

ADSC/WSDOT Meeting Minutes
16 April 2009

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Topics – Rebar Cage Review Criteria, Synthetic Slurry Disposal, Soldier Pile Provisions for Handling, Soil Nail Proof Testing, Provision Changes Allowing Tying CSL Tubes to Verts, Provision Changes Pertaining to Sand Content and Density Limits Higher PGA Allowance for Telescoping, St. Johns Bridge Sonic Coring Results, Centralizer Detail Concerns, Hoop Butt Welding, Shaft Thermal Integrity Tests, Temporary Shoring Removal, Constructability Review of Columbia River Crossing Project Walls

The meeting began at 8:30 AM.

1. Review/Approval of Jan. Meeting Notes

- Notes from the last meeting will be distributed at a later date.

2. Action Item Results (Sequence of discussion revised from agenda)

i. Rebar Cage Review Criteria

Mo discussed current practice.

- No guidelines for gage of wire.
- Mo met with Bridge Office yesterday. WSDOT agrees this should be looked at.
- Timeline – WSDOT will develop additional criteria by mid June.
- This will be discussed with ADSC and AGC.
- Will probably require an engineer's stamp.
- Chuck Olney said that current practice is to provide bracing based on past experience.
- Alan Macnab noted there was a finite element of engineering analysis available through use of software called RISA.
- Mo asked Chuck if he coordinated picking with shaft contractor. Chuck replied he did discuss picks with shaft contractor.
- Alan R said they had a cage constructed with hoops instead of spirals. It picked very well.
- Mo will keep ADSC and AGC updated on this issue.
- Alan Macnab said he would like to attend the AGC meeting
- Mo asked Patrick Clarke if there were any other issues. Patrick replied there is no engineering analysis method for wire ties.
- Patrick asked what the shaft contractors do about ties. Alan R. said the visually look at the cage. He said knowing the weight of the cage would be useful information.
- Alan Macnab said they had some research on effectiveness of types of ties.
- Chuck said they use 12 gage wire for critical ties.
- Patrick asked if there was merit to adding hoops. Mo said we would discuss in a later item.

Action Item: Mo will work with the ADSC, AGC and WSDOT Bridge to develop an acceptance criterion.

ii. Synthetic Slurry Disposal

Mo talked to the WSDOT environmental office. They are concerned since the synthetic slurry needs to be treated with bleach. Mo said even if NSF60 slurries were used WSDOT Environmental would have concerns if acids or bleach were used.

Mo discussed where we are now. A white paper on shaft construction including slurry disposal is being prepared. After the white paper is complete, WSDOT Environmental Office will discuss with DOE.

DOE's current policy is that any material used in drinking water wells must be NSF60 compliant. John Tuttle said there are no slurry systems approved by Washington or California for drinking water systems. Mo said WSDOT research has shown there is one product that is NSF certified.

A group discussion followed:

- Alan R requested ADSC review the white paper. Mo said the group could.
- Alan Macnab asked if synthetic slurries were broken down with dry ice (CO2) only, they could be dispersed into the ground. Mo said he could not answer without consultations with the Environmental folks .

Action Item: Mo will keep this group informed. Mo will request for the ADSC's review of the white paper before wide spread dissemination

iii. Soldier Pile Provisions for Handling

New provisions will address holes for picking piles. This will either be addressed by detailing on plans or by specification. Mo is working with the WSDOT Bridge Office.

Action Item: Mo will inform the Team when the work on this issue is completed.

v. Soil Nail Proof Testing

Mark Frye has routed for WSDOT internal review. He will then route to ADSC team for review and comment. This should be ready for next meeting.

Action Item: Mark will update the Team at the next meeting

vii. Provision Changes Allowing Tying CSL Tubes to Verts.

Provision has been updated based on last meetings discussion. Mike Bauer presented the change to Section 3.06B. Alan Macnab says this addressed his concerns.

