



ADSC/WSDOT Joint Meeting

May 28th, 2015, 8:30 A.M. - 11:30 A.M.

Lakewood Maintenance Facility

11211 41st Avenue SW

Tacoma, WA 98499-4694

Meeting Minutes

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¹ Team co-chair



Guests

Attendee	Company	Phone	E-mail
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1. Welcome/Review of Agenda

Mark Gaines opened the meeting with introductions and reviewed the agenda. No additional topics were added to today's meeting.

2. Changes in HQ Construction Leadership

Mark provided an update on changes in leadership within WSDOT Headquarters. Former Director of Construction, Jeff Carpenter will be assuming a new position as Director of Project Development. Former Director of Maintenance, Chris Christopher will be assuming the Director of Construction position. The former Director of Project Development, Pasco Bakotich will be assuming the Director of Maintenance position.

Mark mentioned he had shared with Chris what the ADSC/WSDOT Team has accomplished over the years and what the Team is currently focused on. The Transition from Jeff C. to Chris C will be happening over the next 2 weeks.

3. Review/Approval of December 2014 meeting minutes

The December 2014 meeting minutes were approved by the Team.

Action Items: Mark to post the meeting minutes to the web site.

4. Constructability Review – Church Creek Fish Passage

Jim C. provided a brief introduction of the project to the Team. Basically – this project will replace a culvert beneath SR 532 near Stanwood with a bridge. The bridge will be constructed on drilled shafts and will utilize ABC construction. The proposed traffic control plan envisions using full weekend closures to get the work done. Jim asked the Team if this work could be done using weekend only closures. It is assumed the shafts will eight feet in diameter and fairly deep.

The Team asked Jim – can temporary bridges be installed? Jim did not know for sure – but a detour using local road network was not a good option. The ADSC members agreed that leaving drill rigs parked on the project during the week is a poor option – and would result in increasing the cost of the drilled shaft work by 1.5 - 2 times. This may make the option of temporary (bypass) bridges more cost effective than the proposed plan.

There was some discussion on how the drilling would be conducted – temp casing or not. Consensus from the group is that you would most likely construct 1 drilled shaft per weekend.



There was some discussion on the feasibility of constructing 2 shafts per weekend – but most everyone agreed that access/ import/export and room to stage would most likely preclude this option.

The concept of constructing the shaft/column as one unit all the way to the crossbeam was discussed. However, this may not be feasible because of the challenges meeting the tolerances for ABC construction with this method. It was also noted that plumbness of the shaft would also be a concern.

Action Items: Jim C. will take the information provided by the ADSC Team back to the Design Team.

5. Specifying casing shoring vs. temp casing for abutment shafts

Jed Bingle of the Bridge and Structures Office asked the Team for comment on specifying casing shoring. Basically, casing shoring is straight forward payment when drilled shafts are being used for the shaft/column connection. When drilled shafts go into an abutment – the casing shoring needs to be removed but shoring may still be needed to facilitate construction of the shaft/abutment connection.

The Contractors thought a potential solution to the problem is to make casing shoring incidental to other work. The current standard bid item makes payment unnecessarily confusing. The bid item for temporary casing could be used in lieu of casing shoring, but casing would not be required if the Prime Contractor has already excavated for the shaft/abutment connection. There was some general discussion about the two bid items and the history behind them.

It was suggested that payment for casing shoring could be incidental to the shaft excavation. The rest of the requirements for casing shoring and the details for the column/shaft connection would remain unchanged.

There was some discussion if the proposed change only applies to abutments – or if it could be applicable for intermediates piers.

Patrick C. reminded folks that the requirement for shoring casing was derived to prevent Contractors from glory holing above the shaft and compromising the integrity of the shaft/column connection area.

Action Items: Mark will work with the Bridge office to bring proposed language changes back to the Team in the fall.

6. Specifying vertical elements for soil nail wall construction

Jim C provided a proposal/concept to the Team that would add vertical soil nail construction as a standard WSDOT specification. WSDOT would develop a General Special Provision for



vertical nails and it would be the Contractor's option if they wanted to use them for additional stability of the face. A potential advantage of using vertical nails is that they could allow for longer duration exposure of the open cut prior to shotcrete placement.

AL R. agreed this proposal provides some flexibility in the Contractor's mean and methods, however there could be times when some Contractors may assume undue risk at bid time that put both the Contractor and Owner in a bad place.

Jim C. suggested that if vertical nails are a good option for many projects, WSDOT should draft Standard Specification language that describes the work.

ADSC Team members recommended WSDOT specify whether or not vertical nails are required and not leave them as optional. Tom A. suggested the geotechnical recommendations should be more specific on what needs to be done during construction to maintain face stability. If vertical nails are required, the ADSC recommended using larger-diameter nails. Their experience has shown that the larger-diameter nails are more effective in providing face stability than smaller nails.

