

# PROJECT DESCRIPTION

Project No. 0070-0119  
Replacement of Bridge No. 07119 in Lebanon  
Route 616 over Goshen Brook

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Bridge 07119 was built in 1950 and has not been reconstructed to date. It carries Route 616 over Goshen Brook in Lebanon. The bridge carries one lane in each direction, and the 2021 estimated average daily traffic is 1,500 vehicles, with 1% trucks.

The existing bridge does not have a concrete deck; it is a bituminous overlay over process fill. The culvert is a two-barrel culvert with barrel one being a circular, corrugated steel pipe and barrel two being a corrugated steel arch pipe. The structure has a sufficiency rating of 72.7 and has not been load rated, per the 2024 Bridge Inspection Report.

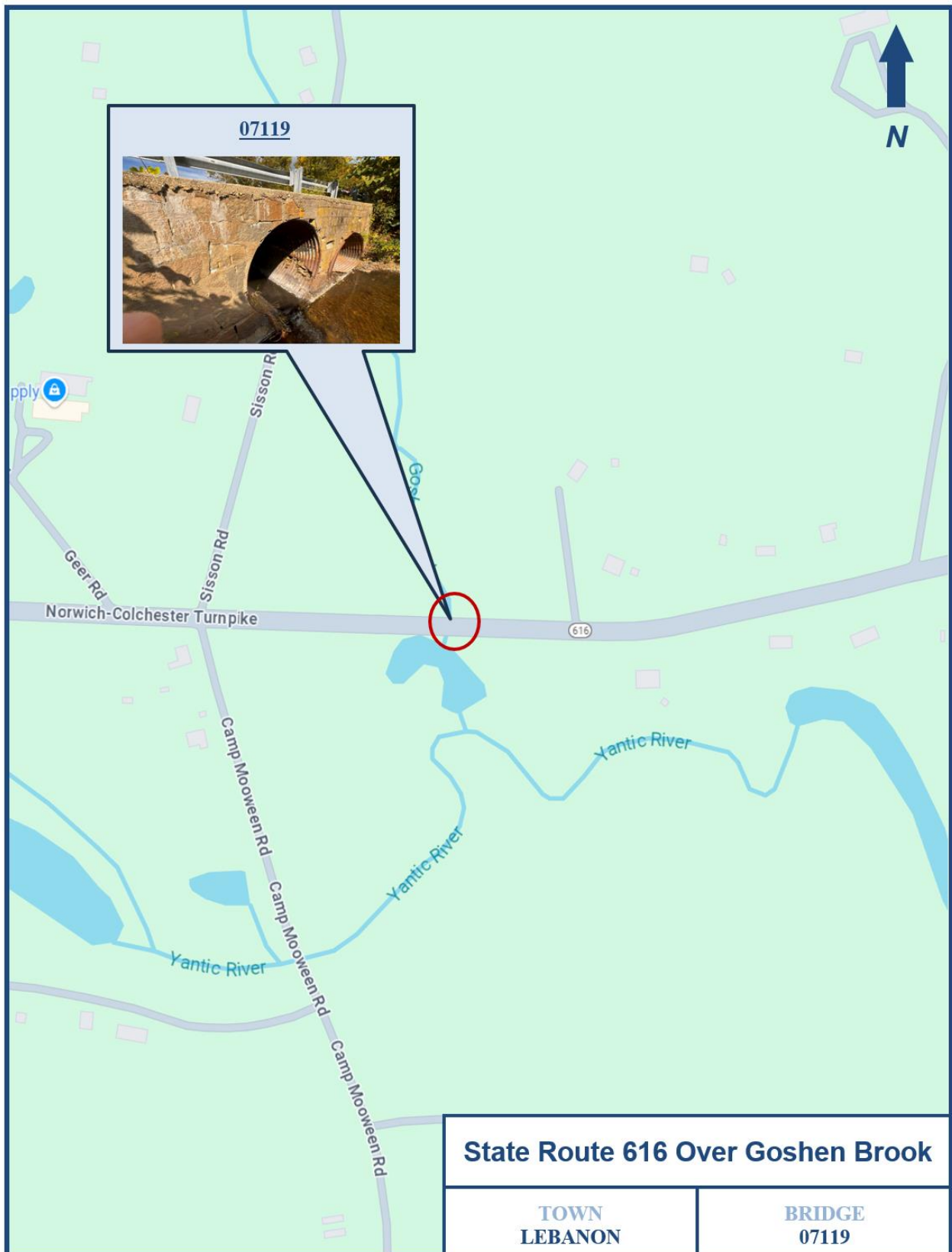
On the topside, there are overhead electrical and communication lines that cross over the south side of the structure. There are currently no sidewalks along route 616 or traffic signals at the intersection of either approach. The road exhibits undermining particularly at the southeast shoulder. There have previously been repairs done for asphalt crack sealing and rip rap installation for erosion prevention.

The culverts and retaining walls are rated 4 – poor. It is evident from surrounding conditions that the roadway is overtopped during significant enough storm events, likely due to backflow from the Yantic River, as there is not enough debris in the barrels to block the flow. The corrugated steel barrels show moderate corrosion beginning from the bottom and extending up to 2' high along their length. There is common, localized corrosion resulting in complete section loss of the pipe in those areas, some up to 3.7 feet long by 1.4 feet wide. The joint of barrel 2 is offset 5" vertically at station 0+18. The interior epoxy coating is nearly 100% deteriorated with isolated remnants only. The headwalls exhibit significant mortar loss, up to 25%, with some areas missing blocks entirely (over 3 sf of blocks in some areas). The upstream headwall exhibits several voids around the opening of barrel 1, up to 1.7 feet of penetration into the wall. The upstream headwall of barrel 2 also had severe gaps, up to 6 feet of penetration into the roadway base. On the downstream side there is much less penetration with only about an inch around barrel 2.

According to FEMA Flood map panel 09011C0178G (eff. 7/8/2011), the bridge is located directly north of a flood zone designated AE for high risk. There is a 1% annual risk of flood in the zone downstream of, and this area encompasses approximately 15 acres of mixed residential property in the direct vicinity of the bridge.

The purpose of this project is to address the above noted deficiencies and provide a structure that meets both modern load rating requirements and design standards. A full replacement of the culvert with a cast in place concrete slab supported on integral abutments, potential local drainage improvements and approach modifications is likely to meet these goals. The existing opening at the structure will be increased in size and will be a 25' clear span over Goshen Brook. Along with the new bridge structure, there will be full depth roadway reconstruction, roadway embankment construction, channel embankment regrading, and safety improvements for both cyclists and motorists. There are existing overhead utilities which will be moved prior to construction to allow for crane placement and movements associated with installation of steel piles for the bridge foundation. There will be right of way impacts at the south side of the structure associated with removal of the existing culvert & headwall, embankment grading, water handling devices installation and removal, & channel regrading. This project will be constructed using stage construction in two separate stages due to the high average daily traffic and inadequate detour routes available. During stage construction the traffic will cross Goshen Brook in an alternating one-way configuration with stop sign controlled stops at each end of the work zone. There will be advanced warning signs set up according to the latest Manual for Uniform Traffic Control Devices (MUTCD) standards with illumination set up for improved visibility.

## PROJECT LOCATION





## AERIAL PHOTOGRAPH







Headwall (down-stream)



Headwall (up-stream)





Downstream Channel



Upstream Channel





Typical view of bridge from approach (west shown)



Typical Interior View of Barrel (Barrel 1 Shown)





Typical View of Section Loss in Barrel (Barrel 1 Shown)



Typical View of Undermining at Shoulder (South East Corner Shown)