

Bridge No. 07093 supports Interstate 84 over an unnamed marsh tributary to Bush Meadow Brook in the town of Union. The structure is located at Exit 73, approximately 0.24 miles northeast of the Barrows Road intersection with Buckley Highway (Route 190) (see Location Map).

The existing bridge, constructed in 1985, consists of three 72-inch wide by 42-inch-tall asphalt coated corrugated metal pipe (ACCOMP) arch culverts with flared metal culvert ends, overlain by 2.5 feet of fill. Each barrel is separated by 7 feet with 3 feet between the end sections. The existing structures have an approximate length of 216 feet and an overall length of 230 feet when including the end sections. The existing lane configuration of Interstate 84 (I-84) over the bridge is composed of a separated highway with three 12-foot travel lanes and a single ramp lane in each direction, both westbound and eastbound. Three-cable guide rail is present along both sides of the roadway, a double-sided metal beam rail in the vegetated median and a chain link fence along the west side of westbound I-84. The Average Daily Traffic (ADT) over the bridge is approximately 48,200 vehicles per day (2021 CTDOT Traffic Log).

Bridge No. 07093 is in poor condition primarily due to the deteriorated condition of the corrugated steel (Rating = 4). The existing culverts exhibit loss of coating inside the pipes with light to laminated rust throughout and some section loss. Several joints were observed to be misaligned up to two inches with fill exfiltration, isolated rust holes through holes and bent crowns. The bent crown locations appear to occur near where the guiderail intersects the culvert pipes along the I-84 EB right shoulder. The flared metal culvert ends of the culverts exhibit heavy rust with large perforations. The area surrounding the pipes is swamp and wetlands, the upstream mitered ends are undermined, full length and width with water piping beginning beneath the structures.

There are no overhead utilities or illumination in the vicinity. Underground Telecommunications and electric ducts exist in the west grass shoulder along I-84 WB and cross over the culvert. Additionally, cable ducts exist in the wetlands approximately 30-feet west of the inlet.

The project site lies within the Bigelow Brook drainage basin (3203), which is part of the Natchaug Regional Basin and the Thames Major Basin and is not located within an aquifer protection area. According to the FEMA Map Service Center, there has not been a detailed flood study performed for the subject crossing. According to the effective Flood Insurance Rate Map (FIRM) for the Town of Union (Community Number 090190), the upstream (western) side of the watercourse is located within Zone A (approximate 100-year floodplain), and the downstream (eastern) side is within Zone C (no floodplain). Review of CT DEEP's Natural Diversity Data Base (NDDB) for Union indicates that the project site is located within an area identified as a known habitat for state and federally listed species and significant natural communities.

The purpose and need of this project is to address the poor condition of the bridge. The structure will be replaced with a 20'-0" span x 7'-0" rise precast concrete box culvert at approximately 216' in length. The proposed box culvert will generally match the existing crown elevations, and the bottom of the box will be filled with channel bottom material burying a minimum of 2 feet of pipe in accordance with the USACE Stream Crossing BMPs. The existing flared metal inlet and outlet will be replaced entirely with new cast-in-place concrete headwalls and wingwalls. Water handling will consist of cofferdams and low flow pumping. The existing culvert barrel used for water handling will be abandoned in place and backfilled with flowable fill.

The proposed work will be completed in three similar stages of construction. During Stage 1, the I-84 EB Exit 73 on-ramp will be detoured using Buckley Highway (CT-190), Fish Point Rd (CT-89), and the Exit 72 on-ramp in a 2-mile detour, with I-84 EB being reduced to two lanes of travel and shifted to the median side of the existing roadway. During Stage 2, the I-84 EB Exit 73 on-ramp will continue to be detoured during this stage and I-84 WB Exit 73 off-ramp will now be detoured as well. The off-ramp detour will use I-84 Exit 72, Fish Point Rd (CT-89) and Buckley Highway (CT-190) in a 2.8-mile detour. I-84 WB will be reduced to two lanes of travel that will be shifted to the ramp side of the existing roadway. During Stage 3, the I-84 WB Exit 73 off-ramp will continue to be detoured during this stage and the I-84 WB will be reduced to two lanes of travel and shifted to the median side of the existing roadway.

Construction is anticipated to begin in Spring 2029.