The majority of Team believes that WSDOT should prescribe and design vertical nails if they are needed.

Action Items: Mike B. will work on GSP language for vertical nails and bring back to the Team in the fall.

7. Action Items

A. Modifications to Obstruction Clause

Mark informed the group that he has not made much progress on this item since the last meeting. There is a proposed revision that limits/reduces equipment damage that would be compensated under the force account item for obstruction removal. Though one could argue the nature of obstruction removal could impose additional wear that may break a piece of equipment – the needed repair could also be the result of typical wear and tear and the needed maintenance not necessarily the result of an obstruction.

ADSC acknowledged the challenge associated with this issue and agreed the proposed revisions for equipment damage is a compromise and is fair and biddable.

Mark will continue to work on how WSDOT can better address contract time associated with FA obstruction removal. It is recognized that drilled shaft work is often a critical path activity early in the project schedule, but typically drops off the critical path after the first few shafts are completed. With a large dollar amount for obstruction removal and a requirement to expend these dollars without additional contract time, significant obstruction issues early in a project could seriously jeopardize the project schedule.



Action Items: Mark G. to move forward with the changes associated with equipment damage during obstruction removal. He will continue to work on the contract time issue, and will bring proposed language back to the Team in the fall.

B. Review of drilled shaft centralizers

Patrick C. and Chuck O. provided an update on the issue. So far, there has not been agreement on a centralizer detail made of reinforcing steel. Patrick reviewed some work on the Seattle Seawall project and noted that the reinforcing steel centralizers were not performing well. In order to get a solution in place that is constructible and insures adequate shaft cover, the Bridge Office will revert back to the structural steel centralizer that was removed from the plan sheets a couple of years ago. The Bridge Office will provide future updates if they are able to identify a reinforcing steel centralizer detail that can be fabricated and provides the necessary shaft cage centering.

Action Items: Patrick to provide Mark G the latest detail. Mark will send it out to the Team for review and comment.

C. UC Irvine lateral load testing of shafts

Al R. provided an update on this research project. The scope of this work will be to gather drilled shaft lateral load test data from past projects and provide access to this data through a web site. The research is basically complete. It should be beneficial to have all of this data assimilated and made available through a single source.

D. OSU study of high-strength bar as shaft reinforcing

John S. provided an update on this research effort. As discussed at the last meeting, this project will focus on the performance of shafts with high-strength steel reinforcing and permanent casing considered as providing structural capacity. This project is being handled as a collaborative project with contributions from the drilled shaft contracting industry. The research team is looking for drilled shaft contractors who are willing to contribute time, equipment and materials to construct the test shafts. Four shafts that are three feet in diameter will be constructed with different types of steel. He noted that the reinforcing cages for this project have already been donated. The testing will be done in Corvallis, Oregon. The research is also evaluating the contributions of permanent casing on shaft capacity.

Action Items: ADSC Members are encouraged to get in touch with Al if they can support this research work. Mark will keep this on the agenda for an update at the next meeting.

E. FHWA/Texas A&M base grouting

This project has not progressed as quickly as hoped. Research was started but then stalled due to the main Contractor having to pull resources off the project. The research work will not move from Texas A&M to a different research facility as previously thought.



Action Items: Mark will keep on the agenda for an update at the next meeting.

F. Payment for soil excavation above the top of the shaft

Mark G. will work with Mike Bauer to create revised contract language. It is recognized that there are challenges defining payment for this work, how the drillers allocate cost for excavation and how this work is scheduled by the Primes.

Action Items: Mark will bring proposed language back to the Team at the next meeting.

8. Proposed change to gage range for soil nail/ground anchor test

Mark Frye reminded folks of past discussions on the topic. A review of the specification requires gauge readings being in the middle 2/3 of the required pressure reading. This requirement can be met without utilizing very much of the gauge range. Mark F. is proposing the specification be modified to require the gauge reading to be in the top 1/3 of the gauge. He showed examples of the range per the current specifications and the proposed range, including how it will better utilize the full range of the gauge. No Team members took issue with the proposed change.

Action Items: Mark to incorporate this change as part of the August 2015 amendments.

9. Payment for soil excavation above the top of shaft

This was discussed earlier in the meeting.

10. Proposed changes to 6-19.5 addressing equipment damage

This was discussed earlier.

11. Proposed changes to 6-19.4 addressing payment for rebar

Mark shared proposed changes for how we measure and pay for steel reinforcement and asked the Team for comments/feedback. Chuck O. did say there has been discrepancy with what gets paid vs. what is installed – however bidding the work has not been a significant problem. The Team had no concerns with the proposed specification revisions.

