AGC/WSDOT Structures Team
March 10th, 2017 Meeting Minutes

Initials	Member	Company	Phone	E-mail
X	Aldrich, Brian	WSDOT-HQ	360-705-7828	aldricb@wsdot.wa.gov
	Armour, Tom	DBM Constr.	206-730-4591	tarmour@dbmcm.com
X	Ayers, Scott[1]	Graham Constr.	206-631-2358	scotta@grahamus.com
X	Bingle, Jed	WSDOT	360-705-7224	bingleJ@wsdot.wa.gov
X	Binnig, Bill	Kiewit Pacific	425-255-8333	bill.binnig@kiewit.com
X	Bowles, Eric	Conc. Tech.	253-383-3545	ebowles@concretetech.com
X	DeGasparis, Charlie	Atkinson Constr.	425-255-7551	charlie.degasparis@atkn.com
X	Fell, Susan	WSDOT-SWR	360-759-1312	fells@wsdot.wa.gov
X	Foster, Marco	WSDOT-HQ	360-705-7824	fosterm@wsdot.wa.gov
X	Firth, Jeff	Hamilton Const.	541-953-9755	JFirth@hamil.com
X	Gaines, Mark[1]	WSDOT-HQ	360-705-7827	gainesm@wsdot.wa.gov
X	Griffith, Kelly	Max J. Kuney	509-535-0651	kelly@maxkuney.com
	Haas, Carl	PCL	425-495-2086	cchaas@pcl.com
X	Hilmes, Bob	WSDOT-ER	509-324-6232	hilmesb@wsdot.wa.gov
	Lehman, Debbie	FHWA	360-753-9482	Debbie.Lehman@dot.gov
X	Madden, Tom	WSDOT-UCO	206-805-5352	maddent@wsdot.wa.gov
X	Olk, John	WSDOT	360-705-7395	olkj@wsdot.wa.gov
	Olson, Ryan	PCL	425-577-4217	ryolson@pcl.com
	Owen, Geoff	Kiewit	360-609-6548	Geoff.owen@kiewit.com
X	Quigg, John	Quigg Bros.	360-533-1530	johnq@quiggbros.com
	Regnier, Ed	PCL	425-577-4217	edregnier@pcl.com
	Reller, Robert	Manson Constr.	206-762-0950	rreller@mansonconstruction.com
X	Smith, Will	WSDOT	509-577-1844	smithw@wsdot.wa.gov
	Swenson, Robb	General Constr.	360-394-1407	Robb.Swenson@kiewit.com
X	Tornberg, Ben	Manson Constr.	206-496.9407	btornberg@mansonconstruction.com
X	Welch, Pete	Granite Constr.	425-551-3100	pete.welch@gcinc.com
X	Zeigler, Dave	WSDOT	360-357-2745	zeigled@wsdot.wa.gov

1 Team co-chair

Guests

Attendee	Company	Phone	E-mail
Paolo Calvi	UW		pmc85@uw.edu
Tim Peruchini	UW		peruct1@uw.edu
John Stanton	UW		stanton@u.washington.edu
Mark Frye	WSDOT Geo	360-709-5469	fryem@wsdot.wa.gov
Cesar Mayor	WSF	206-515-3732	mayorc@wsdot.wa.gov
Eric Robinson	WSF	206-515-3897	robinse@wsdot.wa.gov

Lei Lu	WSF	206-515-3848	lulei@wsdot.wa.gov

Meeting minutes were prepared by Marco Foster.

Topics – Use of UHPC for bulb T connections; Constructability Review – Bainbridge OHL structure; Update on Partnering Training; AGC Annual meeting debrief; SS 2-09.3(3) B Excavation; Temporary Footing and Mudsills; Grade 80 reinforcing steel; dewatering foundations and seals; structural steel erection; Standard Specification for concrete tolerances; changes to the Team.

1. **Welcome & Review of Agenda**

   Mark welcomed the group and reviewed the agenda. There were several guests present so introductions were made. Mark asked if anyone had comments on last meeting minutes. A small Typo was identified by Bob Hilmes and no other comments were received. Mark reviewed the agenda – it is very full so we may not get thru all of the items today.

   Action Item: Mark will post the meeting minutes to the web.

2. **Use of UHPC for connections between Bulb T Girders**

   Professor Stanton and 2 research students from the University of Washington were here to present recent research on Bulb Tee connections and request input from the team. The WSDOT Bridge office is considering the use of Deck Bulb Tees (DBTs) for use on major highways, in order to speed up construction and reduce traffic impacts. The traditional ways of connecting DBTs, by welding together steel embeds in adjoining flanges, supplemented by a grout key, work adequately on minor roads but are not robust enough to withstand the heavy truck traffic on a major highway. Consequently, WSDOT is considering making the connection with UHPC (Ultra-high-performance-concrete). Bars would project transversely from the flanges of the DBTs into the longitudinal joint, and UHPC would be poured into the joint. Due to the increased performance with UHPC, bar strength can be developed at a reduced length thereby reducing the width of the joints significantly.

   Professor Stanton then presented some of the details associated with this concept and requested feedback on the following topics.

   General questions;

   How critical is time? Cost?
   The Contractors agreed that the cost of UHPC is very expensive so keeping the joints as narrow as possible is very important. With 9”-10” joints – forming would be very easy. Over pouring the joint and then grinding is very difficult due to the compressive strength of the UHPC. This would not be as big of a concern if the deck were to get an overlay. There was some open discussion about the need for overlays. If a wearing course is constructed then the finish of the UHPC would not be as critical.

Would the Contractors prefer to cast a wider joint with conventional material?
There was some open discussion but the consensus of the group is that it just depends on the project schedule/constraints. Forming the wider joint adds time.
UHPC – need for mockup and "dry run"?
There was some discussion that a manufacturer's representative would be adequate. With an experienced contractor – a mock up may not be needed but it may be desirable with an inexperienced contractor. It was acknowledged that UHPC is extremely difficult to remove so it is very important that there are no problems during the concrete pour.

Girders;

Shipping weight. Wider bulb T girder will be heavier - CTC suggested you go up to 270 kips but Contractors warned picking can be an issue. There was a lot of discussion about the variabilities of the site conditions, traffic restrictions, etc….
Stability – shipping and erection. This was not a big concern/issue as they are picked from the top. However, it was recognized that the center of gravity would be higher the on wide flange girders and care would be needed until the second girder is set and braced.
Camber correction. Equalizing the girders is necessary regardless. Without an overlay equalizing would be more crucial and less forgiving.
Skew bridges. Cambers are less likely to line up – it would be a concern.
Widening's would be a concern. There was some concern expressed that the location of the existing reinforcing would be too variable to fabricate new girders that would place steel in a proper location.

UHPC Joint;

Joint width and bar projection – what practical limitations exist? The Contractors requested joint width be as narrow as possible.
Forming. Are there limits on joint width related to forming? Could the joint be 1.5" thicker that the DBT flange? Etc. Yes – pouring the joint thicker should not be a problem.

Materials;

Would you be happy with a performance spec for UHPC? The Contractors were agreed that they would prefer to pay the Concrete suppliers to develop and provide the required UHPC. Even if the cost to produce UHPC was reduced – the Contractors were a bit reluctant to assume responsibility for developing and mixing the UHPC. If WSDOT developed the design the Contractors might be more likely to mix and install.

There was then some open discussion regarding the availability of materials, type of testing required. There was discussion regarding QC testing - flow/spread, tension, and bond testing would most likely be necessary to insure adequate performance.
Pouring – top forms, leaks in the forming. Finishing. Do you need to grind the UHPC if a wearing course will be cast?

