

**Connecticut Department of Transportation
Highway Management Unit
Scoping Report
Proposed Project 115-005 (PP_115_005)
Replacement of Retaining Wall Supporting Route 44
Town of Putnam**

Project Location:

This project is located on Pomfret Street (US Route 44) in the Town of Putnam, at the site of the Cargill Falls Mill. The project limits extends approximately from MPs 99.4 to 99.7, from north of the intersection of Route 44 and Sabin Street to the intersection of Route 44 and Church Street.

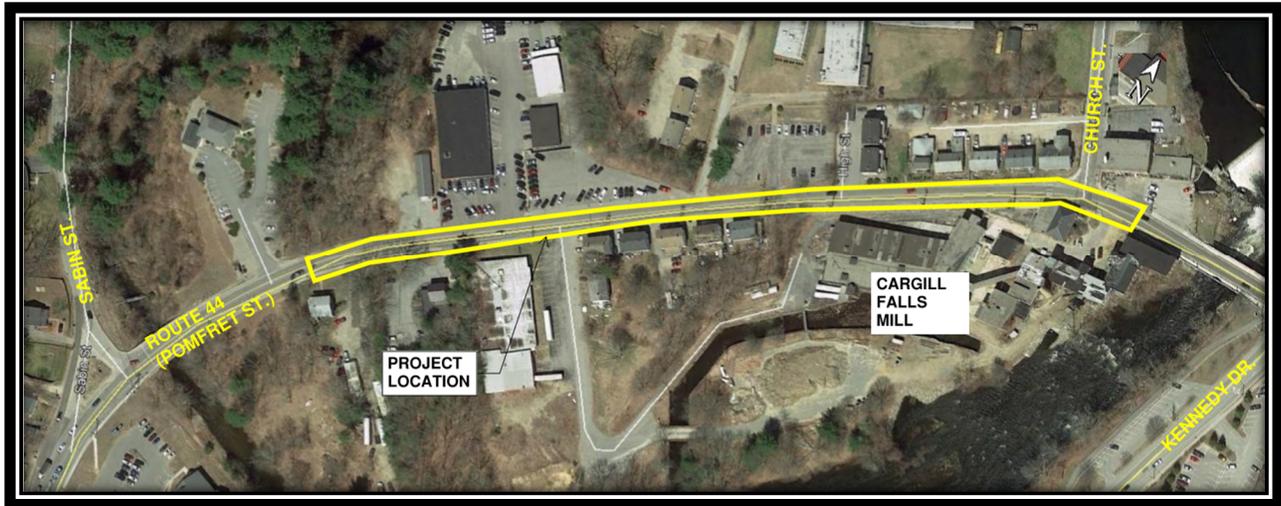


Figure 1: Project Location

Purpose and Need:

The purpose of this project is insure the stability and safety of Route 44. It is needed because the existing rubble stone retaining wall that supports Route 44 has shown signs of failure through visual indicators i.e. bulges, settlement, and loss of material. Ultimate failure of this wall could threaten the safety and welfare of the traveling public and the historic Mill complex adjacent to it.

Background:

Cargill Falls Mill, also known as Wilkinson Mill, was founded in 1806 and is one of the state’s oldest mill complexes. Located on the Quinebaug River, this site became Windham County’s first cotton mill. In 2014 it was listed on the National Register of Historic Places. Structures dating back to 1806 represent 178 plus years of mill architecture.

The history of this wall itself is uncertain. Records from 1925 show this wall; as do the as-built plans from the 1935 Reconstruction of Pomfret Street (Route 44), but the Mill’s application to the NRHP does not specifically mention it, nor is it featured in any of the associated application photos. It appears the wall was repointed/refaced with mortar at one time, but the mortar only remains at both ends of the wall. The center portion of the wall, where deficiencies have been noted, has no remaining mortar or was never grouted. While the Mill’s approval to the National Register of Historic Places does not specifically mention the wall, consideration must still be given to the potential contributing significance of its presence and appearance when considering replacement alternatives.

