# AASHTO TECHNICAL COMMITTEE ON HYDROLOGY AND HYDRAULICS
# FALL 2007 MEETING DRAFT MINUTES DATED 04/05/08
## November 6-8, 2007
## Moab, Utah

## AGENDA

**Tuesday, November 6, 2007**

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| 8:00 am – 8:15 am | Dave Henderson – Call Task Force Meeting to Order, Housekeeping and Introductions |
| 8:15 am – 8:30 am | Michael Fazio – Welcome |
| 8:30 am – 9:30 am | Jorge Pagán – FHWA Perspective |
| 9:30 am – 9:45 am | Break |
| 9:45 am – 10:30 am | Kelley Rehm, AASHTO Update |
| 10:30 am – 11:55 am | Open Discussion; TC Direction, Progress, Concerns, Ideas |
| 11:55 am – 1:00 pm | Lunch |
| 1:00 pm – 1:45 pm | NCHRP Update, David Reynaud |
| 2:45 pm – 3:00 pm | Break |
| 3:00 pm – 4:00 pm | Subcommittees - Work Session I |
| 4:00 pm – 5:00 pm | Reconvene Full Committee for Discussion |

**Wednesday, November 7, 2007**

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|---|---|
| 8:00 am – 10:00 am | Subcommittees - Work Session II |
| 10:00 am – 10:15 am | Break |
| 10:15 am – 11:55 am | Subcommittees - Work Session III |
| 12:00 pm –1:00 pm | Lunch |
| 1:00 pm – 2:45 pm | Subcommittees - Work Session IV |
| 2:45 pm – 3:00 pm | Break |
| 3:00 pm – 4:00 pm | Subcommittees - Work Session V |
| 4:00 pm – 5:00 pm | Reconvene Full Committee for Discussion |

**Thursday, November 7, 2007**

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| 8:00 am – 10:00 am | Subcommittees - Work Session VI |
| 10:00 am –10:15 am | Break |
| 10:15 am –11:55 am | Subcommittees - Work Session VII |
| 11:55 pm – 1:00 pm | Lunch |
| 1:00 pm – 2:15 pm | Full Committee Discussion on Progress |
| 2:15 pm – 2:30 pm | Break |
| 2:30 pm – 3:00 pm | Technical Committee Business Session |
| | & Election of Officers |
| 3:00 pm – 4:00 pm | Concerns of the States |
| 4:00 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 |
| Merril Dougherty | Indiana | 1994 | 3 |
| Hani Farghaly | Ontario | 2004 | 3 (absent) |
| Mike Fazio, Vice-Chair | Utah | 2001 | 4 |
| Preston Helms | South Carolina | 2001 | 2 (absent) |
| Dave Henderson, Chair | North Carolina | 2000 | 2 |
| Andrea Hendrickson | Minnesota | 2005 | 3 |
| Roy Mills | Virginia | 1999 | 2 (absent) |
| Te Ngo | Oklahoma | 1991 | 4 |
| Matt O'Connor | Illinois | 2001 | 3 |
| Jorge Pagán-Ortiz, FHWA/Secretary | Wash., D.C. | 2003 | 1 |
| Richard Phillips | South Dakota | 2002 | 4 |
| Karuna Pujara | Maryland | 2005 | 1 |
| Lotwick Reese | Idaho | 1996 | 4 |
| Rick Renna | Florida | 2001 | 2 |
| Jim Richardson | Kansas | 1996 | 3 |
| Amy Ronnfeldt | Texas | 2006 | 4 |
| Norm Schips | New York | 2002 | 1 (absent) |
| Alvin Shoblom | Oregon | 2005 | 4 (absent) |
| Amir Soltani | Nevada | 2005 | 4 (absent) |
| Duc minh Tran | Quebec | 1999 | 1 (absent) |
| Rae Van Hoven | New Mexico | 2004 | 4 (absent) |

## A) WELCOME AND INTRODUCTION:

1. Chairman Dave Henderson welcomed members and friends of the AASHTO Technical Committee on Hydrology and Hydraulics (TCHH) to the fall 2007 meeting and thanked Mike Fazio for arranging this meeting in Moab, Utah. This is the TCHH meeting number 73. Chairman Henderson briefly talked about the history of Moab. He shared with us that the town of Moab was almost not existent, except for the movie industries – John Wayne did 2 to 3 movies in Moab. Chair Henderson introduced Doug Moore of the NYDOT. He also discussed housekeeping items.
2. Vice-chairman Mike Fazio welcomed the TCHH to Utah on behalf of the Utah DOT. He had asked the Utah DOT deputy director to come over to Moab this week, but due to the fact that he had other commitments, he asked Mike to welcome the members of the TCHH to Moab. Mike suggested that we may want to consider working at night time so that we can have the opportunity to do visit some places around the Moab area as there are quite a few great sightseeing locations such as the Arches National Park and Devil's Point. Mike introduced Jim Baird of his state the Utah DOT.
3. Chairman Henderson made some remarks about the Moab region – from the marvelous wildlife and their amazing survival capabilities to the annual rainfall in Moab – 9 inches per year -- to the trees, which may be 600-700 hundred years – to the many trails – some of which may take 2 days to complete.
4. TCHH roster was passed around for updates and corrections as well as the list of visitors (see Appendixes A and B).

## B) FHWA PERSPECTIVE:

5. Jorge Pagán-Ortiz made a presentation on FHWA Perspective. Please visit the following ftp site to download presentation: ftp://hibtguest:hibtguest@fhwaftp.fhwa.dot.gov and follow these steps:

   a. Once you are on the ftp site you should double-click on the "HIBT" folder.

   b. Double-click on the "FROM" directory.

   c. Double-click on the "NAME" folder.

   d. Look in the "Jorge Pagan" folder for the Power Point Presentation "MONITORING"

   e. Copy (only) this power point presentation to a (pre-determine) location in your computer.

## C) NCHRP:

6. David Reynaud presented a status report on the NCHRP projects. Please visit NCHRP web site for more information on these projects at: http://www.trb.org/CRP/About/DivD.asp

## D) AASHTO:

7. Kelley Rehm, AASHTO liaison to the TCHH, gave a report on AASHTO activities and share with us a list of issues discussed at the AASHTO Standing Committee on Design (See summary report in Appendix C). Also, she provided a list of: NCHRP 20-07 projects, NCHRP projects funded for FY 2008, and contingency projects. These lists are also presented in Appendix C).

8. She reported that the AASHTO TCH&H need to update its standard operation procedures.

**Action Item No. 1** – TCHH needs to work on its standard operation procedures and send it to AASHTO as soon as possible.

9. Kelly indicated that any time that any research proposals submitted by the TCHH will have to go through the Subcommittee on Design, who in turn will have to compete for prioritization with other proposals they received from other technical committees. Rick Renna stated that a lot of the research proposals that we work on falls under the Subcommittee on Bridges and Structures and therefore, if it goes to the subcommittee on design, it won't fit their needs. Kelly indicated that if we feel that a proposal fits better under other TC, say culverts, then we should submit it to that other TC and do a joint proposal. Rick indicated that we have more research proposals pertaining to bridges due to our scour initiatives and questioned if we can participate in both, the Subcommittee on Bridges and Structures and the Subcommittee on Design.
10. Kelly discussed some specific issues that AASHTO has such as:
    a. Would like TCHH to meet at the same time as the Subcommittee on Design meets
    b. Concerned with the locations where we have met as they are difficult to get to.
    c. Would like to have a timeline, which we should define before our meetings are over.
    d. Need to prepare a financial report -- The TCHH financial report is presented in Appendix D.