Later in the meeting there was further discussion on this topic. Chuck asked if this meant the CSL tubes had to be attached to the vertical bars. If the vertical bars are smaller than the CSL tubes, the bracing would ride on the CSL tubes, not the verts.. It was suggested this be revised.

Action Item: Mike Bauer will draft a revision and share at the next meeting.

viii. Provision Changes Pertaining to Sand Content and Density Limits

Mike Bauer presented changes to Section 2.04.C consistent with ADSC recommendations. Mud Weight Density decreased from 70 to 65 max. Sand Content percentage decreased from 4.0 to 1.0 max. Jim Cuthbertson asked if the group knew about API procedure. Jim C has not seen the change and has requested a copy. Mo said that density tests have not been done regularly. This is something WSDOT will be enforcing.

Action Item: No further action required

vi. Higher PGA Allowance for Telescoping

Mike Bauer provided updated provision based on comments provided at last meeting. Alan R asked is there was going to be more telescoping casing. Patrick Clarke said there would not be. The seismic map has changed and telescoping casing would not have been allowed. This change keeps us approximately where we were before.

Action Item: No further action is needed

3. St. Johns Bridge Sonic Coring Results

Sa'ud Tayeh handed out information to the group. Could not get groundwater elevation with equipment used. Sample is extracted using water pressure. All samples are wet with 100% recovery. Plenty of core samples were recovered. There was some difficulty in determining elevation of sample.

A discussion followed:

- Alan Macnab asked why rest results weren't run at the same levels for the two different drilling methods. Samples are still available so WSDOT can cross compare.
- Discussed differences between conventional and sonic. Some differences in the fines content up to 10% more fines were noted.
- Jim C suggested additional testing on samples taken to see if differences are due to drilling method or sample size.
- John T. says it is typical for him to see higher actual fines content in the field when compared to wet method borings.
- Jim C says that we need SPT data for design. SPT results for sonic are questionable. Getting SPTs and sonic cores would require 2 holes, increasing cost.
- John T suggested sonic could be used to supplement conventional drilling when fines content is critical.
- Jim C asked the group how they wanted data presented. Al R said they would like to see the core sample.
- Jim C asked at what fines content we should be looking at sonic. John T said he gets concerned if the fines in sandy and gravelly materials are below 8%.

Action Plan: WSDOT will conduct additional testing on samples to get results at same elevation as the wet method. New results will be provided at next meeting.

5. Centralizer Detail Concerns

Chuck Olney provided industry feedback and the group discussed:

- The new centralizer is rigid and does not flex.
- Chuck asked what concerns were driving the change. The cost of the new design is significantly more expensive.
- Mo asked about welds failing. Chuck thinks the failure is due to lack of flexibility at the weld.
- Patrick said we had problems with the old method not working. They were rolling over or flattening out. Patrick asked for suggestions.
- Chuck suggested prior standard be used with #5 bars and widen the space between the legs.
- More centralizers could be added.
- Patrick asked if a sketch could be provided. Chuck said he can make one up and bring it to the next meeting.
- Alan R agreed that more centralizers that were flexible would be preferred.
- Patrick asked if anyone had experience with flat bar centralizers. No one had any experience with these.
- Alan R asked why epoxy was needed in a cased installation. Patrick said he had seen examples of centralizers going in to the verts. Spray on zinc could be an alternative to epoxy coating.
- Mo said we would like to expedite this. Chuck said he would provide a sketch.

Action Item: Chuck will provide a centralizer sample for further discussion at the next meeting and will discuss other options.

6. Hoop Butt Welding

Mo asked if there are constructability concerns with respect to use of larger bar size hoops. A group discussion followed:

- Chuck said current practice would require welding in place.
- Chuck said he could not use his the current fabrication method with welded hoops.
- Chuck said there are constructability concerns with this proposal.
- Mo asked if it was difficult or impossible. There was further discussion. It would be difficult. Twice as much work room would be required. Chuck said he would look at this further.
- Patrick said the driver for this is to add reinforcement and still maintain the 6 inch window.
- Tim Moore asked about full penetration butt weld constructability issues. Chuck said it could be done if you know going in.
- Chuck said the butt weld can be done in the field up to #11. Mo replied we are looking for a flash shop weld.