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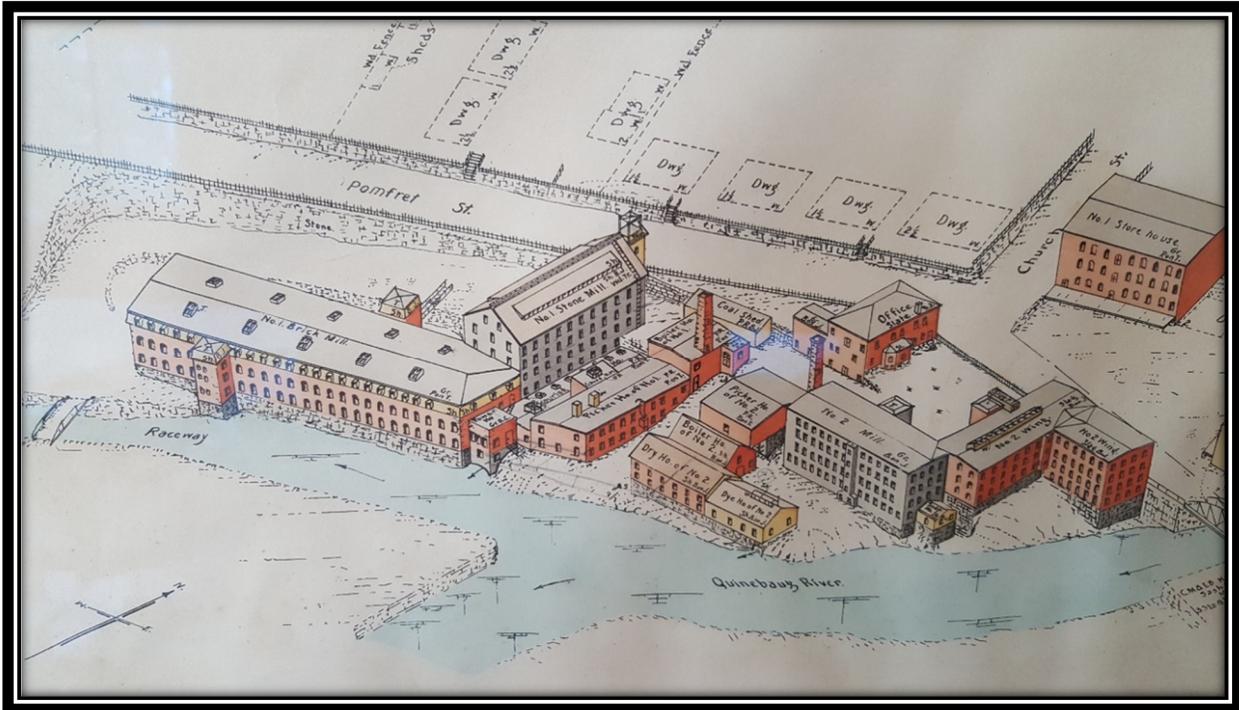


Figure 2: June 1925 Sketch of Cargill Falls Mill and Retaining Wall

Renovation and restoration to the Mill began in 2013 with Haynes Construction actively working as the General Contractor on the project. Multiple State loans and grants were awarded to the reconstruction efforts, including funds from Governor M. Jodi Rell's Office of Brownfield Remediation and Development, Governor Malloy's Competitive Housing Assistance for Multifamily Properties (CHAMP) initiative through the Department of Housing (DOH) and CT Housing Finance Authority (CHFA), and the Connecticut Green Bank. These funds sought to redevelop the site into a diverse mixed-use complex with commercial space on the ground floors and residential units on the upper floors. Per the October 22, 2014 Press Release from Governor Malloy, it was also intended that complex "...enjoy significantly reduced electricity costs from the one megawatt hydroelectric dam and cogeneration facility also being developed at the property."

As part of the redevelopment efforts and because of its size, the Mill complex was required to follow the Office of State Traffic Administration's (OSTA's) Major Traffic Generator (MTG) review process. On December 22, 2015, Traffic Investigation Report No. 115-1307-01 was approved by the OSTA for a mixed-use development at Cargill Falls Mill complex including an in-only site driveway within the northeastern quadrant and a main site driveway within the southwest quadrant. One stipulation of this approval stated that prior to issuance of an encroachment permit, an easement be granted to the State, at no cost, for the maintenance of the existing retaining wall, measured 15-feet south of the wall along Route 44 (Rights of Way File NO. 115-000-071). At the time of this report, a certificate has not been issued for the development, indicating that not all requirements of the TIR have been met.