**E) OPEN DISCUSSION ON DIRECTION, CONCERNS AND IDEAS:**

11. There are quite a few of the TCHH members that have had problems getting to the FTP site that FHWA created.
12. A discussion took place with regards to the current schedule for completing the manual as it seems to be unrealistic. Also, a discussion took place regarding the large amount of time that has taken to work on the policy manual and that we should really spend time on the procedure manual.
13. Chairman Henderson reminded the TCHH members that our last publication did not come out until 2005 instead of 2003 as it was originally planned. He indicated that while we have lost a lot of time trying to figure out where we were going with the next version of our manuals, delaying completion of our manuals by 24 months -- to 2010 -- would put us on a 5-year schedule. And this will allow us to dedicate more time on the "How" (procedures) document. Te Ngo introduced a motion to delay the final products by 24-months – from 2008 to 2010. Kelly Rehm said that she does not believe that AASHTO would have any objection to this delay. The motion was second. Chairman Henderson pointed out that AASHTO is looking at changing the format of the MDM as they are looking for better ways to market our manuals and ways of making them available by sections of interest to customers.
14. A TCHH member voiced some issues that she experienced with the references used on her chapter – they got convoluted and it took her a lot of extra effort to make sure that references were correctly use in her chapter. Another chapter chair voiced the need to elevate our level of effort to make chapters consistent as there have been different authors and written styles from one chapter to another. Vice-Chairman Fazio suggested that the TCHH should hire a consultant to help us out not only with format and style, but also with any technical issues that may exist between chapter and chapter. It was discussed that if we were to go in this direction, a consultant would need about a year to massage all information and technical material, which may be another factor for the committee to consider delaying completion of the manuals until 2010. Also, AASHTO may be able to give us some educational comments based on what we have done so far. Kelly told us that we will have to go through copyrights approvals once again. Te Ngo

reminded the committee members that the cost for consultants was not cheap for the 2005 MDM as it cost about $300K.

15. Kelly said that December 2008 is the target day AASHTO editors have planned to have our product for their review and that March 2009 is the target date for publishing. Also, she said that AASHTO can start working on portions of the publications. TCHH members voiced they would prefer that we submit all together for one manual. Kelly said that if we do not have the urgency of having AASHTO review pieces of the manual, then she would agree that we should go ahead and submit a full package. Chairman Henderson said that there is a consensus that there is not that urgent to submit portions of the manual.
16. Glenn DeCou said that we would need a more comprehensive schedule if we are considering bringing external help.
17. Chairman Henderson said that if we bring a consultant, we would need to establish a process for selection. And we could consider using an NCHRP 20-07 project as the vehicle to take us there.
18. Vice-Chairman Fazio said that he is willing to set up a solicitation on the web for helping us with the final product. Chairman Henderson said that we could also solicit $10K per year per state for 2 years through a pooled-fund project. These funds can be used to pay for the consultant assistance. Another option would be to solicit $5K per year for 3 years. It was decided to go for the higher amount ($10K) per year per state for 2 years. Vice-chairman Fazio will prepare a solicitation letter to all states. He will draft the solicitation letter and send it out to the TCHH members for comments. The TCHH will also consider extending the completion of the manuals beyond 2010. A group will be set up to define the timeline of what the schedule should be. To help this group in preparing the new schedule for completing the manuals, the TCHH needed to find out where it is so far as far as the completion of each chapter for each of the two manuals. A motion was made to review the status of progress made by each chapter chair. Vice-chairman Fazio called upon each chair to report their progress on both the policy and procedures manuals. The chapter progress presented in Appendix E. A schedule for completing the manuals is presented in Appendix F.
19. Chairman Henderson asked for any volunteers to help in putting together a pooled-fund solicitation to all states. Volunteers include: Andrea Hendrickson, Glenn DeCou and Rick Renna – these volunteers with work with Vice-chairman Mike Fazio in developing the solicitation for all states.
20. A couple of observations were made regarding the documents that the TCHH is currently working on. One member of the TCHH pointed out that it appears that the TCHH will be moving towards developing an authoritative document and as such he envisions the TCHH will be busy in updating our documents on a yearly basis as NCHRP projects are finalized. Another member pointed out that there are things that are going on in the area of materials at other committees that may impact what we are doing. He suggested that there should be a better way to interact and communicate with them to make sure we know what is going on and that we are including the latest information in our documents. Chairman Henderson suggested that we should write a letter to AASHTO that would address that due to the absence of communication between committees there could be a negative effect on the final products that these committees put together – other members offered comments such as that several of our issues are multidisciplinary and we should involve others as we develop our standards and policies.
21. Another suggestion made was that we should share our problem statements with other committees to see if there is any interest of cross-cutting needs for assistance. This would help to identify potential areas of coordination needed with other committees up-front in our problem statements.
22. A summary of topics discussed by chapter chairs as they reported their progress towards completing their respective chapters follows:
    a. Chapter 1 (Douglas Morse) – Not much done. Chapter chair is not familiar with format

(Douglas is a new chapter chair). Material in chapter is pretty outdated.

b. Chapter 2 (Jim Richardson) – Comments incorporated and draft chapter ready.
c. Chapter 3 (To be included in Chapter 2) – Chapter has been reviewed.
d. Chapter 4 (Glenn DeCou) -- The appendix on this chapter will be taken to the level II.
e. Chapter 5 (Mike Fazio) – No discussion.
f. Chapter 6 (Lotwick Reese) – No discussion.
g. Chapter 7 (Rae Van Hoven) -- No discussion.
h. Chapter 8 (Brooks Booher) – No discussion.
i. Chapter 9 (Te Ngo) – No discussion.
j. Chapter 10 (Roy Mills) – No discussion.
k. Chapter 11 (Richard Phillips) – No discussion.
l. Chapter 12 (Merril Dougherty) -- Need help – have to add BMP material. Would like know what state manuals have on BMP's. Glenn DeCou will share what they have on BMPs in California on detention, retention, water quality guidance. Merril is also looking for temporary and permanent BMPs. It was suggested that Merril coordinates with Amy as she may already have covered certain topics on her chapter so that Merril can just reference one to Amy's chapter. A discussion took place as of whether this chapter should be titled Erosion and Sediment Control or should it be Water Quality as erosion and sediment control measures are primarily for temporary control of erosion.
m. Chapter 13 (Bill Bailey) – while he was absent from this meeting, his work is posted on the web and needs to be checked. It is 6 pages long.
n. Chapter 14 (Dan Ghere) – No discussion.
o. Chapter 15 (Amy Ronnfeldt) – No discussion.
p. Chapter 16 (Dave Henderson) – Issues not resolved with FTP site and Mike Fazio will help Dave with this.
q. Chapter 17 (Alvin Shoblom) – No discussion.
r. Chapter 18 (Rick Renna) – His chapter still lacking west coast information (say from Alaska). He needs west coast assistance. Glenn said that he e-mailed information on hurricanes and Tsunamies after the NM meeting.
s. Chapter 19 (Matt O'Connor) – No discussion.
t. Chapter 20 (Dave Henderson) – No discussion.
u. Chapter 21 (Andrea Hendrickson) – No discussion.
v. Chapter 22 (Karuna Pujara) – She could use help on the "How" manual – on information or examples.

23. In summary, most of the Level I document is completed and about 80 percent of the Level II chapters need quite a bit of help – eight chapters of the Level II document are almost completed. Chairman Henderson encouraged those that are almost complete to step up to help others with more support and help.
24. The following chapter chairs need help with their chapters:
    a. Chapter 1 (Douglas Morse) – Needs help with both Levels I and II.
    b. Chapter 8 (Brooks Booher) – Posted policy chapter on FTP site, but did not get help from his chapter team.
    c. Chapter 9 (Te Ngo) – Needs help with Level II.
    d. Chapter 11 (Richard Phillips) – Needs help with Level II.
    e. Chapter 12 (Merril Dougerty) – Needs help with both Levels.
    f. Chapter 16 (Dave Henderson) – Needs help with Level II.
    g. Chapter 17 (Alvin Shoblom) – Needs help with Level II.
    h. Chapter 19 (Matt O'Connor) -- Needs help with Level I.
    i. Chapter 20 (Dave Henderson) – Needs help with both Levels.
    j. Chapter 22 (Karuna Pujara) – Needs help with Level II.

25. A member of the TCHH suggested that we could look at the HECs/HDS's and pull material (procedures) from these documents for our Level II manual, but for more details we should refer to these FHWA publications.
26. A suggestion was made to have a master table of content per level of document and then each chapter should have its own detailed table of content. The master table of content could be web-based.
27. The issue on dual units was discussed as we want to be consistent throughout the documents. Also, since international sales of the AASHTO documents have not been great, it was discussed that now would be the time to make a change in direction with regards to units. Kelly mentioned that the Subcommittee on Design passed a resolution not to have metric in their publications. Chairman Henderson suggested that we ask the Subcommittee on Design to see what direction they recommend as we need to be consistent with this committee as we are more accountable to them.
28. Kelley followed up with AASHTO regarding the use of dual units and informed that AASHTO requires that if a TC is going dual units, everything has to be in dual units with English firs followed by Metric in parenthesis. Also, the tales/figures and examples will have to be in English and Metric. Therefore, the committee needs to decide whether or not it would like to continue with dual units. The other aspect is that wee ha a committee member from Canada and if we go only say English, we may give a disservice to Canada since they use metric. If was suggested that if we go dual units, we should use soft conversions rather than hard conversions. Currently, the committee believes that the conversion on the MDM and HDG are soft conversions – this would have to be verified.

**Action Item No. 2** – Need to verify whether or not the MDM and HDG use soft conversions or hard conversion of units.

29. The primary document to be more affected by the decision on units will be the Level II manual.
30. A motion was introduced to go single units and was seconded and voted in favor by the majority of the TCHH membership. This decision will modify Item 50 of the Amelia Island minutes. Also, this will need to get an exception from the Subcommittee on Design.
31. Vice-chairman Fazio announced that there will be a presentation by Rusty _____ of AQUAVEO on "TUFLOW" – is a commercial flood and tide simulation software. AQUAVEO is an environmental and hydraulics consultant firm in Provo (BYU), Utah. They work as a consultant to Utah DOT. "TUFLOW" is a 1D/2D hydraulic model that uses finite difference. It has a wide range of applications including floodplains, urban flooding, estuaries and coastal waters. It uses SMS as its interface and can model 1D in combination with 2-D data. This program has not been accepted by any federal agency in the U.S.A., yet. It is very popular in Australia. EMS-I provides the marketing of this software and AQUAVEO the technical support.

**F) WORK SESSIONS:**

32. Chairman Henderson divided the TCHH into working groups as follows:
    a. Session 1A: Energy, Construction and Culvert Chapters -- Richard Phillips and Matt O'Connor and Te Ngo)
    b. Session 1B: Introductory Chapter, Legal, Documentation and Planning – Douglas Morse, Jim Richardson, Glenn DeCou and Mike Fazio.
    c. Session 2A: Wetlands, Environment and Erosion and Sediment
    d. Session 2B: Groundwater, Pump Stations and Coastal Zone – Dan Ghere and Rick Renna.
    e. Session 3A: Data Collection, Construction – Matt O'Connor.
    f. Session 3B Storage, maintenance, Channels – Merril Dougherty.

33. The committee agreed on a format to be followed for the Chapters of the Levels I and II manuals (See Appendix G).

34. Prior to beginning the Thursday afternoon session, members of the committee stepped outside the conference room and enjoyed a few minutes of beautiful mother nature while meditating on the memory of our friend Mark Miles.
35. Once the afternoon session began, Chairman Henderson gave a few notes for chapter chairs to keep in mind such as:
    a. Numbering equations in each chapter and defining the variables.
    b. Regarding the format of an equation, continue to use what we currently have in the chapters for now.
    c. Numbering equations independently on each chapter as the same equation may be used in another chapter.
    d. If the same equation is used in same chapter, continue to reference it by the number which was used first on the equation.
    e. When posting a chapter let your team members know that it is posted.
36. The TCHH would also like to initiate an effort on culvert management program. Vice-chairman Fazio will draft a letter and will send it out to the TCHH members for comments.
37. On the subject of Pipe Materials – Chairman Henderson sent a copy of draft letter on pipe joints and asked if anyone has a comment. Glenn DeCou said that it is a good effort as it establishes performance criteria for joints -- he said that we should be looking for an end-product performance and recommended that developers should be talking to the members of the TCHH. Further, he said that is appears that the Committee on Materials has totally ignored the topic of shear moments for joints. Chairman Henderson said that this is an indicator of the lack of communication between committees in AASHTO. Chair Henderson he will be glad to sit down with Cecil Jones to discuss comments Glenn's comments with him. Also, Chair Henderson said that depending on the information coming out on joints, we may have to add more material on the culvert chapter.
38. Andrea Hendrickson briefed the TCHH on the National Hydraulic Engineering Conference:
    a. The Conference's Steering Committee is looking for presenters to submit abstracts.
    b. Presenters must keep in mind the Conference's theme – Partnership. So, any abstract that touches on this will be great.
    c. Abstracts should be sent to Cynthia Nurmi.
    d. Exhibit requests should be sent to Cynthia Nurmi, too.
    e. The Conference goes from Tuesday, August 26, 2008, to Friday, August 29, 2008.
    f. TCHH will meet on Monday and Wednesday during the conference's week – this will require Sunday Travel.
    g. The Steering Committee is anticipating over 200 participants.
    h. An invitational letter to FHWA Administrator Rick Capka is being developed.
    i. Thanks to Cynthia Nurmi's process and the energy and enthusiasm of the Maine DOT Conference Coordinator, things are going well.
39. Chairman Henderson and Vice-chair Fazio reported that apparently the Standing Committee on Design does not have interest in chairing a TC in which they have no interest and that AASHTO still looking at members of the SCOD to chair Technical Committees. Chairman Henderson and Vice-chairman Fazio went to Burlington, Vermont in 2006 and presented the TCHH annual report and lobbied for our TCHH to continue to have its chair from its own membership. Chair Henderson believes that members of the SCOD did listen to the TCHH consensus and that his lobbying was well received. Since Vice-chairman Fazio is one of the members of the SCOD, that gives us another 24 months to keep somebody with knowledge of our issues as chair of our technical committee. The executive committee expressed interest in continuing to listen to our

concerns. Vice-chairman Fazio thanks Chairman Henderson for his leadership in pursuing this issue at the SCOD meeting in Burlington, Vermont. Chairman Henderson encouraged members of the TCHH to discuss this issue with their corresponding voting members of The SCOD. We are hoping to get a resolution that would allow the TCHH to retain a chair from within its members with the understanding that the chair will attend the SCOD meetings.

40. Glenn DeCou had a question regarding whether or not we should be ranking our problem statements before December 17, 2008. Also, he said that we may have to bring our rankings up to the attention of the SCOD so that they can add them up to their agenda for their April 2008, meeting. It was mentioned that we missed the deadline for this year as problem statements were due 2 weeks ago. It was suggested to post our problem statements on the FTP site and have a deadline to comment on them so that we do not miss a deadline.
41. The level of importance for selection of problem statements goes as following from top to bottom: AASHTO, States and TRB.
42. New research ideas that members suggested should be developed within the next 6 months include:
    a. On the subject of pipe culverts – setting a criteria for accepting culverts
43. Te Ngo reminded us that the TDB AFB60 Committee on Hydrology, Hydraulics and Water Quality is working on various problem statements and that we can review and vote on prioritizing them.
44. With regards to the TRB AFB60 Committee would like to have members of the AASHTO TCHH become part of their Subcommittee. Chairman Henderson said that we should continue to have representation on this Committee, which is heavily represented by researchers and the academia. Their main goal is to identify research needs.
45. With regards to the AASHTO TCHH by-laws – Chairman Henderson said that we need to set-up a group to revise them as their last revision is dated 1979. Chairman Henderson will send a copy of the by-laws that he has to Lotwick Reese and Dan Ghere to make sure that the version that he has is the most current one. Also, Chairman Henderson suggested that we should move to reinstate our by-laws to elect our chair and Vice-chair every 2 years. A motion to reinstate the by-laws was introduced, second and passed by unanimous vote. As stated in the by-laws, the TCHH Chair should be replaced by the Vice-chair. Then, the Vice-chair should be nominated by the TCHH. Rick Renna was interested in become Vice-chair (Glenn DeCou and Jim Richardson would be also interested if they would be able to participate on every meeting).
46. A motion was introduced to have Rick Renna as the TCHH Vice-chair, second and selected unanimously by acclamation.
47. A tale showing the chapter chair assignments is shown in Appendix H.
48. Pictures courtesy of Te Ngo are presented in Appendix I.

## G. CONCERNS OF THE STATES:

49. Arkansas – Brooks Booher reported that his Department is revising its culvert material selection policy at present to comply with federal directive. They are struggling with finding information to justify new policy, whatever it may be. They cannot find answers to questions about material strength and durability, other than information provided by manufacturers. Also, like many small state DOT's, they cannot justify expense of providing software training because do not have enough participants to fill up a class;
50. California – Glenn DeCou talked about the updates of their regression equations, which were last updated in the late 1970's. They are looking to partnering with other states to complete their updates. It is very hard for his staff to approve alternative pipe materials selection. A student developed a computer program for material pipe selection. Caltrans completed the development of a fish passage manual in June 2007. It covers small culverts, too and the manual is posted on

their web site. Also, they have posted a report on culvert abrasion on the web.

51. Florida – Rick Renna reported that they just finished a project on sediment and erosion control with their environmental counterparts, which produced a manual that is being adopted for statewide usage. They completed a research on stormwater re-use and pervious pavement as part of a new stormwater treatment rule by the Florida regulatory agency. They completed the update of their complex pier scour procedures.
52. Indiana – Merril Dougherty reported spending quite a bit of time on 401 water quality certifications for nationwide permits. They oversize their culverts by about 20 percent and as such, they will have a significant cost increase in their culvert program and are looking for ways to negotiate with environmental resource agencies on this. They have gone through a 2-year organizational restructuring and finally are seeing it working. He got two new positions which he was able to fill last August. He commented that FHWA conducted a hydraulics review in August 2007 which helped him to understand what they are doing well and what needs to be improved and encourages other states to consider a review of their practices.
53. Kansas – Jim Richardson reported that they have developed guidelines for stream classifications using Rosgen.
54. Maryland – Karuna Pujara mentioned that the place for our Spring 2008 meeting will be at the Maritime Institute near Baltimore, Maryland. The meeting dates will be April 8-10, 2008, which coincides with the Cherry Blossom time. A bus tour of the new Woodrow Wilson Bridge is being planned.
55. Minnesota – Andrea Hendrickson reported that Minnesota's regression equations are being updated by USGS. They are planning on partnering to help fund USGS's StreamStats. She also reported that NPDES, TMDL & MS-4 increasing requirements for managing stormwater has become high profile. They are also considering adding hydraulic infrastructure to state plan, and maintenance performance measures. They are hoping to get Atlas 14 pooled-fund for the Midwest region.
56. New York – Douglas Morse reported that it took two years to hatch out a document that DEC will accept – one that local municipalities would use. New SPDES regulations to go into effect Jan. 08. With regards to fish passage, they have to worry not only about passage of fish, but everything (in the New York and Buffalo districts). They have to meet USACE regional conditions for bottomless culverts (not necessarily just fish passage). Nationwide permits will be re-issued again as they are good for 5-years. Stormwater factors are becoming a big design control factor.
57. New Mexico – Rae Van Hoven reported concerns with the need for better defined curve numbers and better defined time of concentration. At this time, they are using 400-ft in length of the first overland flows, then 2000-ft of shallow concentrated flows, and the remaining is kirpich equation. She is interested in knowing how other State DOTs in flat lands or in the plains deal with drainage issues like TC. They do not have much hydraulic data to estimate sediment transport; and usually use 15-20 % bulking factor for sediment quantities. Their drainage manual is being revised at this time, but it will take maybe over one year before it is published.
58. North Carolina – Chair Henderson reported that they are going through a change in how NCDOT does business with regards to 375 bridge in their bridge replacement program and are looking at methods that can be used to expedite standards for design. Roadway designers have determined that the hydraulic of a bridge do not drive the cost of the bridge up, but that it is the roadway design features.
59. South Dakota – Richard Phillips reported that they have noticed a few bridges with very deep scour holes based on the USGS Level 1.5 scour analysis. Also, the State is concerned with the applicability of Briaud's method on scour on cohesive soils – they are looking into whether or not the SRICOS Method is applicable to South Dakota.
60. Texas – Amy Ronnfeldt reported that TXDOT has rescinded $666M to date -- $361M on FY

2007. On FY 2008 they are shifting funds from new construction (which will be very little) to maintenance – they will be even cutting back on consultant contracts. With regards to storm water quality, they are seeing the beginning of a shift from mandatory detention to looking at the effects on the downstream hydrographs using the entire watershed. While this may be good practice, she cannot see how this can be implemented down to the lowest levels (i.e., the techs in the small offices).

**H) FINANCIAL REPORT**

61. See Appendix D. May have to increase registration fees if the TCHH Chair has to assist the SCOD meetings.

**I) TCHH FUTURE MEETING LOCATIONS:**

- 2008 Spring Baltimore, MD
- 2008 Fall Portland, Maine (in conjunction with the 2008 National Hydraulics Engineering Conference)
- 2009 Spring TBD
- 2009 Fall TBD

# Appendix A

**AASHTO TECHNICAL COMMITTEE ON HYDOLOGY AND HYDRAULICS**

**MEMBERS/MEMBER'S REPRESENTATIVES**

| MEMBER | ADDRESS | TELEPHONE |
|---|---|---|
| Mr. Bill Bailey<br>Hydraulics Engineer | Wyoming Transportation Department<br>5300 Bishop Blvd., Cheyenne, WY 82009 | (307) 777-4045 (o)<br>(307) 777-4279 (f)<br>william.bailey@dot.state.wy.us |
| Mr. Brooks Booher<br>Staff Hydraulic Engineer | AR State Highway & Transportation Dept.<br>10324 I-30, Little Rock, AR, 72209<br>PO Box 2261, Little Rock, 72203-2261 | (501) 569-2589 (o)<br>(501) 569-2057 (fax)<br>brooks.booher@arkansashighways.com |
| Mr. Glenn DeCou<br>Headquarters Hydraulic Engineer<br>State Highway Drainage Design | CALTRANS, 1120 N Street, Room 2208,<br>Sacramento, CA 95814, P.O. Box 942874<br>Sacramento, CA 94274-0001 | (916) 653-1302 (o)<br>(916) 653-1446 (f)<br>Glenn_S_DeCou@dot.ca.gov |
| Mr. Merril E. Dougherty<br>Hydraulics Engineer<br>Supervisor | Indiana Department of Transportation<br>100 North Senate Avenue, Rm N642<br>Indianapolis, IN 46204-2228 | (317) 232-6776 (o)<br>(317) 233-4929 (f)<br>mdougherty@indot.in.gov |
| Dr. Hani Farghaly<br>Senior Hydrotechnical Engineer<br>Design and Contract Standards Office | Ontario Ministry of Transportation<br>301 St. Paul St, 2nd Floor North<br>St. Catherines, Ontario L2R 7R4 | (905) 704-2244 (o)<br>(905) 704-2051 (f)<br>hani.farghaly@mto.gov.on.ca |
| Mr. Mike Fazio<br>TCHH Vice-Chair<br>Deputy Director of Research | Utah Department of Transportation<br>4501 South 2700 West<br>Salt Lake City, Utah 84114 | (801) 957-8595 (o)<br>(801) 633-6228 (m)<br>(801) 965-4564 (f)<br>mfazio@utah.gov |
| Mr. Preston Helms<br>Hydraulic Design Engineer | SC Department of Transportation<br>P.O. Box 191, Columbia, SC 29202<br>955 Park Street, Columbia, SC 29201 | (803) 737-1723 (o)<br>(803) 737-9868 (f)<br>helmspw@dot.state.sc.us |
| Mr. David Henderson<br>Chair, TCHH<br>State Hydraulics Engineer | NC DOT, 1590 Mail Service Center<br>Raleigh, North Carolina 27699<br>1020 Birch Ridge Rd., 27610 (deliveries) | (919) 250-4100 (o)<br>(919) 250-4108 (f)<br>dhenderson@dot.state.nc.us |
| Ms. Andrea Hendrickson<br>State Hydraulics Engineer | Minnesota Department of Transportation<br>3485 Hadley Avenue North<br>Oakdale, MN 55128 | (651) 366-4466 (o)<br>(651) 366-4509 (f)<br>andrea.hendrickson@dot.state.mn.us |
| Mr. Roy T. Mills<br>State Hydraulics Engineer | VA Dept. of Transportation<br>1401 East Broad St.<br>Richmond, Virginia 23219 | (804) 786-9013 (o)<br>(804) 225-3686 (f)<br>roy.mills@vdot.virginia.gov |
| Mr. Te Anh Ngo<br>Roadway Drainage Engineer<br>Roadway Design Division | Oklahoma Dept. of Transportation<br>200 N.E. 21st Street<br>Oklahoma City, Oklahoma 73105 | (405) 521-6772 (o)<br>(405) 522-4519 (f)<br>tngo@odot.org |
| Mr. Matt O'Connor<br>Hydraulics Engineer | Illinois Department of Transportation<br>2300 S. Dirksen Parkway<br>Springfield, Illinois 62764 | (217) 785-2917 (o)<br>(217) 782-7960 (f)<br>matthew.oconnor@illinois.gov |

**AASHTO TECHNICAL COMMITTEE ON HYDOLOGY AND HYDRAULICS**

**MEMBERS/MEMBER'S REPRESENTATIVES**

| MEMBER | ADDRESS | TELEPHONE |
|---|---|---|
| Mr. Jorge E. Pagán-Ortiz,<br>Secretary, TCHH<br>Principal Bridge Engineer – Hydraulics | FHWA, HIBT-20<br>1200 New Jersey Avenue, SE.<br>Room E75-322<br>Washington, D.C. 20590 | (202) 366-4604 (o)<br>(571) 264-7039 (m)<br>(202) 366-3077 (f)<br>jorge.pagan@dot.gov |
| Mr. Richard Phillips<br>Bridge Hydraulics Engineer<br>Office of Bridge Design | South Dakota Department of Transportation<br>700 East Broadway<br>Pierre, South Dakota 57501 | (605) 773-3285 (o)<br>(605) 773-4993 (desk)<br>(605) 773-2614 (f)<br>rich.phillips@state.sd.us |
| Ms. Karuna Pujara<br>Chief, Highway Hydraulics Division | Maryland State Highway Admin.<br>707 N. Calvert St., MS C-201<br>Highway Hydraulics Div.<br>Baltimore, MD 21202 | (410) 545-8390 (o)<br>(410) 209-5031 (f)<br>kpujara@sha.state.md.us |
| Mr. Lotwick I. Reese<br>Hydraulics Engineer | Idaho Transportation Department<br>P.O. Box 7129, Boise, Idaho 83703<br>3311 West State Street<br>Boise, Idaho 83707-1129 | (208) 334-8491 (o)<br>(208) 334-8040 (f)<br>lotwick.reese@itd.idaho.gov |
| Mr. Rick Renna<br>State Hydraulics Engineer | Florida Department of Transportation<br>605 Suwannee Street M.S. 32<br>Tallahassee, Florida 32399-0450 | (850) 414-4351 (o)<br>(850) 559-2780 (m)<br>(850) 414-5261 (f)<br>rick.renna@dot.state.fl.us |
| Mr. James R. Richardson<br>Road Design Leader | Kansas Department of Transportation<br>Bureau of Design, Road Section<br>700 SW Harrison Street<br>Topeka, Kansas 66603-3754 | (785) 368-8292 (o)<br>(785) 296-6946 (f)<br>jimr@ksdot.org |
| Ms. Amy Ronnfeldt<br>Hydraulics Engineer | TXDOT<br>200 E. Riverside Dr.<br>Austin, Texas 78704 | (512) 416-2328 (o)<br>(512) 416-3098 (f)<br>aronnfel@dot.state.tx.us |
| Mr. Norman P. Schips<br>Civil Engineer 3 | New York State Department of Transportation<br>Design Quality Assurance Bureau<br>50 Wolf Road - POD 23<br>Albany, NY 12232 | (518) 485-8611 (o)<br>(518) 457-6477 (f)<br>nschips@gw.dot.state.ny.us |
| Mr. Alvin Shoblom<br>Senior Hydraulics Engineer | Oregon Department of Transportation<br>355 Capital Street NE<br>Room 308A<br>Salem, Oregon 97301 | (503) 986-3365 (o)<br>alvin.shoblom@odot.state.or.us |
| Mr. Amir Soltani | Nevada Department of Transportation | (775) 888-7619 (o)<br>(775) 986-3407 (f)<br>amir.soltani@sbcglobal.net |

## AASHTO TECHNICAL COMMITTEE ON HYDOLOGY AND HYDRAULICS

### MEMBERS/MEMBER'S REPRESENTATIVES

| MEMBER | ADDRESS | TELEPHONE |
|---|---|---|
| Dr. Duc minh Tran | Ministère des Transports du Québec<br>930 Chemin Sainte-Foy<br>7è étage Ville Québec<br>Province Québec, Canada G1S 4X9 | (418) 644-0894 (o)<br>(418) 646-5415 (f)<br>mdtran@mtq.gouv.qc.ca |
| Ms. Rae Van Hoven<br>State Drainage Engineer | NM DOT<br>1120 Cerrillos Rd.<br>Santa Fe, New Mexico 87505-1842 | (505) 827-5323 (o)<br>(505) 827-5345 (f)<br>rae.vanhoven@state.nm.us |

