

**APPENDIX C: HYDRAULIC FLOOD ANALYSIS****ERICKSON ENGINEERING**

Consulting Engineers • Designers • Construction Inspectors

HYDRAULIC FLOOD ANALYSIS  
FOR  
COOK COUNTY

Proposed Bridge #16529 on CSAH 17

Sec. 4 T 63 N R 6 E

Data for adequate dimensioning of proposed 3-span treated timber slab bridge:

Stream.....	Grand Portage Creek
Drainage Area.....	7.1 sq. mi.
Maximum Flood on Record.....	unknown
Maximum Observed Highwater Elevation.....	unknown
2 Year Frequency.....	200 cfs
Stage Elevation.....	615.9
Headwater Elevation.....	616.0
Mean Velocity Through Structure.....	4.5 fps
Main Channel Velocity.....	4.1 fps
Design Flood (100 Year Frequency).....	1120 cfs
Design Stage Elevation.....	618.2
Total Stage Increase.....	< 0.1 ft.
Headwater Elevation.....	618.2
Minimum Waterway Opening Below Elevation 618.2.....	262 sq. ft.
Low Member At or Above Elevation.....	620.5
Mean Velocity Through Structure.....	4.3 fps
Main Channel Velocity.....	7.0 fps
Greatest Flood (500 Year Frequency).....	1790 cfs
Stage Elevation.....	619.2
Total Stage Increase.....	< 0.1 ft.
Headwater Elevation.....	619.2
Mean Velocity Through Structure.....	6.2 fps
Main Channel Velocity.....	7.9 fps
Approximate Channel Flowline Elevation.....	612.2
Estimated Contraction Scour Elevation (greatest flood).....	612.0
Estimated Pier Scour Elevation (greatest flood).....	607.9
Skew Angle.....	0°
Scour Code.....	L

The waterway opening is the net waterway area measured normal to the direction of flow. The waterway area is based on a trapezoidal channel cross section with 1:2 sideslopes.

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