During the MTG review, a commitment was made to the Property Manager via electronic mail correspondence that a future project to rehabilitate/replace the retaining wall would provide consideration to the wall's aesthetics given the historical character of the Mill and surrounding area. (Email from Matt Geanacolpoulos [CT DOT ROW] to Tim Sheldon [Former Cargill Falls Mill Property Manager] dated June 27, 2016). Subsequent conversations with Mr. Sheldon included statements

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regarding the State Historic Office of Preservation and National Park Service’s desire to “have an active oversight role in reviewing the construction plans and fascia treatment of the retaining wall.” Coordination with the Department’s Office of Environmental Planning regarding the topic is noted in the Coordination and Recommendations section below.

Concurrent with the MTG review process, multiple site visits were made to visually observe the existing wall conditions. Two main areas of concern were noted, including a bulging area where several small stones have been dislodged and sediment is continually lost, and a location where a larger stone has been displaced outward approximately 6”-8” (Figure 3). Settlement of the topside sidewalk has taken place above the bulged portion of the wall as well (Figure 5). The wall also has a noticeable lean towards the Mill where a steel structure attached to a Mill building sits atop the wall (Figures 6+7).



Figure 3: Existing Bulge near Center of Wall

In September of 2016, the Department held an internal meeting to discuss details for a future project and as a result, in 2017 the Department’s Soil and Foundations Unit performed subsurface exploration and collected boring samples at the wall location. Given the sensitivity of the area and the potential disruption to traffic on Route 44 and reconstruction efforts at the Mill, boring samples were taken to confirm whether it might be possible to stabilize the wall by means of a minimally invasive method such as injection grouting. The boring data that was collected determined that this method would not be ideal due to the in-situ soil type.

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Subsequent to these findings, a survey monitoring program was initiated with the District 2 Surveys Unit to continue monitoring the wall and track any movement or settlement that may be indicative of future failure. In November of 2018 the monitoring program was created and the Department's District 2 Surveys personnel performed an initial survey focusing on the roadway and sidewalk areas atop the wall. A cluster of approximately 30 monitoring points were established in these areas and continue to be monitored for vertical and horizontal displacement.

In January 2019, an existing fire hydrant (or its associated piping) on Route 44 ruptured and led to the washout of an estimated eight cubic yards of material behind the wall. The hydrant was later removed and the piping capped. The volume of lost material around the hydrant was backfilled with low strength controlled material and the sidewalk braced with timber. In February of 2019, UConn performed a 3D scan of the wall and provided the gathered information to the Department (Figure 6).



Figure 4: Location of Removed Fire Hydrant



Figure 5: Settlement and Deterioration of Sidewalk atop Wall

Existing Roadway Conditions:

Route 44 (Pomfret Road) is classified as an Urban Other Principal Arterial roadway with an 85th percentile speed of approximately 37 mph and a posted speed limit of 30 mph within the project limits. The roadway runs southwest to northeast with an average daily traffic of approximately 9,800 vehicles per day per 2016 data. It is designated part of the National Highway System (NHS). There were three crashes but no noticeable crash patterns recorded within the project limits between January 1, 2016 and December 31, 2018.

Route 44 is comprised of one approximately 11-to-12-foot lane in each direction with approximately 3.5-foot wide shoulders in the eastbound direction and approximately 2.5-foot wide shoulders in the westbound direction. A 4.5-to-5-foot wide sidewalk exists on the east side of the roadway but has severely settled and deteriorated due to movement behind the retaining wall, rendering it nearly impassable. Abutting the sidewalk and atop the retaining wall there is a two cable railing system with metal posts that does not appear to be crashworthy. A chain-link fence also exists atop the wall behind the two cable railing system. Utility poles are located within the sidewalk spaced out approximately 150 feet apart and further impede pedestrian movements along the sidewalk. In the westbound direction there exists a smaller rubble stone cut wall that is approximately 4.5 feet off the edge of road. This wall is retaining earth above Route 44 and supports multiple residential housing structures. No evaluation or analysis of this wall was completed as part of this scoping effort, nor is any work for the wall included in the estimate.

