Brightline First in North America to Construct Rail Underpass Under Highway System Using Innovative Box-Jacking Method

Concrete railway tunnels jacked under live traffic
eliminating need for extended road closure of SR 528

ORLANDO, Fla. (March 8, 2021) – Brightline Trains will make construction history when it builds a rail underpass under SR 528 in Brevard County, becoming the first in North America to use the innovative box-jacking method under a highway system and the first to do so under live traffic.

The SR 528 tunnel, located just west of US-1, will be constructed over a two-week span using box-jacking. The method uses hydraulic jacks to move precast concrete boxes into place, creating a tunnel under the roadway. An anti-drag system will be used when installing the boxes to allow for traffic to continue to travel overtop the work.

The SR 528 box-jacking project begins on Sunday, March 14 and will last through Tuesday, March 30. During this time, the highway will be reduced to one lane in each direction and some entrance and exit ramps will be closed to reduce congestion on the highway. Full detours of SR 528 will be limited to overnight hours at the start and finish of the project.

“In order to build an underpass under SR 528, a busy highway which is a gateway to Florida beaches, we knew we had to come up with a way to minimize the impact on this roadway and the travelling public,” said Michael Cegelis, Executive Vice President, Development and Construction, Brightline. “We strive to use the newest technologies to build high-speed rail in America and our general contractor Granite found, investigated, and proposed this box-jacking concept. Box-jacking will enable us to accomplish in 15 days what would otherwise take up to a year using traditional construction methods.”

Granite, who built the concrete box segments, will jack them into place with support from specialty subcontractor Petrucco. The Italy-based Petrucco has successfully completed thousands of box-jacking operations worldwide.

The box-jacking system will use hydraulic jacks to push three precast concrete boxes, each weighing between 3,300 and 4,600 tons under SR 528. The installation will progress at approximately three feet per hour and will take between 40 and 50 workers working 12-hour shifts to keep the operation running 24/7. The underpass, once constructed, will measure 31-feet high by 43-feet wide, will be the length of a football field and will accommodate two trains side-by-side. The underpass will allow Brightline to travel between South Florida and Central Florida and pass under SR 528, eliminating the need for a railroad crossing.

The Petrucco box-jacking method, while commonly used in Europe and around the globe for rail construction, has seen limited use in North America. It was first used in the United States on the Long Island Railroad expansion project in New York City. The SR 528 project will mark the fifth use of this method in North America and the second on the Brightline high-speed rail project to Orlando. In September 2020, Brightline became the first to use box-jacking outside of the northeast when it built an underpass under Goldenrod Rd. in just nine days. Traditional underpass construction would have shut down the roadway for nearly a year.
The box-jacking work is part of Brightline’s Orlando extension project which covers 170-miles from West Palm Beach to Orlando International Airport and will connect Miami to Orlando via high-speed rail. Construction of the $2.7B project is expected to be completed in late 2022. Railroad construction information can also be found online at https://www.gobrightline.com/railroad-construction.

Brightline construction videos and photos available for download at the following links:
- B-Roll / Selects: Brightline Orlando Extension Project
- Time Lapse Video: Box-Jacking project at Goldenrod Rd., September 2020
- Drone Footage: Brightline Construction Video

**Dimensions / weight of boxes:**
Box 1: 137 ft. x 31 ft., 4,400 tons
Box 2: 110 ft. x 31 ft., 4,600 tons
Box 3: 101 ft. x 31 ft., 3,300 tons

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**SR 528 CLOSURES and DETOURS**

**LANE CLOSURES**

**Eastbound and westbound SR 528 (from Industry Rd. to US-1)**
Full road closure with detour:
- 10 p.m., Sunday, March 14 to 5 a.m., Monday, March 15
- 10 p.m., Monday, March 29 to 5 a.m., Tuesday, March 30

**Detour Information:**
- Eastbound SR 528 traffic will be directed to exit at Clearlake Rd. (Exit 45), travel south on Industry Rd. to SR 524, travel east on SR 524/Clearlake Rd. and follow south to SR 520, travel east on SR 520 to US-1 and travel north on US-1 to access eastbound SR 528.
- Westbound SR 528 traffic will be directed to exit at US-1 (Exit 46), travel south on US-1 to SR 520, travel west on SR 520 to Clearlake Rd., travel north on Clearlake Rd. to Industry Rd. and travel north on Industry Rd. to access westbound SR 528.

**Eastbound and westbound SR 528 (from Industry Rd. to US-1)**
Single lane closure in each direction, 5 a.m., Monday, March 15 through 10 p.m., Monday, March 29.
- Traffic will be shifted to west side of SR 528 and will be reduced to one lane in each direction. As work progresses, traffic will be shifted from the westbound to the eastbound side of SR-528 remaining in one lane in each direction.

**RAMP CLOSURES:**

**Northbound Industry Rd. entrance ramp to eastbound SR 528**
Full ramp closure, 10 p.m., Sunday, March 14 to 5 a.m., Tuesday, March 30.

**Detour Information:**
- Northbound Industry Rd. traffic wishing to travel east on SR 528 will be directed to travel south on Industry Rd. to SR 524, travel east on SR 524 to Clearlake Rd., travel south on Clearlake Rd. to SR 520, travel east on SR 520 to US-1 and travel north on US-1 to access eastbound SR 528.
**Northbound US-1 entrance ramp to westbound SR 528**
Full ramp closure, 10 p.m., Sunday, March 14 to 5 a.m., Tuesday, March 30.

**Detour Information:**
- Northbound US-1 traffic wishing to travel west on SR 528 will be directed to travel south on US-1 to SR 520, travel west on SR 520 to Clearlake Rd., travel north on Clearlake Rd. to Industry Rd. and travel north on Industry Rd. to access westbound SR 528.

**Eastbound SR 528 exit ramp to northbound US-1 (Exit 46)**
Full ramp closure, 10 p.m., Sunday, March 14 to 5 a.m., Tuesday, March 30.

**Detour Information:**
- Eastbound SR 528 traffic wishing to travel north on US-1 will be directed to exit early at Industry Rd./Clearlake Rd. (Exit 45), travel south on Industry Rd. to SR 524, travel east on SR 524 to Clearlake Rd., travel south on Clearlake Rd. to SR 520, travel east on SR 520 to US-1 and travel north on US-1 to access eastbound SR 528.

### SR-528 Eastbound and Westbound Detour

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**About Brightline**
Brightline is the first privately funded passenger rail system in America in over a century and was recognized by Fast Company as one of the Most Innovative Companies in travel. Brightline is designed to reinvent travel and take cars off the road by connecting city pairs and congested corridors that are too close to fly and too long to drive. Providing fast, efficient, hospitality-driven transportation featuring the latest in customer-friendly amenities, Brightline currently operates in Florida between Miami, Fort Lauderdale and West Palm Beach, with plans to develop new stations in Boca Raton, Aventura and Port Miami. Construction to Orlando is underway and will be complete in late 2022. Brightline West, which will connect Las Vegas and Southern California, is shovel ready and expects to launch service in 2024.

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