Meet Angeli.
She’s connecting LA County.

REGIONAL CONNECTOR TRANSIT PROJECT
Tunnel Boring Machine Fun Facts

metro.net/regionalconnector
“Angeli” is the name given to the Regional Connector Tunnel Boring Machine (TBM). She will dig twin 1.1 mile underground light-rail tunnels that connect the Metro Blue, Expo and Gold Lines allowing passengers to travel seamlessly about LA County from Long Beach to Azusa and East Los Angeles to Santa Monica. The tunnels will connect three new stations from Little Tokyo to the Financial District in downtown Los Angeles: Little Tokyo/Arts District Station in Little Tokyo, Historic Broadway Station near Civic Center, and Grand Av Arts/Bunker Hill Station near Bunker Hill.

**What is a TBM?**

A TBM is like a giant drill. The TBM will slowly drill through the earth, digging the tunnels needed for the trains to travel underground. The front section of the TBM is called the shield. At the front of the shield is the cutter head. The cutter head is like a giant circular cheese grater. The shield has two jobs; it drills through the dirt to create a large hole which it then lines with concrete segments to form complete rings. These rings support the tunnel.

**What do they do with all that dirt?**

The soil that has been grated away by the TBM will be taken out of the tunnel in large rail cars and hauled away to a dump site. When the TBM has done its job, it will have excavated 142,500 cubic yards of soil from the ground.

**Why is she named?**

Like ships, TBMs are named before they begin work for the first time—a mining tradition that dates back to the 14th century. A female name is chosen because, historically, underground workers revered Saint Barbara—the patron saint for military engineers and miners—as a symbol of protection and good luck for centuries. This homage evolved into the tradition of naming tunneling machines with a female name before the digging begins.

The public voted to name the Regional Connector TBM “Angeli,” a name proposed by a local middle school student, Windsor McInereny. “Angeli” is Latin for the word “angels” and shares the name given to the city of Los Angeles, the City of Angels. “Angeli” represents the angel needed to complete this important project that greatly improves transportation in Los Angeles.

**How slow does she go?**

“Angeli” tunnels at the rate of 60 feet per day, for a final length equivalent to 82 football fields. The center of the earth is about 3,959 miles down. It would take approximately 954 years for “Angeli” to bore a tunnel to the center of the earth.
A Journey through the Earth

Angeli will dig a tunnel starting from 1st and Alameda in Little Tokyo to 4th and Flower in the Financial District in downtown Los Angeles. Then she will return to Little Tokyo and dig a second tunnel to the Financial District.

The body of the machine is primarily made of steel.

Wiring and motor cables are typically made of copper.

Conveyor belts are made from layered rubber with steel wire reinforcing for strength.

**WEIGHT**
As heavy as 13 Endeavor Space Shuttles.

**WIDTH**
As wide as the Triforium in downtown LA.

**MASS**
142,500 CUBIC YARDS OF SOIL EXCAVATED
The dirt from the tunnel would be enough to fill 263,889 bathtubs.

**LENGTH**
As long as 10 school buses.

1,000 TONS OR 2 MILLION LBS

21 1/2 FEET IN DIAMETER

400 FEET LONG
How many people work on the machine? At any one time there will be about 6 people working in the TBM. It will house a crew headed by the TBM operator working in the machine’s operating cabin.

Who built Angeli? Herrenknecht (workers below in green overalls) in Schwanau, Germany.

When will Angeli start work? Angeli starts work in 2017, after she has been assembled and tested. It will take three months to put Angeli together.

SPEED 4 INCHES PER MINUTE
As fast as a snail... or should we say slow?

HEIGHT 21 1/2 FEET TALL
As tall as 4 construction workers – standing on each other’s shoulders.

SIZE 21 1/2 FEET IN DIAMETER, SEATTLE’S BERTHA IS A GIANT 57 FEET
Big, but not as big as Bertha.
Blue continues along current Gold Line route to Pasadena.

Regional Connector Transit Project Map

Metro’s Regional Connector Transit Project will provide a one-seat ride for travel across LA County. From the Metro Gold Line, passengers will be able to travel from Azusa to Long Beach and from East Los Angeles to Santa Monica without transferring lines.
Contact Us

Please use the following contact tools to access more project information, ask questions or provide comments.

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