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Existing Retaining Wall Conditions:

The retaining wall is a rubble stone fill wall of unknown age. It ranges from 15-40 feet in height and is approximately 480 feet in length in its entirety. The wall length supporting Route 44 is approximately 300 feet with approximately 225 feet of it showing significant signs of deterioration or concern. As noted in the “Background” section of this report, there are two main sections of this wall that appear to be failing: The bulging portion (Figure 3) at the center of the wall, and the leaning portion towards the northeast end of the wall (Figures 6+7). Between these two sections exist a dry stack rubble wall with no mortar. There are signs of small stones and sediment washout within this limit. At its closest point, the retaining wall is only approximately 12-feet away from a Mill building. This ‘lane’ is used for one-way internal circulation around the buildings.

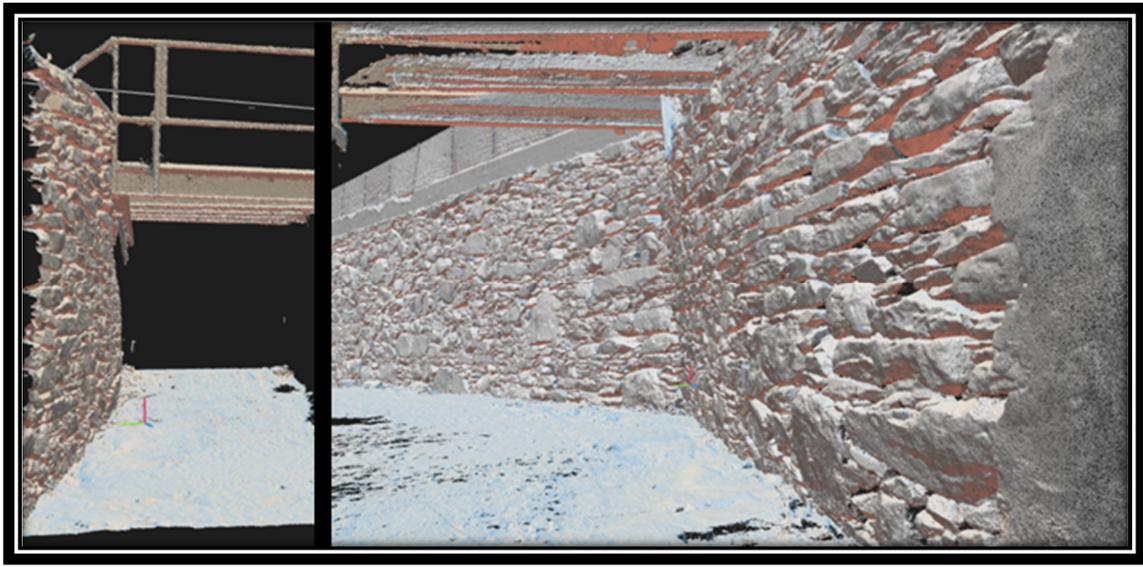


Figure 6: 3D Point Cloud Scan at the Slanted Region of Wall



Figure 7: Slanted Region of Wall

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Proposed Improvements (see attached sketch):

It is recommended that approximately 270 feet of the existing retaining wall supporting Route 44 be replaced. As the vertical face area of the proposed retaining wall replacement is greater than 5000 sq. ft., a proprietary prefabricated retaining wall will likely be the most economical. Installation of prefabricated wall is expected to have shorter construction duration, which would be an important factor to consider due to the close proximity of the residential units and commercial uses of the proposed Cargill Falls Mill complex.

