will convert to Windows operating system
- HDS-5 “Hydraulics of Highway Culverts”**
Update will consider results from FHWA lab studies and NCHRP Project 15-24
Programmed for FY '05-'06
- Effects on Inlet Geometry on Performance of Rectangular Culverts**
FHWA lab study sponsored by SD DOT
Sterling Jones will present results
- New FHWA Storm Drain Software**
Replace HYDRA which was challenged for proprietary rights
Programmed for FY '05-'06
- New algorithms for WMS (FY '05)**
On going maintenance activity
Dr. Larry Arneson has lead.
- HEC-22 Urban Drainage Design Manual**
Updates programmed for FY '05-'06
- Junction Loss Study**
FHWA lab study using PIV to visualize flow patterns and test Kilgore’s proposed procedures for the next edition of HEC-22
- Coastal Transportation Research Center**
Earmark funds
Contractor: University of South Alabama (Dr. Scott Douglas).
Includes coastal hydrology, numerical modeling of coastal storm processes, water quality aspects
- Upgrade Rainfall Maps**
Candidate for targeted pooled fund study
Geof Bonning ,NOAA, provided list of states and suggested funding over three year period. (see attached list)
- HEC-15 “Design of Roadside Channels with Flexible Linings”**
Contractor: Kilgore Consulting and Management
Final draft has been reviewed by FHWA.
Dan Ghery has lead.
- HEC-26 “Design and Retrofit of Highway Culverts for Fish Passage”**

Contractor: Washington State University (Dr. Rollin Hotchkiss)
Earmark contract monitored by Hamid Ghasemi from TFHRC R&D
Bart Bergendahl, has lead for this Task.

HEC-11 Design of Riprap Revetment

Updates programmed for FY '05-'06

Substrate Stability Tests for Fish Passage Culverts

FHWA lab study discussed for funding by Alaska DOT

Mark Miles indicated that Alaska is negotiating with Utah State Univ. to do this work.

NHI Training Courses

135010 River Engineering for Highway Encroachments

135027 Urban Drainage Design

135028 Stormwater Pump Station Design

135041 HEC-RAS, River Analysis System

135046 Stream Stability and Scour at Highway Bridges

135047 Stream Stability and Scour at Highway Bridges for Bridge Inspectors

135048 Countermeasure Design for Bridge Scour and Stream Instability

135056 Culvert Design

135065 Introduction to Highway Hydraulics

135067 Practical Highway Hydrology

135071 Surface Water Modeling System with Flo2DH and SMS

135080 Hydrologic Analysis and Modeling with WMS

135081 Introduction to Highway Hydraulics Software

NHI Training Courses New and Updates

135082, Tidal Hydrology, Hydraulics and Scour at Bridges

Contractors: University of South Alabama and Kilgore Consultant Management.

Scheduled completion in FY '07.

Joe Krolak has lead.

135083, Tidal Hydrology and Hydraulics Modeling

programmed for FY '06

135084, Sediment Transport

programmed for FY '06

135041 HEC-RAS, River Analysis System

Contractor is Ayres Associates.

Will add pre/post tests and a comprehensive workshop.

Dr. Larry Arneson has lead.

National Bridge Inspection Standards--- Updated Rule

Enacted on January 13, 2005

requires a Plan Of Action (POA) for bridges identified as scour critical.

ATTACHMENT F

Geoff Bonnin estimate of funding requirements to update rainfall maps by pooled fund studies

	State	State Cost
>		
>		
> Alaska	AK	\$540,179
>	Project Cost-----	\$540,179
> Northwest	CA-other	\$304,828
>	ID	\$162,865
>	OR	\$260,356
>	WA	<u>\$213,280</u>
>	Project Cost-----	\$941,000
> Midwest	CO	\$258,735
>	IA	\$174,424
>	KS	\$236,393
>	MN	\$176,085
>	MO	\$205,326
>	MT	\$318,517
>	ND	\$162,563
>	NE	\$208,747
>	SD	\$175,846
>	WY	<u>\$215,531</u>
>	Project Cost-----	\$2,132,000
> Michigan/Wisconsin	MI	\$202,630
>	WI	<u>\$152,705</u>
>	Project Cost-----	\$355,000
> Northeast	CT	\$47,762
>	MA	\$72,980
>	ME	\$83,619
>	NH	\$66,779
>	NY	\$280,459
>	RI	\$8,855
>	VT	<u>\$53,313</u>
>	Project Cost-----	\$614,000
>		
> Southeast	AL	\$178,883
>	AR	\$166,297
>	FL	\$168,300
>	GA	\$164,655
>	LA	\$184,142
>	MS	\$157,606
>	OK	\$202,955
>	TX	\$1,957 <u>\$734,579</u>
>	Project Cost-----	\$1,957,000
>		
>Pacific Islands	PI	\$42,781