Action Items: Mark will make the modifications and incorporate into the August amendments.

12. Electronic Plans, as-builts and digital signatures

Mark shared updates on discussion within WSDOT with regards to this topic. Certain disciplines within WSDOT are already moving towards using electronic plans and eliminating paper copies.

Mark provided a quick overview of our current practice. Scanned copies can get clouded and make rebar details difficult to determine. When the details are scanned after construction to



develop as-built drawings – the detail is further degraded. Utilizing digital/electronic plans will preserve the high quality of the images and provide a better product than current practice. The Bridge office has identified a pilot project to implement the new process.

13. Additional Items

No new items were raised.

14. Future Dates

The meeting adjourned at 11:10. Future meeting dates are; October 1st, December 3rd, and February 4th. The annual ADSC/WSDOT joint training meeting will be discussed at the October meeting.



ADSC/WSDOT Joint Meeting
 October 1st, 2015, 8:30 A.M. - 11:30 A.M.
 Lakewood Maintenance Facility
 11211 41st Avenue SW
 Tacoma, WA 98499-4694

Meeting Minutes

Attended	Member	Company	Phone	E-mail
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X	Binnig, Bill	Kiewit	253-493-4200	bill.binnig@kiewit.com
	Carnevale, Robert	Kulchin Foundation	253-888-4284	bob@kulchin.com
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1. Welcome/Review of Agenda

Mark Gaines opened the meeting with introductions and reviewed the agenda. No additional topics were added to today's meeting. Patrick Clarke will be leaving as a team member and Anthony Mizumori will be joining as the Bridge and Structures Office representative. Mark acknowledged Patrick's long term participation and contribution to the team and thanked him for his efforts over the years. Today is Patrick's last meeting.

Action Items: No action required.

2. Constructability Review – Mukilteo Ferry Terminal

This project will be constructing a new Ferry Terminal in Mukilteo. The new Vehicle transfer span (VTS) and passenger overhead loading span (OHL) will use drilled shaft foundations for support. The VTS will require two 7' diameter shafts approximately 120' in length and the OHL will require one 11' diameter drilled shaft approximately 105' in length. The project team provided an overview of the contract, schedule and constraints. Greg Hess (KPFF) provided a power point presentation. The project design is nearly completed, with Construction anticipated to start in early 2017. The shafts will be located in about 35' to 50' of water (depending on tide). Current design requires approximately 45' of permanent casing for the VTS shafts and about 42 feet of permanent casing for the OHL shaft below the mud line. The intent of the design is to require the permanent casing to penetrate approximately 10' into the denser material/substrate.

Possible construction setups were discussed utilizing barges with templates for shaft construction. It is anticipated that a vibratory hammer would be used to install cans. The team agreed this could be done. There was some discussion about obstructions.

The barge set up was discussed and it was noted that this is an expensive method to install three drilled shafts. Shaft installation from a temporary work trestle was discussed and appeared to be a viable option. Allowing for either barge or trestle installation might be the best opportunity for competition during bidding. It was identified that marine equipment will most likely be needed for installation of the transfer spans. Mark advised that if the designers



include a trestle option, they need to verify there is adequate permitting for the number of piles needed to support a trestle.

There was discussion on the current Standard Specifications tolerance for plan location and vertical alignment (plumbness) of the shafts. The designers would like to tighten this tolerance to assist in designing the remaining structure. A tighter tolerance would help with the design and installation of the mechanical and electrical equipment that goes inside the shaft casing and allows vertical movement of the structures. The Team suggested a reduction in tolerances is possible but it also suggested the designers consider increasing the casing diameter (make the shaft larger) to provide more flexibility in insuring the casing is within tolerance. If the designers choose to reduce the tolerance, the Team suggested reducing from 6” down to 3”. The did not advise making the tolerance any less than 3”.

There was open discussion from the team with regards to full depth casing. Full depth structural casing requires adherence to stringent welding practices. If the permanent casing is designed as a structural element, it may be difficult to provide adequate structural welding in the field conditions. There was some discussion and different ideas shared with regards to the pros and cons of making the permanent casing full depth.

Mark asked the ADSC team if this project would be a good candidate to provide option for full depth or not full depth casing. Ultimately, the team suggested there would not necessarily be a benefit for going full depth and to keep the design the way it is currently shown.

In conclusion the recommendation was made that the completed design be very clear on the inside diameter of the shafts and the allowable tolerances if different than the standard specifications. A comment was provided that is may be prudent to fabricate the shroud that goes over the top of shaft after the shaft construction is complete. This plan would be more forgiving with respect to shaft tolerance.

No concern was expressed with regards to anchoring barges in the deeper water.