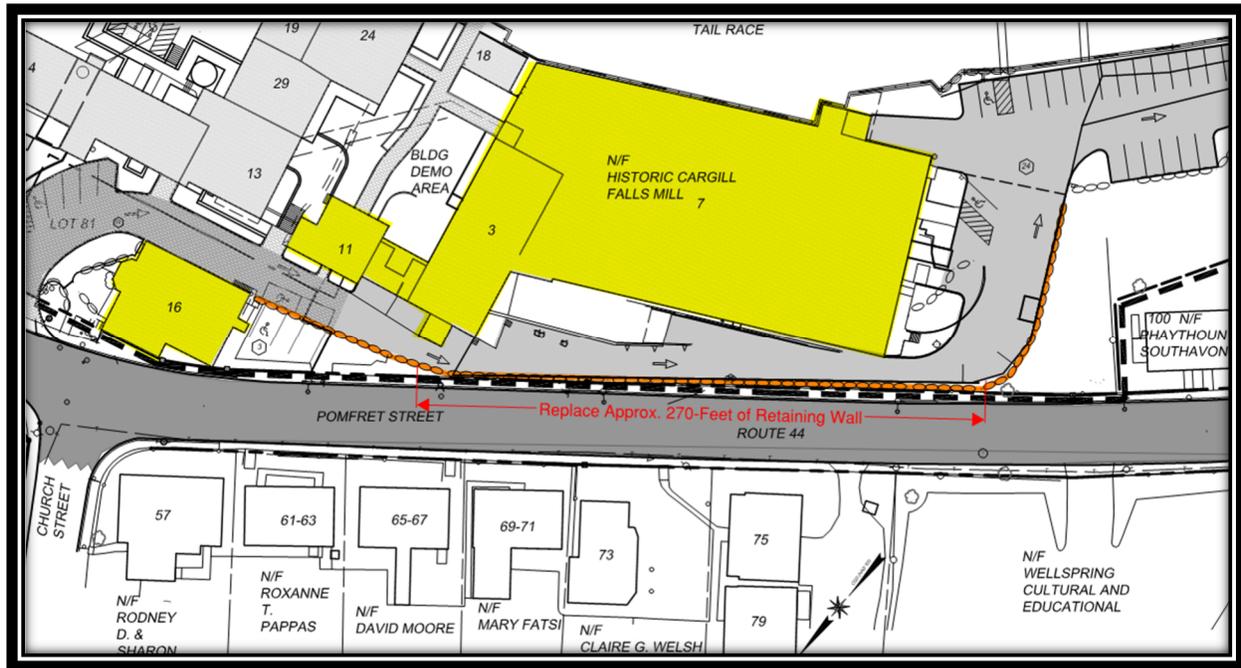


Figure 8: Plan from Cargill Mills Falls MTG Showing Wall and Building Proximity

The proposed replacement will also consist of full depth reconstruction of approximately 500 feet of Route 44 adjacent to the retaining wall and reconstruction of approximately 1400 total feet of sidewalk as shown in the attached sketch. Proposed cross-section of Route 44 will match the existing cross-section with 11 foot travel lane and 4 foot shoulder in each direction and a 5 foot concrete sidewalk. It is recommended that the sidewalk reconstruction be extended beyond the roadway reconstruction limits as shown in the sketch due to the poor condition of adjoining sidewalk and the connectivity of this sidewalk network to Downtown Putnam.

It is recommended that the top of the retaining wall adjacent to the sidewalk have a solid concrete parapet with a protective fencing system. The ends of the concrete parapet will be terminated with RB-MASH guiderail and attachments per State standards. Additionally, the end segments of driveways intersecting the proposed sidewalk replacement will be reconstructed to match the proposed sidewalk grades.

Due to the high volume of traffic on Route 44, an alternating one-way traffic operation would likely create long queue and delays during the peak hours and was not considered an effective Maintenance and Protection of Traffic alternative under this scope. A detour route of approximately 3.5 miles is available via State and Town roads. The detour route could be employed for a shorter duration for construction of retaining wall and roadway only to minimize impacts to the traveling public. Construction of concrete parapets, sidewalks and other ancillary work called for in the project could be performed utilizing standard

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traffic control patterns after opening the road to vehicular traffic. Note that no coordination with the Division of Traffic Engineering was completed during the scoping phase.

Coordination and Recommendations

Rights-of-Way: The proposed retaining wall, roadway, and sidewalk are within the state right of way. An easement will be required for the construction and maintenance of the retaining wall. As mentioned in the “Background” section of this report, one of the stipulations of Traffic Investigation Report No. 115-1307-01 is that prior to issuance of an Encroachment Permit for the Cargill Falls Mill Redevelopment, an easement be granted to the State, at no cost, for the maintenance of the existing retaining wall, measured 15-feet south of the wall along Route 44 (Rights of Way File NO. 115-000-071). Rights to grade and construct driveway will be required from 7 properties. A conceptual ROW estimate was prepared as part of this scoping process. Costs for a temporary construction easement are included in the total project cost.

