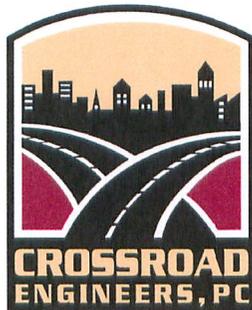


Stormwater Calculations

**Johnson County Board of Commissioners
Central Dispatch Building
1091 Hospital Road
Franklin, Indiana**

**Drainage Submittal:
November 6, 2013**

Prepared By:



Handwritten signature in blue ink
11-6-13

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Beech Grove, IN 46107
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Stormwater Calculations Summary

Pre-Development Conditions

The existing site consists of a developed +/-24 acre parcel with infrastructure, buildings, etc. to the north and a shooting range to the south. The project site is situated on the Johnson County Sheriff's complex located at 1091 Hospital Road, Franklin, Indiana. As described above, the existing land use is built out about the northern portions and contains heavy woods to the south. The existing drainage sheet flows into well-defined channels about the southern portion of the property before discharging directly into Young's Creek.

Portions of the subject property lie within Flood Hazard Zones X; Shaded X; and AE as plotted by hand on the Federal Emergency Management Agency Flood Insurance Rate Map for Johnson County, Indiana, community panel number 18081C0227D, which bears an effective date of August 2, 2007.

Post-Development Conditions

The proposed improvements include the construction of a new central dispatch building, concrete sidewalks, and expansion of the asphalt parking lot. The proposed site grading results in runoff sheet flowing from northeast to southwest towards Young's Creek. The proposed grading eliminates the need for storm sewer infrastructure in the post-development condition.

Detention Calculations

Due to the minimal impervious area being added and the project's vicinity to Young's Creek, a waiver from the City's detention requirements is being requested. Per the FEMA Flood Insurance Rate Map, the northern limit of the Young's Creek floodway is approximately 300 feet southeast of the project limits.

All drainage calculations were completed using the Rational Method. It can be seen in the ***Rational Pre-Post Comparison*** calculations contained herein that the minimal impervious area added to the site results in an increase of just over 4.0% in either the 10yr or 100yr storm events.

This increase is negligible and causes no undue burden to the receiving waters of Young's Creek. It should also be noted that stormwater quality is provided as a result of all runoff sheet flowing across the grass areas surrounding the proposed improvements. The existing grass ground cover will remain undisturbed during construction.



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Date _____

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Project _____

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Subject _____

Reviewed By _____ Date _____

<u>Post-Development Conditions</u>						
$A_{TOTAL} = 23.48 \text{ Ac.}$						
$A_{imp.} = 8.31 \text{ Ac.} \quad C = 0.85$						
$A_{grass} = 3.99 \text{ Ac.} \quad C = 0.20$						
$A_{woods} = 11.18 \text{ Ac.} \quad C = 0.20$						
Assume No change to $t_c \rightarrow C_{10} = 6.99 \text{ in/hr} + 400 = 9.69 \text{ in/hr}$						
$Q_{10} = [(8.31 \times 0.85) + (3.99 \times 0.20) + (11.18 \times 0.20)] \times 6.99 = 70.58 \text{ cfs}$						
$Q_{100} = [(8.31 \times 0.85) + (3.99 \times 0.20) + (11.18 \times 0.20)] \times 9.69 = 97.05 \text{ cfs}$						
Net Increase in Runoff \rightarrow 2.78 cfs ($\pm 4.1\%$) in 10 yr 4.04 cfs ($\pm 4.3\%$) in 100 yr						