ACEC / Caltrans Division of Engineering Services
Structures Liaison Committee

MEETING MINUTES

DATE: July 28, 2011

TIME: 10:00 AM – 12:00 PM

MAIN LOCATION: California Department of Transportation
Division of Engineering Services
1801 30th Street, Room 102 (Farmers Market 1 Building, 1st Floor)
Sacramento, CA 95816

VIDEO CONFERENCE LOCATION: District 12 Office, Room 333
3337 Michelson Drive, Irvine

MEETING MINUTES: Y. Nien Wang, PE

I. Call to Order

A. Introductions

B. Changes to Agenda

II. Status/Reports on Technical Topics

A. Technical Questions

- Responses to CTBridge Software Questions (Mike Keever)
- Responses to last meetings SDC 1.6 Technical Questions (Mark Mahan for Mike Keever)
  - *Tom Walker handed out Caltrans emailed responses to 3 abutment shear key questions. Mark explained the concept behind the responses. SDC offers both old and new shear key design as two equal shear key design alternatives. Per UCSD testing, old shear key designed abutment may have capacity of 2.5 times the design value. It means abutment piles may not be saved per this design.*

    ***Action Item:** Mark will provide sample details to OSFP to post on CT website and include it in this meeting's minutes as an attachment.*
- P/S losses for camber calculations (Tom Walker)
  - *Tom explained that two opinions have developed in the bridge design community regarding which p/s deflections are to be used for camber calculations; before or after p/s losses. Opinions vary among bridge designers and developers of bridge design software.*

    ***Action Item:** Tom to submit the formal request for clarification on the issue to John Fujimoto. Sue Hida will look into it and provide a response.*

B. SDC 1.6 Technical Questions (open forum)

The committee agreed to leave this item as open discussion and remove it as a regular agenda item. Lam stated all tech questions from consultants should be going through Tom/ACEC, Sudhakar to CT committee chairs. Suggest CT to post on website and request all questions goes to ACEC.

C. District Approvals of Bridge Site Data Submittal Package (John Fujimoto)

Tom stated the question regarding the bridge group is ready for type selection but District has not approved the BSDS and approval is lengthy process. Will OSFP be able to work with Districts to speed up the process? John responded that the purpose of BSDS is getting District to confirm/approve the geometrics so OSFP may proceed with Type Selection without risk of change to project scope and geometrics. John is working with the Liaison Engineers to review various Districts' BSDS process and will try to improve it.

III. Updates

A. DES Updates (Lam Nguyen)

Lam stated since 4/28/11 update, there are more changes. Rick Land is acting Chief Deputy Director, etc. (see attached org chart) and John Fujimoto is acting Chief of OSFP/Local Assistance/OSCM, term is unknown.

B. DES Updates: Memo to Designers, Technical Research, IQA (Sue Hida attended for Barton Newton)

MTD 3-7 signed 7/12/11 and published (see web site). New XS sheets for 2010 were posted. CT amendments updated Dec 2008 have all been updated. CT won't adapt AASHTO 5th addition but will use blue sheets to incorporate needed changes. MTD 3-1 is on hold until abutment issue is resolved.

Technical Research – Sue confirmed that the expired contracts don't yet have the 2pp summaries or final reports and have updates:

- *Decisions were made on what research to push forward from last year's solicitation*
- *Solicitation for new Research Proposals sent in May; due in Sept.*
- *Expired contracts:*
  1. *'Nonlinear Load-Deflection Behavior of Abutment Backwalls with Variable Heights and Skew' by UCLA*
  2. *'LONG-TERM STRUCTURAL PERFORMANCE MONITORING OF BRIDGES' by UCI*
- *Executed contracts:*
  1. *'Development of Improved Guidelines for Seismic Analysis and Design of Earth Retaining Structures' by UCLA*
  2. *'Resilient Bridges: Replaceable Structural Fuses for Post-Earthquake Accelerated Bridge Construction/Repair under Continued Service – Phase I: Analytical Investigation' by SUNY Buffalo*
  3. *'Repair Earthquake Damage - Bridge column with Fractured Rebar' by UNR*