Utilities: There are 6 utility poles (with adjacent stub poles) within the existing sidewalk. It is likely that the poles will be in conflict with the construction of the retaining wall and it is recommended that they be permanently relocated outside of the wall and sidewalk limits to reduce conflicts and provide adequate sidewalk width. Options include relocation to the other side of the street or conversion to underground conduit. Neither option was coordinated with the Department’s Utilities Section, therefore final placement will need to be determined during the design phase and with utility company coordination. Additionally, there are underground gas main, telecommunication duct, water main and sanitary sewer pipes within the existing roadway limits which will need to be supported/considered during construction. Estimated costs for temporary support of underground facilities and relocation of overhead facilities are included.

Complete Streets: A Bicycle and Pedestrian Travel Needs Assessment Form for was completed and reviewed by the Office of Strategic Planning and Projects. They concluded that “...the accommodations included are reasonable and we do not have any comments regarding bicycle and pedestrian access. Please include this office in future milestone design reviews for this project.” The form and comments will be made available to the Design team for project documentation.

Soils and Foundations: The Office of Soils and Foundations has had an active role in the development of this concept. In addition to early investigations and field visits to examine the wall’s stability, they also initiated the obtainment of soil borings from the topside of Route 44 to evaluate potential rehabilitation options. The borings information was used to determine if less invasive methods might be used to stabilize the wall, such as injection grouting. The nine borings indicated that the materials behind the wall were not suitable for less invasive methods and that a replacement was likely best option for the continued safety and stability of Route 44. Their office, along with the District 2 Survey Unit and the UCONN 3D scanning team, has produced useful information that will be helpful with initial design discussions for the replacement retaining wall.

Environmental Coordination: An Early Resource Screening was requested of the Office of Environmental Planning. Regarding environmental permitting, the limits of the project do not encroach on the Quinebaug River and therefore the only coordination anticipated at this time is the standard documentation for the northern long-eared bat with US Fish and Wildlife Service.

Section 106: As part of the Early Resource Screening request, the historic nature of the Mill and the surrounding properties was specifically investigated. The Office of Environmental Planning’s National Register Specialist Lucas Karmazinas provided the following comments relative to the retaining wall:

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- While the mill complex's nomination to the National Register of Historic Places not specifically mention the wall, it "is clearly historically and contextually associated with the complex and surrounding mill village" as there is similar masonry that frames the rows of neighboring worker housing and other the mill infrastructure, such as the raceways and tailraces.

- Given the above, the wall "...should be considered potentially eligible for the (National Register) both as part of the nomination for the mill complex or a historic district including the mill and neighboring worker housing." And therefore removal of the wall may qualify as an Adverse Effect.