Action Items: Mark will send meeting minutes to the Design Team.

3. Update on WSDOT funding package

Mark provided a brief update to the team on the recently passed funding package and what this mean for future WSDOT projects. The funding will be collected much more slowly than past funding packages because it is not bonded. There are projects identified around the state but much of it is slated for western Washington. The early funding will most likely target design and R/W acquisition. With the revenue being collected slower – it is probable that some of the larger projects could be broken into smaller chunks to align with cash flow.

Mark then provided a short presentation on how WSDOT will evaluate future projects to identify the method of delivery for the upcoming projects. It’s expected that many will still be



Design-Bid-Build, however it's likely that we will begin to see a larger percentage delivered using Design-Build. It is also likely that several additional projects will be delivered using General Contractor/Construction Manager.

The goal of adopting the new process is to insure WSDOT is consistent across the state in how delivery methods are selected. Some states have current delivery method selection processes in place; the WSDOT model is based on the process that is in place at the Colorado DOT.

A probable delivery method will be identified during project scoping. A final determination will be made at or prior to the 30% design level. Project over \$100M will go to a team for review and consideration. A delivery method flow chart was developed and endorsed by RA's for implementation. The process is currently being tested and refined. The process is designed to be flexible and can be adjusted in the future to address legislative needs or Agency priorities.

Action Items: Mark will send a copy of the power point presentation to the ADSC team.

4. Action Items;

a. Review of drilled shaft centralizers

The bridge office has revised the centralizer detail consistent with past ADSC meeting discussions. Mark requested the team provided concurrence that this detail is acceptable to industry so WSDOT can adopt it as the standard detail in future designs. The Team concurred with the new detail.

Action Items: Patrick will share the newly adopted detail with the Bridge Office for inclusion on future contracts. No further action required on this item.

b. OSU study of high-strength bar as shaft reinforcing

As discussed at the last meeting, this project focuses on the performance of shafts with high-strength steel reinforcing and permanent casing considered as providing structural capacity. This project is being handled as a collaborative project with contributions from the drilled shaft contracting industry. The research team is looking for drilled shaft contractors who are willing to contribute time, equipment and materials for this project. Al noted that Malcolm Drilling has constructed four shafts that are 3' in diameter and use different types of steel. The group is still working to find someone to construct a reaction frame (including additional drilled shafts) so that testing can be completed by OSU. The project is located in Corvallis Oregon. Al is still struggling to obtain research funding to complete the project.

Action Items: Al is soliciting help from other ADSC members to participate in this effort. Mark will keep this on the agenda and Al will provide an update at a future meeting.



c. **FHWA/Texas A&M base grouting**

This project has not progressed as quickly as hoped. Research was started but then stalled due to the donating Contractor having to pull resources off the project. The research work will not move from Texas A&M to a different research facility as previously thought. The national ADSC is working with FHWA to complete the research. It needs to be completed by the end of the year.

Action Items: Mark will keep on the agenda. Al R. will provide an update at a future meeting.

d. **Payment for soil excavation above the top of the shaft**

Mark G. has worked with Mike Bauer to create revised contract language. It is recognized that there are challenges defining payment for this work considering how the drilling contractors allocate cost for excavation and how this work is scheduled by the Primes. Mark reviewed the current proposed language changes with the team based on comments from the last meeting. The quantity of soil excavation for shaft will now be calculated from the top of shaft to the bottom of shaft as shown in the contract plans. Any excavation above the top of shaft shall be incidental to the excavation of other soils on the project. The Contractors stated this would work as long as WSDOT is consistent with measuring from top of shaft to bottom of shaft (in the case where top of shaft is above existing ground). This created some open discussion that also revisited changing payment for Drilled shafts to a L.F. or LS measurement.

Mark asked the team if there would be any problems going to LS? None of the ADSC team members readily identified any issues with this proposal. The question was then raised should there be flexibility to allow unit bids, LF or LS depending on circumstances. Mike B thought this proposal had merit and could work.

LF worked well on the SR 520 project. There was some consensus amongst the team to move forward with LF measurement and payment.

Action Items: Mike B will provide a draft of new linear foot measurement and payment language for Team review at the next meeting.

e. **Specifying casing shoring vs. temp casing for abutment shafts** At the May ADSC meeting, Jed Bingle of the Bridge and Structures Office asked the Team for comment on specifying casing shoring. Basically, casing shoring is a straight-forward payment item for drilled shafts. However, when drilled shafts go into an abutment – the casing shoring needs to be removed but shoring is still required to facilitate construction of the shaft/abutment connection.



In May, the Contractors suggested the casing shoring could be incidental to other work. This would simplify the standard specification that currently makes payment unnecessarily confusing.