IQA - *for design quality management plan, it's started in 2009 and now it's expanding. FHWA generate it nationwide. AASHTO bridge committee has it and it's Appendix to current AASHTO.*

Pedestrian Overcrossings: Lam brought up the issue of meeting ADA requirement for maximum slopes and landing requirements. Bridges are being designed at the ADA limits without allowance for construction tolerances. CT is reviewing current projects to determine how extensive this problem

Action Item: *John Fujimoto will provide full details in next meeting.*

Seismic workshop/seminar – Sue stated CT is not planning for one in the near future.

Tony stated that in a design management meeting, a question was raised as to when 2010 spec will be used? The suggestion was to use it for projects with RTL after 7/1/2012. The details and exceptions are to be worked out.

Tony – also stated Caltrans I refining project estimate. CT requested 50% project achieve approximate 10% low bid. 39% were provided by consultant firms. CT is reviewing the process. Performance measure is ongoing. DES is research different/ better way to estimate to improve the percentage. CT is also looking for the need of final estimate certificate when close to bid date due to some project estimates could be performed too early and with dynamic pricing in the market.

Mark Ashley – heard CT selected AUTOCAD for civil design. Tony stated CT has contract with AUTODESK CIVIL 3D, training may take 3-5 years. There is committee team set up to focus on it.

Action Item: *Tony will invite CT lead to present it in next meeting. Jack stated he received a PowerPoint file from Caltrans during SANDAG outreach meeting a week ago and will provide it to Tom to distribute.*

C. ACEC Updates

1. Invoicing on Caltrans Contracts (John Fujimoto, Mark Ashley)

   Mark discussed with DES contact and provided update/progress. Invoice package size is reducing but can further improve too. Lam stated in order to improve the invoice, 1st thing is to use one EA to avoid numerous screens. Now is good time to put all on table and go over with accounting group. Lam suggested John to talk with accounting group first and let Mark know when to meet. It needs to meet statewide format, and may need to talk to DPAC.

   Action Item: *John will provide update in next meeting.*

2. Technical Workshops

   a) Concrete Technology Seminar – Sacramento (Tom Walker)

      Tom stated the seminar in Sacramento was a success with 3 sponsorships that paid for the handout booklets, breakfast for everyone and lunch for presentation team.

b) Plain Language Specifications

CT is having initial training now. No commitment for consultant training yet.

c) ACEC/DES Structures Liaison Committee Annual Report

for 2010/2011 (Tom Walker)

2009/20010 Annual report has been finalized. Tom is working on the 2010/2011 report.

Action Item: *Tom to resubmit 09/10 report to John. Tom to submit 2010/2011 Annual Report to John.*

D. Project Development Oversight/Updates/Contracting Opportunities (John Fujimoto)

John stated CT just executed 70 task orders for CI contracts. Existing Geotech contracts are for north, south and west. The west contract will be expiring at end of this year. CT will issue two replacement contracts (north and south) to replace the existing three contracts, eliminating a separate west contract. Expect to advertise for these two contracts in the fall.

E. Statewide Committee Report (Tom Post)

PYE decreased for this fiscal year, post in dept financial web site. Past few years local assistance has updated policy and process often, if interested, visit web site or ask Tom Post. Lam suggested the interested individual can register to local assistance web site get auto updates.