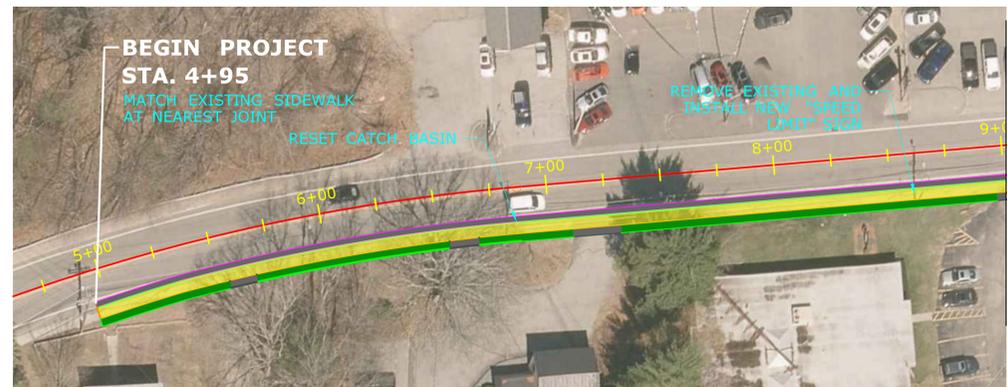
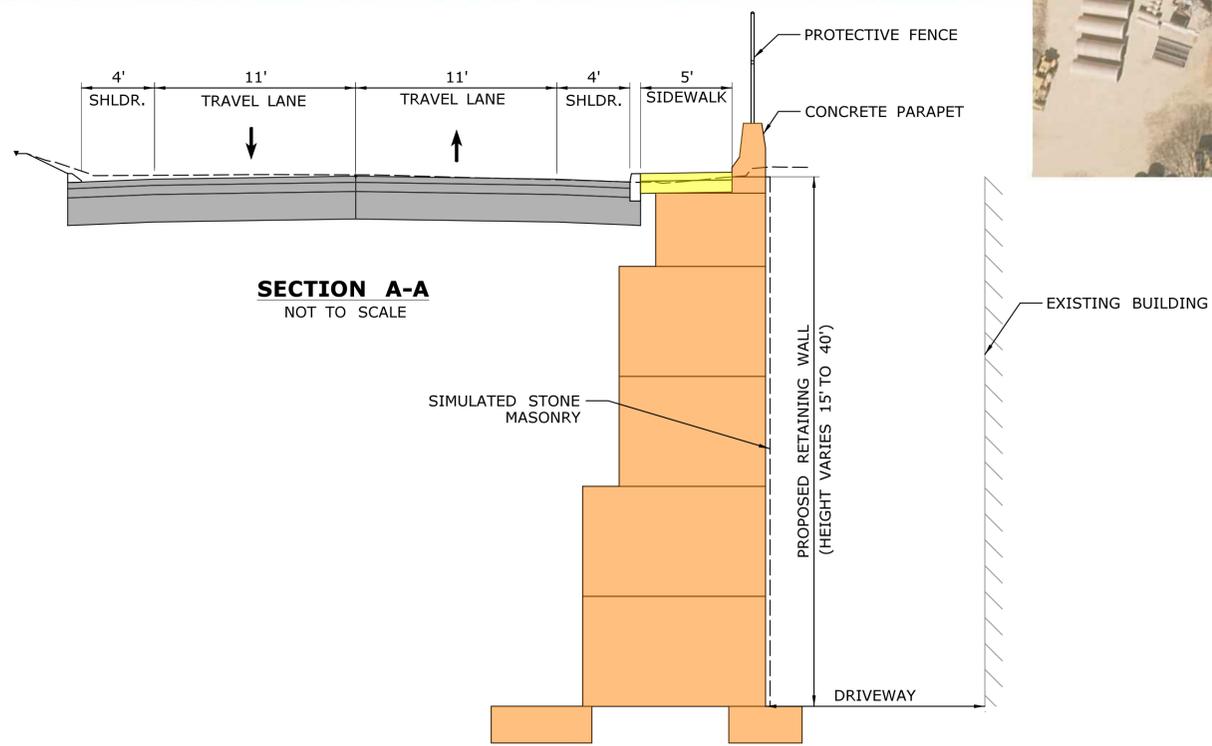
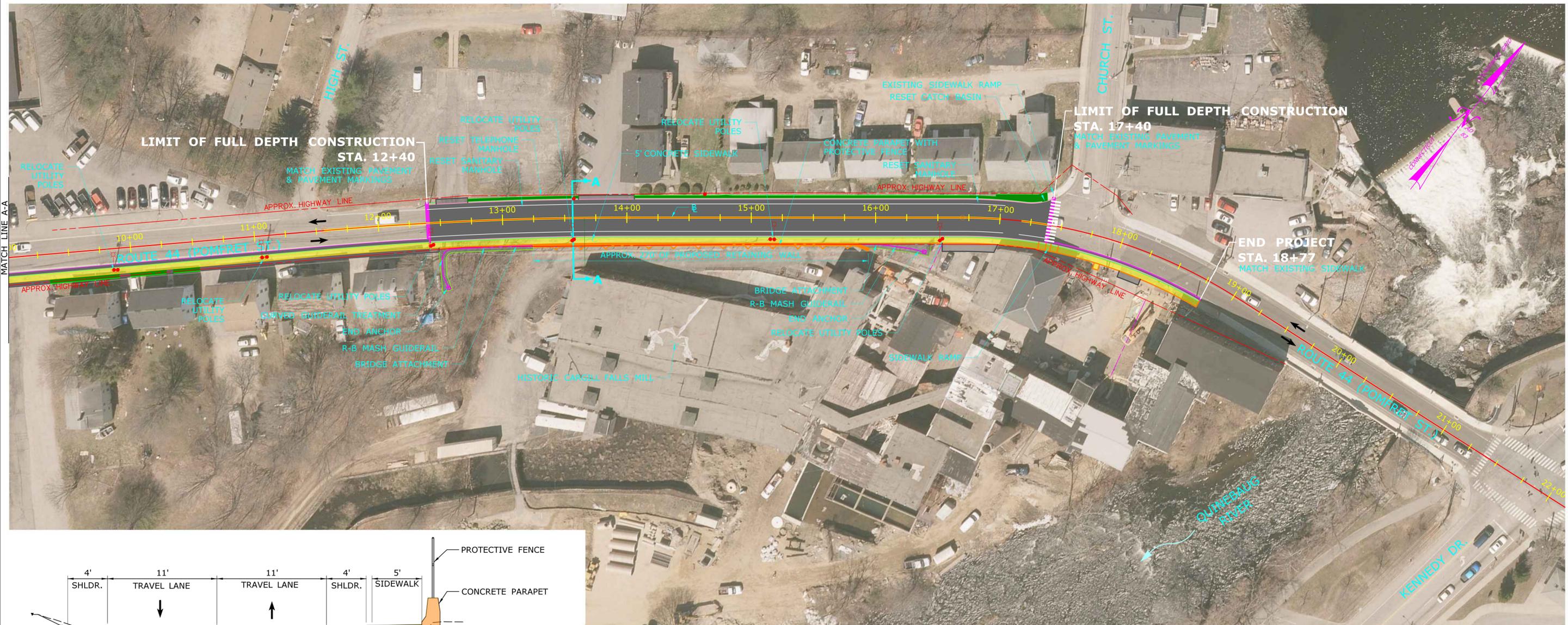
However, he also notes that because the wall is minimally visible from the public way, a concrete wall with a stone or simulated stone face is an acceptable starting point for project development provided it can be designed to be as "visually sympathetic to the other masonry as possible". He also noted that extensive coordination with the SHPO and the Mill owner will be necessary early in design to determine an acceptable alternative, and added that OEP's Cultural Resource staff will have considerable involvement during the life of the project to monitor and document the process.

