

## Memorandum

To: Dominion Inc.

From: Ben L. Green, P.E. – Kimley-Horn and Associates

Date: January 2, 2024

Subject: ***Technical Memo: Tower Road Drainage Improvements***

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The content of this memo is based on a 15.49-acre tract of land located in City of Manor, approximately 500 feet east of the intersection of Tower Road and Suncrest Road. Kimley-Horn (KH) has prepared this memo to evaluate the existing drainage conditions of Tower Road at this location and to provide possible solutions to minimize the current flooding in this area. KH has been made aware that there is frequent flooding along Tower Road at this location which has prompted the need for this analysis.

The following summarizes the technical elements of the existing drainage problems and proposed drainage improvements on Tower Road for this location:

- Currently there is an existing 24" corrugated metal pipe storm culvert crossing under Tower Road. Per KH's analysis, this culvert is severely undersized resulting in frequent flooding during all significant storm events including the 2-year storm event.
- KH has determined that constructing four (4) - 3'X6' box culverts would allow sufficient storm water to pass under Tower Road and to prevent water from backing up and overtopping the existing roadway in the 2-year storm event and flooding in larger storm events such as the 25-year and 100-year would be reduced.

Tower Road experiences flooding in the lowest commonly analyzed rain event, the 2-year storm event, and it can be expected to flood in smaller rain events multiple times per year. This 2-year storm event is defined as approximately 4 inches of rain over 24 hours and statistically has a 50% chance to occur each year.

In this existing condition that amount of rainfall causes the water to overtop Tower Road at a depth of approximately 1.5 feet over the pavement at its deepest location. This overtopping flow spans along Tower Road for approximately 239 feet which creates an unsafe driving condition occurring during most of the sustained rain events.

With the installation of the four (4) 3'X6' culverts, drainage will be improved such that water during the 2-year storm event and less will be fully conveyed underneath the roadway and contained within storm infrastructure. Since overtopping of the roadway will no longer occur; this will ensure Tower Road remains functional during the majority of rain events. The Culvert Exhibit depicts these existing a proposed conditions.