Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: Ashfield Project Title: Baptist Corner Road Stream Crossing Ecological Improvements Award Year (FY): 22 Grant Award: \$ 548,600 Match: \$ 178,800 Match Source: Municipal One or Two Year Project: Two Municipal Department Leading Project: Highway Project Website URL: N/A

Community Overview:

- Ashfield is located in northwestern Massachusetts approximately 31 miles east of Pittsfield. It has an approximate population of 1,700 residents.
- While there are no Environmental Justice (EJ) communities in Ashfield the rural nature some of the Town's infrastructure impacts public safety and emergency service access in the face of flooding from increased storm intensity precipitation and frequency. Replacing undersized crossings with adequately sized structures adds to the overall climate resiliency of the community and increases safety by eliminating potential deadend situations caused by culvert and road washouts.
- Ashfield was first settled in 1743 and was officially incorporated in 1765. The Town occupies roughly 40 square miles of land. It is comprised of mostly rural developed land and mountainous/wooded terrain. Ashfield lies in the eastern foothills of The Berkshires, with several high hills, including Ridge Hill, in the northern portion of town. The town is fed by several rivers and brooks, including the South River, the "western" Swift River (the "eastern" river flows out of the Quabbin Reservoir in central Massachusetts) and several prominent brooks, most of which feed into either the Deerfield River or the Connecticut River. Near the center of town, Ashfield Lake feeds into the South River, and is a recreational site. In the southwest portion of town, a small portion of the Daughters of the American Revolution State Forest. Ashfield is the birthplace of prominent director Cecil B. DeMille (whose parents were vacationing in the town at the time).

Project Description and Goals:

- The project is located along Baptist Corner Road over an unnamed tributary to Bear River within Ashfield, MA.
- The project addresses climate change related increased precipitation amount and frequency (flooding) since the newly installed culvert increased in span and rise when compared to existing conditions, flood resilience was increased. The new culvert is capable of handling a 100-year storm event without flooding the roadway.
- The project goals and tasks for this project were as follows:
 - Implement a climate resilient road crossing increasing community flood resilience and increasing aquatic organism and wildlife passage;
- The project met the goals set forth in our application in terms of:
 - Employing nature-based solutions an ecologically sound crossing increasing aquatic organism and wildlife passage was built;

- Improving equitable outcomes for and fostering strong partnerships with EJ and other Climate Vulnerable Populations - flood resilience for the population relying on Baptist Corner Road for commuter and emergency access was vastly increased;
- Providing regional benefits Baptist Corner Road is a major connector between Ashfield and Buckland/Conway;
- Implementing the public involvement and community engagement plan the Baptist Corner Road site is a Massachusetts Department of Fish and Game Division of Ecological Restoration (DER) Regional Training Site which is used as a case study for neighboring Highway and Public Works Departments of the benefits of implementing a crossing meeting the Massachusetts Stream Crossing Standards;
- Finishing the project on time.
- The project met these goals by:
 - Increasing sustainability and climate change resilience in the form of increasing the flood event capacity;
 - Creating streambanks within the structure and widening the structure to better support hydraulics and both aquatic / terrestrial wildlife movement;
 - Improving public safety;
 - Meeting schedule deadlines and milestones;

Results and Deliverables:

- The newly constructed culvert increased from a deteriorated 5-foot diameter corrugated metal pipe to a 19-foot span by 4-foot rise precast concrete box culvert. Hydraulic capacity of the culvert increased from handling a 25-year storm to a 100-year storm. Banks and natural streambed material were installed within the new culvert. Enhanced wildlife access to over 260 acres of habitat and ¼ mile of mountain stream was added by eliminating the undersized, perched crossing.
- Deliverables were as follows:
 - Solicitation and public bid process to determine low bidder and award;
 - MassDOT Approved Contractor Shop Drawings and Submittals;
 - Fully constructed culvert with associated wingwalls, bank stabilization, and guardrail system;
 - This study report and case study slide.

Lessons Learned:

- Several lessons learned were as follows:
 - Make sure regular communication with all stakeholders takes place (such as regular progress meeting with all parties involved with the project (municipality, funding agency, lead design engineer, selected contractor, etc.);
 - Allow adequate schedule and financial resources for the new MassDOT Chapter 85 two-part approval process;
 - Contractor changes to design which require MassDOT approval should be avoided to the maximum extent practicable;
- The best ways for other communities to learn from this project are:
 - As noted, the Baptist Corner Road site is a Massachusetts Department of Fish and Game Division of Ecological Restoration (DER) Regional Training Site which is used as a case study for neighboring Highway and Public Works Departments of

the benefits of implementing a crossing meeting the Massachusetts Stream Crossing Standards. Sharing of the documents produced through that process is the best way for other communities to learn from our project.

Partners and Other Support:

- Town of Ashfield Highway Department (Client)
- Municipal Vulnerability Preparedness Program (Funding Agency)
- Comprehensive Environmental Inc. (Lead Design Engineer)
- Kenefick Corp. (Lead Contractor)
- Massachusetts Department of Transportation (Technical Reviewing Agency)
- AI Engineers (Peer Review Structural Engineer)
- Concrete Systems Inc. (sub-contractor / precast manufacturer)
- Pretek Group (sub-contractor)
- Arrow Concrete Products (sub-contractor)
- SFC Engineering Partnership, Inc. (sub-contractor)

Project Photos:

• The following photos were taken by Comprehensive Environmental Inc. and are attached:



Finished Culvert Looking Upstream from Downstream Side of Crossing



Internal Natural Stream Substrate and Banks



Upstream of New Crossing



Baptist Corner Road Looking North