

ADSC/WSDOT Meeting Minutes
25 June 2009

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Guests

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The meeting began at 8:30 AM.

1. Review/Approval of April Meeting Notes

Item viii needs to be expanded on to clarify change.

Action Item: Notes will be updated and placed on the WSDOT Construction Office website.

2. Action Item Reports (Item discussion sequence revised from agenda)

i. Rebar Cage Review Criteria

Alan Macnab met with AGC to discuss. Alan M. passed out draft review criteria. WSDOT has provided a review procedure. AGC commented on this. WSDOT has come back with new review criteria that would apply to shafts 6 ft diameter or larger and 60 ft or more in length. PE sealed calculations for rebar cage lifting and transportation will be required.

Jim Cuthbertson asked about column cages. Column cages are under discussion.

Mo said this is a draft and asked for comments. Alan M. requested comments to him in 2 weeks.

Mo asked Chuck Olney for comments. He saw no issues. Chuck did not want the criteria to tell him how he had to construct the cage.

Mo discussed requirement for calculations. Most at AGC agreed that requiring calculations and a PE stamp was reasonable.

Tim Moore asked what would be included in the calculation package. What code does WSDOT as owner check the calculations against? This comment specifically applies to tie wire connections where the strength is unknown. Mo responded that the calculations prepared for Condon Johnson were based on actual field testing for strength of tie wire connections.

Action Item: Group to provide comments to Alan Macnab.

ii. Soldier Pile Provisions for Handling

This item is still being worked on. Will stay on agenda until complete.

Action Item: Keep on agenda for next meeting.

iii. Soil Nail Proof Testing

Proof testing will be performed on sacrificial nails, not production nails. This item is complete.

Action Item: Item complete.

iv. Provision Changes Allowing Tying CSL Tubes to Vertical Bars

Page 18 of the latest draft of the shaft provision was modified to address the group's concerns. Chuck concurred with the revision.

Action Item: Item complete.

vi. Use of Flash Welded Hoops

Copy of Caltrans flash weld specification was handed out to the group. Chuck said there is a backlog on flash welded hoops in California. Alan M. asked about certification for fabricators/welders when WSDOT starts using them. Al Rasband suggested that since flash welding was coming the certification program be moved forward.

Action Item: WSDOT to continue developing specification and certification for flash welding.

vii. New Centralizers

Chuck raised concerns with getting concrete through centralizers with large surface area. Chuck will bring mock-up of his proposed centralizer to the next meeting. Patrick Clarke discussed current system. WSDOT is looking for a centralizer that will not roll over.

Action Item: Chuck to bring centralizer to next meeting.

viii. Allowing for Use of Pea Gravel in Temporary Soldier Piles

Mo said WSDOT is working on changes to the temporary soldier pile wall specifications.

Mark Frye and Jim Cuthbertson said the concern is pea gravel running out during excavation. This is more of an issue with timber lagging than steel sheets. WSDOT is working on specification language to address concerns.

Alan M. said there are other options but they are more costly.

Jim C. asked for comments on allowing pea gravel only when steel sheets are used for lagging. Mark Etheridge said there are applications where sheets are not workable so this would address only part of the issue.

Action Item: WSDOT will continue working on draft specification and present at a future meeting.

3. Wet Setting PGA Tendons

Tony Allen said he visited a project where PGA tendons were being wet set. This project had a number of anchor failures. Wet setting is allowed by FHWA and AASHTO. Tony asked how often the wet set method was used on PGAs and what the results were.

Alan M and Al R said they have used this method in the past with success in silts with cased holes. This method of placement is uncommon for PGAs.

After further discussion it sounded like a construction practices issue, not a wet setting issue.

Mo asked if WSDOT needed to add language to the Standard Specifications.

Alan M. asked what type of failure occurred on the previous project. Answer: It was a grout to ground failure.

Group discussion indicated that wet setting should be an acceptable method.

Jim C. suggested adding language to Standard Specifications to address concerns with wet setting including maximum length and use of one type of grout.

Alan M. suggested language prohibiting intermixing of grout.

Action Plan: WSDOT Geotech Office will draft specification language and forward to Mike Bauer. Draft will be presented at a future meeting.

v. Sonic Coring

Sa'ud Tayeh handed out new boring logs and laboratory data. Jim C. and Sa'ud discussed sampling/testing methods and test results.

The group discussed the results:

- Alan M. said where fines content becomes a concern is when it is less than 10%. His observation was the SPT data generally shows lower fines content on these samples.
- Tony Allen said WSDOT would consider use of sonic coring where fines content is near the critical point.

Action Item: The Geotech Branch will develop a policy for when sonic coring is warranted.

4. Alaskan Way Viaduct (Holgate to King) Shaft Constructability

Tim Moore and Monique Nykamp provided background information on the project.

Mainline:

- 34 each 10 ft diameter shafts.
- 7 each 6 ft diameter shafts.

- 70 to 150 ft deep

Atlantic Street Undercrossing “U Tube”:

- 672 each 4 ft diameter shafts.
- 50 to 100 ft deep.

