**WSDOT/ACEC Structures/Geotechnical Team**

**MEETING MINUTES**

**May 13, 2022 -- 10:00 AM – 12:30 PM**

**MS Teams Meeting**

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| --- | --- | --- | --- |
| WSDOT | Bijan Khaleghi, PE/SE | WSDOT – Bridge Design (co-chair) | x |
| Tony Allen, PE | WSDOT – Geotechnical Office |  |
| Jeri Bernstein, PE/SE | Washington State Ferries |  |
| Craig Boone, PE/SE | WSDOT – Bridge Design | x |
| Andrew Fiske, PE | WSDOT – Geotechnical Office | x |
| Katie Olleman, PE | WSDOT - Bridge Design |  |
| Nick Rodda, PE/SE | WSDOT - Bridge Design | x |
| Scott Sargent, PE | WSDOT - HQ Construction Office |  |
| ACEC | Joan Zhong-Brisbois, PE/SE | CDM Smith (co-chair) | x |
| Lee Andrews, PE/SE | HDR | x |
| Matt Barber, PE | WSP | x |
| Matt Baughman, PE/SE | COWI | x |
| Stan Boyle, PE | Shannon & Wilson |  |
| Brice Exley, PE | Hart Crowser | x |
| Eric Herzstein, PE/SE | Parsons |  |
| Yang Jiang, PE/SE | HNTB | x |
| Scott Phelan, PE/SE | Consor (job change in May 2022) | x |
| Reza Sehhati, PE | Consor (job change in May 2022) | x |

1. Review meeting agenda (5 minutes) – All

Removed lunch break.

Deferred the agenda item #9 to the next meeting.

1. Review minutes from March 18 meeting (5 minutes) – All

No comments on March minutes.

**ACTION**: Bijan to get March minutes posted

1. COVID-19 Update (20 minutes) – Bijan/All
   1. WSDOT Situation Report (Bijan)
   2. Governor’s vaccination mandate and Bridge Office staffing (Bijan)
   3. Return to the office (Bijan/all)

WSDOT survey showed that teleworking remains popular among the established workforce. The practice of “Core Days” helps new staff or junior staff adapt to their new roles and assignments. Working in the office is encouraged but not mandated.

* 1. Travel/conferences (Bijan/all)

No travel restrictions at this time.

* 1. Future ACEC/WSDOT Structures & Geotech meetings (Bijan)

Fridays are preferred.

Suggested move to 9:00am - 12:00pm.

**ACTION**: Bijan to send out future meeting invites to the group; Joan to survey for the options of in-person, remote or hybrid.

1. Disconnect between seismic design requirements for retaining walls vs. buried structures shorter than 20 feet – Part II (25 minutes) – Andrew, Brice, Reza, Joan

Andrew reviewed the previous discussion on the different design criteria that dominate the buried structure less than 20 ft and the adjacent wingwalls. While the buried structure does not consider seismic loading, the wingwalls that are adjacent to it are designed for seismic loading if they're supporting the traveled way. Sometimes these buried structures may have a taller headwall that supports traffic so that headwall is still a wall and would fall under the life safety conditions, and this buried structure is to be designed for seismic because it's carrying a wall that's supporting the traffic. For load combinations, the Extreme I with seismic. combined with 50% of the design scour (the 100-year scour). We used to consider 25% and now we're considering 50%. As the result this wall has a lot less passive resistance so when we're looking at that design where our global stability analysis, which predict a failure plane for global stability rather than predicting a movement. While people think it's fish passage design but it's now really the wall design that is more challenging to make it work. It could require implement the ground improvement or something similar which is expensive and time-consuming.

This leads to the question of “What is the possibility for walls to fail and topple over due to a global stability”? Bryce mentioned that we don't know if in the real world, it is actually an issue. However currently by code it mandates to meet a stability requirement. Andrew thinks there is room for a lot more study in order to clarify this. Right now, we could adopt reliable path to either extend the culvert to avoid having the walls, or to place the wingwalls at the locations that do not impact the travel. As we're progressing, especially with design build projects, there will be more and more creative solutions to get around this and working with our stakeholders. It could mitigate this challenge and reduce the costs in delivering the fish passages.

1. Update on Precast Concrete Culvert Standards for WSDOT Fish Passage Projects – Part II (15 minutes) – Bijan

Phase 1 (analysis) is expected to complete in May, WSDOT is to review and spend July for comment resolutions. Phase 2 is expected in August thru November to develop the standard plans. The standard plans are expected to be applicable to many of the culvert replacement, with certain limitations in culvert sizes, geotechnical and seismic conditions. For those culverts with challenging conditions, it is going to be on a site-specific and case by case basis.