### AASHTO HIGHWAY SUBCOMMITTEE ON DESIGN OFFICERS

| | | |
|---|---|---|
| Dr. Kam K. Movassaghi (Chair)<br>Secretary, LA DOT & Development | P.O. Box 94245<br>1201 Capitol Access Road<br>Baton Rouge, LA 70804-9245 | (225) 379-1200 (o)<br>(225) 379-1851 (f)<br>kammovassaghi@dotd.state.la.us |
| Mr. Dwight Horne (Secretary)<br>Director, Office of Program Administration | FHWA, (HIPA-1)<br>400 7th Street, SW., Room 3134<br>Washington, D.C. 20590 | (202) 366-5530 (o)<br>(202) 366-7298 (f)<br>dwight.horne@fhwa.dot.gov |
| Ms. Kelley C. Rehm, P.E.<br>AASHTO Staff<br>Project Engineer - Technical Committee on Hydrology and Hydraulics | AASHTO<br>520 Suffolk Court<br>Old Hickory, Tennessee 37138 | (859) 433-9623 (o)<br>(866) 301-1322 (f)<br>krehm@aashto.org |

# Appendix B

**VISITORS**
AASHTO TECHNICAL COMMITTEE ON HYDROLOGY AND HYDRAULICS
FALL 2007 MEETING
MOAB, UTAH
NOVEMBER 6-8, 2007

| Name | Address | Telephone/Fax/E-Mail |
|---|---|---|
| David Reynaud<br>NCHRP | 500 5th Street, NW.<br>Washington, D.C. 20001 | (202) 334-1695 (Office)<br>(202) 334-2006 (Fax)<br>dreynaud@nas.edu |
| Douglas Morse<br>NYSDOT | 50 Wolf Road<br>POD 2-4<br>Albany, NY 12232 | 518-457-4843<br>dmorse@dot.state.ny.us |
| Jim Baird<br>Utah DOT | Box 148405<br>Salt Lake City, Utah 84114 | 801-965-4024<br>jamesbaird@utah.gov |
| Dan Ghere<br>FHWA | 19900 Governors Drive<br>Suite 301<br>Olympia Fields, Illinois 60461 | 708-283-3557<br>dan.ghere@dot.gov |
| Rusty Jones<br>AQUAVEO | 75 South 200 East<br>Suite 201<br>Provo, Utah 84606 | 801-691-5528<br>rjones@aquaveo.com |
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# Appendix C

Kelly Rehm

AASHTO Report to the Technical Committee on Hydrology and Hydraulics
October 2007

**Issues Discussed at SCOD (applicable to TCED)**

- One of the issues discussed at the SCOD meeting was for the technical committees to have a larger and more visible role at future Subcommittee meetings.
    - This may occur either in the planning of the technical sessions or through more detailed reporting to the subcommittee on their activities.
    - The SCOD Executive Council will be discussing these ideas over the next few months on their conference calls and will get back to the technical committees in the beginning of 2008.

- Resolutions that were passed at SCOD that may be of interest include the following:
    - A task force was established to review SCOD's Operating Procedures and develop a long-range vision and plan for the Subcommittee on Design, and then work on creating goals and objectives for SCOD and its technical committees.
        - Only one conference call has been held by this group so far, and they are currently working on developing the long-range vision portion of their charge.
    - The SCOD Executive Council (which consists of the SCOD officers and the Regional officers) will draft changes to the SCOD Operating Procedures to reflect the SCOH requirement that chairs must come from parent committee. SCOD will then ballot the proposed changes.
        - They have heard and discussed options presented by various technical committees, but they still feel that consistent participation by the technical committee chairs at the SCOD meeting is important.

- The SCOD Meeting also had sessions on the following topics:
    - Cost Escalation and Cost Containment Strategies
    - Cross-Cutting Issues between the Subcommittee on Design and the Standing Committee on Highway Traffic Safety, as well as the Subcommittee on Right-of-Way, and Utilities
    - Recruitment and Retention of Engineers
    - Innovative Geometric Designs (Continuous Flow Intersection, Diverging Diamond Interchange, and Center Turn Overpass)
    - Considerations in Designing for Machine Controlled Equipment
    - Highway Safety Manual

**Standing Committee on Research (earlier this year)**

- The Standing Committee on Research (SCOR) announced a new procedure for proposing research projects to NCHRP (the National Cooperative Highway Research Program).
    - This new procedure includes both the full-fledged NCHRP program that SCOR reviews each Spring, as well as the NCHRP 20-7 program that SCOH reviews twice a year at its meetings.
    - The requirement is: "All proposals from technical committees must now be reviewed and ranked by the parent subcommittee."

- SCOR established this requirement because they don't feel that they have the expertise to determine which technical research proposals from within a given functional area are the most needed or most important – SCOR feels feel that this determination is most appropriately done at the subcommittee level.

**Relevant Issues discussed at SCOH (held in late September)**

- The meeting mostly focused on bridge issues and the recent collapse of the I-35W Bridge in Minneapolis, including inspection, maintenance, funding, terminology, etc.
- SCOH passed a resolution requesting that FHWA re-look at its regulations/restrictions regarding new and innovative – i.e., proprietary – products
- SCOH also passed a resolution establishing a short-term, high-level task force to look into how to address project delivery issues. (They sunsetted the existing CSS Task Force and established a broader-vision task force to address project delivery issues that cut across the functional areas within the State DOTs.)

**Other Issues**

- AASHTO staff would like to still encourage you to meet at the same time and location as the SCOD meeting for at least one of your twice yearly meetings. Also, in the future, the staff would like you to consider locations that are easier to get to.

- Publications would like an update of progress on the new publication and tentative dates on when to expect a product for editorial review.

- Remember that after each meeting, we need to prepare a financial spreadsheet documenting the income (registration fees), expenditures, and final balance.

**NCHRP Project 20-7**
***Research for the AASHTO Standing Committee on Highways***
**Panel Recommendations – September 29, 2007**

| Candidates for Funding | Approved Funding Amount |
|---|---|
| **AASHTO Subcommittee on Asset Management** | |
| 1. **Asset Management Approaches to ADA Compliance ($??? Requested by the AASHTO Subcommittee on Asset Management)**<br>This proposed study would be to gather information on various approaches used to address ADA compliance issues and best ways to share this information. | **$30,000** |
| 2. **Asset Management Issues and Performance Specifications Associated with Long-Term Outsourcing and Leasing of Transportation Infrastructure ($???Requested by the AASHTO Subcommittee on Asset Management)**<br>This proposed study would gather information, both domestic and international, on various approaches used to ensure a safe, functional and economical facility, and to share lessons learned to date. | |
| **AASHTO Subcommittee on Maintenance** | |
| 3. **Update AASHTO "Guide for Snow and Ice Control" ($50,000 Requested by the AASHTO Subcommittee on Maintenance)**<br>This proposed study would update chapters dealing with equipment, snow and ice control materials, and weather information systems. | **$50,000** |
| 4. **Development of a Pavement Preservation Chapter for the AASHTO Mechanistic-Empirical Pavement Design Guide ($70,000 Requested by the AASHTO Subcommittee on Materials)**<br>This proposed study would develop a pavement preservation chapter to be included in the MEPDG. | **$70,000** |
| 5. **Development of Guidelines for Conducting Effective Customer Surveys Related to Highway Maintenance Operations ($75,000 Requested by the AASHTO Subcommittee on Maintenance)**<br>This proposed study would develop a compilation of existing highway maintenance-related market research or customer survey activities to develop a guide document of best practices. | |
| **AASHTO Subcommittee on Bridges and Structures** | |
| 6. **Guidelines for Implementing Quality Control and Quality Assurance for Bridge Inspection ($75,000 Requested by the AASHTO Subcommittee on Bridges and Structures)**<br>This proposed study would develop methods for implementing advanced QC/QA procedures within existing bridge inspection programs. | **$75,000** |
| 7. **Review and Update of the AASHTO *Guide Specifications for Seismic Isolation Design* ($85,000 Requested by the Subcommittee on Bridges and Structures)**<br>This proposed study would develop the Third Edition of the *AASHTO Guide Specifications for Isolation Design* to be considered and possibly adopted by the AASHTO Subcommittee on Bridges and Structures. | |
| 8. **Torsion in Concrete Bridges ($70,000 Requested by the AASHTO Subcommittee on Bridges and Structures)**<br>This proposed study would provide guidance on whether or not to modify both load and resistance for torsion and whether or not it is justified to have a higher limit on torsion when the older shear methodology is used. | |

