

ADSC/WSDOT Meeting Minutes
25 September 2008

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The meeting began at 8:30 AM.

1. Constructability Review of SR 522

This project widens about 4.5 miles of SR 522 from two lanes to four lanes. This project is at the 30% design phase, and has a planned Ad date in December, 2009. The Design Team is seeking constructability input for two of the structures on this project; the Snohomish River Bridge and the BNSF Railroad Bridge.

The Snohomish River Bridge

This is a new two-lane structure that will parallel the existing bridge. This is tentatively being designed as an eight-span bridge with one of the piers located in the river. The pier in the water is expected to use a 10 or 12 foot diameter drilled shaft. The project is being permitted to allow a work trestle over the river, but there is also some interest in determining if the shafts could be drilled from a barge or flexi-float system. The in-water work window is only about two months long (basically July and August).

The ADSC Members suggested that two months to construct the work trestle, build the shaft, and remove the trestle may be cutting it close. Rich Zeldenrust stated that the two-month window was for trestle installation and shaft construction. A third month would be available to remove the trestle. Considering this, the ADSC Members didn't see an issue with constructing this shaft using a trestle. Construction from a trestle would avoid the complications associated with working from a floating barge or platform.

Al R. encouraged the Designers to stay away from a 12-foot diameter drilled shaft. Regardless of the construction method (conventional or oscillator), a ten-foot diameter shaft is much easier to construct. With a 10-foot shaft, actual drilling time was expected to be three days and one week for the Oscillating and conventional methods respectively.

Al M. suggested running the permanent casing above the high water line to simplify the construction. It was also suggested that the Designers look closely at shaft cage picking and setting. When working from a trestle, this can be the most complicated part of the work.

The BNSF Railroad Bridge

This is a four-span, single lane structure that spans the BNSF right-of-way. Piers for the structure are being designed as single-column single-shaft. The significant constraint on the shaft construction is the presence of overhead power lines on both sides of the rail line.

ADSC believes that 2-3 days of construction will be required for each shaft. It's possible that the power lines can remain energized during shaft construction. However, during reinforcing cage installation, the power lines will definitely need to be de-energized.

Action Plan:

- Alan M. to provide formal, written comments to Mo within ten days.

2. Constructability Review of I-5 West View Noise Wall

This project will construct a noise wall along I-5 in the vicinity of Burlington. The noise wall is supported by 2'-6" diameter shafts that are 20 feet in length. Because of the loose soils, WSDOT anticipates that the shaft excavation will need to be supported by full-depth temporary casing. Temporary casing complicates the installation of the anchor bolts into the top of the shaft. WSDOT asked ADSC for feedback on constructability issues with installing anchor bolts when full-depth temporary casing is used.

Al M. suggested that the high water table and loose soils may necessitate the use of both synthetic slurry and temporary casing. All ADSC Members agreed that installing the anchor bolts will be a challenge because of the temporary casing. Three possibilities were identified to make this more constructable:

1. Use full-depth casing per plan, but allow the Contractor to wet-set the anchor bolts.
2. Eliminate the temporary casing and allow slurry-drilling of the shafts.
3. Use a piece of permanent casing at the top of the shaft (i.e. a sonotube) and allow a construction joint just below the anchor bolts.

Jim C. will discuss these options with the Bridge Office.

The ADSC Members believe that regardless of which option is selected, production rates should be around 8-10 shafts per day. Production will probably be governed by the general contractor rather than the drilled shaft sub-contractor.

Action Plan:

- Al M. to provide formal, written comments to Mo within ten days.

3. Review/Approval of June 2008 Meeting Notes

Three grammatical comments were made on the June minutes.

Action Plan:

- Mark G. to correct grammatical errors and post minutes to the web site.

4. Action Item Reports

i. Requirements for the Rebar Boots

Mark G. relayed experience on a recent project where quarry spalls were used without rebar boots. The CSL results provided indications that are consistent with a soft bottom. The likely explanation is the reinforcing cage and CSL tubes penetrated into the quarry spall layer, providing the soft bottom indication. Requiring bar boots or plates would help mitigate this. The Task Force agreed that it is reasonable to require boots/plates when quarry spalls are used to support the cage.

Action Plan:

- Mike B. to modify the special provision to require bar boots or plates when quarry spalls are used to support the cage.

ii. Sonic Coring Update

Boart Longyear is set up to perform sonic coring at the St. John's bridge project in Vancouver. Mo asked WSDOT Geotech to get involved in identifying a good location for the coring so there is a good correlation to the existing SPT samples.

Alan Macnab mentioned that Boart is coordinating with the WSDOT region staff to drill in November.