- Mo asked for contacts that had been dealing with welded hoops.

Action Item: Mo will continue to update the Team on use and availability of the flash welded hoops.

7. Pilot Project Using Mini SID

Item not discussed.

8. Shaft Thermal Integrity Tests

Professor Mullin will be out next month. Test will be done at Nalley Valley. He will use CSL tubes. He will not be using PVC tubes. Water will need to be air lifted out of the CSL tubes during temperature readings.

Alan R asked if he might find mass concrete heat issues. Mo said there is no evidence this is an issue.

Action Item: Mo will keep the group informed.

Added Item – Temporary Shoring Removal

Soldier pile removal with lean concrete is difficult. If removal is required, then pea gravel should be allowed.

Action Item: Mo will look into this issue and will discuss at the next meeting.

4. Constructability Review of Columbia River Crossing Project Walls

Frank Green handed out project information and briefly covered the project back ground. He went over soil profiles. Water table is at 30' to 35' below ground on south end, 80' below ground on north end. Group discussion followed:

- Alan Macnab asked where Troutdale formation was on profiles.
- R/W constraints require walls for widening.
- Alan Macnab asked why this type of wall was being used. He thought a secant pile wall required less space to construct. He suggested use of secant pile wall at the Cinema location and tangent or other types elsewhere. Use a steel beam for the primary shafts.
- Soldier piles could be an option.
- Jim C said there isn't room for tie-backs. There are concerns with damage to building with height of soldier pile wall.
- Alan Macnab said tangent pile walls can be constructed for much less than secant pile walls.
- There is a basement under the post hospital. This building is on the National Historic Register.
- Alan R asked to describe secant piles. These are lean shafts with structural reinforced piles drilled in between.
- Alan Macnab suggested some strengthening be considered on post hospital basement. This can be done on the outside of the basement.

- Frank asked about access. A temporary wall would probably need to be constructed with a flat work platform on top. Desired access road width is 40' – 50'. Asked about 30'. Costs would go up as it would become one way access. These widths are for the wall alternatives with reinforced cages.
- There is an existing retaining wall along the post hospital. It is a standard reinforced concrete cantilever wall.
- Can the new wall be built for the existing 38' wide roadway at the top of the existing retaining wall? Yes.

Discussed Section North of 4th Plain:

- Walls are much higher, up to 37'. Is secant the right wall type? No suggestions offered.
- The group asked what type would replace a secant wall at these heights. A soil nail wall could be an option where there is an existing street over the nails.
- Alan R suggested a guide wall be considered if alignment is critical for secant wall.
- Alan R commented where loss of ground was a concern require casing.
- Alan R said where there is room cylinder pile or soldier pile walls are an option.

Discussed theatre vicinity:

- Alan Macnab suggested finding out exactly where the theatre footings are.
- Patrick asked if there was any consideration given to underpinning the theater foundation.

More general discussion:

- Are there any concerns with the transition between wall types? No concerns were raised for similar vertically drilled walls.
- What are production rates? 150 vertical feet per day per drill rig round number.
- Group emphasized consistency will lead to better prices.
- Could work off of a 30' wide bench for up to 4' diameter shafts.
- Any concerns about tiebacks under residential areas? Need to be careful, particularly when pressure grouting.
- How close to a building can work be done? It looks like all situations presented are constructible.
- Tim asked about effect of Troutdale layer. Recommended casing to, but not through the Troutdale layer.
- Tim was concerned about how WSDOT defines Troutdale. Did the group have any concerns? Not a big concern if proper equipment is used. Recommend this be addressed in Geotechnical Report.

Next Meeting: June 25, 2009, 8:30 AM at the Lakewood Maintenance Facility.

