



TO: Planholders for Lake Oswego Interceptor Sewer – Lake Full Project

FROM: Jon Holland, Design Team Project Manager

SUBJECT: Questions from Contractors and Design Team Responses

DATE: March 24, 2009

The following questions were received from prequalified contractors on the project. The design team's responses are provided in **red bold text** after each question.

1. In the new Bid Form issued as part of Addendum No. 4, the quantity for buoyancy pipes (Bid Item Nos. 63-68) should be **24** times the quantity for tether brackets (Bid Item Nos. 58-60), but this is not the case. Why?

Addendum No. 5 will correct a quantity error for Bid Item No. 64, HDPE Buoyancy Pipe, 30-inch Diameter by 9-feet, DR 13.5. Quantity should be 24, not 216.

2. In light of the eyenut delivery, without an alternate item which can be obtained in a timely manner, the project cannot be completed by the specified dates. Delivery dates for stainless bar for the Ground Anchors is marginal at best. We request that the substantial and final completion dates as well as Lake Down contract dates be extended by one year and that the bid date be extended by one month in order to resolve this and other critical design issues.

Delivery time for the stainless steel portion of the ground anchors and threaded eyenuts will have to be carefully factored into each Bidder's schedule. However, we believe the project can be completed within the substantial and final completion dates, as modified in Addendum No. 4, and that bids can reasonably be prepared by the bid opening date, also as modified in Addendum No. 4.

3. In Addendum No. 3, item #26, paragraph 15065-3.06.1 adds Lost Dog Trunk to the trunks to have blind flanges installed in preparation for dewatering. This trunk will not be connected to a manhole at either end during the Lake Full Contract. This will mean that this trunk will require blind flanges at each end and then be dewatered. There is no feasible method to get video equipment into this trunk with both ends capped. Please clarify the extent of work required on this trunk.

See Addendum No. 4 for revised text under 15065-3.06.B that addresses this question.

4. Addendum No. 2 calls for the Springbrook, Twin Points, and Forest Hills trunks to have blind flanges at each end. These trunks connect (during Lake Full Contract) on one end to the stainless steel manholes, while the other ends are not manhole connected in this contract. Is the intent to disconnect (or not connect) these from the stainless steel manholes and not video the interiors? Or do these only get blind flanges at the unconnected ends, then pumped out with the main interceptor and inspected at that time?

See Addendum No. 4 for revised text under 15065-3.06.B that addresses this question.

5. Addendum No. 3 deletes the requirement for cleaning of the new pipe. However, requirements for TV inspections of the interior of the pipe as well as requirements for caisson testing and final survey are confusing and require clarification.
 - a. Paragraph 01050-2.02.C.5 implies that final survey is made only from Manhole A to G.
 - b. Paragraph 02560-1.01.C.2 implies that each caisson is to be tested at each manhole, while paragraph 02532-3.04.A requires temporary installation of each caisson at a minimum of 2 manholes.
 - c. Paragraph 02560-3.01.C implies TV inspection when the sewer is active, which would be after the Lake Down contract.
 - d. Paragraphs 15065-3.06.1 through 6 detail preparation and dewatering of the system as well as timing of final survey, adjustments and internal TV inspections.

Please confirm the extent of final survey and internal TV inspection (MH to MH? trunks?)

Please confirm that final survey and internal TV inspection are required only prior substantial completion and not following Lake Down.

Please confirm that caisson testing is only required at 2 manholes per caisson.

See Addendum No. 4 for revisions to Section 01050-2.02.C.4 clarifying extent of survey (i.e., every tether bracket and every buoyant manhole).

See Addendum No. 4 for revisions to Section 01015-1.02.M that clarify timing of final grade adjustment and internal TV inspection (i.e., by substantial completion). Section 02560-3.01.B does not conflict with this, however, flow control or bypassing will not be needed as the system will not be active.

Caisson testing is specified in Section 02532-3.04.A and Section 02560-1.01.C.2 does not conflict with this.

6. Specification section 02532 2.07.A. specifies an inflating rubber pipe plug, part number 365608 by “Cherne Industries, Minneapolis MN. Contact with representatives of this company revealed that this company no longer manufactures this particular item, or similar. What is considered an acceptable “or equal” substitute?

Cherne has recently replaced part no. 365608 with part no. 314608. Addendum No. 5 will make this update.

7. Paragraph 15065-3.05.B.5 calls for temporary weights or anchorages to secure the free ends of the air-filled pipe system. May these weights be left in place for removal by the Lake Down contractor or must they be removed after flooding the pipeline?