Action Plan:

- Jim C. to coordinate with the WSDOT Project Office and Boart Longyear to identify sonic coring locations.

iii. Water Infiltration Limits in Shafts and the Need for Tremie Placement

Mike B. went over recent changes to the drilled shaft special provision. Updates have been made to provide better guidance on water levels and infiltration rates that will require tremie placement of concrete. The Task Force agreed with the changes that were made.

Mo asked the group for feedback on the use of gravity tremies for concrete placement. On a recent project, a drilled shaft contractor elected to use a 10" diameter gravity tremie that was fed by a concrete pump truck. Our Specification doesn't clearly prohibit this method of placement. Mo asked for input on whether this should be specifically prohibited in the future.

In general, the ADSC Members believe that a solid connection between the concrete pump and the tremie is the best way to place concrete. The gravity tremie is widely accepted elsewhere in the country, but can lead to problems with concrete placement (leaking tremie joints, loss of seal, etc.). The ADSC Members suggested that the specification be re-written to specifically prohibit gravity tremies.

Action Plan:

- Mike Bauer will revise the Special to incorporate this recommendation.

iv. Soldier Pile Standard Specification Update for Drainage Issues

Mo discussed the recent changes to the soldier pile standard sheets as follows:

- The prefabricated drainage mats need be 4' strips centered between the piles. Mike Bauer has updated the Specs accordingly;
- Deleted the soil type reference on the standard sheet;
- On sheet 3, the 5/16" weld may not be adequate to fill the potentially larger gap. There may need to be a larger weld size. The Bridge Office will evaluate; and
- The backfill material behind lagging will say "free draining material approved by the Engineer"

The Task Force members agreed with these changes.

Action Plan:

- No action needed.

5. Continuation of Slurry Disposal

Mo recently met with HQ Environmental to further discuss the slurry disposal issues that have been a main topic in the last few Task Force meetings. Scott Carey was in attendance to help bring the Task Force up to speed on the latest information.

With respect to the disposal of water slurry, the Environmental staff has investigated further and has determined that this water can generally be discharged in an upland area. Upland areas can be identified by the Environmental staff on a project-specific basis, but in general will be a non-critical area that is sufficiently contained to prevent discharge into the surface runoff and waters of the State. The water table will typically need to be at least five feet below the bottom of discharge elevation to allow proper infiltration. When discharged to an upland area, turbidity and pH are not issues.

An ADSC Member asked if it would be acceptable to discharge into a storm sewer. Since storm sewers sometimes feed directly into bodies of water, a permit would be required before this was allowed after turbidity and pH are within the acceptance standards. The permit would generally be obtained by the general contractor.

Scott Carey cautioned that so far, this discussion and interpretation has been internal to WSDOT Headquarters. However, HQ Environmental will work to get state-wide concurrence on this issue. Approval to discharge to upland areas will be specific to WSDOT projects. For private or local agency projects, the drilled shaft contractors will need to work things out with the general contractor and the owner.

For disposal of synthetic slurry, there is no change to the current guidelines and regulations. Synthetic slurry must be contained, treated, and discharged to sanitary sewer in accordance with the permit requirements. In terms of slurry contamination of ground water concerns expressed by the permitting agencies, WSDOT is interested in opening up a dialog with the Department of Ecology, but would need to know the chemical make-up of the slurries. This can be complicated because each slurry provider has different products with different chemical compositions. Al R. suggested the slurry providers discuss this internally and look at how this can be approached.

Scott suggested we do our homework on this issue now so we are prepared should this come up as a permitting issue in the future.

Action Plan:

- Scott Carey, Mo, and Mike Bauer will work on a language for the Drilled Shaft Special Provisions to address slurry disposal as described above.

6. Additional Items

i. Update on Washington State Ferries Eagle Harbor Project

John Callahan updated the Task Force on the Eagle Harbor project. Many of the previous Task Force comments had been incorporated into the project, and it was now on Ad. The bid opening for this project is scheduled for November 1st.

Action Plan:

- No action needed.

ii. Tying Rebar Cages

Al M. introduced a topic of requirements for tying drilled shaft rebar cages. In his experience, picking a large shaft cage is a challenging and risky operation. The success of the pick depends on how well the reinforcing cage is tied together. He asked what guidelines are used to specify how the cages are tied.

Mark G. referred to Section 6-02.3(24)C of the Standard Specification. This is the section that governs tying of reinforcing bars. For cages with a bar spacing of less than one foot (this covers most shaft cages) the Specifications require every other bar intersection to be tied. Mark also confirmed that the State strictly enforces this Specification.

Considering the risks, Al M. suggested that large rebar cages should require engineering/stamping. This would significantly improve safety when a large cage is being installed. An alternative would be to have the drilled shaft sub-contractor be in charge of furnishing, tying, and installing the reinforcing cage.

Action Plan:

- Mo to evaluate these suggestions and report back at the next meeting.

Future Meeting Dates

Future meeting dates are as follows:

- October 30
- December 11

The meeting was adjourned at 10:30