ATTACHMENT G

Tim Hess Summary of NCHRP Projects of Interest to H&H

Publications from Completed Research

NCHRP Report 533, Web Doc 67, CD-48 and CD-49 “Methodology for Predicting Channel Migration ”

NCHRP Report 516, “Pier and Contraction Scour in Cohesive Soils ”

NCHRP Report 515, “Portable Scour Monitoring Equipment”

NCHRP Report 482, “Guidance for Selecting Compensatory Wetland Mitigation Options”

NCHRP Report 474, “Assessments of Impacts of Bridge Deck Runoff Contaminants on Receiving Waters”

NCHRP Report 473 and Web Doc 44, “Recommended Specifications for Large-Span Culverts”

NCHRP Reports 448, 443, and CRP –CD-7, “Environmental Impact of Construction and Repair Materials on Surface and Ground Water”

NCHRP Report 445, “Design Specifications for Debris Forces on Highway Bridges”

NCHRP Report 426, “CAESAR: An Expert System for Evaluation of Scour and Stream Stability”

NCHRP Synthesis 303, “Assessment and Rehabilitation of Existing Culverts”

Recent Completions

NCHRP Project 24-14, “Scour at Contracted Bridge Sites”

Final Report published in July 2005

NCHRP Project 24-19, “Environmentally Sensitive Channel- and Bank-Protection Measures”

Final Report published June 2005

Active Projects

NCHRP Project 24-7(2), “Pier Scour Countermeasures”

Ayres and Associates, \$800K

NCHRP Project 24-15(2), “Abutment Scour in Cohesive Soils”

Texas A&M, \$400K

NCHRP Project 24-18A, “Countermeasures to Protect Bridge Abutments from Scour ”

Michigan Tech, \$500K

NCHRP Project 24-20, “Prediction of Scour at Bridge Abutments ”

University of Iowa, \$500K

NCHRP Project 24-23, “Riprap Design Criteria, Specifications, and Quality Control”

Ayres and Associates, \$350K

NCHRP Project 24-24, “Criteria for Selecting Numeric Hydraulic Modeling Software”

Ocean Engineering Associates, \$175K

NCHRP Project 24-25, “Risk-Based Management of Bridges with Unknown Foundations”

GKY & Associates, \$200K

NCHRP Project 24-26, “Effects of Debris on Bridge-Pier Scour ”

Ayres and Associates, \$600K
NCHRP Project 24-27, "Recommendations for the Adoption of Bridge Scour Research"
In development, \$350K
Project 20-07(146), "Development of Software Verification Protocol for the Hydrologic and Hydraulic Models for Highway Planning and Design"
University of South Carolina, \$100,000
Project 20-07(162), "Synthesis-of-Practice: Correlation of Bench-Scale and Large-Scale Testing on Rolled Erosion Control Products (RECP)"
-Colorado State University, \$50,000
Project 20-07(178), "Evaluation and Update of NCHRP Project 24-08: 'Scour at Bridge Foundations: Research Needs'"
Ayres and Associates, \$25K
Project 20-05 (Synthesis 36-02) "Practices for Monitoring Scour Critical Bridges"
Beatrice Hunt, Hardesty & Hanover
Project 25-25(8), "Developing performance data collection protocol for stream restoration"
GKY & Associates, \$50,000
Project 25-25(14), "The evaluation of various assessment methodologies used to study and monitor the effects of dam removal projects (stream restoration) implemented as appropriate stream mitigation for federally funded transportation projects"
ICF Consulting, \$75,000
NCHRP Project 25-20(1), "Evaluation of Best Management Practices for Highway Runoff Control"
Oregon State University, \$700,000
NCHRP Project 25-9(1), "Environmental Impact of Construction and Repair Materials on Surface and Ground Waters -- Outreach and Training"
Oregon State University, \$100,000

New H&H Projects funded for FY2006

NCHRP Project 15-36, "Procedure for the Joint Probability of Design Peak Flows at Confluences"
\$400,000
NCHRP Project 24-29, "Effects of Fractured or Degradable Rock on Pier Scour at Bridges"
\$750,000
NCHRP Project 15-24, "Hydraulic Loss Coefficients for Culverts"
\$250,000 (continuation funding)
NCHRP Project 24-20, "Prediction of Scour at Bridge Abutments"
\$200,000 (continuation funding)
Project E-08, "Ecological Effects of Streambank Armoring"
\$500,000 (contingency funding)