To mitigate issues if a pour goes bad you would manage the pour to be able to construct a bulk head. It is very hard to remove the UHPC. There was some open discussion on how areas could be repaired. Top forms need some consideration – either holding down with threaded rods or weighting. The steel fibers in UHPC are domestically available and would meet buy America requirement. The fibers are a bi-product of the radial tire manufacturing. They are very strong. Mark Gaines requested the research team verify that CMO's are available for the fiber.

Worker safety regarding the handling of the fibers was discussed. It does require some attention. The hardened UHPC can leave fibers sticking out that can cut workers.

The Contractor asked if there were temperature requirements for placement of the UHPC.

Action Item: N/A

3. **Constructability Review - Bainbridge Terminal Overhead Loading**

The WSF project team provided an overview of the project. The facility is near the end of its service life and seismically deficient. Cezar Mayor presented several power point slides providing details of the project site. WSF presented the project to ADSC several months ago and has made some modifications based on comments received from the drillers.

Some of the project constraints include;

1. Sailings depart every 50 or 60 minutes between 4:30 am to 1:00 am
2. Contractor may need to provide own water for slurry
3. Condominiums nearby to the South
4. Minimal upland laydown areas (paid parking stalls may be rented for oversize laydown area)

Project goals include;

1. Maintain Use of OHL during all CN Phases
2. No delays to WSF sailing schedule
3. Complete project within one fish window (July 16th, 2018 to February 15th, 2019).

The WSF team then provided details of the proposed construction staging/sequence and then asked the following questions;

1. Are the assumed work zones adequate? The short window offered up during the middle of the night for setting prefabricated trusses looks problematic. Longer windows to set up cranes and trusses would be much better. Possibly look at a full short term closure (10 hours).
2. How to construct/access temporary walkway? There was concern expressed on how you would access and construct the temporary ramp due to the drop off onto the beach and proximity of the trees. The Contractors asked if mud sills could be

installed on the beach. Possibly. A temporary trestle would be the logical solution to construct the temporary bent and set the temporary walkway. It was suggested that a barge could not get far enough upland to reach the foundation location.

3. Barge or truck truss structures? You would have to truck in the truss sections as the cranes would not be able to reach a barge. Shorter spans would be helpful to reduce crane sizes. Smaller cranes would expedite mobilizing in and out during the short work windows. There was some open discussion amongst the team on different crane options. Using smaller cranes and smaller prefabricated truss sections would be better for constructability reasons.
4. Night work? Noise and neighbor unrest would be a concern but is also necessary to minimize impacts to Ferry operations. Room needed for construction would also impact ferry holding more than originally anticipated.

Action Item: No action needed.

4. **WSDOT's Partnering Training update**
There was no time left on the agenda to discuss this item today.

Action Item: This item will be kept on the agenda for the next meeting.

5. **AGC Annual Meeting Team Feedback**
There was no time left on the agenda to discuss this item today.

Action Item: This item will be kept on the agenda for the next meeting.

6. **Action Items**

a.) Standard Specification 2-09.3(3)B Excavation

Mark Frye reminded folks on the history of this topic. Basically, the current standard specification refers to the Geotechnical Design Manual (GDM) and the GDM requires any excavation over 4 feet needs to be reviewed and approved by an Engineer. Mark F. went thru a short slide presentation to provide examples to help clarify the intent behind this requirement.

The Contractors requested that WSDOT identify parameters under which Engineering would not be required for excavations. For example – would WSDOT allow excavation without Engineering where a structure or roadway is more than 10ft from the excavation? Mark Fry reiterated that there are too many Geotechnical variables to allow for this type of simple solution and provided an example where this would not be adequate. The sensitivity of the excavation and its effect on specific structures is very site specific. The Contractors expressed how difficult it can be to bid the cost of having to have Professional Engineer review and Engineer every excavation on the project. There currently is inconsistency on when Engineered drawings are being required by WSDOT PE offices.

Mark Fry then went thru a few more slides demonstrating specific examples of recent excavations that were not done properly. There was extended open discussion on problems, challenges, and inconsistencies on how and when engineered plans are required by Project Engineers and how much Engineering/calculations are required and provided.

Mark Gaines proposed an option that we require a different submittal for specific circumstances. A Type 1E could be submitted for situation with little concern and a Type 2E could be submitted for deep excavations next to structures. There would still be challenges in defining the circumstances that would dictate which submittal.

Charlie D. suggested that WSDOT take pertinent information out of the GDM and insert into it into the Standard Specification in lieu of simply referencing the entire GDM. Mark Fry suggested this would make the Standard Specification very verbose and is probably not practical. He offered that it may be more practical to consolidate and clean up the GDM to make it more useable. Perhaps place all pertinent information for Engineered drawings for excavations in its own chapter/location.

It was suggested that perhaps Standard plans could be developed to depict common excavation situations. Someone offered that BNSF has implemented a similar process. Mark Fry still is not convinced that it is possible to come up with generic "rules of thumb" parameters.

To move this issue forward it was decided to try and start to develop some general criteria that would identify when a Type 1E or Type 2E submittal would be required. It was suggested Mark Fry attend the AGC meeting until this issue gets resolved – which everyone acknowledged could be a very long time. The benefits of using standard plans to communicate concerns/intent on when engineering is required was acknowledged.

Action Item: Mark Fry will send a draft to the team before next meeting.

b.) Temporary Footings and Mudsills.
Mark G. reviewed the AASHTO guide book with the team and asked if it would be a helpful reference to include in our specifications. Mark F. suggested that there are still flaws with this approach. Charlie cited different scenarios that should require different and more detailed analysis.

The plate test has been eliminated because it did not take into consideration global stability. California requires the Contractor to provide a test to demonstrate adequate capacity. Charlie advocated allowing the Contractor to develop their own test and calculations in lieu of referencing the GDM, which would end up requiring a Geotechnical Engineer.

There was some open discussion. The team was unanimous that the responsibility for the design of the mudsill should be the Contractor's responsibility. It was also

generally agreed to allow the Contractor the flexibility to determine what test should be used to validate design assumptions.

Action Item: Brian will bring back revised language to the next meeting.

c.) Dewatering foundations/use of foundation seals

There was no time left on the agenda to discuss this item today.

Action Item: This item will be kept on the agenda for the next meeting.

7. **Structural Steel Erection**

There was no time left on the agenda to discuss this item today.

Action Item: This item will be kept on the agenda for the next meeting.

8. **Standard Specification concrete tolerances**

There was no time left on the agenda to discuss this item today.

Action Item: This item will be kept on the agenda for the next meeting.

9. **Changes to the AGC/WSDOT Structures Team**

Mark let the team know that Brian Aldrich will be assuming the role of co-chair for the Team. Mark has assumed other responsibilities within the Construction office and has not been able to devote adequate time to team issues/topics. Mark will continue to participate as time allows. Marco will continue to support Brian on the Team.

Action Item: N/A

10. **Future Agenda Items and meetings**

- The presentation and discussion of the method of delivery for the Alaska Way Viaduct demolition.
- Invite WACA to discuss current 75degree temperature requirement for deck concrete

Next meeting dates: April 21st, June 2nd.