After reviewing this further, Mark proposed to leave the casing shoring language as-is. In the rare situations where abutment shafts are used, it might be necessary to write a special provision to describe payment limits and requirements for removing casing shoring. Special provisions like this have been used successfully on past projects. The team agreed with this proposal.

Action Items: No action needed.

f. Specifying vertical elements for soil nail wall construction

Mark provided a vertical shoring GSP to the team for comment. Having the option to use vertical shoring elements appears to be supported by the team and most felt it should be a tool that be allowed in certain cases.

The team recognized this proposal does provide some flexibility in the Contractor's mean and methods, however there may be times when some contractors assume undue risk at bid time that put both the Contractor and Owner in a bad place.

There was some discussion on when and where are vertical elements would required/necessary. ADSC team members suggested it may be prudent for WSDOT specify whether or not vertical nails are required and not leave it optional to the Contractor. Tom A. suggested the Geotechnical recommendations should be more specific on what needs to be done during construction to maintain face stability.

Action Items: This topic will be discussed further within WSDOT and be kept on the agenda for further discussion with ADSC. The proposed specification will be put on hold at this time.

5. Force Account Obstruction Removal time/cost

History of the obstruction item was reviewed and it is acknowledged that with our current policy WSDOT assumes the risk of obstructions.

Mark asked the Contractors for ideas/ways that the risk with obstructions be shared with the Contractor. The concept behind sharing the risk and cost of obstructions is to encourage Contractors to bring out the appropriate tooling for the specific site conditions. One proposal would be for the Contractors to assume cost responsibility for the first 3%-5% of the obstruction cost. Once this is expended – WSDOT pays FA for the rest of the obstruction.



The ADSC members questioned the value of adding 3% - 5% when recent cost history is showing that WSDOT is currently only spending 1% to 2% for obstructions. WSDOT would be inflating bids without benefit.

The ADSC members again pointed out that the current WSDOT obstruction specification has been very successful – the industry is progressing and obstructions have become a less disputed issue than in the past. They felt that WSDOT obstruction specification is a model to be used nationally and strongly suggested we WSDOT not deviate from it.

Mark bought up the concept of granting unworkable days if encountering obstructions on critical path work. John D. thought this would work fine in administering Contract time a on a project.

Action Items: Mark will keep this topic on the agenda for the next meeting.

6. Shotcrete as a permanent fascia

This will be discussed further at the next meeting.

Action Items: Mark will keep on the agenda.

7. Update on Construction Stormwater General Permit

The proposed new DOE Construction Stormwater General Permit does (somewhat) address drilling slurry disposal and does allow infiltrations of water slurry only in upland areas. The current language did not address flocculants – however - Mark said he has provided feedback to WSDOT environmental staff and is optimistic that flocculants are also allowed to infiltrate. Mark noted that the requirements in this permit are far less strenuous than what is covered in Standard Specifications Section 8-01.3(1)C3. Once this new Permit is officially adopted, WSDOT will look at reducing the disposal requirements from the Standard Specifications so there is alignment with the Permit.

Action Items: Mark requested members to provide comment on the new Permit if they have any.

8. Update on drilled shaft thermal integrity profiling

There was no time to discuss this topic.

Action Items: Mark to keep this topic on the agenda for the next meeting.

9. Discuss ADSC/WSDOT Joint Annual Training

Mark asked Dominic if ADSC would like to have a training session next spring. The Team agreed there should be a meeting next spring. Dates and potential topics should be brought to the next meeting.

Action Items: Mark to keep this topic on the agenda for the next meeting.



10. Additional Items

National ADSC has a proposed secant pile specifications they would like WSDOT to review and consider adding to our specifications. It was also requested auger cast piles be added to the agenda.

Mark asked if any of the members had a presentation on auger cast piles they could bring to the next meeting.

Action Items: Mark will include these items on the agenda for the next meeting.

11. Future Dates

The meeting adjourned at 11:35. Future meeting dates are; December 3rd, and February 4th. The annual ADSC/WSDOT joint training meeting will be discussed at the December meeting.



ADSC/WSDOT Joint Meeting

December 17th, 2015, 8:30 A.M. - 11:30 A.M.

