



Working Through Drainage Issues (Together) in Kent County

Drain Commission and Road Commission

Joel Morgan, PE

Kent County Drain Commission

Mike TenBrock, PE

Kent County Road Commission

If Only.....



The Magna Carta

Road Commission Pays 50% for Culvert
Replacements for Hydraulic Capacity

Road Commission Pays 100% for Culvert
Replacements for Structural Issues

MEMORANDUM OF UNDERSTANDING

The **County of Kent**, **Kent County Drain Commissioner**, and **Kent County Road Commission** have a long-standing, mutually beneficial, relationship of working in collaboration to maintain the county drain system for the benefit of county residents. The following articulates the practices that have been established and define the responsibilities of each organization in the context of this partnership. This memorandum serves as an update to the "Road Crossings of County Drains" memo distributed on September 14, 2004, by the Office of the Drain Commissioner.

- I. In accordance with Section 280.322 of the State of Michigan Drain Code, the installation of a bridge or culvert under a county road as part of the construction of a county drain shall be considered part of the drain project and, thus, charged accordingly.
- II. The maintenance of a bridge or culvert that was originally part of a county drain project, as described above, will be the responsibility and cost of the Kent County Road Commission.

Maintenance does not include changes to the bridge or culvert that are initiated by the County Drain Commissioner. Such changes may include the asset's resizing, changing of grade or alignment, or structural replacement. The cost thereof shall be charged as part of the cost of the drain project.

- III. If, in the future, the Kent County Road Commission agrees to participate in the cost of any work on a bridge or culvert as part of a county drain project, signed work authorizations must be executed prior to any work being performed by the Drain Commissioner.
- IV. If the Kent County Road Commission agrees to participate in the cost of work performed on a county drain, the Road Commission reserves the right to review bids and perform work with its own crews or contractor.
- V. In situations where the Kent County Drain Commissioner levies a special drain assessment among property owners, local government, county roads, railroads and state highways, the County of Kent agrees to cover the assessment fees which may be levied against Kent County Road Commission. In return, the Road Commission will provide mutually agreed upon maintenance work on the county drain system within the county road right of way, including but not limited to:
 - Tree and brush removal
 - Ditching/Trucking
 - Minor drainage structure repair

- VI. The Kent County Drain Commissioner's Office and the Kent County Road Commission will meet annually to reconcile associated assessment fees and maintenance work.
- VII. Dated this 21st Day of December, 2016.



Daryl J. Delabbio
County Administrator
County of Kent



William Byl
Drain Commissioner
County of Kent

Steven A. Warren
Managing Director
Kent County Road Commission

OFFICE OF THE DRAIN COMMISSIONER

Roger G. Laninga, Drain Commissioner
1500 Scribner NW, Grand Rapids, Michigan 49504-3233
Telephone (616) 336-3688 Fax: (616) 336-3575
Office Hours: 7:30 am - 4:00 pm



COPY

MEMO

TO: Wayne Harrall, Thomas Byle, Jerry Byrne
Doug Sporte, Brad Boomstra, Angie Latvaitis, Amy Turrill

FROM: Jon Rice, Managing Director, Kent County Road Commission
Roger G. Laninga, Drain Commissioner

SUBJECT: Road Crossings of County Drains

A handwritten signature in black ink, appearing to be "JR", written over the subject line.

DATE: September 15, 2004

1. In accordance with Section 280.322 of the State of Michigan Drain Code, when a bridge or culvert are installed under a County Road as part of the construction of a County Drain, the cost of constructing the bridge or culvert shall be charged as part of the cost of constructing the drain.
2. The maintenance of such bridge or culvert will then be the responsibility and cost of the County Road Commission.
3. When initiated by the County Drain Commissioner, the resizing, changing of the grade, changing of alignment, or the structural replacement of a bridge or culvert, the cost thereof shall be charged as part of the cost of the Drain project.
4. If, in the future, the Kent County Road Commission agrees to participate in the cost of any work on a bridge or culvert as part of a County Drain project, signed work authorizations prior to any work being performed by the Drain Commissioner.
5. If the Kent County Road Commission agrees to participate in the cost of work performed on a County Drain, the Road Commission reserves the right to review bids and perform work with its own crews or contractor.

The “Magna Carta” has over the years provided trustworthiness and it has improved our “Culture”



76th Street
(Gaines 12) –
located 1 mile
downstream of
Gaines 27

This culvert
started the
conversation
about this
watercourse with
the Drain
Commission



Culvert in fair condition – 1959 original wooden structure

The structure undersized and perched. The watercourse incised

Magna Carta Says: Road Commission and Drain Commission 50/50 Split





\$130,000
installation cost.

The 16 x 7 box
cost \$105,000.

Timing on this
worked out, we
had a good local
contractor, and
same size boxes
on both
crossings.



84th Street
(Gaines 27:)

Built in the 1930's

Delamination and
narrow width ->
structurally
deficient

Hydraulically
adequate

We spent about \$250,000 on this 16 x 7 box culvert

You can't see it , but it never fails there is always a **powerline** to a house

We had to set up a generator for this house





**VISTA DRIVE OVER BROOKS CREEK
STRUCTURE #: N/A
INSPECTED: AUGUST 8, 2012**



Control structure at upstream end of culverts

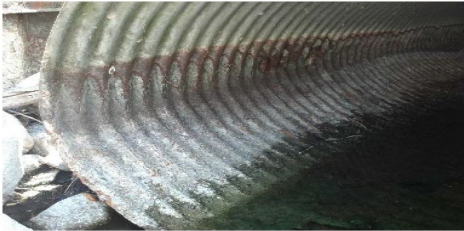


Corrosion and scale on interior of culvert

VISTA DRIVE OVER BROOKS CREEK
STRUCTURE #: N/A
INSPECTED: AUGUST 6, 2012



Control structure at upstream end of culvert



Corrosion and scale on interior of culvert

 J. F. & V. D. ENGINEERING, INC.
10000 W. 10th Ave., Suite 100, Denver, CO 80202
303.755.1234

If you think about this, this is a disaster waiting to happen:

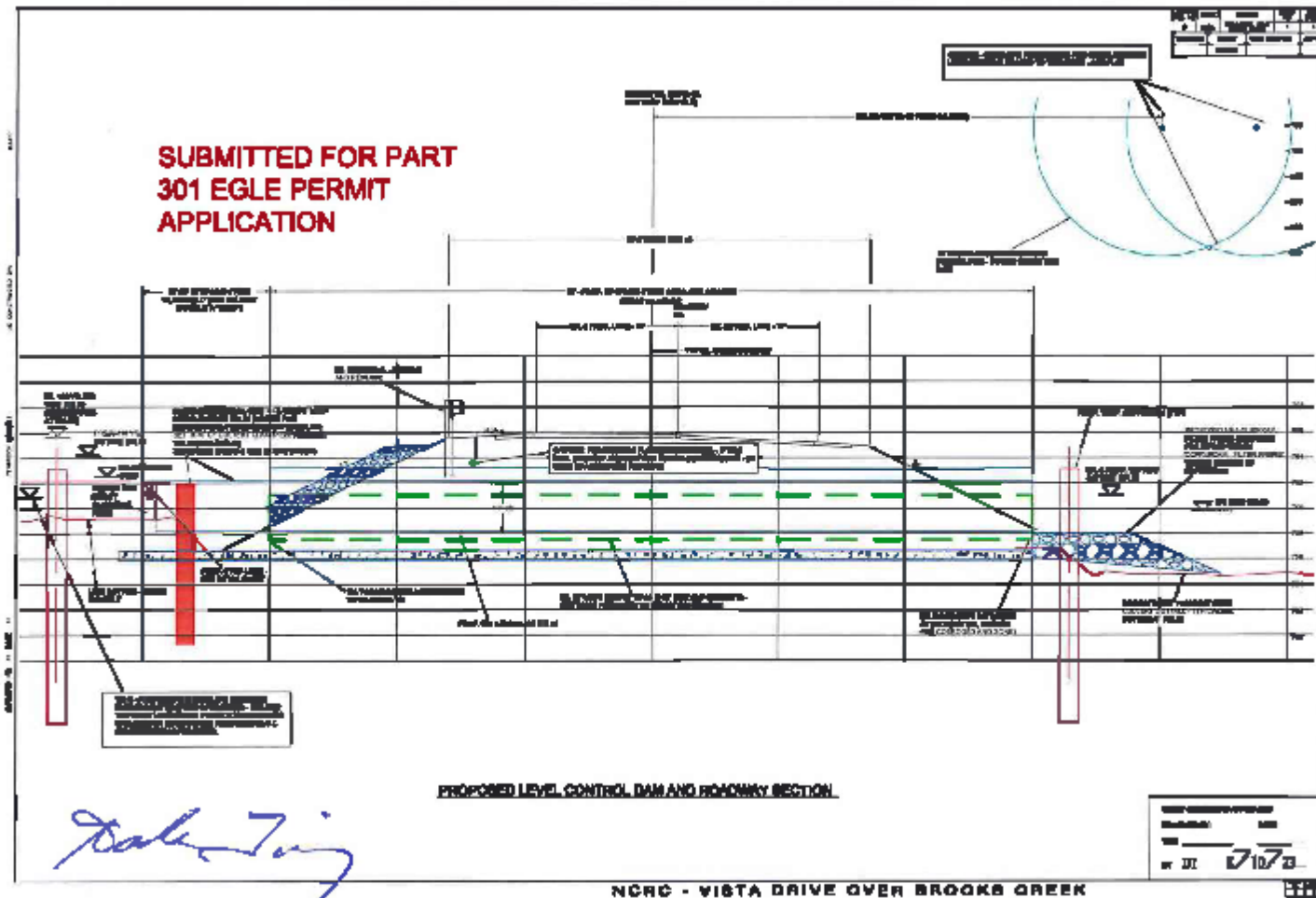
- A swiss cheese pair of culverts installed and nested with a flimsy lake control structure. Nothing can go wrong....

It's on a lake...therefore lake owners close nearby. All of whom are "experts" in everything...

The NCRC hired Jim Kloote for the cofferdam. Others are as skilled certainly. Jim brought his "A Game" to this project.

EGLE
Dam Unit
Classifies
this as a
High
Head
Dam

Expect a
lot of
scrutiny



Robert T. King
8-10-23



The Drain Commission contributed \$50,000 to the “clam shell” shown here.

Eliminated risk with working “around” the existing lake control structure

Structure provides better flood protection and should last 100 years.

Broad Crested Weir Estimates

Brooks Lake Outfall

Broad Crested Weir Calculations

$Q = CLH^{1.5}$ Weir Elev: 762.16 (1988 datum)

$C = 3.09$ in feet and CFS

Assumes a single 6' culvert section and 4' section (10 foot total) acting as a weir (28 net feet of weir for our calculations)

Weir Flow

Lake *HY-8 Governing

Q H Elev: Culvert U/S Elev:

Condition

10 year storm

90 CFS

Weir

50 year storm

160 CFS

Weir

100 year storm

260 CFS

Weir

200 Year Storm

400 CFS

Weir

500 year storm

600 CFS

Road Overtopping

Note: this assumes culvert capacity is adequate - a separate analysis is required

Road Crown at 765.67 +/-







THANK YOU !

JOEL MORGAN, PE

MIKE TENBROCK, PE