AGC/WSDOT Structures Team
April 21st, 2017 Meeting Minutes

Initials	Member	Company	Phone	E-mail
X	Aldrich, Brian[1]	WSDOT-HQ	360-705-7828	aldricb@wsdot.wa.gov
X	Ayers, Scott[1]	Graham Constr.	206-631-2358	scotta@grahamus.com
X	Bingle, Jed	WSDOT	360-705-7224	bingleJ@wsdot.wa.gov
X	Binnig, Bill	Kiewit Pacific	425-255-8333	bill.binnig@kiewit.com
X	Bowles, Eric	Conc. Tech.	253-383-3545	ebowles@concretetech.com
X	DeGasparis, Charlie	Atkinson Constr.	425-255-7551	charlie.degasparis@atkn.com
X	Fell, Susan	WSDOT-SWR	360-759-1312	fells@wsdot.wa.gov
X	Firth, Jeff	Hamilton Const.	541-953-9755	JFirth@hamil.com
	Foster, Marco	WSDOT-HQ	360-705-7824	fosterm@wsdot.wa.gov
X	Gaines, Mark	WSDOT-HQ	360-705-7827	gainesm@wsdot.wa.gov
X	Griffith, Kelly	Max J. Kuney	509-535-0651	kelly@maxkuney.com
X	Hilmes, Bob	WSDOT-ER	509-324-6232	hilmesb@wsdot.wa.gov
	Lehman, Debbie	FHWA	360-753-9482	Debbie.Lehman@dot.gov
X	Madden, Tom	WSDOT-UCO	206-805-5352	maddent@wsdot.wa.gov
X	Olk, John	WSDOT	360-705-7395	olkj@wsdot.wa.gov
	Olson, Ryan	Granite Const.	425-394-4200	
	Owen, Geoff	Kiewit	360-609-6548	Geoff.owen@kiewit.com
X	Quigg, John	Quigg Bros.	360-533-1530	johnq@quiggbros.com
	Reller, Robert	Manson Constr.	206-762-0950	rreller@mansonconstruction.com
X	Robinson, Eric	WSDOT-WSF	206-515-3897	robinse@wsdot.wa.gov
	Smith, Will	WSDOT	509-577-1844	smithw@wsdot.wa.gov
	Tornberg, Ben	Manson Constr.	206-496.9407	btornberg@mansonconstruction.com
	Watt, Doug	CJA	425-988-2150	dwatt@condon-johnson.com
	Welch, Pete	Granite Constr.	425-551-3100	pete.welch@gcinc.com
X	Zeigler, Dave	WSDOT	360-357-2745	zeigled@wsdot.wa.gov

1 Team co-chair

Guests

Attendee	Company	Phone	E-mail
Iris Picat	WSDOT – AWV		PicatIr@consultant.wsdot.wa.gov
Cliff Bates	V. VanDyke	266-425-4105	cbates@vvandyke.com
Doug Buss	V. VanDyke	206-817-0389	bussdoug
Millard Barney	Concrete Tech	253-383-3545	mbarney@concretetech.com
Nathan Lightner	Granite Const.	425-320-9969	Nathan.lightner@gcinc.com
Bruce Chattin	WACA	206-878-1622	bchattin@washingtonconcrete.org
Greg McKinnon	Stoneway	206-255-8479	gmckinnon@stonewayconcrete.com
Tamson Omps	CalPortland	206-909-2180	tomps@calportland.com

Craig Matteson	Oldcastle		craig.matteson@oldcastlematerials.com
Brian Nielsen	WSDOT-AWV	206-805-5426	NIELSEB@wsdot.wa.gov
Ali Amiri	WSDOT-AWV	206-805-5315	amiria@wsdot.wa.gov
Mark Frye	WSDOT-Geot.	360-709-5469	FRYEM@wsdot.wa.gov

Meeting minutes were prepared by Mark Gaines.

Topics – Temperature requirements for placement of Class 4000D concrete; Project Review – AWV Demolition; Partnership for Excellence in Contract Administration; Partnering Training; AGC Annual Meeting Feedback; SS 2-09.3(3)B Excavation; SS 6-02.3(16) & (17)D Temporary Footings and Mudsills; Dewatering foundations/use of foundation seals; SS for Concrete Tolerances; SS for Concrete Repair Procedures; SS 6-02.3(24)A Field Bending

1. **Welcome/Review of Agenda/Past Meeting Minutes**
   Brian introduced himself and had everyone in the room do introductions due to a number of guests and visitors. Brian reviewed the agenda with the Team. Brian asked for any comments on the meeting minutes. Bob and Tom provided him with written comments.

   Action Item: Brian will post the meeting minutes to the web.

2. **6-02.3(4)D 75 degree F Temperature Requirement for Class 4000D placement**
   There is a significant issue with meeting the 75 degree temperature limits during the hot summer months. Mark relayed that every summer we end up with some projects that are unable to meet the 75 degree F requirement. Typically, the deck placement starts early in the morning and initially all of the concrete is below the limit. If the pour continues into the late morning or early afternoon, temperatures tend to rise and can exceed the 75 degree limit. The Team pointed out contributing factors, including:
   1. The pump often raises the concrete temperature by as much as 5 degrees F. Concrete may be within specification limits at the truck, but exceeds at the point of acceptance (pump discharge).
   2. Frequently time delays while the trucks wait at the jobsite and heat up during the delay. These delays are outside the control of the concrete producer.

   There are a number of ways to cool the concrete, however each method has it's challenges or limitations:
   1. Cold water is easy to implement, however it typically only provides a 4°-5° F reduction in temperature of the mix.
   2. Ice is also a good option, but it is very difficult to get in the warm summer months. Ice suppliers find it far more lucrative to sell ice for recreational uses rather than commercial uses. Also, there are limits to the cooling that ice can provide while staying within the w/c ratios. Ice may provide a 10° F reduction in temperature.

3. Liquid nitrogen is an excellent way to reduce mix temperatures. However, a liquid nitrogen set-up is very expensive and brings with it significant risks for the concrete producer (damage to equipment, safety protocols, etc.) Most small or medium size producers would probably find liquid nitrogen cost prohibitive.

Mark relayed that the ultimate concern is that higher peak hydration temperatures (or specifically temperature differential compared to ambient) leads to increased concrete cracking. He referenced research that suggest keeping the differential temperature between the deck concrete and ambient to less than 22° F for the first 24 hours after placement. Greg McKinnon pointed out that heat generation is necessary for concrete to achieve hardness. There can be ways to shift or delay the heat generation, but it needs to happen for the concrete to harden.

The Team discussed some other ways to reduce differential temperatures, including conducting concrete pours at night, using less cement and more fly ash/supplemental cementitious materials, flooding the bridge deck after placement, using set retarders, etc. Each of these has pros and cons.

Following the discussion, Mark stated that WSDOT will keep the 75° F limitation, but will consider some sort of guidance to the Project Offices encouraging some leniency for situations where temperatures are marginally above the 75° F limit. Mark will spend additional time looking at other opportunities to address the bridge deck cracking issues. He will also look to see what is being done in States like Arizona and New Mexico.

Action Item: Mark to continue working on this issue. Will update the Team if there are future developments worth sharing.

3. **Project Review: Alaska Way Viaduct Demolition**

Brian Nielsen gave an update on the overall viaduct replacement program. The project consists of 32 construction contracts with 26 completed at this time. The tunnel boring was recently completed and they are preparing for the AWV demolition project that will start once the South Access project is complete and traffic is in the tunnel. They are going to use design-build delivery with the RFQ coming out this summer (probably August), a fall shortlist and an RFP late 2017 or early 2018. Demolition not scheduled to start until January 2019. This might be pushed up a little because the tunnel is on schedule to be opened to traffic in October 2018.

WSDOT hopes to get the demolition completed by early summer 2019 to minimize impacts on the waterfront. Ali provided details on the demolition project, including the limits of the demolition work and the ramp connections that will be included with the demolition. He pointed out how close the viaduct structure is to existing buildings, particularly in the Pioneer Square area and at the North end of the project by the BNSF track.

