Alaskan Way Viaduct
REPLACEMENT
PROGRAM

Seattle City Council

July 15, 2013

U.S. Department of Transportation
Federal Highway Administration

WSDOT

King County

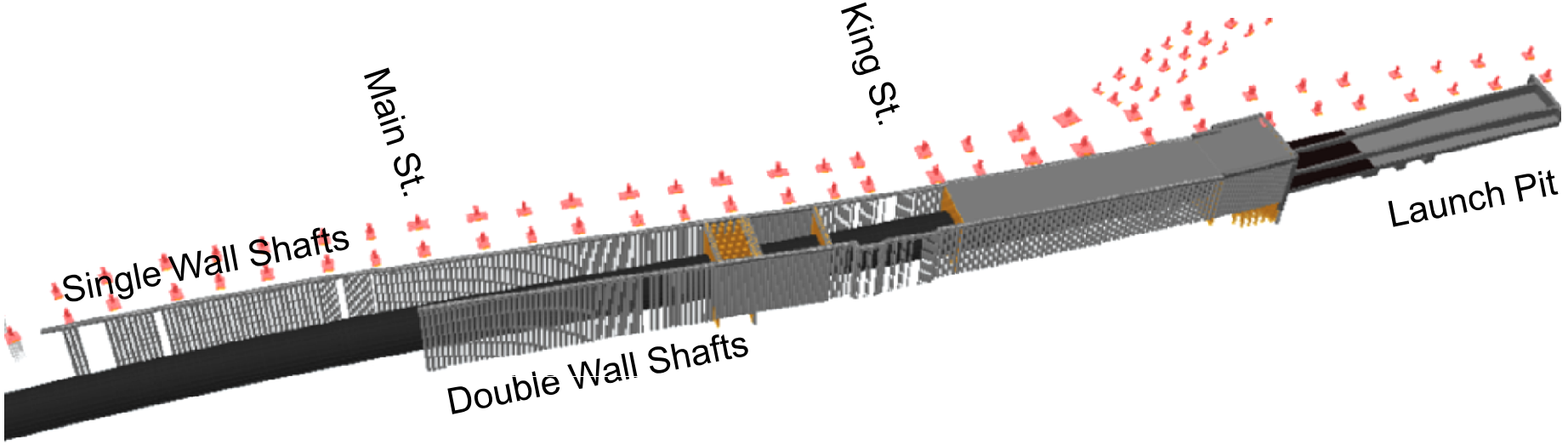
Port of Seattle

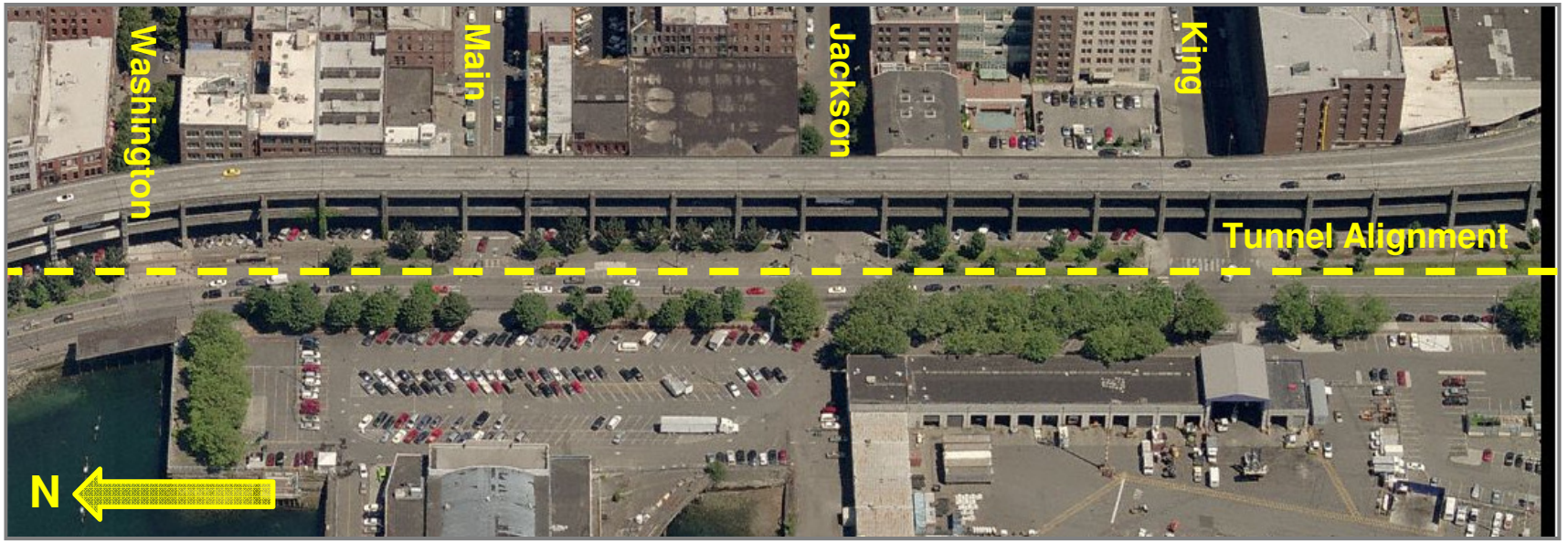
City of Seattle

Overview

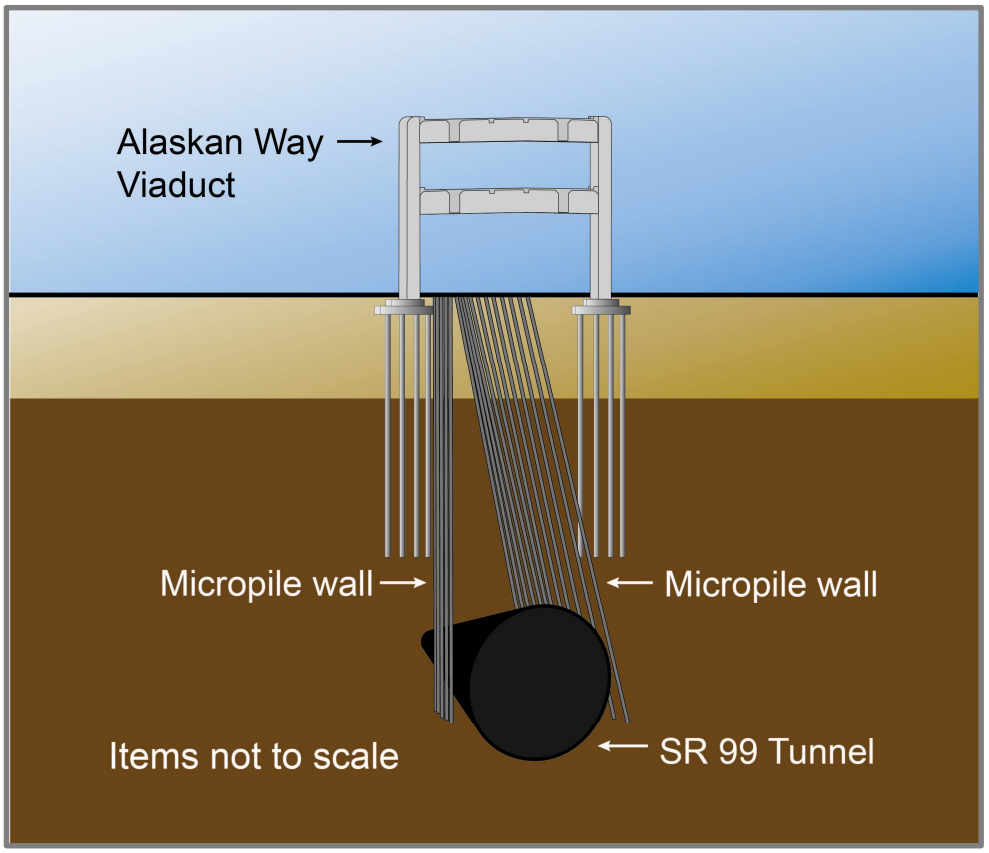
- Settlement mitigation and monitoring program.
- Six-month tunneling schedule and online tracking tool.
- State and City coordination during tunneling.
- Bertha dedication event.

South End Settlement Mitigation





Settlement Mitigation Along the Tunnel Route



Crews installed micropiles under the viaduct.

Crews finished reinforcing a section of the viaduct last fall.

Western Building Structural Reinforcement

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Settlement Monitoring Program

Protecting Structures Along the Tunnel Route

Monitoring equipment installed on a rooftop. Photo by Soldata.

- Install monitoring equipment on nearly 200 structures, including the viaduct.
- Install 700 instruments under streets and sidewalks to measure any ground changes.
- Track measurements of excavated material as tunneling machine progresses.
- Use satellite images to assess any changes in ground condition.

