



STATE OF
COLORADO

Ebert - DNR, Jared <jared.ebert@state.co.us>

Loveland Ready Mix (LRM) Permit Application # M-2017-036

ROBERT N HAVIS <rhavis@msn.com>

Thu, Mar 8, 2018 at 4:49 PM

To: "Ebert - DNR, Jared" <jared.ebert@state.co.us>

Cc: Pete Waack <chetek65@yahoo.com>, John Barth <barthlawoffice@gmail.com>

Dear Mr. Ebert:

Thank you for your time today in traveling to Fort Collins for subject pre-hearing conference. As promised I have attached a comment letter on the potential for instability in buildings adjacent to the project caused by ground water mounding.

Robert Havis

For No LaPorte Gravel



LRM-34.32.5-115(e).pdf

230K

NO LAPORTE GRAVEL.ORG

nolaportegravel@gmail.com

March 8, 2018

By email: jared.ebert@state.co.us -

Jared Ebert

Colorado Division of Reclamation, Mining and Safety

1313 Sherman Street

Denver, Colorado 80303

Re: Loveland Ready Mix (LRM) Permit Application # M-2017-036.

Dear Mr. Ebert:

Title 34 states that the board may deny a permit if "34.32.5-115(e) The mining operation will adversely affect the stability of any significant, valuable, and permanent manmade structures located within 200 feet of the affected land..." The second LRM ground water study predicts about 2 feet of ground water mounding under structures within 200 feet of the property boundary. The depth to ground water today, March 8th is, about 3 feet in the vicinity of these structures. Larimer County requires that building footers extend at least 30 inches below ground surface so ground water is only 6 inches from the bottom of the footers. The addition of 2 feet of ground water mounding will surely inundate building footers as well as flooding crawl spaces.

It is well known that soil saturation reduces the bearing capacity of soils. The first term of the Terzachi-Meyerhof equation (1) for soil bearing capacity is modified for application to saturated soils such that $\gamma' = \gamma - \gamma_w$, significantly reducing foundation bearing capacity (q_o) in saturated soils (Sowers and Sowers, 1970).

$$q_o = \gamma' B / 2 N_\gamma + c' N_c + q' N_q \quad (1)$$

where:

γ	is the unit weight of soil
γ_w ,	is the unit weight of water
$\gamma' B / 2 N_\gamma$	is the soil weight and foundation width term
$c' N_c$	is the soil cohesion term

Board Members; Patty McElwaine, Co-President | Jayme Tilley, Co-President | Pete Waack, Legal Liaison | Leah Salmans, Treasurer
Amy Maddox, Secretary | Robert Havis, Advising Member/Engineer | Tess Reyes, Advising Member/ Nurse | Erica Daniell, Advising
Member/ Schools | Linda Sawyers, Advising Member | Ruth Wallick, Advising Member | Susan Barbour, Advising Member

No Laporte Gravel P.O. Box 523 Laporte, CO 80535 970/490-1776

$q'N_q'$ is the soil surcharge term

N are bearing capacity factors as a function of internal angle of friction

The effect of soil saturation around building foundations in the reduction of soil bearing capacity is significant in the first term of the Terzachi-Meyerhof equation, Saturation around foundations will affect building stability potentially causing differential settlement and lateral movement. Higher saturation levels above the foundation bottom causes greater reduction in soil bearing capacity. The potential inundation of structure foundations by an estimated 1.5 feet of water should be enough evidence for the board to deny the LRM permit based on 34.32.5-115(e).

Thank you for reviewing this document.

Sincerely,

Robert N. Havis, PhD, PE for

No LaPorte Gravel Corporation

[Type here]

No Laporte Gravel P.O. Box 523 Laporte, CO 80535 970/490-1776