This project is expected to have a six- to nine-month construction duration. The RFP is being developed to provide the project constraints but allow as much flexibility as possible within these constraints. Work will be prioritized to demolish the viaduct north of Pike and around the Columbia on-ramp as an early part of the project.

Ali showed a typical cross-section of the viaduct portal, including the typical staging area and proximity of adjacent structures. He also discussed safety and mentioned that pedestrian and bicycle access will be maintained through the work zone during construction. WSDOT anticipates the Design-Builder will set up to remove structure over two to three blocks at a time. Work will need to be completed in that three-block zone before construction proceeds to the next zone.

Brian went over the questions for the Team.
Does co-location make sense for this project? Without a lot of design work, colocation may not be as important. The AGC thinks that colocation is probably worthwhile. While the design effort is minimal, there is a significant amount of coordination that needs to occur. Co-location would help facilitate this effort. Location and responsibility for finding a co-location place would need to be covered by the RFP.

Commercial general liability insurance limits? No particular input from the Team.

Does industry have an interest in looking over the RFP before we submit it formally? Yes, absolutely. Industry is very interested in reviewing this ahead of the formal RFP.

Is the pre-construction phase duration lengthy enough? In general, yes. It was noted that a very detailed survey of the existing structure will be necessary. Every nook and cranny will need to be investigated to assess existing conditions.

Should we add the Alaskan Way restoration and traffic switch to the scope of work prior to the start of demo? Or should this be handled as a separate contract? General consensus was that it makes sense to add this work to the demolition contract. The primary driver is that adding another Contractor to a congested work zone may create problems.

Does our estimated construction duration seem appropriate? In general, yes. There was a question about agreements on night work. The AWV Team responded that they have assumed no active demolition (impact work) is allowed at night, but the nights could be used for hauling. Is crunching too loud? Don't anticipate a lot of crunching happening. Expect that most of the elements will need to be saw-cut, picked and hauled offsite.

In response to a question about disposing of demolition materials, the AWV Team stated they don't plan on procuring property for processing demolition material. This will be up to the DB to figure out.

The AGC encouraged reasonable standards for demolition limits of underground structures. In general, materials are to be removed to 5'-0" below grade. However, if a footing is 4'-6" below grade, it makes very little sense (and adds significant cost) to remove 6" of footing.

Action Item: No action needed.

4. **Partnership for Excellence in Contract Administration**

Mark shared that there weren't very many applications for the 2016 Excellence in Contract Administration awards. He asked the Team for feedback on what can be done to encourage more applications to be submitted. The Team brainstormed some ideas for consideration:

- Emphasize that we are looking for projects with challenges. Sometimes people don't think about submitting the project with challenges, just the ones that went smoothly.
- Add categories related to suppliers and subcontractors.
- Make the application process more streamlined.
- Relax criteria for when a project can be submitted.

Mark asked the Team what they thought about making this a Contractor-driven application rather than a WSDOT-driven process. Some concern was expressed that this could actually reduce the number of applications we receive.

Action Item: Mark will consider this input as we work to revise the award process.

5. **Partnering Training**

Brian noted that WSDOT and the AGC have completed first round of partnering training. He asked the Team for their perspectives on the training, how you feel it went, etc. Some open discussion followed. The consensus was that the training was helpful and provided some good tools. It was noted that the training made people think about things from a different perspective.

Brian asked for thoughts from the Team on additional partnering? Most of the Team felt that partnering should be expanded at WSDOT. Some specific comments included:

- You don't need to go through the touchy feely meetings to get there.
- Need to develop the issue escalation ladder, assign members from each team to address challenging issues, etc.
- If you bring new staff on board, make sure they are aware of the partnering agreement.
- It's a good idea to piggy back onto the precon to set up the partnering arrangement. This can often be a two-hour effort.
- Make sure you are pulling the partnering agreement out every few months to review and to verify the Team is in alignment with what was agreed.
- Consider a quarterly meeting to check in on partnering.
- Management support in important.

- Need a partnering champion for both the owner and the contractor who can address issues that develop.

Action Item: No action needed.

6. **AGC Annual Meeting Team Feedback**

Since it had been several months since the meeting, Brian reviewed the agenda with the Team. The Team specifically noted the excellent time to network. The networking is just as important as the presentations.

For next year's meeting, try to find someone from FHWA to share where we are going with DBE, Buy America, etc. Will Buy America be expanded to include plastics and other materials in the future?

Get more AGC participation to the meetings. It seems like it is mostly WSDOT making the presentations.

Action Item: Mark or Brian to share this information with the Lead Team.

7. **Action Items**

a.) Standard Specification 2-09.3(3)B Excavation

Mark Frye reviewed Caltrans and ODOT specifications. Caltrans allows five foot of excavation without a submittal, but is vague on when engineering is required. Mark is still working on developing specifications that will allow some level of excavation without a submittal. Mark G emphasized that we want to get this solved, and that it is important to provide uniformity for all bidders. Dave Erickson is engaged in this issue and also shares the concerns about uniformity in expectations across the agency.

Action Item: Brian to keep this on the agenda for the next meeting.

b.) 6-02.3(16) & (17)D Temporary Footings and Mudsills.

Brian went through the new specifications and pointed out that we have included the AASHTO Guide Specifications for bridge temporary works. D1 and D2 have been deleted because they can be covered by the references. Sections D3 and D4 are being kept because they are somewhat unique to WSDOT. Sections D5 to D8 are deleted because they are either covered by the references (temporary works) or by the manufacturer's catalog data.

The Team thought these revisions would work well. A question was asked about what the Project Engineer will do with this submittal. If assumptions are made in their design, how does the field administer this? Bob asked if certain soil types are assumed, what role does the PEO have in verification? Mark responded that we would expect the Contractor to use site soils data to develop a design for temporary works. The Team concurred with this approach.

In section 6-02.3(16), a suggestion was made to replace "will be rejected" with "will not be accepted". The Team concurred.

Action Item: Brian will move these changes forward as part of the August 2017 amendments.

c.) Dewatering foundations/use of foundation seals

Kelly Griffith introduced this item to the Team. In section 6-02.3(6) Placing Concrete, we state:

When a foundation excavation contains water, the Contractor shall pump it dry before placing concrete. If this is impossible, an underwater concrete seal shall be placed that complies with Section 6-02.3(6)B.

Kelly asked what constitutes an "impossible" dewatering situation? With large enough pumps, anything could be possible. Instead, this should be based on what is practical or reasonable. Situations with massive amounts of groundwater should have been designed with a dewatering system or seal in the first place.

A possible solution is to make all dewatering a force account item. Another suggestion is to develop Construction Manual language delineating when a seal should be used. If we want the Contractor to bid the cost of dewatering, the Contract should define the amount of water that will be encountered.

Kelly will work on developing a problem statement for discussion at an upcoming meeting.

Action Item: Kelly to develop a problem statement on the dewatering specification for discussion at a future meeting.

8. **Standard Specifications Concrete Tolerances**

Brian introduced the Team to the work he has been doing to provide tolerances for concrete construction. While our specifications already include some tolerances, they aren't comprehensive and tend to be scattered throughout Division 6. Brian walked through some of the tolerances he has assembled, based primarily on tolerances already included in American Concrete Institute publications. One comment was to make sure that these new tolerances don't override item-specific tolerances contained elsewhere in the Specifications.

Action Item: Brian will continue working on this and bring it forward for further review at a future meeting.

9. **Standard Specification Concrete Repair Procedures**

This item was not covered due to insufficient time.