Exterior Building Monitoring Equipment

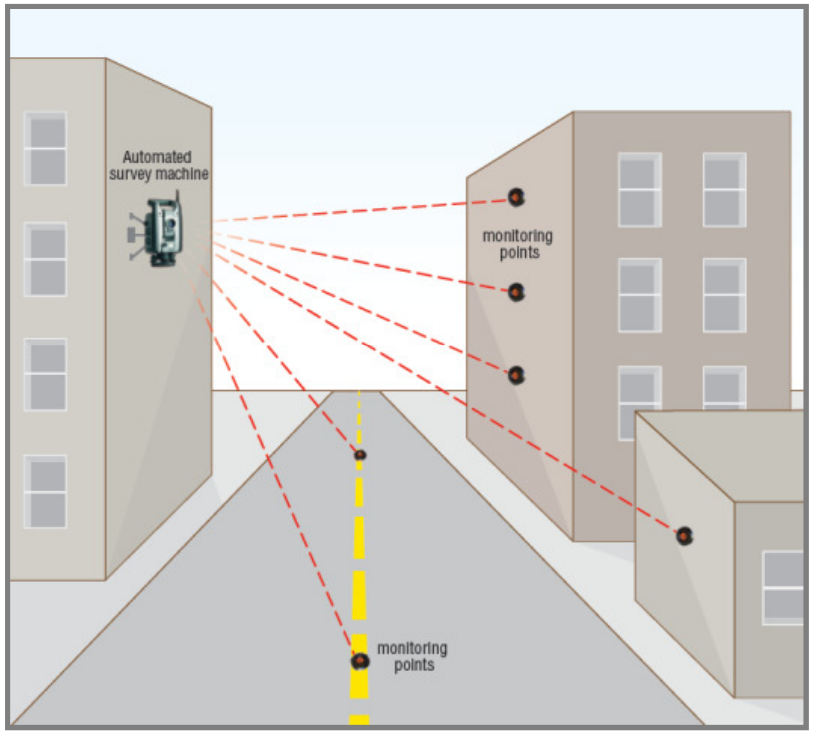


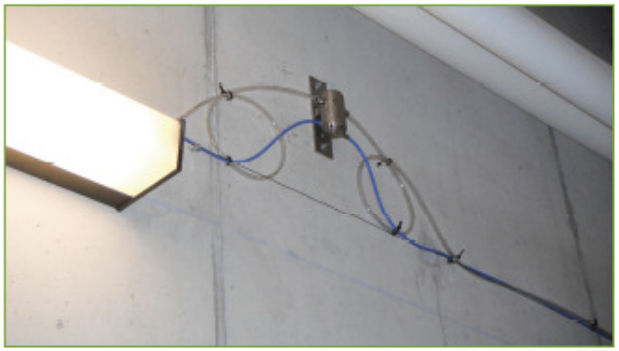
Photo by Soldata of crews installing an automated survey machine.

Interior Building Monitoring Equipment

Tiltmeter

A tiltmeter is a 3-inch by 12-inch device fastened to an interior wall with bolts or brackets.

Liquid Level Sensor



A liquid level sensor is a 6-inch by 3-inch device connected to a half inch diameter tube filled with water and mounted on a wall with bolts or brackets.

Crack Gauge

Small gauges measure changes in the size of existing building cracks.

Monitoring the Viaduct

The viaduct is outfitted with:

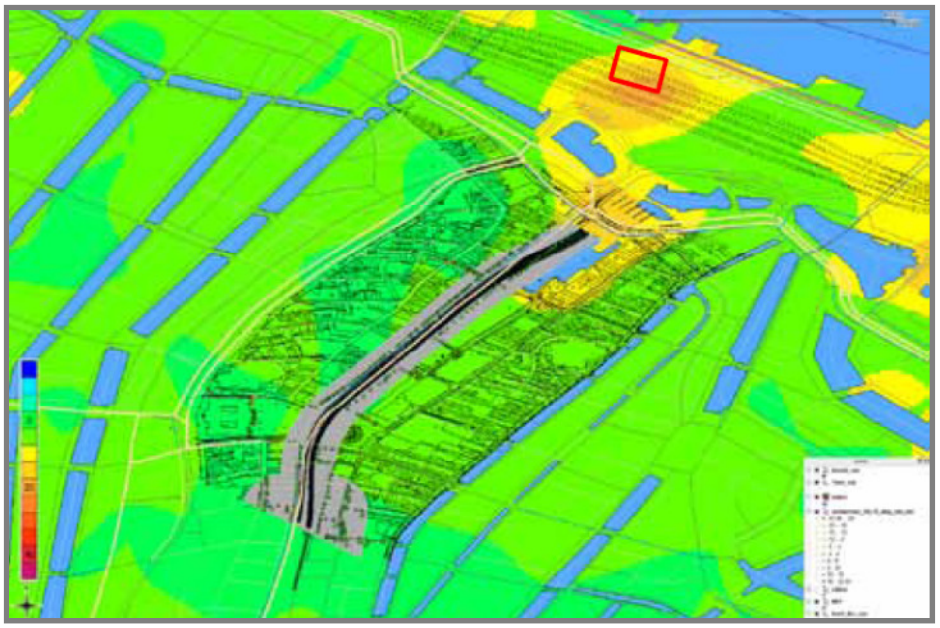
- Tiltmeters
- Prisms, read by an automated survey machine
- Automatic crack gauges

Ground Monitoring

- Instruments installed under streets and sidewalks along tunnel alignment.
- Allows crews to detect movement deep underground before effects are seen at street level.
- Instruments extend 2 to 300 feet underground.
- Visible portion is a 4 to 12-inch diameter cover.

Satellite Imaging

- Images taken prior to construction will create reference points for engineers.
- Images taken during construction will be compared with pre-construction data to monitor any changes.
- Allows crews to monitor tunnel route as well as areas beyond the instrumented monitoring area.



Collecting and Organizing Data

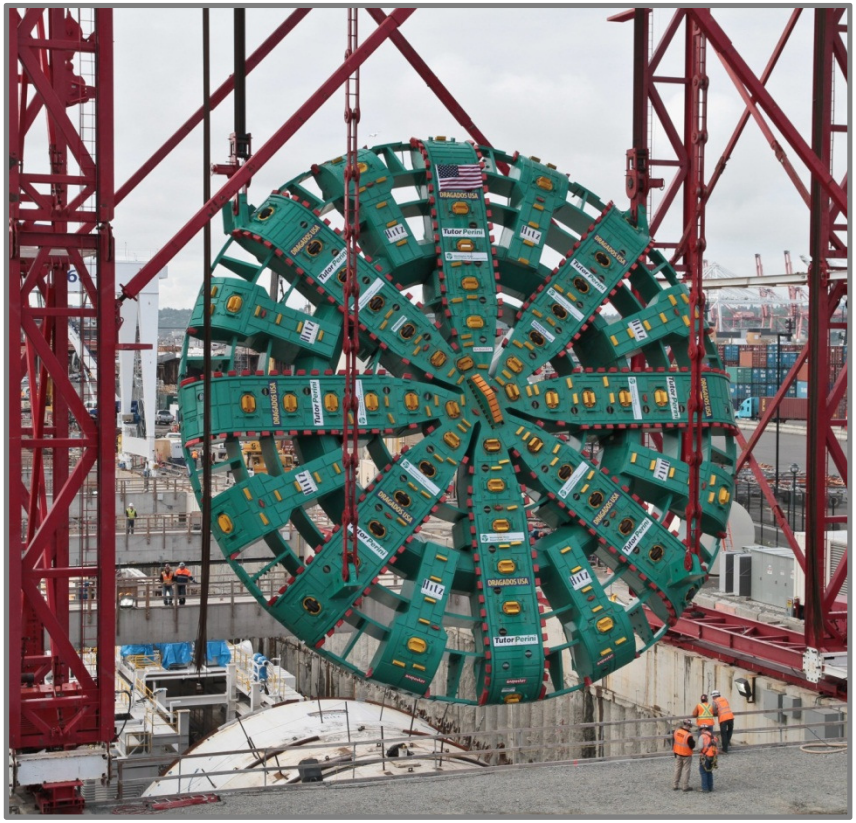
- Construction monitoring task force meets daily to review data.

- From the tunneling machine:
  - Track measurements of excavated material.
  - Track grout volumes.
  - Track face pressures.

- From the surface:
  - Using Geoscope database to organize collected geotechnical and structural data.

Six-Month Tunneling Timeline

- Start tunneling: late July 2013.
- Tunneling in controlled environment: late July to fall 2013.
- Arrive at final controlled maintenance zone: fall 2013.
- Tunnel under the viaduct: late fall 2013.



State and City Coordination During Tunneling

- Participate in ongoing weekly scheduled meetings.
- Develop and distribute daily tunnel progress reports.
- Shared access to database containing real-time monitoring data.
- Maintain coordinated incident response protocol.

Photo taken near South King Street where Bertha will tunnel in a controlled environment.

Bertha's Pre-Bore Dedication Public Event

- Saturday, July 20, 2013.
- Dedication ceremony at 11:30 a.m.
- Walk the construction site and view Bertha, up-close from 12 p.m. to 3 p.m.
- Sign your name on a tunnel liner segment.
- www.AlaskanWayViaduct.org for more details.

Visit the SR 99 Tunnel Construction Viewing Platform

Milepost Thirty-One

Website:
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A view of Bertha from above.