Lakewood Maintenance Facility

11211 41st Avenue SW

Tacoma, WA 98499-4694

Meeting Minutes

Attended	Member	Company	Phone	E-mail
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	Carnevale, Robert	Kulchin Foundation	253-888-4284	bob@kulchin.com
	Clarke, Patrick	WSDOT	360-705-7220	clarkp@wsdot.wa.gov
	Cuthbertson, Jim	WSDOT	360-709-5452	cuthbej@wsdot.wa.gov
X	Deffenbacher, Jon	WSDOT	253-589-6100	deffenj@wsdot.wa.gov
	DiFabio, Vinnie	PACO	206-762-3550	vdifabio@pacoequip.com
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	Ellis, Susan	FHWA	360-753-9412	Susan.Ellis@dot.gov
X	Foster, Marco	WSDOT	360-705-7824	fosterm@wsdot.wa.gov
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X	Topham, Dale	Snohomish Co	425-388-6668	dale.topham@snoco.org
	Tuttle, John	Sinclair	661-212-1223	jtuttle@sinclairwp.com



1 Team co-chair

Guests

Attendee	Company	Phone	E-mail
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Watts, Troy	WSDOT	253-255-8215	wattst@wsdot.wa.gov
Binnig, Bill	Kiewit	253-493-4200	bill.binnig@kiewit.com

1. Welcome/Review of Agenda

Mark Gaines opened the meeting with introductions and reviewed the agenda. No additional topics were added to today’s meeting. Al R. announced this will be his last meeting with the ADSC Team as he will be assuming a new position with Malcom. He thanked WSDOT for establishing a partnership with the ADSC and commended WSDOT on its business practice. Malcolm will be adding a new member to be a representative on the team. John Kvinsland will be assuming the district manager position vacated by Al. Mark thanked Al for his many years on the team and all the contributions he has provided. Dale Topham from Snohomish County is joining the team. Having a representative from a Local agency should be valuable in assuring local agency concerns be considered as the Team addressed by the team. Dale has been with Snohomish County for approximately 15 years.

Action Items: No action needed.

2. Constructability Review – Jansen Creek Fish Barrier Removal

Piper Petit from the WSDOT project office provided an overview of the project and Andrew Fiske from WSDOT Geotechnical office summarized the geotechnical conditions.

The purpose of this project is to eliminate the current fish barrier at this location by replacing the existing culverts with a bridge and constructing a new channel. This project is located at MP 5.17 on SR112 in Clallam County. The existing crossing consists of two 56’ long, 5’ diameter round concrete pipes that convey Jansen Creek under the highway where it outlets immediately into the Strait of Juan de Fuca. Fish passage will be provided at this site by removing the existing pipe culverts and constructing a new bridge structure. Temporary fill will be placed on the North side of the highway to construct a 400’ single lane shoofly to detour traffic around the work site during construction.

The design team has identified several challenges to constructability for this specific project:

- Remote project location to mobilize equipment, materials, and crews. Commercial concrete plants are more than 1 hour from the jobsite.
- Limited available work space given the adjacent topography and narrow roadway section (24’- 26’). There is limited area available to park vehicles and store equipment.



- No detour available, access around the project site must be provided for local traffic. Access to Makah reservation property and access for FS road needs to be maintained. There are active logging operations off the FS road so access for logging trucks will need to be accommodated.
- Restrictive environmental work windows including an in-water work window (June 15-September 30) and daylight work restrictions associated with ESA listed species.

REVIEW QUESTIONS

1. Do you have any specific concerns about the project location and access for mobilizing equipment to the site?
No issues mobilizing to the project. Volume of water needed to be stored in Baker tanks is that of the volume of the shaft excavation.
2. How much space is required for drilling equipment? Does the required work space vary significantly between different drilling methods (oscillating vs. auger)?
The space needed for performing the work would be the same for conventional drilling or oscillator.
3. Is it possible to construct these shafts under a single lane closure, keeping one lane of the highway open?
There was little support for constructing the shafts under single lane closure. Waiting until the detour was operating appears to be preferred by the ADSC.
4. Does the detour layout provide enough space for drilling operations?
The ADSC did not appear too concerned with work space with the shoofly detour in place. Mark asked the question whether or not precast bridge elements were considered - Piper indicated it was discussed but not deemed practical as the current CPM indicated the work can be accomplished within the work window.
5. Do you foresee any issues with drilling through the existing concrete pipe culverts?
The ADSC felt the culvert should be removed in advance of drilling.
6. What considerations should be given to designing temporary or permanent casings?
ADSC recommended full depth temporary casing.

Action Items: Mark to send meeting minutes to the Design Team.

3. Constructability Review – Wildcat Creek Fish Barrier Removal

The project consists of removing a fish barrier by replacing the existing three-sided box culvert at milepost 5.01 with two single span pre-stressed concrete girder bridges (one for each direction of traffic on SR-8). The two bridges will be constructed using a “top down” approach to minimize the duration of in-stream work. Traffic will be detoured across the median to put two-lane, two-way traffic onto one side of the existing roadway. The other side of the existing roadway will be excavated for bridge abutments and girder placement. After



the first bridge is built and paved, the two-lane, two-way traffic will be detoured onto it, and then the other side of the existing roadway will be excavated for bridge abutments and girder placement. After the second bridge is built and paved, the temporary detour fill and pavement will be removed and traffic will return to four lanes. During the subsequent fish window, a stream bypass will be installed, the existing three sided box culvert removed and the creek channel widened and realigned.

