

2022

LYCOMING COUNTY BRIDGE BUNDLING PROGRAM BUNDLE 3

GROUNDBREAKING



Booklet Presented By:

Bassett Engineering Inc.

Bridge Bundling Program Overview

The Federal Highway Administration has required since 1971 that all bridges spanning over 20 feet receive full NBIS inspections at least once every 4 years. Lycoming County suspected that small municipally-owned bridges might be seriously neglected because they had never been formally inspected. PennDOT first surveyed these bridges, and then Lycoming County began inspecting all between 8 to 20-foot spans in 2010; this was the first County-wide Small Bridge Inspection Program in the Commonwealth. Bassett Engineering conducted full NBIS inspections on 104 bridges every one to four years, depending on the conditions from 2010-2016. Over 40% of the bridges were structurally deficient. Some municipalities repaired and replaced bridges, but many were unaffordable. Lycoming County took the initiative to begin this greatly needed infrastructure project. The Commissioners took out a \$7.2 million Pennsylvania Infrastructure Bank (PIB) Loan from PennDOT, and they enacted the \$5/vehicle annual surcharge on vehicle registration fees to pay back the loan. Bassett Engineering had experience bundling multiple bridges into single construction projects, realizing significant costs and time savings, and the PennDOT Rapid Bridge Replacement (RBR) Program also provided an example. The County worked with its consulting engineers to select the 17 bridges, both over and under 20 foot-span, each from a different municipality, to include in this first Bridge Bundling Program.

The bridge bundling program is upgrading local bridges at significantly lower costs than if each bridge was repaired or replaced individually. Cost savings result from the considerable economy of scale gained by building multiple bridges of the same type under one contract. Bassett conducted a feasibility study considering a wide variety of bridge types to determine the optimum structure for each location. This program also involved a steering committee of the seventeen municipalities, PennDOT, PA DEP, PA Fish & Boat, and the Lycoming County Conservation District.

The project is split into four bundles: each bundle consists of 3 to 5 bridges of a similar structure type. The Feasibility Study began in July 2020. Bundle 1 was designed in 2020 and early 2021 and constructed in 2021. Bundles 2 and 3 were designed in 2021 with construction to begin spring of 2022. Bundle 4 will be designed in 2022 and is expected to be constructed in 2023.

Bundle 3 Information

GRS-IBS

Bundle 3 of the Lycoming County Bridge Bundling Program consists of five (5) all-new Geosynthetic Reinforced Soils Integrated Bridge Systems (GRS-IBS). After conducting an extensive feasibility study, Bassett Engineering determined GRS-IBS to be the best structure type for these sites.

Bundle 3 consists entirely of geosynthetic reinforced soil foundations and abutments, combined with precast concrete beams and cast-in-place concrete decks. GRS abutments are suitable where stream velocities do not exceed 12 feet per second. These conditions are fairly common on tributaries in the floodplain of larger streams, mountain plateaus, and downstream wetlands, lakes, and ponds.

GRS-IBS bridges offer the greatest hydraulic opening at the lowest cost for spans between 30 – 60 feet where stream velocities are acceptable. They allow for rapid bridge replacement because GRS abutments combined with adjacent beams minimize concrete pours and associated cure times. Abutments are faced with large concrete blocks to protect against scour from floodwaters. GRS abutments can be used where the road alignment is at a skew with the stream.

GRS retains the natural streambed which allows Aquatic Organism Passage (AOP) and is critical for exceptional value and trout streams. It also allows moderate streambed movement.

Total construction cost for Bundle totals \$2,015,000.00. Ryland Construction Company, Inc is constructing the Bundle.



Montgomery Park Road, Montgomery Borough

The bridge is situated in Montgomery Park, where the Park Road crosses Adams Creek, roughly 500 feet from its mouth on the West Branch of the Susquehanna River. Adams Creek is a warm water fishery located in the level floodplain of the river. The low velocities allow the use of a GRS-IBS bridge, which offers the greatest hydraulic opening at the lowest cost for this span. Due to its location in the Park, serving two baseball fields and the boat launch, the bridge is heavily used at certain times of the year. A GRS bridge will slightly increase the hydraulic opening, and allow continued passage of the 100-year and 500-year storms.



Zinck Road, Mifflin Township

Zinck Road Bridge is situated right off Route 287, where Zinck Road crosses a small unnamed tributary to Larrys Creek in the general floodplain. The site is flat, but it lies at the toe of a hill. The tributary is an Exceptional Value stream. The low stream velocities enable the use of GRS, which is well-suited for the low-profile structure on a low-ADT road. GRS also offers the ability to orient with Zinck Road's skew to the unnamed tributary.

Winner Lane, Gamble Township

Winner Lane Bridge sits at the lower end of a marshy field over Murray Run, an Exceptional Value natural reproduction trout stream. The low stream velocities enable the use of GRS, which is well-suited for the low-profile structure on a low-ADT road. GRS also offers the ability to orient with Winner Lane's skew to Murray Run. The abutment was shaped to fit the superelevation of the road surface that suits the curve of the road at the bridge while meeting the bridge alignment.



Penn Drive, Wolf Township

Penn Drive bridge is located at the foot of the hills just east of Hughesville, which is at the border of hilly farmland and a historic floodplain. The stream has a designated use as a cold-water fishery. GRS provides an open bottom structure and will retain the natural streambed and allow aquatic organisms to move freely. GRS also offers the ability to orient with Penn Drive's skew to Gregg's Run. The abutment was shaped to fit the superelevation of the road surface that suits the curve of the road at the bridge while meeting the bridge alignment. Traffic safety will be improved by expanding traffic lanes and implementing 2-foot wide lane shoulders.

Logue Hill, Penn Township

Logue Hill bridge is located downstream of a glacial marsh in the shadow of North Mountain at the east end of the Country where Logue Hill Road crosses Marsh Run, which has low velocities coming out of the large wetland. Marsh Run is a cold-water fishery. The low stream velocities enable the use of GRS, which is well-suited for the medium-profile structure on a low-ADT road. The project eliminated the pre-existing jump in the road over the old structure and fixed the skew in the road.



Completed GRS-IBS Bridge



Photographed above: Logue Hill, Penn Township

Thank you to the following:



Bassett Engineering

