Wood Research and Development
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January 23, 2025

Scott Bomboy
Perkasie Borough
620 West Chestnut Street
P.O. Box 96
Perkasie, PA 18944

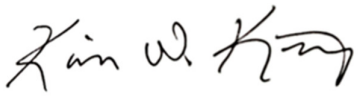
RE: Summary of damage caused to the Perkasie Covered Bridge by Hurricane Ida.

Dear Scott,

The purpose of this letter is to summarize the damage caused by and exacerbated by Hurricane Ida to the South Perkasie Covered Bridge in 2021. Attached as Appendix A to this letter is a summary table of the various components, a description of the required repairs and determinations and discussions of whether the damage was caused or exacerbated by the storm.

Should you require any further clarification of the information presented herein, please do not hesitate to contact me.

Kind regards,



Kim King, P.E.
Senior Engineer
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Appendix A - Summary of damage caused to the Perkasie Covered Bridge by Hurricane Ida

Bridge Component	Description of Repair	Caused by Hurricane	Exacerbated by Hurricane	Discussion
Roof Shakes	Remove at least one layer and replace.		✓	The roof system was weathered, but the hurricane increased damage, leading to more severe leaking in the bridge.
Siding	Reinstall loose and misaligned siding boards and replace missing siding boards.	✓		The siding was damaged and, in some cases, dislodged and destroyed by high winds and excessive movement of the bridge.
Main Rafters	Sister with new timber elements or repair with Retroshear® Panels and Retroten® Reinforcements as required.	✗		The minor damage or decay in the rafters likely existed before the hurricane.
Secondary Rafters	Sister with new timber elements or repair with Retroshear® Panels and Retroten® Reinforcements as required.	✗		The minor damage or decay in the rafters likely existed before the hurricane.
Knee Braces	Replace broken and cleaved knee braces.	✓		The end connection joints of the knee braces would have been compromised significantly when the bridge was moved and rotated globally during the hurricane.
Collar Ties	Replace broken and cleaved collar ties.		✓	It is likely that some of the damage noted existed before the storm; however, it was also likely connections were further compromised when the bridge was moved and rotated globally during the hurricane.

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Bridge Component	Description of Repair	Caused by Hurricane	Exacerbated by Hurricane	Discussion
Upper Cross Braces	Replace broken and cleaved cross braces.		✓	It is likely that some of the damage noted in the inspection existed before the storm; however, it was also likely connections were further compromised when the bridge was moved and rotated globally during the hurricane.
Top Chords	Repair connections (using fastener and/or high-strength fiber) as required by future structural analysis.		✓	It is likely that much of the damage noted in the inspection existed before the storm; however, it was also possible connections were further compromised when the bridge was moved and rotated globally during the hurricane.
Middle Chords	Repair connections (using fastener and/or high-strength fiber) as required by future structural analysis.		✓	It is likely that much of the damage noted in the inspection existed before the storm; however, it was also possible connections were further compromised when the bridge was moved and rotated globally during the hurricane.
Bottom Chords	Repair connections (using fastener and/or high-strength fiber) as required by future structural analysis.		✓	It is likely that some of the damage/decay noted in the inspection existed before the storm; however, it is certain that the bearing connections and associated chord material was further destroyed when the bridge was moved and rotated globally during the hurricane.

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Bridge Component	Description of Repair	Caused by Hurricane	Exacerbated by Hurricane	Discussion
Lattice Members	Repair connections (using fastener and/or high-strength fiber) as required by future structural analysis.		✓	It is likely that some of the damage noted in the inspection existed before the storm; however, it is certain that some members were destroyed, and some connections were further compromised when the bridge was moved and rotated globally during the hurricane.
Posts at Wingwalls	Amputate poor segments and post with new segments designed to support and transfer load to existing elements.		✓	It is likely that some of the decay/damage noted in the inspection existed before the storm; however, it was certain bearing connections and associated post material was further destroyed when the bridge was moved and rotated globally during the hurricane.
Floor Decking	Lift decking boards to re-seat joists then replace decking and plane as necessary.	✓		The floor was obviously displaced during the storm and the floor decking will have to be removed and replaced to resolve the damage.
Transverse Beams	Repair with Retroshear® Panels and Retroten® Reinforcements as required.		✓	It is likely that much of the damage noted in the inspection existed before the storm; however, it was also possible connections were further compromised when the bridge was moved and rotated globally during the hurricane.

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Bridge Component	Description of Repair	Caused by Hurricane	Exacerbated by Hurricane	Discussion
Floor Joists	Reseat joists to ensure they are level. Repair with Retroshear® Panels and Retroten® Reinforcements as required (possibly sister or replace in a few isolated cases).		✓	It is likely that some of the damage noted in the inspection existed before the storm; however, the floor was obviously displaced during the storm and the floor decking and joists will have to be removed and replaced to resolve the damage.
Lower Cross Braces	Repair with Retroshear® Panels and Retroten® Reinforcements as required (possibly replace in a few isolated cases).		✓	It is likely that some of the damage/decay noted in the inspection existed before the storm; however, it is certain that the connections were further damaged when the bridge was moved and rotated globally during the hurricane.
Foundations	New foundations are proposed.	✓		Obvious damage during storm.
Approach stone walls	Reconstruct damaged zones or rebuild walls using similar new or existing stones and repoint grout as required.	✓		Obvious damage during storm.
Approach breastwalls	Remove CMU walls and incorporate new breastwall into the new foundation at both ends.	✓		Obvious damage during storm.
Approach wear surface	Demolish damaged surface, replace and compact receded backfill, and install new wear surface.	✓		Obvious damage during storm.