Transition:

- 12 each 10 ft diameter shafts.
- 16 each 7 ft diameter shafts.
- 50 to 100 ft deep.

Subsurface soil is loose fill over alluvial silt deposits over estuarine deposits over sand over till. Groundwater is 6 to 14 feet below existing surface. Groundwater level may vary 1 to 2 feet due to tide.

There are several potential obstructions including planked roadways, railroad trestles, falsework piles, piers, saw mills, boat yards, lumber yards, and falsework piles under the existing viaduct.

Construction sequence – portions of west side constructed while existing viaduct carrier traffic. Ground improvements will be required. Vibration due to shaft and pile installation will be restricted due to harmful impacts on the existing structure.

Geotechnical recommendations include temporary casing installed by oscillator method.

The group discussed constructability issues:

- Alan M. asked if secant wall is under a structure. Answer: It is not.
- Al R. asked if ground improvement areas had overhead obstructions. Answer: They do not. Jet grouting will be under structures.
- Alan M. asked why not pretrench. Response was a lot of the wood is vertical and that the response of the structure will be changes. Alan M. suggesting locating the vertical wood and pulling it. Also, Al. M. suggested designing for the excavation.
- Alan M. said a lot of the wood is sawdust. This can cause problems with slurry and clogging of pumps. One possible solution is to excavate through the woody region in the dry before flooding the shaft.
- Dealing with wood in soil mixing will have problems.
- Alan M. suggested an option to deal with timber obstructions is to not include it in the obstruction clause.
- Can the secant pile wall area be soil mixed? Answer: There are buoyancy concerns.
- Tim asked how a 70 ft pile is pulled with an auger. Alan M. replied it will need to be pulled or removed with the clam, not an auger.
- Al R. commented that wood in a 4 ft secant pile is difficult to deal with no matter what construction method is used.

- Alan M. asked why there were different size shafts. Answer: Utility conflicts limit space.
- Mark F. asked if utilities were going to limit the use of telescoping casing. Answer: They might.
- Al R. reminded the group that current oscillator casings are metric. This should be taken in to account in tight areas.
- Mo asked Tim to discuss Lump Sum bid items for shafts. Tim asked what the group thought about having the shaft item be by the lineal ft. The group felt the top of shaft limit needed to be clearly defined. Al R. said he liked the idea of less bid items. ADSC will discuss and provide a recommendation.

Action Item: ADSC will provide recommendation on LF item for shafts.

7. Columbia River Crossing Shaft Constructability

Rob Turton presented background information on the Columbia Crossing structure and piers:

- Approximately 200 ft of alluvium over Troutdale in the river.
- 500 ft +/- spans on structure.
- 9 to 10 ft diameter shafts in a 70 ft by 70 ft shaft cap.
- A coffer dam is assumed.

Group discussion followed:

- Alan M. asked why not float in the shaft cap.
- Details showed permanent casing to the top of Troutdale. Alan M. asked if permanent casing to top of Troutdale was required. Answer: This is open to discussion.
- Discussed shafts vs. large diameter piles. There are significant environmental concerns with underwater noise vibration generated by the pile driving operation.
- Alan M. asked about using slurry in the Columbia River. Answer: It will need to be contained.
- Alan M. asked if they had sonic cores. Answer: Not yet.
- Jim C. commented there were concerns with keeping uncased shafts open with slurry for the length of time required to excavate these large diameter, deep shafts.
- Patrick Clarke pointed out with coffer dam the piles could be driven in the dry if coffer dam could be dewatered. This could reduce acoustical concerns.
- Alan M. asked if casing could be telescoped. Answer: Would not be allowed according to the shaft provision due to acceleration coefficient. Tim Moore said telescoping temporary casing could be analyzed for specific configurations.
- Al R. said the casing could not be installed to Troutdale using conventional methods.
- Will the oscillator casing be able to penetrate the Troutdale? Al R said it would.
- Will the oscillator work from a barge? Al R said it would not.
- Does the casing have to be permanent? It is a question of if the temporary casing can be pulled. Depends on the depth, weight, and friction. This is at the limit of any machine.

- The reinforcement cages will need to be lifted in multiple sections.
- Use barges to bring in reinforcement cages and concrete.
- Are temporary piles required for support? Answer: Required for oscillator. Need 200T axial capacity.
- Temporary piles are typically vibrated as far as possible then proof tested with hammer to verify bearing.
- Frank Green asked for estimate of time to install temporary platform. Answer: This is a question for general contractors.
- Al R. said full depth temporary casing could be pulled if the top 100 ft +/- was oversize casing cleaned out.
- Will there be competitive bids? Depends on the number of prime contractors that can bid.

It was asked how much room is needed behind a secant pile wall and right of way.

Answer: If a guide wall is specified verticality can be maintained. Estimate outside diameter plus 1.5 to 2 ft to right of way is required.

Future Meetings: September 10, 2009, 8:30 AM at the Lakewood Maintenance Facility.
November 12, 2009, 8:30 AM at the Lakewood Maintenance Facility.