10. **Standard Specifications 6-02.3(24)A Field Bending**

This item was not covered due to insufficient time.

The meeting adjourned at 12:00 pm.

Next meeting date: June 2nd, but revised to September 22nd.

AGC/WSDOT Structures Team
September 22nd, 2017 Meeting Minutes

Initials	Member	Company	Phone	E-mail
X	Aldrich, Brian[1]	WSDOT-HQ	360-705-7828	aldricb@wsdot.wa.gov
X	Ayers, Scott[1]	Graham Constr.	206-631-2358	scotta@grahamus.com
X	Bingle, Jed	WSDOT	360-705-7224	bingleJ@wsdot.wa.gov
X	Binnig, Bill	Kiewit Pacific	425-255-8333	bill.binnig@kiewit.com
X	Bowles, Eric	Conc. Tech.	253-383-3545	ebowles@concretetech.com
X	DeGasparis, Charlie	Atkinson Constr.	425-255-7551	charlie.degasparis@atkn.com
X	Fell, Susan	WSDOT-SWR	360-759-1312	fells@wsdot.wa.gov
X	Firth, Jeff	Hamilton Const.	541-953-9755	JFirth@hamil.com
X	Foster, Marco	WSDOT-HQ	360-705-7824	fosterm@wsdot.wa.gov
	Fuller, Patrick	WSDOT-AWV	206-805-2960	fullep@wsdot.wa.gov
	Gaines, Mark	WSDOT-HQ	360-705-7827	gainesm@wsdot.wa.gov
	Griffith, Kelly	Max J. Kuney	509-535-0651	kelly@maxkuney.com
X	Hilmes, Bob	WSDOT-ER	509-324-6232	hilmesb@wsdot.wa.gov
	Lehman, Debbie	FHWA	360-753-9482	Debbie.Lehman@dot.gov
X	Minnick, Jeff	WSDOT-SCR	509-577-1844	minnicj@wsdot.wa.gov
X	Olk, John	WSDOT	360-705-7395	olkj@wsdot.wa.gov
X	Olson, Ryan	Granite Const.	425-394-4200	
	Owen, Geoff	Kiewit	360-609-6548	Geoff.owen@kiewit.com
X	Quigg, John	Quigg Bros.	360-533-1530	johnq@quiggbros.com
	Reller, Robert	Manson Constr.	206-762-0950	rreller@mansonconstruction.com
X	Robinson, Eric	WSDOT-WSF	206-515-3897	robinse@wsdot.wa.gov
	Tornberg, Ben	Manson Constr.	206-496.9407	btornberg@mansonconstruction.com
X	Watt, Doug	CJA	425-988-2150	dwatt@condon-johnson.com
	Welch, Pete	Granite Constr.	425-551-3100	pete.welch@gcinc.com
X	Zeigler, Dave	WSDOT	360-357-2745	zeigled@wsdot.wa.gov

1 Team co-chair

Guests

Attendee	Company	Phone	E-mail
Nathan Lightner	Granite Const.	425-320-9966	Nathan.lightner@gcinc.com
Amy Palo	WSDOT-OEO	360-704-6314	paloa@wsdot.wa.gov

Meeting minutes were prepared by Marco Foster.

Topics – **Pre-apprenticeship program; Girder Stress checks during diaphragm and bridge deck placement; Shotcrete Best Practices; SS 2-09.3(3)B Excavation; Dewatering foundations/use of foundation seals; SS 6.02.3(4)D 75 degree requirement for Class 4000D; AGC/WAPA feedback on cost escalation; SS for Concrete Tolerances; SS for Concrete Repair Procedures; 2018 last printed version of SS.**

1. **Welcome/Review of Agenda/Past Meeting Minutes**
   There were several guests at the meeting so introductions were made. Brian reviewed the agenda with the Team – there were a couple of items added with regard to silica fume bags and Recycled Concrete Aggregate. Brian asked for any comments on the April meeting minutes. Bob H. provided several written comments.

   Action Item: Brian will post the corrected meeting minutes to the web.

2. **Pre-apprenticeship Program**
   Amy Palo provided an update from the OEO office on recent changes to the Apprenticeship program. Amy has recently been assigned OJT and apprenticeship programs. A years ago the legislature allocated $5.5M to WSDOT to develop and expand the apprenticeship program. Amy works with folks around the state and she is available to support contractors if they are having a difficult time finding apprentices.

   There will be a meet and greet event in Kent on November 1st. Amy would like to hear from the Contractors on what she or the apprenticeship programs themselves can do to assist Contractors in recruiting the right apprentices to meet their needs. Ryan commented that in his experience some of the apprentice's that have been sent out to his projects are simply not ready to work. Amy stated this is the kind of feedback that is needed from the Contractors. The goal is to develop a program to be successful.

   With so much construction work forthcoming - it is expected that there will be a worker shortage in the future.

   Action Item: N/A

3. **Girder Stress Checks for Bridge Girders during diaphragm and deck placement**
   Charlie suggested we may want to add some clarifying language to the standard specifications to address girder stresses during erection. Charlie feels that the EOR is in the best position to efficiently review construction induced stresses on the girder stability but currently the specifications pushes this responsibility back on the Contractor.

   There was some open discussion on what type of information is included on the plans. It is recognized that the Contractor's mean and methods define what stresses will be induced on the girders – however – the Contractor's argued that standard construction practices limit variability. The Contractors feel that the WSDOT EOR could make very reasonable assumptions based on standard practices and list maximum loadings on the contract plans. This would be most helpful for concrete girders. Steel girder would still need to be analyzed by the Contractor due to more variability in the girders.

Jed thought there may be some opportunity to add additional information on the plans for tub girders that might help the Contractors insure stability during erection. This would negate the Contractor from having to hire a structural engineer and perform and independent analysis during the Contract unless the Contractor desired to exceed allowable loading.

Action Item: Jed will discuss further with the Bridge Office and perhaps there is opportunity to list assumptions and provide loading on the plan sheets. This item will be discussed again at the next meeting.

4. **Shotcrete Best Practices Phase 2 Research**

Brian provided an update on our shotcrete research. Brian briefly reviewed several slides to highlight some of the data and conclusions from the phase 1 research. The phase research basically took a generic shotcrete mix design and compared properties to a typical class 4000 mix design to create test specimens. Brian reviewed some of the data provided by the research group including shrinkage, freeze thaw and scaling.

Conclusion – shotcrete (before shooting) performed as well or better than Class 4000 in the laboratory.

Brian then reviewed some photos from the recently constructed shotcrete wall on Puyallup River bridge project.

Shrinkage test results were discussed and the challenges with using curing compound and water cure on vertical walls were discussed. The Contractors stated that keeping a good wet cure on vertical walls is very challenging and they would prefer using curing compound. Wind makes keeping the plastic sheeting in place a big problem.

Marco suggested we typically do not get adequate coverage using curing compound. Scott suggested we could simply require increased coverage to address this problem. Bob suggested we could do both curing compound and wet cure. Marco then mentioned that proprietary curing blankets worked very well on the North Access contract. Jeff said that he has been able to utilize proprietary blankets for several cycles (more than once) and suggested they are used more in Oregon.

Phase 2 research will focus on best practices for shotcrete placement and will attempt to correlate the properties of wet shotcrete with that of the hardened shotcrete. For example – phase one research suggest optimal air content of wet shotcrete (before shooting) is 8% to 12%. Phase 2 research would evaluate air entrainment of hardened shotcrete and correlate it to air testing done prior to placement.

Action Item: Brian will update the team as more projects are completed and data is developed from the phase 2 study.

5. **Action Items:**

a.) Standard Specification 2-09.3(3)B Excavation

Mark Frye has been tied up with other work and has not had an opportunity to advance this topic so it will be deferred to our next meeting,

The goal of this topic is to provide criteria to eliminate the need for engineered drawings for all excavations over 4' in depth.

Action Item: Brian to keep this on the agenda for the next meeting.

b.) Dewatering foundations/use of foundation seals

Kelly Griffith was not in attendance today so this topic will be tabled until the next meeting.

As a reminder - this topic is specific to section 6-02.3(6) Placing Concrete: *When a foundation excavation contains water, the Contractor shall pump it dry before placing concrete. If this is impossible, an underwater concrete seal shall be placed that complies with Section 6-02.3(6)B.*

Kelly asked what constitutes an "impossible" dewatering situation. With large enough pumps, anything could be possible. Instead, this should be based on what is practical or reasonable. Situations with massive amounts of groundwater should have been designed with a dewatering system or seal in the first place.

A possible solution is to make all dewatering a force account item. Another suggestion is to develop Construction Manual language delineating when a seal should be used. If we want the Contractor to bid the cost of dewatering, the Contract should define the amount of water that will be encountered.

Kelly will work on developing a problem statement for discussion at an upcoming meeting.

After the meeting, Patrick Fuller (WSDOT AWV) offered to assist Kelly in this task.

Action Item: Kelly and Patrick to develop a problem statement on the dewatering specification for discussion at a future meeting.

c.) 6-02.3(4)D 75 degree F Temperature Requirement for Class 4000D placement

Marco asked the Team if exceeding the temperature was an issue last summer. Ryan had one sound transit project where they actually allowed a variance to go up to 80 degrees. Jeff Minnick had troubles on Snoqualmie Pass as Environmental restrictions prevented/limited night work. Jeff Firth addressed problem he was having with meeting the temperature requirement by pouring deck at night when temperatures were cooler.

Action Item: Brian will look at updating CM language to insure PE staff use some judgement in accepting concrete that may be slightly above 75 degrees. Marco suggested we also have further discussions with WACA with regards.

6. **AGC/WAPA Feedback on Cost Escalation: Opportunities for improvement?**
Brian used a report to communicate discussions WSDOT has recently had with industry with regards to price escalation. Brian reviewed 12 points that were raised;

- Restricting work hours/night work
- Inadequate contract time
- Inflexible start dates
- Advertising projects late in the year
- Project Management issue
- Subcontracting
- Liquidated damages
- Bid and pre-bid issues
- Cost of working for public owners
- Availability of contractors/abundance of work
- Traffic Control
- Paving issues

The Contractors raised the issue that inexperience at the staff level (bullet 5) is really hurting WSDOT. The risk and cost associated with timely decision making is hard to quantify and is concerning.

Brian also quickly reviewed another PP presentation which supports the above bulleted items. Data suggests that we are not having the same number of bidders on average for each of our projects, low bids are coming in on average 15% over the engineers estimate in lieu of 10% under, and there is an estimated $30 Billion dollars of Public works forecast for the next 5 years in the Puget Sound area.

Action Item: The Team will provide any additional comments to Brian within 2 weeks.

7. **Standard Specifications Concrete Tolerances**
Brian updated the Team on the work he has been doing to provide tolerances for concrete construction. While our specifications already include some tolerances, they aren't comprehensive and tend to be scattered throughout Division 6. Brian walked through some of the tolerances he has assembled, based primarily on tolerances already included in American Concrete Institute publications. One comment was to make sure that these new tolerances don't override item-specific tolerances contained elsewhere in the Specifications. Brian asked the team to provide feedback in the next couple of weeks.

The team was unanimous in agreeing that having these tolerances be better defined is an improvement and clarifies for both parties what is acceptable. Brian hopes to get the new specifications adopted in time for the January amendments.

Bob suggested the final version be routed thru the Region Construction Engineers for comment and endorsement.

Action Item: The Team will provide any additional comments to Brian within 2 weeks. Brian will route the proposed language though the CE's and if there are no objections move forward with adopting.

8. **Standard Specification Concrete Repair Procedures**
Brian provided a brief overview describing his desire to enable concrete repairs to be done without requiring a change order as well as to develop a pre-approved repair procedure for minor repair of spalled concrete and minor voids. Bob had some reservations about developing pre-approved repair plans as he feels the process of submitting repair procedures encourages better workmanship in the first place. The Contractors suggested that they need no encouragement as performing repairs is simply not efficient and undesirable and disruptive (cost and time not expected). There was some open discussion on what is a minor repair and when should a submittal be provided.

After some open discussion it there was general agreement that having a pre-approved plan for minor spalls would be helpful and we can define what information is required to evaluate more extensive repairs.

Action Item: Brian will bring updated language to the next meeting

9. **Standard Specifications – last printed version 2018**
Brian reminded the team that the last printed version of the standard specification will most likely be the 2018 version.

10. **Silica Fume Bags**
Brian added a topic to the agenda to alert contractors of an issue we recently experienced with silica fume bags that had not disintegrated as they were supposed to. The bags are supposed to degrade during the concrete mixing operation but failed to do so. This resulted in a recently overlaid bridge that had paper debris in the overlay and it is causing spalling on the new deck. It is unclear what the final resolution will be but it is probable the entire bridge deck may need to be redone.

None of the team members have heard of this issue but appreciated being informed.

11. **Recycled Concrete Aggregate (RCA)**
Marco briefly updated the team on recent work the Roadway Team and the WACA Team have made with regards to accepting RCA. WSDOT and WACA are working

to better address accepting RCA with regards to LA Wear and Degradation and we are also developing a proof rolling specification to accept RCA compaction. Marco will keep the team informed as this work progresses.

Brian solicited input from the team for new agenda items as the agenda has been on the light side the last couple of meetings. Please send topics if you think of anything. Brian will also remind our PE's that the team is available for constructability reviews. Brian may also reach out to other local organizations.

The meeting adjourned at 11:45 am.

Next meeting dates: November 17th, January 12th, March 9th, May 4th

The Contractors assigned coffee duty as follows for the next 4 meetings;
- Ryan
- Bill
- Scott
- Charlie

AGC/WSDOT Structures Team
November 17th, 2017 Meeting Minutes

Initials	Member	Company	Phone	E-mail
X	Aldrich, Brian[1]	WSDOT-Const.	360-705-7828	aldricb@wsdot.wa.gov
X	Ayers, Scott[1]	Graham Const.	206-755-0239	scotta@grahamus.com
	Bingle, Jed	WSDOT-Bridge	360-705-7222	binglej@wsdot.wa.gov
X	Binnig, Bill	Kiewit IWCo.	253-255-2376	bill.binnig@kiewit.com
X	Bowles, Eric	Conc. Tech.	253-383-3545	ebowles@concretetech.com
X	DeGasparis, Charlie	Atkinson Const.	425-255-7551	charlie.degasparis@atkn.com
X	Fell, Susan	WSDOT-SWR	360-905-1548	fells@wsdot.wa.gov
X	Firth, Jeff	Hamilton Const.	541-953-9755	JFirth@hamil.com
X	Foster, Marco	WSDOT-Const.	360-757-5999	fosterm@wsdot.wa.gov
X	Fuller, Patrick	WSDOT-AWV	206-805-2960	fullep@wsdot.wa.gov
	Gaines, Mark	WSDOT-Const.	360-705-7827	gainesm@wsdot.wa.gov
X	Griffith, Kelly	Max J. Kuney	509-535-0651	kelly@maxkuney.com
X	Hilmes, Bob	WSDOT-ER	509-324-6089	hilmesb@wsdot.wa.gov
	Lehmann, Debbie	FHWA	360-753-9482	Debbie.Lehmann@dot.gov
X	Minnick, Jeff	WSDOT-SCR	509-577-1844	minnicj@wsdot.wa.gov
X	Olk, John	WSDOT-Bridge	360-705-7395	olkj@wsdot.wa.gov
	Olson, Ryan	Granite Const.	425-551-3130	ryan.olson@gcinc.com
	Owen, Geoff	Kiewit IWCo.	360-609-6548	Geoff.owen@kiewit.com
X	Quigg, John	Quigg Bros.	360-533-1530	johnq@quiggbros.com
	Reller, Robert	Manson Const.	206-762-0950	rreller@mansonconstruction.com
	Robinson, Eric	WSDOT-WSF	206-515-3897	robinse@wsdot.wa.gov
X	Tornberg, Ben	Manson Const.	206-496.9407	btornberg@mansonconstruction.com
	Watt, Doug	CJA	425-988-2150	dwatt@condon-johnson.com
X	Welch, Pete	Granite Const.	425-551-3100	pete.welch@gcinc.com
X	Ziegler, Dave	WSDOT-OR	360-357-2745	ziegled@wsdot.wa.gov