The drilled shaft foundations will be constructed, at least partially in the wet, due to shallow Groundwater. WSDOT anticipates the need for full depth temporary or permanent casing due to the high potential for caving of the sands and gravels, particularly below the groundwater. In the event bedrock is encountered, the drilled shaft contractor should be prepared to perform some of the excavations in moderately weak sedimentary rock.

Chris Heathman summarized the geotechnical conditions at the site. Al R. asked about groundwater conditions and whether or not we had observed any artesian conditions. Chris said we had not and that ground water height was slightly above creek levels. It was acknowledged that the ground conditions are varying with numerous layers. The design of the project allows the scour of the creek to come up to the bridge. The recommendation was to temporarily case these shafts full depth. There was some open discussion amongst the team on what shaft diameter will be ultimately used. Al R suggested that consideration should be given to make sure to make sure cage size is appropriate if smaller diameter (say 5') is used with oscillator. Mark agreed to go back to the Bridge office and make sure updated shaft cage criteria is being used as previously discussed at ADSC/WSDOT joint meetings and as revised by Patrick Clarke.

Action Items: Mark to send minutes of the meeting to the Design Team. Mark to add a review of the BDM shaft table to a future meeting.

4. Update on WSDOT funding package

Mark provided a graph that shows forecasted funding plan and a project list associated with the Connecting Washington funding package. The funding will be collected much more slowly than past funding packages because it is not bonded. There are projects identified around the state but much of it is slated for western Washington. The early funding will most likely target design and R/W acquisition. With the revenue being collected slower – it is probable that smaller projects may be coming out to match cash flow. The preliminary Design Build project list was shared. Specific project schedules were reviewed acknowledging that this list is draft and likely the number of DB projects may increase.

Mark shared that WSDOT anticipates Design Build contracting will be used in other Regions around the State that have not used this method of delivery. The Construction Office is working to refine policies and procedures to insure consistent contracting across the state.

Action Items: No further action required.



5. Action Items;

a) OSU study of high-strength bar as shaft reinforcing

As discussed at previous meetings, this project will focus on the performance of shafts with high-strength steel reinforcing and permanent casing considered as providing structural capacity. This project is being handled as a collaborative project with contributions from the drilled shaft contracting industry. John M. updated that a Contractor has been selected/volunteered to install drilled shafts in about 3 weeks.

Action Items: Mark will keep this topic on the agenda and John will provide an update at a future meeting.

b) FHWA/Texas A&M base grouting

This project has not progressed as quickly as hoped. Research was started but then stalled due to the donating Contractor having to pull resources off the project. The research work will not move from Texas A&M to a different research facility as previously thought. The national ADSC is working with FHWA to complete the research. It needs to be completed by the end of the year.

Action Items: Mark will keep on the agenda. Lance will provide an update at a future meeting.

c) Linear foot payment for shafts

Mark G. has worked with Mike Bauer to create revised contract language. It is recognized that there are challenges defining payment for this work and how the Drilling Contractors allocate cost for excavation and how this work is scheduled by the Primes. Mark reviewed the current proposed language changes with the team based on comments from the last meeting. Mark reviewed the draft language to revise shaft payment to LF. Dominic suggested there may be some value in retaining separate pays items for reinforcing steel and excavation. A good reason for leaving reinforcing steel separate would be to address steel cost escalation. Keeping excavation separate would help if rock excavation is part of the work. Dominic raised concerns over rock excavation variations if we do not have 2 excavation items (one for rock and one for soil). Mike B suggested that very few contracts have rock excavation and a GSP could be included for that rare occasion.

Lance said the LF payment has been working well on the WABN contract. Dominic asked how WSDOT would address payment in the shaft/column transition zone. It was acknowledged that this might be confusing for Project Offices when paying for a shaft. There was consensus that the current language should be revised so that a satisfactory shaft is paid in full upon satisfactory completion to the transition zone. Mark suggested we could revise payment for the shaft to be based on satisfactory completion of the CSL testing.



There was some discussion about making CSL tubes incidental to reinforcing steel. Mike B acknowledged this would be an easy spec change but raised the question how will WSDOT's transition to thermal integrity testing be addressed (i.e. would thermal couplers be incidental as well)?

Action Items: Mark will incorporate changes per today's discussion and share with the team.

d) Specifying vertical elements for soil nail wall construction

This topic was raised at the last ADSC meeting. In summary, having the option to use vertical shoring elements appears to be supported by the team and most felt it should be a tool that be allowed in certain cases.

