



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

August 20, 2019

CIRCULAR LETTER 2019-16

CREATED HEAD FOR OVER-THE-ROAD FLOW OR FREEBOARD

COUNTY ENGINEERS / SUPERINTENDENTS OF HIGHWAYS
MUNICIPAL ENGINEERS / DIRECTORS OF PUBLIC WORKS / MAYORS
METROPOLITAN PLANNING ORGANIZATIONS – DIRECTORS
TOWNSHIP HIGHWAY COMMISSIONERS
CONSULTING ENGINEERS

The purpose of this Circular Letter is to provide information to Local Public Agencies regarding inclusion of Created Head in hydraulic submittals.

The Preliminary Bridge Design and Hydraulic Report, Form BLR 10210, was recently updated with instructions for its use. However, there have been some questions regarding whether to include Created Head when determining the Over-the-Road (OTR) flow and the elevation for Freeboard.

IDOT Drainage Manual Section 7-001.04 “Clearance and Freeboard” indicates: *“The reference water surface elevations for the determination of low beam clearance and roadway freeboard are design natural highwater and design headwater, respectively.”*

Drainage Manual Section 7-106.02 “Headwater” indicates: *“The headwater elevation shown on the waterway information table (WIT) is the sum of the (design) natural highwater elevation and created head for the given event.”*

The following is provided to give greater clarity and understanding:

Over-the-Road (OTR) Area. Form BLR 10210 Instruction “**M. Waterway Openings**” indicates: *“The area is to be provided (square feet), not the discharge (cfs), for the Bridge and Over-the-Road openings. The Over-the-Road opening is computed using the design natural highwater elevation, not including the created head.”*

This area is used during Department review to determine the change in OTR opening, often to determine if the hydraulic design may be approved by Statewide Permit (SWP) #12. Therefore, for locations with OTR flow, a larger bridge opening could result in reduced created head. If the created head were used to compute OTR flow area, it could give a false impression of a reduced OTR area. A reduction in the Over-the-Road area could result in an erroneous disqualification for approval under SWP#12 and create unnecessary additional coordination and review efforts. In addition, Created Head dissipates further from the structure. Therefore, it would not be appropriate to apply the full Created Head height for the OTR over an area extended further from the structure.

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Freeboard. Form BLR 10210 indicates: “*Freeboard is measured vertically from the lowest edge of pavement to design head water elevation. 3' is required.*” As noted in Drainage Manual Section 7-001.04 above, determination of roadway freeboard uses the design headwater, which per Drainage Manual Section 7-106.02 includes Created Head.

State owned structures, and some Local Public Agency Structures, require 2 feet vertical clearance over a 50-year design *natural highwater*; this results in a higher roadway elevation and tends to reduce the number of required variances for the 3-foot freeboard requirement. However, variances for freeboard on the Local highway system are common.

Questions regarding this circular letter may be directed to the Local Bridge Unit by email at DOT.LocalBridgeUnit@Illinois.gov.

Sincerely,



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JK/

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