1 Team co-chair

Guests

Attendee	Company	Phone	E-mail
Jim Schettler	Jacobs	425-239-7542	jim.schettler@jacobs.com
Dan McReynolds	Parametrix	253-604-6632	DMcReynolds@parametrix.com
Michael Kosa	City of Sumner		MichaelK@sumnerwa.gov

Meeting minutes were prepared by Marco Foster.

Topics – Constructability review I-90 Yakima River Bridges, constructability review SR 410 Traffic Ave Bridge, Shotcrete Best Practices – volunteers; SS 6-09.3(14) Modified Concrete Overlay bond – repair, SS 2-09.3(3)B Excavation; Dewatering foundations/use of foundation seals; SS 6.02.3(4)D 75 degree

requirement for Class 4000D; girder stress checks for girders during erection; Standard Specifications for Concrete Tolerances.

1. **Welcome/Review of Agenda/Past Meeting Minutes**
   Brian reviewed the agenda with the Team – no new items were added. Brian asked for any comments on the September meeting minutes. No comments were provided.

   Action Item: Brian will post the meeting minutes meeting minutes to the web.

2. **(2a) Constructability Review – I-90 Yakima River Bridge Rehabilitation**
   Jeff Minnick provided an overview of the scope of the project. Basically – the scope of the project is to remove and rehabilitate bridge decks on both the eastbound and westbound Yakima rivers bridges near Cle-Elum and also near Ellensburg on I-90. The traffic control strategy involves constructing temporary bridges between the existing bridges to carry west bound traffic during the westbound bridges rehabilitation and then eastbound traffic during the eastbound bridges rehabilitation. It is assumed that 80 temporary piles will need to be installed to support the temporary bridges and accompanying work. Environmental permit conditions restrict certain work activities. In water work windows will be July 15th thru September 15th. The bridge deck removal will involve removing about 3" of concrete off the bridge decks. The Ellensburg vicinity bridges each also have two hinges that need rehabilitation – and it will involve temporary bents to support the bridge while the work is being done.

   It is assumed that constructing the temporary bridges will take most of a construction season to complete. Would the Contractors build the temporary detour bridges and then shut down until the following season to do bridge rehabilitation work? Would the Contractor consider building both detour bridges simultaneously or would they be consecutive (staggered start?)? Scott suggested that you would not want to be renting the temporary bridges while they were not in use. It may be less expensive to buy the temporary bridges then to rent for several years.

   Pete stated that 80 piles total may not be enough – it would be beneficial if the max number of piles at each location be identified and increased. Pile driving could be done outside the window if they could be done outside the waterline (up the river bank). Pete asked if work could be performed off the existing bridge for the fiber wrap underneath (u-bit – scaffolding). The answer is yes but lane restrictions would be limited to night time. The Contractors asked how the temporary piling could be driven off the outside of the existing bridge for the temporary hinge bent. There were no good ideas at this time unless pile driving off the existing bridge is allowed.

   Jeff asked if the Contractor could provide some estimates of time to install the temporary bridge. Pile driving off the existing bridge will most likely not be an option. There is a possibility to work from the shore. This would require a temporary trestle be constructed for driving pile in the water for the temporary bridges.

1 week per span would be an aggressive schedule – 2 weeks per span may be more realistic. Realigning the temp bridge north or south may provide better access for putting in a temporary trestle. At 1 week per span – it would take close to 3 months to build the temporary trestle. The current fish window is only 2 months. There was some open discussion with regards to means and methods and the time to construct the various alternatives. There was some consensus that this project would be a 4 season project. The team asked if the temporary trestle could simply become the temporary bridge for the detour and stay in the river in lieu of building a separate temporary bridge. Debris flow would be a concern.

The timing of the project was discussed. The project would need to be awarded early in the year to have a chance of having submittals approved and materials procured in time to take full advantage of the fish window. If temporary piers are not in alignment with existing piers a hydraulic analysis may need to be done.

The Contractors reiterated that it would be desirable to leave the trestle in and use it as a temporary bridge. If the existing bridge could be used to drive pile off it may eliminate the need for a temp trestle. Perhaps it would be possible to retrofit the existing bridge to use it to build the temporary bridge from.

It was suggested it may be less expensive to replace the existing bridges than rehabilitate the existing bridges. Consideration should be given. The Contractors suggested WSDOT should design the temporary bridge so the Contractors can simply order materials and hit the ground running.

Safety concerns associated with driving pile next to traffic was discussed.

Action Item: N/A

2. **(2b) Constructability Review – SR 410 Traffic Avenue Bridge**

City of Sumner and Parametrix provided an overview of the scope of the project. Specifically, this project will construct a new longer bridge with a shared use path that is parallel to the existing bridge. The proposed bridge will be constructed between the existing Traffic Avenue Bridge and the existing railroad bridge to the east. This is a highly congested area and the current bridge is a bottleneck. This is the highest priority project for the City of Sumner. WSDOT will ultimately own the new bridge but the City is funding the project to provide congestion relief within the City. The existing bridge is still functional so it will remain. The project is at approximately 30% design. The City is still trying to secure the remaining funds. Late 2018 would be the earliest ad date. The new structure will need to be longer to accommodate additional lanes on SR 410.

The project team used a brief power point presentation to highlight a proposed traffic control scheme. The SR 410 work zone strategy includes the following stages:

- Stage 1: Construct bridge substructure and storm water facility. Mainline SR 410 will be reduced to 11 foot lanes with 2 foot shoulder for 3 to 4 months.

- Stage 2: Set bridge girders during SR 410 full closures for 2 to 3 weekday nights.

- Stage 3: Construct bridge superstructure, retaining walls and widening on the east side of Traffic Avenue. Construct widening on outsides of ramps. Work to be completed in traffic control device delineated areas on Traffic Avenue and in temporary barrier protected work areas on the ramps. Stage 3 will last approximately 2 to 3 months.

- Stage 4A: Move all traffic onto the east side of Traffic Avenue to complete the paving and striping on the west side of Traffic Avenue and construct widening on the south side of the WB Off-Ramp. Stage 4A will last approximately 2 to 3 months.

- Stage 4B: Complete the final lift of pavement and stripe Traffic Ave to the final configuration. Stage 4B includes 2 or 3 weekday night closures of the ramps for paving and final striping.