To facilitate the culver replacement, WSDOT are also in process of adopting a software by Ericsson who have been working with WSDOT in the last year or so. A final version is anticipated at the end of this month which has WSDOT’s requirements such as seismic incorporated, and hopefully addresses the issue of transverse and longitudinal settlement.

With project bundling gaining more popularity for Olympic Region and Northwest Region, have one project has 22 of these and the other one has 28 fish passage project doing in one contract, this will bringing in efficiency.

1. BDM Chapter 15 to RFP 2.13 (15 minutes) – Lee Andrews/ Bijan

Lee reviewed the background of this effort and its current status. Bijan mentioned that WSDOT has an internal dialogue between the offices of Bridges & Structures and Construction. He will loop Lee in the discussions and connect with Mike Rosa to streamline the efforts.

**ACTION**: Bijan to invite Lee Andrews to join the discussion with Mike Rosa and the Construction Office.

1. Specific technical area – How climate change impact the standard care in structural and geotechnical design (20 minutes) – Joan, Andrew, Bijan, Yang, Lee, Reza

As extreme weather events hit more frequently, they raise the questions on whether the standard of care for the design professions has changed, and whether the compliance with code necessarily means that a design satisfies the standard of care. From the geotechnical perspective, flooding and flooding levels have impact on scour and stream migration; the hydraulics groups is doing a pretty good job with geomorphology of the waterways that we're dealing with, and trying to build that into the guidance for both geotechnical and structural design. It is an intragroup effort in WSDOT, also a collaborative effort on the national level among the state agencies, AASHTO, FHWA and FEMA. If based on historic data that the flood level is at certain level but with the new information, we expect the flood level quite a bit higher, consulting engineers should take proactive actions in providing recommendations to the project owners who can have the benefit in the future sustainability/ extended life expectancy of the structure. The topic of climate change has come up more and more often these days when we start planning a project including climatology, wind effect and flood and even temperature range, but the problem is often that there weren’t many details on how we can consider this kind of effect. It seems beyond the local agencies’ capability to tackle at this time.

Sustainability and CO2 footprint of concrete vs steel material was also discussed, related to the choice of structured types.

**ACTION**: Joan to plan on inviting Julie Heilman to speak on the hydraulic recommendations.

1. 3D-Design Models in BIM as Contract Authority for Bridges and Structures (20 minutes) – Joan, Andrew, Bijan, Yang, Reza, Lee

Regarding the current status with ongoing projects and their challenges in implementing BIM, Andrew would like to go at least geotechnically while currently are investigating ways to do that, especially with the Bentley’s universe of apps with expanded ability to link various functions. Yang mentioned we've done much more for the building-type structures including the underground stations and the above ground stations than the bridge structures. Most of the time it is for fancy modeling rendering for flyover and not necessarily design tools. Bijan said we are in the pool fund project, and we can do 3D if we want but haven't done much because it is a multi-office effort. Richard Brice and our software manager are our leads for right now in the pool fund and the new phase Rick is leading. Reza mentioned that the budget dedicated to BIM was often limited, compatibility and interoperability among software and the contractor interface are challenges too. Lee mentioned that we have definitely done it on some big design builds. We've also done a couple of generally considered pilot projects where it was 100% electronic deliverable. Seismic design can add complexity. We're not doing it much for local agencies, recently did a parking garage using 3D deliverable in Revit but for the small bridge attached to it, Microstation was used. It is also hard to find younger CADD staff with 10+/- year experience. Having engineers to do CADD would need some mindset shift.

**ACTION**: Joan to plan on inviting Richard Brice to speak on software and 3-D modeling.

1. AASHTO Ballot Items on Seismic Design Motions – Bijan

This item will be discussed at next group meeting in September.

1. Geotechnical/Hydraulic/Structures streamlining and process improvement for fish passage and other projects (10 minutes) - Bijan

Early coordination and collaboration among HQ hydraulic, geotechnical and bridges officers is being implemented for fish passage deliveries to minimize re-work. For example, the recently updated hydraulic design template in May 2022 considered the iterative and collaborative features in hydraulic design.

1. Upcoming events and resources (15 minutes) – Bijan, Andrew

NCHRP Project ABC Training: May 19-20, 2022

BDM webinar – late July, 2022

Seismic design workshop -Late August, 2022

Tony Allen’s webinar series on MSE walls. This is similar to a college level course on MSE Wall design and construction.

All of the class handouts can be accessed at: ftp.wsdot.wa.gov - /incoming/MSE Wall Webinar Handouts/Final Handouts/

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ASBI Construction Practices for Segmental Concrete Bridges Seminar - Seattle on August 15th and 16th, 2022

1. Adjourned at 12:30 pm

**Future meeting dates:**

One Friday of the following months,

September 2022

November 2022

January 2023

March 2023

May 2023