Internal Circulation and Construction Activity: In addition to the fascia treatment coordination noted above, considerable coordination will also be necessary with the Mill complex's owner, Ms. Leanne Parker, to determine how best to mitigate the disruption to Mill tenants during construction. As noted in previous sections, the wall is, at its closest, only approximately 12-feet from one of the complex buildings. That 12-foot lane is part of the OSTA and Town approved one-way internal circulation driveway (shown in Figure 8). Per Mr. Sheldon:

"This driveway provides access to the project's 34 residential living units housed in Mills' 4, 5, 6, and 16. As such, it is the sole point of access to the handicapped parking required for these 34 residential units. The passenger and service elevator to these units is also accessed from this driveway, as are the project's marketing/rental office and commercial parking for Mill 16.

This same driveway also provides access to the only two drop-off zones and loading/service areas reserved for the remaining 48 residential units found in the complex. The movement of tenants and their furnishings, groceries and other household goods will be severely impacted if construction activities eliminate full use of this driveway..."

To that end, temporary traffic patterns, both on Route 44 and within the Mill complex, will be a critical component of the project's constructability and will require significant stakeholder input.



- LEGEND**
- PROPOSED PAVEMENT
 - PROPOSED SIDEWALK
 - TURF ESTABLISHMENT
 - PROPOSED RETAINING WALL

REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: \$DATES

DESIGNER/DRAFTER: SJ
 CHECKED BY: MLP
 SCALE IN FEET
 0 40 80
 SCALE 1"=40'

**STATE OF CONNECTICUT
 DEPARTMENT OF TRANSPORTATION**

Filename: \$FILES

SIGNATURE/BLOCK:
OFFICE OF ENGINEERING
 APPROVED BY:

PROJECT TITLE:
**REPLACEMENT OF
 RETAINING WALL
 SUPPORTING ROUTE 44**

TOWN: **PUTNAM**
 DRAWING TITLE:
CONCEPT PLAN

PROJECT NO.: **PP_115_005**
 DRAWING NO.: **PLN-01**
 SHEET NO.: