



City of Seattle

January 6, 2015

Program Administrator
Alaskan Way Viaduct & Seawall Replacement Program
999 3rd Avenue, Suite 2424
Seattle, WA 98104

Dear Program Administrator:

Recent events related to excavation and dewatering for construction of the rescue shaft to access the tunnel boring machine (TBM) for repairs have raised issues of timely transmittal of information, transparency, and accountability. We are further concerned that processes required under the contracts between the City and State and its contractor, are not being followed.

On the evening of December 18, 2014, WSDOT's contractor posted a draft report from its engineering firm, Brierley and Associates, dated December 11, 2014, discussing the contractor's shaft excavation and TBM rescue plan. That report included the following statement:

If we continue the current "repair as we go" method of excavation, we significantly increase the risk of a catastrophic failure. Therefore excavation shall not proceed ...

This language was subsequently changed without explanation in the version of the report dated December 18, 2014 to:

In summary, we believe that the untreated soil zones... will have a significant impact on the structural, geotechnical and hydraulic adequacy of the shaft structure.

The extent of any such failure or concern about adequacy is not described; however it is clear that alarm bells were going off. This is particularly of concern in light of evidence that the ground has settled well beyond the limits the State predicted might be affected by its project. Could a failure or lack of structural adequacy have broader implications for nearby property and City infrastructure? What, if anything, changed to cause Brierley to change the language of their assessment?

Whether the phrase used is "significantly increase the risk of catastrophic failure" or "a significant impact on the structural...adequacy", the proximity of this excavation to the Viaduct and surrounding public and private property makes such language alarming to say the least, and we believe required the State to promptly bring the concerns to the City's attention. Merely posting these reports on the project Aconex database is not acceptable and is not in keeping with our expectations regarding the relationship between the City and State. Is a risk of catastrophic failure the same as a concern about adequacy? Is there a specific area to which such a failure might extend?

Brierley is your contractor's engineer. Brierley's directive to your contractor to stop all excavation while a structural review can occur and a requirement that a plan to repair and proceed be developed prior to resumption of excavation is a very significant occurrence. When combined with the documented settling of the ground (also called deformation) outside of the tunnel alignment and well beyond your predicted zone of influence however, we believe that an immediate dialogue between the State and City was not only warranted but necessary.

Leaving aside the question of how government entities should act toward one another, our contractual requirements dictates that a much more proactive notification occur on something that is identified as "significant". We fully expect that in the future the State will more proactively keep us informed of all significant events. We also expect that you will give us a timely opportunity for meaningful review and an opportunity to comment on the plan called for in the Brierley report before excavation work is resumed.

Prior to the commencement of construction of the tunnel project, the State and its contractor analyzed and determined what it believed would be the zone of influence or area in which construction activities might cause ground disturbance or "deformation". As part of its plan, a monitoring program was established for the identified zone of influence. The project plan however never envisioned a complete tunneling machine breakdown and a major excavation to make repairs.

When the State and its contractor decided that the best method of repair was to create a deep excavation, which required significant deep dewatering, we raised concerns. We were given assurances in October that the approach to the design of the excavation including dewatering would result in minor settlement of less than $\frac{1}{4}$ inch in the monitored zone of influence area identified prior to the commencement of construction. There was never any mention of the potential for settlement beyond that zone.

After the commencement of the excavation and dewatering, observed settlement beyond the predicted zone of influence started to occur. Our recent survey results show that settlement in excess of 1 inch has now been measured in the Pioneer Square area well beyond the monitored area. We believe that settlement of this amount beyond your predicted zone of influence requires that you take immediate steps to extend your monitoring and analysis.

Our Agreements require that the State analyze and monitor for potential impacts of deformation associated with the State's bored tunnel project on an ongoing basis, including the establishment of a deformation task force which included not only the State and its contractor, but the City as well. We believe that such a task force is intended to review and analyze data from all areas including not only the original zone of influence above the tunnel alignment, but also any additional areas where observation and survey findings are being influenced by the project, including the access shaft, or other project work.