The proposed plan supports traffic mobility during the construction but results in restricted access for construction. The focus of today's presentation is to solicit feedback from the AGC team to see if there is adequate staging and room to construct the project.

Specific questions asked of the team are;

1. Is there any element of the proposed structure that looks difficult or needlessly costly to construct? No

2. What advice do you have to the design team on how to make the project simpler to construct? Consider extended weekend closure of SR 410 in lieu of weekday night time closures for setting girders. There was some open discussion on how much work could be accomplished during the closure.

3. What is the likely design for the work platform, fill walls or a pile-supported platform? Eliminate the work platform and work at grade if possible – this might require closing a lane of SR 410 and working at night. Constructing some shoring between Traffic Ave and the railroad would allow excavating down in lieu of constructing the platform was also discussed. Even though tie-backs under railroads are typically not allowed, there was consensus from the team that this would be desirable.

3. What is a reasonable number of construction days for the contract? 300 working days.

Action Item: N/A

3. Shotcrete Best Practices Phase 2 Research

Brian reminded the team of the scope of the Phase? 2 research. Phase 2 research will focus on best practices for shotcrete placement and will attempt to correlate the properties of wet shotcrete with that of the hardened shotcrete. For example – phase one research suggest optimal air content of wet shotcrete (before shooting) is 8% to 12%. Phase 2 research would evaluate air entrainment of hardened shotcrete and correlate it to air testing done prior to placement. To assist WSDOT to further the research work – Brian requested that a representative from the Contractors participate in the research effort. Scott offered up a Graham employee – Jason.

Action Item: Scott will provide Brian Jason's contact info.

4. 6-09.3(14) Modified Concrete Overlay bond repair.

Currently there is a General Special Provision in use on recent projects (6-09.3(14).OPT2.GB6) that states the Contractor is responsible for the cost of removal and replacement of modified concrete overlay that has not bonded to the existing bridge deck instead of the Contracting Agency. The Bridge Office has proposed elevating this GSP to the Standard Specifications. There was some discussion as to why WSDOT had been retaining financial responsibility. It was driven by team discussions back in 2006-2007 recognizing that WSDOT will control how much deck repair is being done and therefore Contractors should not bear the risk of bond performance to any unsuitable concrete. It was agreed at that time that the liability of the bond shall be WSDOT responsibility. In open discussion by the team, it was determined that assigning this risk to the Contractor may not be appropriate in all situations.

Action Item: Brian will follow up with the Bridge Office.

5. Action Items:

a.) Standard Specification 2-09.3(3)B Excavation

Mark Frye has been tied up with other work and has not had an opportunity to advance this topic so it will be deferred to our next meeting,

The goal of this topic is to provide criteria to eliminate the need for engineered drawings for all excavations over 4' in depth.

Action Item: Brian to keep this on the agenda for the next meeting.

b.) Dewatering foundations/use of foundation seals

This topic is specific to the following Sections:
2-09.3(3)B: *The Contractor shall drain or pump any water from the pit, taking care not to stir up or soften the bottom. If equipment in the pit or inadequate water removal makes the foundation material unstable, the Contractor shall, at no expense to the Contracting Agency, remove and replace it with material acceptable to the Engineer.*

When the Engineer believes ground water flow may impair a concrete footing, the Contractor shall place under it a layer of gravel at least 6 inches thick. Before placing the gravel, the Contractor shall excavate to whatever grade the Engineer requires. This provision shall not apply to the building of concrete seals.
6-02.3(6) Placing Concrete:
When a foundation excavation contains water, the Contractor shall pump it dry before placing concrete. If this is impossible, an underwater concrete seal shall be placed that complies with Section 6-02.3(6)B.

Kelly asked what constitutes an "impossible" dewatering situation. With large enough pumps, anything could be possible. WSDOT may not want the contractor including large amounts of dewatering in bids. Instead, this should be based on what is practical or reasonable. Situations with large amounts of groundwater should have been designed with a dewatering system or seal in the first place.

Perhaps a specific reference to how much water should be expected and GPM could be identified in the Contract. Patrick suggested that our Geotechnical recommendations may need to elaborate on ground water. There was some open discussion on various options to address the situation.

A possible solution is to attempt to define the level of pumping that should be incidental and any level above that should be paid under a Force Account item. Another suggestion is to develop Construction Manual language delineating when a seal should be used. If we want the Contractor to bid the cost of dewatering, the Contract should define the amount of water that will be encountered.

Action Item: Patrick will work with Kelly on draft spec change to share with the team.

c.) 6-02.3(4)D 75 degree F Temperature Requirement for Class 4000D placement

Brian reviewed proposed spec changes to address difficulties the Contractors were having in meeting the 75 degree requirement. A proposed change, to allow the Contractor to request a variance up to 80 degrees with supporting documentation, will be made. New guidance would allow the Project Engineer to grant approval for the variance after discussion and concurrence of the State Construction Office.

Action Item: Brian will finalize the spec and Construction Manual changes.

d.) Girder Stress Checks for Bridge Girders during Diaphragm and Bridge Deck Placement 6-02.3(17)F5

Jed is working on this issue and it will be left on the agenda for next time. As a reminder – this topic proposed adding some clarifying language to the standard specifications to address girder stresses during erection. Charlie feels that the EOR is in the best position to efficiently review construction induced stresses on the girder stability but currently the specifications pushes this responsibility back on the Contractor.

It is recognized that the Contractor's mean and methods define what stresses will be induced on the girders – however – the Contractor's argued that standard construction practices limit variability. The Contractors feel that the WSDOT EOR could make very reasonable assumptions based on standard practices and list maximum loadings on the contract plans. This would be most helpful for concrete girders. Steel girder would still need to be analyzed by the Contractor due to more variability in the girders.

Jed is evaluating if WSDOT could add additional information on the plans for tub girders that might help the Contractors ensure stability during erection. This would negate the Contractor from having to hire a structural engineer and perform and independent analysis during the Contract unless the Contractor desired to exceed allowable loading.

Action Item: Jed will discuss further with the Bridge Office and perhaps there is opportunity to list assumptions and provide loading on the plan sheets. This item will be discussed again at the next meeting.

6. Standard Specifications Concrete Tolerances

Brian provided an updated specification with regards to tolerances for cast-in-place concrete construction. While our specifications already include some tolerances, they aren't comprehensive and tend to be scattered throughout Division 6. Brian asked the team to provide feedback in the next couple of weeks.

There was some open discussion with regards to top of shaft tolerances. Brian stated this has been discussed with ADSC and agreed to. The Contractors wanted to consider this some more but agreed to provide comment within 2 weeks. The Contractors said that providing the drillers this much tolerance may make it difficult for them to get the columns in the correct location.

Brian hopes to get the new specifications adopted in time for the January amendments.

Action Item: Brian will wait a couple of weeks for comment from the team. Comments shall be provided back to the entire group for review within two weeks (by Friday December 1st).

7. New agenda items

Brian solicited input from the team for new agenda items. Today we had a last minute constructability review – if that had not happened we may not have had enough material to warrant a meeting.

Brian asked the team if we might consider relocating the meeting to Kent facility. There are only a couple of folks that drive down from the north so it may be worth pursuing. After some open discussion it was decided that the meetings remain at Corson Ave.

The phone number for the conference room is 206-768-5721 – it will be included in future agendas so those that do not have card keys can call and have someone open the door. Brian will request card reader access to the Corson Ave. Maintenance Facility for all WSDOT team members.

The meeting adjourned at 11:45 am.

Next meeting date: January 12th, March 9th, , May 4th

The Contractors assigned coffee duty as follows for the next 3 meetings;- Ryan, Scott, Charlie