The team recognized this proposal does provide some flexibility in the Contractor's mean and methods, however there may be times when some contractors assume undue risk at bid time that put both the Contractor and Owner in a bad place.

There was some discussion on when and where vertical elements would be required/necessary. ADSC team members suggested it may be prudent for WSDOT specify whether or not vertical nails are required and not leave it optional to the Contractor. Tom A. suggested the Geotechnical recommendations should be more specific on what needs to be done during construction to maintain face stability.

Action Items: Mark Frye will research and this topic will be discussed further within WSDOT and be kept on the agenda for further discussion with ADSC.

e) Force Account Obstruction Removal time/cost

Per discussion at the last meeting – the FA obstruction item will continue to be used on WSDOT projects. History is showing that WSDOT is currently only spending around 2% of the drilled shaft cost on obstruction removal. This is a good indicator that the current philosophy and process is working well.

So far, we have not really addressed concerns related to contract time when removal of an obstruction is impacting critical path of the project. Mark bought up the concept of granting unworkable days if encountering obstructions on critical path work. Mark acknowledged this topic is more aimed at prime contractors and he plans to approach the AGC structures team with this as well

Action Items: Mark will keep this topic on the agenda and update members on discussions with the AGC.

6. Augercast pile presentation and discussion



Dominic provided a presentation on the current practice of using auger cast piles. Typical pile installation and practices were presented and discussed. The power point presentation provided some of the particulars of the installation of auger cast and displacement piles.

There was some open discussion amongst the team with regards to quality control and opportunities for use on future projects.

WSDOT currently has no specifications for auger cast pile. FHWA currently has some specifications that are being used by local agencies and private work. Mark will review FHWA specification and Dominic will also look for example specifications. Mark will use Dominic's presentation to share with the bridge office. We will work towards developing a specification with Dominic and Anthony M. will look for opportunities for a trial project.

Action Items: Mark will keep this topic on the agenda for the next meeting.

7. Shotcrete as a permanent fascia

Mark provided some background on WSDOT's work towards developing a specification for permanent shotcrete fascia. Mark discussed recent projects that have used and will construct permanent shotcrete fascia. There is \$75k in research funding to evaluate shotcrete performance

Tom suggested we review UDOT and ADOT specifications as they are using permanent shotcrete and acknowledged those DOT's must also be concerned with freeze/thaw and air entrainment.

Action Items: Mark will keep on the agenda and update the team as we obtain more information.

8. Update on drilled shaft thermal integrity profiling

Mark provided some recent results of the thermal Integrity testing we have done on the Tacoma project. The data is showing we are not getting the appropriate concrete cover on the outside of our shafts however this has been inconsistent with yield plots and observation. The conflicting information is raising concerns over the accuracy of the data provided. The thermal integrity testing did find a cold spot in one of the shaft which was cored and subsequently found to have clean gravel and that an anomaly truly existed. Mark expressed concern with the information showing inadequate cover on the outside of the shaft since this is one of the motivators for using TI testing. Tom suggested we contact other owners to see if they have also experienced this false reading for concrete cover.

Mark discussed the possibility of our drilled shaft Contractor's (or an independent lab) conducting the CSL or TI testing in lieu of WSDOT. The motivator is that WSDOT get out of the business of testing. The Drillers communicated that in Oregon the responsibility



of the testing has already been transferred to the Contractor – and it works fine. There was no real opposition to transferring the testing requirements to the Contractor. Mike B suggested a GSP already exists that define testing requirements/experience.

There was some open discussion on interpreting test results (both CSL and TI) and how the results can be influenced if you lose a thermal coupler.

Action Items: Mark will continue to keep this item on the agenda.

9. Discuss ADSC/WSDOT Joint Annual Training

Potential dates for the annual joint training are March 8,10,15,17, 29, 31. Dominic suggested the 31st be the preferred date. Potential topics include case studies, training, update on Thermal Integrity testing, anomaly repair/mitigation. Dominic will take the lead on developing a draft agenda. Mark offered up we could potentially having a conference call to finalize the agenda in January. Tentative date for the conference call is January 20th at 8:00 am.

Action Items: Mark will send out a meeting invite for the January conference call to finalize the joint training agenda.

10.Future Dates

Mark suggested moving the February 3rd meeting date to February 25th. The subsequent meeting will be April 28th.

Action Items: No action needed.

11.Additional Items

Mark provided a quick overview on changes in the Construction Office and roles and responsibilities. This potentially will result in a new co-chair for the ADSC meetings being assigned for WSDOT. Mark will keep the team informed on upcoming changes.

Action Items: Mark will keep the team posted.