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| 9. **Best Practices for Implementing Quality Control and Quality Assurance for Tunnel Inspection ($100,000 Requested by the AASHTO Subcommittee on Bridges and Structures and the AASHTO Subcommittee on Tunnels)**<br>This proposed study would develop methods and guidelines for implementing tunnel inspection and inventory procedures within existing state DOT bridge inspection programs. | |
| **AASHTO Subcommittee on System Operations and Management** | |
| 10. **State DOT Emergency Transportation Operation – Traffic Incident Management (ETO-TIM) Peer Review: Pilot Program ($100,000 Requested by the AASHTO Subcommittee on System Operations and Management )**<br>This proposed study would develop a set of guidelines and checklists to assist state DOTs in conducting peer reviews of ETO-TIM programs and functions. | |
| 10.a. **Subcommittee on Systems Operations and Management Strategic Plan Update ($40,000 Requested by the Subcommittee on Systems Operations and Management)**<br>This proposed study would reassess and update the SSOM strategic plan and taskforce action plans based on new priorities for departments' operations and management. | **$40,000** |
| **AASHTO Standing Committee on Highways, Subcommittee on Construction** | |
| 11. **Feasibility of Establishing National Center for Evaluating and Developing Criteria for BMPs for SWPPP ($??? Requested by the AASHTO Standing Committee on Highways, Subcommittee on Construction)**<br>This proposed study would examine steps that can be taken to permit contractors to develop their own storm water and erosion control plan. Review the various Best Management Practices (BMPs) presently available, new products presently in use, and the most efficient and equitable methods of payment. This could potentially result in big savings if contractors choose products which can be re-used. | |
| **AASHTO Highway Subcommittee on Highway Transport** | |
| 12. **Vehicle Size and Weight Management (VSW) Outreach ($75,000 Requested by the AASHTO Highway Subcommittee on Highway Transport)**<br>This proposed study would provide a number of outreach activities associates with vehicle size and weight management practices. | **$60,000** |
| AASHTO Subcommittee on Materials | |
| 13. **Best Practices for Measuring and Accepting Concrete in the Field ($75,000 Requested by the AASHTO Subcommittee on Materials)**<br>This proposed study would create a standard practice in AASHTO format for the best practices for measuring concrete properties and accepting concrete that accurately represents the concrete that is placed. | |
| 14. **Alternative Calibration Method for AASHTO T 153 ($75,000 Requested by the AASHTO Subcommittee on Materials)**<br>This proposed study would create an alternative method to AASHTO T 153 which would be safer to use than the current method while maintaining the accuracy and precision of the current method. | |
| 15. **Development of Testing Protocols for Adhesive Anchors Under Sustained Tensile Load ($100,000 Requested by the AASHTO Subcommittee on Materials)**<br>This proposed study would develop a comprehensive standard for testing adhesive anchors subject to sustained tensile load. | **$100,000** |

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| **16. Measurement of Early-Age Deformation of Concrete ($75,000 Requested by the AASHTO Subcommittee on Materials)**<br>This proposed study would determine the feasibility of utilizing a simple and readily available means for obtaining measurements of early-age concrete deformation. | |
| **AASHTO Subcommittee on Traffic Engineering** | |
| **17. Driver Comprehension and Behavior Associated with Traffic Signal Indications that Combine the Flashing Yellow Arrow Interval (FYA) with the Yellow (Y) Change Interval within a Single Signal Section ($75,000 Requested by the Subcommittee on Traffic Engineering)**<br>This proposed study would evaluate driver comprehension and behavior impact with regard to using a 3-section display with the FYA and Y Change Interval contained in the same signal section. | |
| **18. Safety Impacts of the Emerging Digital Display Technology for Outdoor Advertising Signs ($50,000 Requested by the Subcommittee on Traffic Engineering)**<br>This proposed study would review on-going human factor studies and guidelines with regard to highway agency DMS's and CMS's now in use on highways. | **$50,000** |
| **19. Guidelines for the Use of Bicycle Lanes for Various Roadway Characteristics ($100,000 Requested by the Subcommittee on Traffic Engineering)**<br>This proposed study would provide guidance to the states for the establishment of bike lanes. | |
| **AASHTO Task Force for Roadside Safety** | |
| **20. Crash Tested Precast Concrete Barrier Designs and Anchoring Methods ($75,000 Requested by the AASHTO Task Force on Roadside Safety)**<br>This proposed study would compile data on all known testing of precast concrete barriers and produce a report that summarizes the design information and crash test performance data. | **$75,000** |
| **AASHTO Standing Committee on Highways** | |
| **21. Identification of Cross-cutting Issues Related to the Development, Management, and Delivery of Transportation Projects and Programs ($50,000 requested by the Standing Committee on Highways)**<br>This proposed study would identify and prioritize cross-cutting issues related to development, management, and delivery of projects and programs for an AASHTO committee to address, and develop an organizational plan for integrating this committee within the AASHTO structure. | **$50,000** |
| **TOTAL FUNDING APPROVED** | **$600,000** |

**National Cooperative Highway Research Program**
**Projects in the Fiscal Year 2008 Program**

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## CONTINGENT ON THE AVAILABILITY OF FUNDS

# Appendix D

## American Association of State Highway and Transportation Officials

SCOH Committee Annual Financial Report, May 2007 - Dec 2007

Subcomittee on Design

Technical Committee on Hydrology and hydraulics

| Item | Description | Quantity | Cost per | Total |
|---|---|---|---|---|
| **Received from Previous Host State** | | | | |
| Previous Balance | | | | **$3,155.75** |
| | | | | |
| | | | | |
| **Income** | | | | |
| | | | | $0.00 |
| | | | | $0.00 |
| Registration | Amelia Island, FL Registration Fee (May 07) | 23 | $95.00 | $2,185.00 |
| | | | | $0.00 |
| Registration | Moab, UT (Nov 07) | 19 | $95.00 | $1,805.00 |
| | | | | $0.00 |
| | | | | $0.00 |
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| **Total Income** | | | | **$3,990.00** |
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| **Expenditures** | | | | |
| | | | | $0.00 |
| | | | | $0.00 |
| | | | | $0.00 |
| | | | | $0.00 |
| Meeting Room | Cost for conference room | 1 | $750.00 | $750.00 |
| Catering | Refreshments | 1 | $840.00 | $840.00 |
| Room Rate Refund | Amy Ronfeldt | 1 | $135.16 | $135.16 |
| AASHTO SCOD Meeting | Dave Henderson | 1 | $500.29 | $500.29 |
| Fall 07 Meeting | Cost of Refreshements | 1 | $472.50 | $472.50 |
| Fall 07 Meeting | Meeting Facilities | 1 | $366.50 | $366.50 |
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| **Total Expenditures** | | | | **$3,064.45** |
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| **Balance** | | | | **$4,081.30** |
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# Appendix E

