



## SR99 – Alaskan Way Viaduct, Seattle, Washington

Washington State Department of Transportation's Alaskan Way Viaduct tunnel is part of more than 20 projects being funded to reshape the SR 99 corridor. Tunnel construction began in 2011 and is expected to be completed and open to traffic in 2016. The tunnel will replace the double decker SR99 Alaskan Way Viaduct.

EnCon Washington produced the precast tunnel segments for the nearby 1.8 mile tunnel. The SR99 Tunnel is composed of 1,445 50'-0" diameter rings, with each ring containing 10 segments. Each ring has a two foot thickness. They have an internal diameter of 52 feet and a width of approximately a 6'-6". The average segment weight is about 38,000 pounds.

The EnCon Washington batch plant is producing 12 cubic yards of concrete every 15 minutes to meet facility production requirements for 66 segments per day. A continuous quality control check system is in place beginning with each segment receiving a pre-pour inspection and every cage receiving a 100% inspection for wire size placement, and welding. Manufacturing tolerances are less than one millimeter in some measurements, and up to three millimeters in others.

### Project Facts:

**Market Segment:** Transportation  
**Project Type:** Tunnel  
**Products Used:** Precast tunnel liner segments

### Project Design Team:

**Owner:** Washington State Department of Transportation, Denver, CO  
**General Contractor:** Seattle Tunnel Partners, Seattle, WA  
**Engineer of Record:** Seattle Tunnel Partners, Seattle, WA

### Company Information:

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A recent 32,000 square feet of additional precast production area was added to the EnCon Washington facility to house the carousel production system required to produce the tunnel segments. The carousel production system contains nine manufacturing stations, a curing chamber, evacuation line, automated concrete delivery and placement. The batch plant delivers concrete to a casting cabin with a flying bucket and 100% of the waste water is reclaimed and processed through a water treatment plant.



Target production requirements for the tunnel pieces are 33 segments per shift. There are two daily shifts, running 8-9 hours each, allowing for up to 66 segments per day.



Tunnel segments will be placed to a maximum depth of 200 feet below sea level with a maximum pressure of 5.6 bar. The segments are produced to provide 100 year service life. The precast pieces are also rated for a magnitude 10 earthquake.



The SR99 Tunnel is composed of 10 segments per ring. The ring contains seven A segments, two counter key segments, and one key segment. Each ring has a two foot thickness. They have an internal diameter of 52 feet and a width of approximately a 6'-6". The average segment weight is 38,000 pounds. The tunnel length is 1.8 miles and will include a total quantity of 1,445, or 14,450 segments.

