



STORMWATER MANAGEMENT COMMISSION

July 12, 2019

John W. Koffel
100 Old School Road
Mettawa, IL 60045

Subject: Watershed Development Permit No. 14-31-094
Sound Isolation Berm
NOTICE OF ORDINANCE VIOLATION

Dear Mr. Koffel:

The Village of Mettawa issued a permit with a maximum side slope of 2:1 and a drainage pipe discharging to the Tollway right-of-way. Although you have the option to complete the project in compliance with these permit requirements, it is our understanding that you are reluctant to perform grading modifications or install the pipe according to the permitted plans. The project will remain in violation status until a Watershed Development Permit is issued by the Lake County Stormwater Management Commission (SMC) and the Village of Mettawa. Additional legal actions may be taken to remedy this violation.

In order to allow sufficient review time prior to the September 9, 2019 hearing date, please provide the following items within **forty-five (45) days or August 26, 2019**:

1. A geotechnical report signed and sealed by an Illinois Registered Professional Engineer or Structural Engineer. The results of the Embankment Stability Report, dated July 2019, are based on simple approximations from the USACE Slope Stability Engineer Manual, EM 1110-2-1902. While this manual is an acceptable resource for slope stability determination, additional analyses is required. The 'At-rest earth pressure method' is not intended as a primary design method and only as a method to perform preliminary estimates of stability prior to, or validate the results from, more rigorous and complete calculations or modeling. Its use as the sole determination for stability along the Tollway is inadequate, particularly considering the life-threatening risks to motorists. Site specific information, including but not limited to records of compaction, moisture, and density of fill materials were not included in the report. These uncertainties coupled with the significant consequences of failure represent an unacceptable condition; a cursory calculated value of the factor of safety is not an acceptable substitute for a detailed analysis. The required process of evaluating slope stability is provided in the Section 1-6. Stability Analysis and Design Procedure (a. through k.) of EM 1110-2-1902:
 - a. *Explore and sample foundation and borrow sources.* EM 1110-1-1804 provides methods and procedures that address these issues.

- b. Characterize the soil strength (see EM 1110-2-1902 Appendix D).* This usually involves testing representative samples as described in EM 1110-2-1906. The selection of representative samples for testing requires much care.
- c. Establish the 2-D idealization of the cross section, including the surface geometry and the subsurface boundaries between the various materials.*
- d. Establish the seepage and groundwater conditions in the cross section as measured or as predicted for the design load conditions.* EM 1110-2-1901 describes methods to establishing seepage conditions through analysis and field measurements.
- e. Select loading conditions for analysis (see EM 1110-2-1902 Chapter 2).*
- f. Select trial slip surfaces and compute factors of safety using Spencer's method.* In some cases it may be adequate to compute factors of safety using the Simplified Bishop Method or the force equilibrium method (including the Modified Swedish Method) with a constant side force (EM 1110-2-1902 Appendix C). EM 1110-2-1902 Appendix F provides example problems and calculations for the simplified Bishop and Modified Swedish Procedures.
- g. Repeat step f above until the "critical" slip surface has been located.* The critical slip surface is the one that has the lowest factor of safety and which, therefore, represents the most likely failure mechanism.

Steps *f* and *g* are automated in most slope stability computer programs, but several different starting points and search criteria should be used to ensure that the critical slip surface has been located accurately.

- h. Compare the computed factor of safety with experienced-based criteria (see EM 1110-2-1902 Chapter 3).*

Return to any of the items above, and repeat the process through step *h*, until a satisfactory design has been achieved. When the analysis has been completed, the following steps complete the design process:

- i. The specifications should be written consistent with the design assumptions.*
- j. The design assumptions should be verified during construction.* This may require repeating steps *b*, *c*, *d*, *f*, *g*, and *h* and modifying the design if conditions are found that do not match the design assumptions.
- k. Following construction, the performance of the completed structure should be monitored.* Actual piezometric surfaces based on pore water pressure measurements should be compared with those assumed during design (part *d* above) to determine if the embankment meets safe stability standards.

2. A topographic plat of survey signed by an Illinois Registered Land Surveyor; including a signed statement by a Registered Professional Engineer that accounts for the drainage of surface waters in accordance with the Plat Act [765 ILCS 205/2]. The plat shall also include:
 - a. *Topographic elevations showing the location and limits of the entire berm.*
 - b. *Topographic elevations showing the location and limits of the southern drainage ditch. A recorded drainage easement is required for off-site portions of the drainage ditch on the Trelka property.*
 - c. *Boundary survey for property lines adjoining the Tollway right-of-way and Trelka property.*
 - d. *Tollway fence line and setback dimensions.* The Embankment Stability Report states the berm is setback 10 to 15-feet from the Tollway right-of-way fencing, to allow for access and maintenance of the eastern face.

We look forward to your continued progress to bring the site into compliance. Should you have any questions, please feel free to contact me any time.

Sincerely,

LAKE COUNTY STORMWATER MANAGEMENT COMMISSION



Kurt Woolford, P.E., CFM
Chief Engineer / Enforcement Officer

C: Bob Irvin – Mettawa Village Administrator
Dan Krill – Code Enforcement Manager, Lake County
Larry Clark – State's Attorney, Lake County