We further request that the State take the following steps to fulfill other terms of our Agreements, including but not limited to the following:

1. Create an updated Deformation analysis report pursuant to GCA 6486 Section 12.1, UT 01474 Section 4.1, and UT 01476 Section 4.1, for the full areal extent of all potential project impacts, including the additional area influenced by the TBM access shaft. This report should include analysis of impacts from dewatering, include updated tunnel boring settlement projections, analysis of impacts of the migration of drilling fluids along the length of the tunnel bored to-date, installation of micropiles, and the south-end settlement due to dewatering in and near the south portal. This updated report should be based on the updated understanding of the subsurface geology and hydrogeology where that information exists, rather than relying on previously assumed conditions.
2. Develop a current assessment of potential Deformation impacts on City Facilities pursuant to GCA 6486 Sections 12.1 & 12.2, UT 01474 Sections 4.1 & 4.2 and UT 01476 Sections 4.1 & 4.2, identifying the risk to all facilities within the areal extent of potential deformation of the project. Please include a full analysis of all impacts including but not restricted to: the impact on services of the potential differential movement between the ground and structures (whether due to dewatering, tunneling, or any other project impacts), the impacts to sewers, the impact to pile-supported facilities (such as large sewers and watermains in Pioneer Square), impacts to SCL vaults and duct banks, particularly in the area of Thomas.
3. Establish the plan for Deformation Mitigation Work required in UT 01474 Section 4.3 and UT 01476 Section 4.3, which should include demonstrating how the State will protect all vulnerable facilities, and allow for SPU and SCL input as referenced in that Section.
4. Promptly develop and implement a revised assessment, instrumentation and monitoring plan pursuant to GCA 6486 Section 12.4, UT 01474 Sections 4.4 & 4.7 and UT 01476 Sections 4.4 & 4.7 for all facilities within the area potentially influenced by project dewatering or other activities associated with the TBM access shaft. This needs to cover all areas where piezometer or surface movement has been detected. This should include placement of additional piezometers to ascertain the extent of groundwater changes associated with the TBM access shaft dewatering. Please include alert levels for all potentially-impacted facilities. This monitoring plan needs to monitor at a high level of accuracy on a real-time basis for deformation that is spatially highly variable over a wide area. All data must be provided in real-time to the City in a readily understandable format. Please provide a regular monitoring program of all accessible points on all water mains and services in the Pioneer Square area.
5. Furnish a response plan which describes what actions will be taken to avoid exceeding the allowed increment of ground deformation (defined as the Maximum Total Displacement Criteria in our agreements, should specific alert levels be reached.
6. Provide the City with a copy of the reports that document and interpret the impacts of dewatering that occurred earlier in the project in the WOSCA Yard and surrounding area.
7. On an ongoing basis please promptly furnish us with all of your contractor's raw survey data as well as final survey results.
8. Correct all data in Geoscope to show absolute movement. (Note that Geoscope currently shows points in red-alert in uplift north of Yesler).

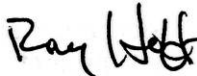
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9. Finally, please immediately resume holding the weekly Thursday large group Construction Monitoring Task Force Meetings and please do not cancel these meetings without City concurrence.

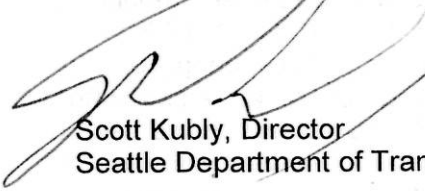
While the Alaskan Way Viaduct Replacement Project is the State's project, there are numerous agreements including GCA 6486, UT 01476 and UT 01474 between the State and the City regarding construction and its impacts on critical infrastructure and the citizens of the City of Seattle. The City's primary interest is the well-being of its citizens. Unexpected significant increases in settlement surrounding the rescue shaft and the potential for "catastrophic failure" of the rescue shaft that was not timely communicated to the City cause us to be seriously concerned.

As the project moves forward we expect that the State will engage on a timely basis with the City regarding project challenges and progress. We look forward to a more collaborative and transparent relationship to complete this project and working through and resolving the specific issues identified in the near future.

Sincerely,



Ray Hoffman, Director
Seattle Public Utilities



Scott Kubly, Director

Seattle Department of Transportation

cc: Lynn Peterson, Secretary, Washington State Department of Transportation
Todd Trapanier, P.E., Washington State Department of Transportation
Dave Sowers, P.E., Washington State Department of Transportation