Per Addendum No. 4, Section 15065-3.06.B.4 places responsibility on Lake Down contractor to remove temporary anchorage.

8. Detail B on drawing 000-D-022 shows a bar coupler within the 10 feet above the bond zone. Can the bottom coupler be at a higher elevation allowing a longer length of anchor bar to be used?

Yes, there is no intent in this detail to specify where the coupler is located.

9. In the ground anchor specification 02491, pages 6 and 7 describe the Project Record Documents with a list of 17 items to be recorded. Will this be a joint effort between the Engineer and the Contractor’s drill crew, but the final responsibility is that of the Engineer?

These items comprise the daily reports to be prepared by the ENGINEER. As noted in this specification, the CONTRACTOR shall provide requested information on these items to assist ENGINEER in preparing these reports.

10. The ground anchor specification page 14 (item 3.03.D.1) says that no additives shall be used in the drilling fluid. Given that drilling depths from the water surface are up to 200 feet deep, there may be difficulty in cleaning the casing completely. Additives such as polymer are commonly used in the

drilling industry for this purpose, with no detrimental effect on the anchorage. Could the use of polymers be permitted?

See Addendum No. 2 for revisions that address this item.

11. Where are the six pre-production performance test anchors to be installed? .

See Addendum No. 2 for revisions that address this item.

12. How are the installation and testing of the six pre-performance test anchors to be paid for? There does not appear to be a bid item for them.

See Bid Item Nos. 54 and 81 (as re-numbered in revised Bid Form issued as part of Addendum No. 4), and associated Measurement and Payment descriptions in Section 01025. These items cover both pre-production and production anchor performance testing.

13. On drawings 000-D-125 and 000-D-126, the notes list the micropile service loads for P, B, M and V. Section 1 on both drawings shows the loads applied to the manhole cap. We assume that these listed loads are acting on the manhole rather than to each micropile individually. For example, the P, B and V load would be applied one fourth to each micropile and the moment M would be resisted in tension and compression by micropiles on opposite sides of the manhole cap. Is this correct?

The loading is shown as the total acting at the manhole lid. The distribution of the loading to each micropile will be based upon the geometry, stiffness, etc.

14. How is the installation and testing of the pre-production micropile to be paid for? There does not appear to be a bid item for this.

See Bid Item No. 85 (as re-numbered in revised Bid Form issued as part of Addendum No. 4) and associated Measurement and Payment description in Section 01025. This item covers both pre-production and production micropile performance testing. Note the quantity adjustment for this item per Addendum No. 1.

15. In the table on page 6 of Section 02491, deflection acceptance criteria are provided for manhole stabilization and buoyant pipe anchors for both performance and proof tests. In addition, item 9 on page 9 and the first paragraphs on pages 18 and 19 all say that deflection measurement resolution (for both manhole stabilization and buoyant pipe anchors) shall be 0.01 ft. This is not consistent with page 6 acceptance criteria. More importantly, all of these tolerances, while achievable on land, are not feasible overwater. Please advise on how these tolerances are to be achieved overwater.

See Addendum No. 2 for revisions to deflection acceptance criteria. See Attachment A to this memo for one possible way to achieve tolerances.

16. Page 7 of Section 02491 provides limits on how closely measurements must be made and bottom of page 12 provides horizontal acceptance criteria, however no vertical acceptance criteria are provided.

See Addendum No. 2 for revisions that address this item.

17. Is the contractor required to develop all sites as defined in the documents?

BC response: See Addendum No. 2 for modifications to Section 01550.

18. Is the contractor required to develop 100% of each specific site as defined in the documents?

BC response: Alder Circle site requires geotextile and rock as required, area is shown on drawing G-012. Other sites say geotextile and rock as needed.

19. Can the large building at the Rosemont site be modified?
If yes to above, does the building need to be restored to original condition by the end of the contract?

BC response: Bidders should not plan at this time on being able to modify this building. Addendum No. 5 will include requirement that portion of barn will continue to be used by OWNER's Parks and Recreation Department for equipment storage.

20. If the Alder Circle dock is removed as part of the site development, does it need to be replaced?

BC response: There is no requirement to replace the dock at Alder Circle that is designated to be removed.

21. We request more information for the lake channel depth/width in the vicinity of manhole 23.

BC response: The water depth in the vicinity of MH 23 is approximately 7 feet.

22. We request structural information for the "South Shore Bridge", i.e., girder sizes, column material and embedment, end wall configuration, etc.

BC response: Drawings for the bridge were posted to the project website and planholders were notified on March 10, 2009.

23. Can the South Shore Bridge be closed and used to move or demove more than 1 period of time? Currently the specifications say 1 each – 14 day block of time.

BC response: 2nd 14 day period for use of South Shore Bridge provided per Addendum No. 1.

24. Drawing 400-D-005 shows 148.5' of 12" HDPE pipe to be installed from MH 21R to E10C-004S. The Lake Full vs. Lake Down chart accompanying this drawing does not include the stationing or reference to this piece of pipe. Is this pipe to be installed lake full and sunk to the lake bed or installed by the lake down contract?

BC response: See Addendum No. 2 for revisions that address this item.

25. Bid item #87, "Performance Test Micropiles at MHs 25, 26" has a quantity of 2 each. Specification section 02466-3.04.A states, "Performance micropile load tests shall be performed for 3 micropiles, one preproduction micropile and 2 production micropiles at each manhole . . ." Specification section 02466-3.04.D states, "A minimum of one performance test shall be performed for each foundation soil type for each different equipment, construction method, and/or procedures, prior to production micropile installation. Minimum 2 performance tests shall be performed on production micropile, one at each manhole." Depending on how and what one reads of these paragraphs, you can do performance tests on micropiles anywhere from 2 to 6 times. How many preproduction micropile performance tests are required? How many production micropile performance tests are required?

BC response: See Addendum No. 1 for revisions that address this item.

26. Specification section 02466-3.05.A states, "Each production micropile installed will be subject to a proof test." Specification section 02466-05.B states, ". . . Contractor shall provide minimum of one proof test for micropiles to be embedded in rock foundation. . . ." There could be from 1 to 8 micropile proof tests. How many micropile proof test are required?

BC response: See Addendum No. 1 for revisions that address this item.

27. Drawing 000-G-016 shows a temporary 20'X20' dock at Maple Circle. Are we allowed to drive piling for this temporary dock to support equipment loads?

BC response: Any pile driving proposed for a dock at Maple Circle would be subject to vibration limitations to avoid damage to adjacent residences and private structures.

28. Section 03403, Manhole Preformed Structural Liner, paragraph 1.04.A requires that the Manufacturer's Representative be present to verify in writing that the proper procedures and equipment are used by the installer and that the liner is being applied per the Preformed Liner system Installation Plan. Is the Manufacturer's Representative required to stay for the installation of all the manhole liners or just until the Representative is satisfied that the liners are being installed in accordance with the installation plan submitted?

BC response: See Addenda Nos. 1 and 2 for revisions that address this item.

29. Section 02550, Temporary Bypass Pumping and Flow Control
- a. The Liner replacement manholes have flow from upland manholes. Please provide bidders with layouts of the upland manholes and the feeder sources to these manholes.
 - b. Paragraphs 1.01.C and 1.01.F. Please clarify the Contractor's role in acquiring an encroachment permit versus the Owner obtaining a right-of-way entry/right of access agreement.
 - c. Paragraph 2.02.A. For CCTV and cleaning activities. What is the connection scope and/or pipe plugging scope of the lake down contract? When does the system get put on-line? What manholes will need to be bypassed, if any, from contact with sewage?

BC response: Items b. and c. are addressed in Addendum No. 2 and Item a. is addressed with reference material (sewer system maps) posted to project website on March 10, 2009 (planholders notified by e-mail).

30. Section 02762, Lake Drawdown and Refill Assistance, paragraph 1.01.D. Step 1 Refill will be from 22-foot drawdown to 16-foot drawdown and is scheduled to begin approximately January 15, 2011. When is step 1 refill scheduled to finish?

BC response: This specification section and its corresponding bid item were deleted by Addendum No. 4.

31. At substantial completion of the Lake Full contract, there should exist no sediment or debris in the pipeline. Any sediment or debris entering the pipeline will likely be generated by the Lake Down contractor due to the nature of his operation in burying the pipe. The Lake Full contractor will have no control over the condition of the pipeline after turning it over to the

Lake Down contractor. We request that cleaning of the system be eliminated from the Lake Full contract.

BC response: Cleaning of the system was essentially deleted by Addendum No. 3. However, Addendum No. 5 will also delete Section 02760.

32. We cannot accept Actual Damages in contracts as these are undefined and we are unable to quantify and price this risk. Paragraph 3.2 of the Contract defines Liquidated Damages for late completion. SC-12.03E calls for Actual Damages for avoidable Contractor delay during contract performance. Please confirm that the only penalty for late completion will be the stipulated Liquidated Damages.

BC response: Liquidated damages apply for late completion. The provisions of SC-12.03E cover a different scenario: reimbursement of actual costs incurred when a time extension is granted for avoidable delay. Either one or the other would apply but not both. Addendum No. 3 includes revisions to this Supplementary Condition that places a ceiling on actual costs.

33. Please confirm that the LD's include any and all penalties for delays to other projects as noted in SC-4.04.B.2.

BC response: SC-4.04.B.2 has nothing to do with liquidated damages. It simply modifies GC 4.04 to add that Owner and Engineer are not liable to Contractor if there are Underground Facilities found that were not shown on the Contract Documents.

34. Some of the piles have rock sockets drilled inside the driven piles. Must the prequalified Pipe Pile Driving Specialty Contractors self-perform this rock socket drilling or may the drilling work be subcontracted?

BC response: The pile installation must be done by a prequalified specialty contractor, however, we do not preclude the potential for some limited degree of assistance provided by a subcontractor under the specialty contractor's control and direction.

35. The specifications are confusing regarding warranty. GP-13.07 calls for a Correction Period of one year from the date of Substantial Completion. However, SC-6.19.A indicates that "If a Contractor performs warranty Work, the warranty Work also shall have a two (2) year warranty period from the date of its completion and Acceptance by Owner." Please clarify the length of the warranty period and the date that it commences.

BC response: See Addendum No. 4 for revisions that address this item.

36. Specification section 02532-2.01.A prescribes materials to be utilized for Caisson fabrication. Table specifies 6061-T6 or 6063-T6 aluminum shapes and plates, as well as 316L SS bolts. Section 2.02 specifies flange material as “. . . from forgings and meet the minimum standards of ASTM 105 or 182. (As an alternate, flanges may be fabricated and segmented from ASTM 240 Plate).” ASTM 105 designates forged carbon steel piping components, ASTM 182 designates stainless steel forgings and ASTM 240 designates stainless steel plate. The drawings indicate the flanges are welded to the body of the caisson. Welding or bonding aluminum to carbon or stainless steel is not possible with normal fabrication procedures. What material is intended to be specified for the caisson flanges?

BC response: See Addendum No. 2 for revisions that address this item.

37. Item #56 “Internodal Cable Bracket for 42-in Sewer” (**note: as advertised numbering**) in the bid schedule designates a quantity of 38 each. The Internodal Cable Bracket Schedule on drawing 000-D-020 shows a quantity of 44 each. Should the quantity in bid item #56 be revised to show a quantity of 44 each?

BC response: See Addendum No. 1 for revision that addresses this item.

JH:wmp

Attachment A – Ground Anchor Measurement Reference
Prepared by Shannon & Wilson

The following narrative provides a description of a conceptual off-barge measurement reference point required to accomplish performance and proof tests for ground anchors. The following excerpts from the project specifications are provided for reference.

Specification 02491-1.04.D.3 related to submittals requires the following:

Submit a detailed anchor test plan describing equipment and techniques to be used to apply test load, measure elongation under load, and confirm final position and elevation of anchor eye-bolt. The test plan shall include the following minimum information:

- a. Uplift test loading system for anchors including stressing jacks, pressure gages, load cells, or other devices for measuring stressing load, certified calibration records for each set of jacking equipment, and current testing curves for stress measurement gages which show that gages have been calibrated for the jacks for which they are used shall be submitted for review 30 days prior to the start of the testing operations.*
- b. Measurement system that negates the influence of barge movement and provides the stated resolution.***
- c. Cable or bar system used to attach to the ground anchor and extend above the lake surface to the deformation measuring point.*

Specification 02491-3.05.D related to Proof Load Tests requires the following:

*Proof load tests will be performed generally conforming to PTI, Section 8 and this specification on all production ground anchors for buoyant pipeline and buoyant manholes. Stressing and testing equipment shall be in accordance with PTI and the following. The ram travel of the stressing equipment shall provide not less than 200 percent of the theoretical elastic elongation of the total anchor length, plus any required extension elements. **In addition, ram travel length must accommodate barge displacement such that no regripping of the anchor is required.** The stressing system shall be capable of loading the anchor to each load increment within 60 seconds, and shall maintain consistent pressure as measured by the hydraulic pressure gages for the test period without additional pumping. The stressing equipment and pressure gage must have been calibrated as a unit no more than 30 calendar days prior to commencing work under this contract and at 6-month intervals throughout the period of use or as required by the ENGINEER.*

The anchor elongation measuring device shall have a minimum travel equal to 200 percent of the theoretical elastic elongation of the total anchor length at the maximum Test Load, and any barge displacement without resetting the

device. For overwater testing, specialized elongation measurement equipment of CONTRACTOR design is required, and shall be referenced to off-barge, stable reference points such that a resolution of 0.20 inch can be achieved. CONTRACTOR's design of the testing and reference system shall be submitted for review and approval. The accepted stressing and testing system shall be in service for the performance tests required in the above section.

The contractor is required to return to a given anchor following installation, reconnect to the anchor eye nut and apply an uplift test load from barge based operations at the lake surface. To allow measurement of elongation of the anchor bar system, and potential movements in the embedded anchor zone, measurements as precise as possible are sought that are an order of magnitude less precise than normally accomplished for the same testing performed on land, due in large part to the lack of a fixed reference point from which deflection of the anchor system can be measured. Consequently, an off-barge reference system of contractor design is required. For each of the hundreds of proof tests, the off-barge system should provide a reliable, stable easily read reference to allow measurement of the test deformation for a period typically on the order of 15 minutes, but potentially extending to 60 minutes. Precise elevation of the reference point would not be required.

Experience during prior geotechnical exploration programs has provided insight into developing stable off-barge reference points in the unusual conditions posed by thick, very soft sediments. For example, drilling barge stabilization with 60 foot spuds were somewhat unreliable due to the very soft lake sediments that cannot be fully penetrated with that length spud. Later exploration phases relied on large anchors operated by winches on the drill barge. The anchors consisted of concrete cylinders on the order of 5-foot in diameter and 2.5 to 3 feet thick, with a connection point in the center. Four anchors were positioned on the barge corners, and were lowered vertically to the mud line via winch. Settlement of the anchors was noted for a period of an hour or more following their placement, and winch adjustments were required. But after an initial period of adjustment, this system provided a relatively stable drilling platform. Tightening up on the anchors seated the barge deeper into the water and countered the effects of wind and boat wakes, which at times were problematic. Although some initial settlement of the anchors occurred (estimated to be less than 2 or 3 feet), the anchors were readily recovered without incident, and did not "sink out of sight" in the mud, as an uncontrolled spud would.

From that experience, the following concept for an off-barge reference measurement system was derived. The information is provided as a concept only, and the described concept does not represent a recommendation or requirement for contractor's use. Instead, it provides one concept we believe can feasibly provide the required off-barge reference system. Responsibility for design and implementation of the system shall remain with the contractor to meet the contract criteria. Alternatives, such as hydraulically pushed or driven piles or long spuds might also provide workable concepts. Preproduction performance tests will provide an opportunity to refine the reference system prior to production anchor testing. However, prior to actual test use, the resolution achievable with the system should be tested in an area with soft mud lake bottom near an existing manhole, and perform trial measurements using survey techniques from the manhole.

The conceptual system description follows. Consider that a cylindrical anchor of similar dimensions to those described above appears to have been stable at or near the mud line, and

not experience ongoing or uncontrollable settlement into the mud. Such an anchor, with a 4- to 10-inch diameter rigid rod or pipe system would extend from the anchor to above the water surface. The vertical rod system would attach to the anchor through connection that allows limited rotation to account for an uneven mud line or differential settlement of the anchor into the mud. The rigid pipe or rod system could be adjusted for the length using threaded segments, but those joints must not loosen in operation. To assure stability and verticality, the rod would be supported by an inflatable buoyant “donut” airbag attached to encircle the rod below the water surface (to avoid wind and wave exposure) and deliver a consistent, uniform uplift force. The uplift would also serve to reduce the potential for settlement of the anchor into the mud.

Given that the above-described concept would provide a vertically upright, fixed elevation steel rod system, that reference would have an attached self-leveling laser to allow projection of a reference (local datum but not true elevation) to any location within a reasonable radius from the measurement point, thus providing a visible reference datum on the barge for multiple anchor test positions from one setting.

Considerations and caveats for the performance of load test operations follow:

- Windy conditions will be problematic for barge stability and may deflect the anchor connection system. Avoidance of testing during windy conditions will improve test performance and potentially the pace of the test completion.
- Choppy water from numerous pleasure boats provided the most unstable barge conditions during drilling. Avoidance of testing during prime recreation periods will improve test performance and potentially the pace of test completion. Such periods of time occur during the winter months, and early morning or night hours of summer months.