AASHTO Drainage Manual
Date:
Manual Review Progress

| Chapter No. | Title | Chair | Completion Fall 07 | | Completion Spring 08 | |
|---|---|---|---|---|---|---|
| | | | Level I | Level II | Level I | Level II |
| 1 | Introduction | Schips | 20% | | | |
| 2 | | Richarson | 90% | | | |
| 3 | To be included in Ch. 2 | | 40% | | | |
| 4 | Documentation | DeCou | 95% | | | |
| 5 | Planning | Fazio | 95% | 90% | | |
| 6 | Data Collection | Reese | 95% | 95% | | |
| 7 | Hydrology | Van Hoven | 90% | 90% | | |
| 8 | Channels | Booher | 85% | 40% | | |
| 9 | Culverts | Ngo | 99% | 10% | | |
| 10 | Bridge | Mills | 90% | | | |
| 11 | Energy | Phillips | 60% | 10% | | |
| 12 | Storage | Dougherty | 55% | 10% | | |
| 13 | Storm Drains | Bailey | 90% | | | |
| 14 | Pump Station | Ghere | 90% | 90% | | |
| 15 | Environment | Ronnfeldt | 90% | 80% | | |
| 16 | Erosion and Sediment | Henderson | 99% | 60% | | |
| 17 | Channel Bank Protection | Shoblom | | | | |
| 18 | Coastal Zone | Renna | 95% | 90% | | |
| 19 | Construction | O'Connor | 50% | 80% | | |
| 20 | Maintenance | Henderson | 40% | 10% | | |
| 21 | Wetlands | Hendrickson | 99% | 75% | | |
| 22 | Groundwater | Pujara | 95% | 70% | | |

# Appendix F

### Schedule for Publishing Highway Drainage Manual

| | Task | Duration | Start | Finish | Task Relation | Resource Name |
|---|---|---|---|---|---|---|
| 1 | Rough Draft What and Why portion | 0 days | 11/8/2007 8:00 | 11/8/2007 8:00 | | TCHH Chapter Chairs |
| 2 | Finalize What and Why | 115 days | 11/12/2007 8:00 | 4/18/2008 17:00 | | Chapter Chairs |
| 3 | Work on Rough Draft on How | 115 days | 11/12/2007 8:00 | 4/18/2008 17:00 | | TCHH Committee members |
| 4 | Develop pool fund solicitation | 10 days | 12/5/2007 8:00 | 12/18/2007 17:00 | | Michael |
| 5 | Send pool fund solicitation for review | 10 days | 12/18/2007 8:00 | 12/31/2007 17:00 | | Michael |
| 6 | Set solicitation on line | 2 days | 1/3/2008 8:00 | 1/4/2008 17:00 | 5 | Michael |
| 7 | Solicitation | 105 days? | 1/7/2008 8:00 | 5/30/2008 17:00 | 6 | |
| 8 | AASHTO TCHH Spring Meeting - Baltimore | 3 days? | 4/8/2008 8:00 | 4/10/2008 17:00 | | |
| 9 | Prepare RFP for Publishing Manual | 15 days | 4/14/2008 8:00 | 5/2/2008 17:00 | | Team |
| 10 | Send RFP out | 7 days | 4/28/2008 8:00 | 5/6/2008 17:00 | | Team to be assigned |
| 11 | Advertisement Period | 10 days | 5/5/2008 8:00 | 5/16/2008 17:00 | 9 | |
| 12 | Select Consultant | 15 days | 5/19/2008 8:00 | 6/6/2008 17:00 | 11 | |
| 13 | Finalize all chapter draft version for consultants | 94 days? | 4/21/2008 8:00 | 8/28/2008 17:00 | 2,3 | Chapter Chairs |
| 14 | AASHTO Fall Meeting | 4 days | 8/25/2008 8:00 | 8/28/2008 17:00 | | |
| 15 | First Draft of What and Why | 58 days | 6/11/2008 8:00 | 8/29/2008 17:00 | 12 | Chapter Chairs |
| 16 | Review Comment first draft W & W | 30 days | 9/1/2008 8:00 | 10/10/2008 17:00 | 15 | Chapter Chairs |
| 17 | First Draft How | 156 days | 9/1/2008 8:00 | 4/6/2009 17:00 | | TCHH |
| 18 | AASHTO TCHH Spring Meeting | 3 days | 4/7/2009 8:00 | 4/9/2009 17:00 | | TCHH |
| 19 | Comments on first draft How | 30 days | 4/9/2009 8:00 | 5/20/2009 17:00 | 17 | TCHH |
| 20 | Second Draft whole doc | 127 days? | 4/13/2009 8:00 | 10/6/2009 17:00 | | Consultant |
| 21 | Second Draft review | 30 days | 10/12/2009 8:00 | 11/20/2009 17:00 | 20 | TCHH |
| 22 | Final Draft | 61 days? | 12/7/2009 8:00 | 3/1/2010 17:00 | 21 | Consultant |
| 23 | Final Draft review | 25 days | 3/2/2010 8:00 | 4/5/2010 17:00 | 22 | TCHH |

| | | | | | | |
|---|---|---|---|---|---|---|
| ***24*** | Final changes | 60 days | 4/6/2010 8:00 | 6/28/2010 17:00 | 23 | Consultant |
| ***25*** | Vote to approve publication | 1 day | 10/5/2010 8:00 | 10/5/2010 17:00 | 24 | TCHH |

# Appendix G

VOLUME II -- Procedures

Chapter 9B

Culvert Procedures

# Appendix H

## ASSIGNMENT OF CHAPTER CHAIRS FOR HDG

**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 | Ronnfeldt |
| 11 | Coastal | Renna |
| 12 | Stormwater | Dougherty |
| 13 | Training | Phillips |
| 14 | Culvert Materials | DeCou |
| 15 | Consultants | Pujara |
| | Glossary | Schips |

## ASSIGNMENT OF CHAPTER CHAIRS AND TEAM MEMBERS FOR THE POLICY (LEVEL I) AND PROCEDURES (LEVEL II) MANUALS

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

| Chapter | Title | Chapter Chair | Team Members | | |
|---|---|---|---|---|---|
| 1 | Introduction | Schips | Henderson | Mills | Booher |
| 2 | Legal | Richardson | Schips | Soltani | Ghere |
| 3 | | *Intentionally left blank* | | | |
| 4 | Documentation | DeCou | Bailey | Fazio | Mills |
| 5 | Planning | Fazio | Richardson | Tran | Pagán |
| 6 | Data Collection | Reese | Hendrickson | Helms | Pagán |
| 7 | Hydrology | Van Hoven | Fazio | Krolak | Bailey |
| 8 | Channels | Booher | Arneson | Nurmi | Farghaly |
| 9 | Culverts | Ngo | Phillips | O'Connor | Farghaly |
| 10 | Bridge | Mills | Arneson | Phillips | O'Connor |
| 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 | Ronnfeldt | Henderson | Renna | Pujara |
| 16 | Erosion and Sediment | Henderson | Dougherty | Van Hoven | Pujara |
| 17 | Channel Bank Protection | Shoblom | Bergendahl | Farghaly | Booher |
| 18 | Coastal Zone | Renna | Henderson | Shoblom | 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 | Ronnfeldt | Fazio |

# Appendix I


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