IV. 2011 Meeting Schedule

October 27th

Distribution:

Robert Pieplow, Caltrans
Sudhakar Vatti, Caltrans
Rob Stott, Caltrans
Mike Keever, Caltrans
Tony Marquez, Caltrans
John Stayton, Caltrans
James Davis, Caltrans
Barton Newton, Caltrans
Dolores Valls, Caltrans

Walt LaFranchi, URS Corporation
Wei Koo, WKE
Mark Ashley, TY Lin International
Thomas Post, HNTB
Jay Holombo, PBS&J
Nien Wang, HNTB
Jim Frost, Simon Wong Engineering
Tom Walker, Mark Thomas & Company
Jack Abcarius, Nolte Associates
Chandu Shenoy, Nolte Associates
Mark Reno, Quincy Engineering
Steve Tayanipour, Huitt Zollars
Todd Goolkasian, Cornerstone Struct. Eng.
Greg Zeiss, HDR
Majid Sarraf, Parsons
Ayman Salama, TRC

Kevin Coates, WKE
Syed Kazmi, URS
Po Chen, Mark Thomas & Company
Sunny Jhutti, AECOM
Kevin Thompson, Arora
Kevin Michalski, Mark Thomas & Company

ACEC/Caltrans Division of Engineering Services
Structures Liaison Committee

SIGN IN SHEET

Date: July 28, 2011

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VIDEO CONFERENCE SIGN IN SHEET

Date: July 28, 2011

ATTENDEES BY VIDEO

NAME	AFFILIATION
Paul Morel	Simon Wong Engineering

Questions on SDC 1.6 from ACEC/DES Committee April 28th Meeting

Responses from DES Office of Earthquake Engineering

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Question 1
Section 7.8.2 – Transverse Abutment Response:

This section recommends using 50% stiffness of adjacent bent as value used for abutment transverse stiffness as part of elastic dynamic model. The transverse abutment stiffness has significant impact on overall seismic demands at the bent (not abutment), however this prescribed value of stiffness does not correspond to actual abutment transverse stiffness which is really attributed to a combined system of abutment pile, shear key, wing wall and passive soils. It is my understanding that this recommendation may lead to unrealistic displacement demands at adjacent bents and as well as abutment piles.

Majid Sarraf, Ph.D., P.E., P.Eng.

Response
Agree that abutments influence seismic response. Full release transversely will result in unrealistic and excessive inertial loads to the bent, particularly for a 2 span bridges. SDC 7.8.2 is intended to modify the load distribution to the bent such that it is comparable to a transverse pushover analysis distributing the inertial mass based on tributary area. There are two models for calculation of the transverse displacement of the bent in a two-span bridge.

1- The stand-alone push over analysis of the bent.
2- A computer model of the bridge.

If Method 2 is used, then there is a need to tweak the model at the abutment shear key locations to obtain reasonable results comparable to those in method 1. Use of abutment transverse springs equal to 50% of the bent stiffness achieves this goal.

Question 2
Section 7.8.4 – Abutment Shear key Design:

The load path for transfer of seismic force to the foundation pile is both through direct contact of a shear key at an abutment as well as friction or bearing as directly seating on abutment and still in contact. The equations 7.47(a) through (d) seems to ignore the later interaction, thus underestimates the total force transfer to abutment pile system, which is supposed to be used as the maximum force demand for capacity protection of pile system.

Majid Sarraf, Ph.D., P.E., P.Eng.

Response

It is true that we are ignoring the additional force transmitted from the bearings onto the abutment, however, this force is negligible compared to the shear key force. Once the shear key is broken then the superstructure is sliding on the abutment stem wall (concrete on concrete contact), however, this force is NOT necessarily additive. This model is better suited to the isolated shear key design.

Question 3

Section 7.8.4 –Abutment Shear Key Design:

This section provides three equations to determine the abutment shear key force capacity. These equations include an "alpha" factor that ranges from 0.5 – 1.0. This means that for the same structure, one acceptable shear key design could be twice as strong as another acceptable shear key design. Is there any additional information available that would clarify the intent of the alpha factor or any other guidelines that would help designers to select an alpha factor?

Tom Walker, PE

Response

Typically alpha starts at 1.0. If the shear key cannot be designed for this value (other constraints controlling the design) then it may be reduced all the way down to 0.5. The guidelines are intended to give the engineer discretion to determine the load to be transferred through the sacrificial shear key

State of California
Department of Transportation

JUNE 2011

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