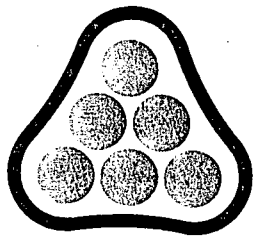

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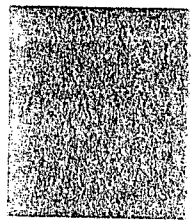

February 27, 1991

Reflection Ridge, Inc.
7926 W. 21st St. No.
Wichita, KS 67212

Attention: Mr. Marvin Schellenberg

Reference: Storage Analysis
Pond No. 2
Block 1, Reflection Ridge Addition
PEC File 36-88119-2273

Dear Mr. Schellenberg:

We have completed our study of the existing pond in Block 1, Reflection Ridge Addition now known as "Lake Ridge" and present the findings herein.

The pond as originally designed provided for total storage of the 100-year design flood, and also provided over 2.5 feet of freeboard for floods in excess of the design storm. As designed, the static pool was to be maintained at elevation 155.1. The homeowners desire to maintain the static pool at a higher elevation. Therefore, we have investigated the possibility of raising the static pool, reducing the amount of freeboard, and providing alternative means of protection for storms in excess of the 100-year design storm.

The platted minimum pad elevation for Lots 10 thru 18 in Block 1 is 163.1. Under City of Wichita criteria, the maximum allowable water surface would be at least one foot below this elevation, or elevation 162.0. All design concepts must be evaluated to determine if the 100-year runoff volume can be stored or passed through the pond without exceeding elevation 162.0

In evaluating allowable discharge from the pond, the 100-year runoff peak discharge was estimated for the pre-developed cultivated conditions. Under these conditions, the peak rate of runoff of 55 cubic feet per second would be the expected value for the 100-year runoff from the 20 acre drainage area discharging into the property located immediately north of Lake Ridge.

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To discharge this flow, two open channels were investigated as follows:

1. Flow meandering northeasterly across the existing cultivated land along the existing swale. This channel would be trapezoidal in shape, having a 4-foot flat bottom and 6:1 side slopes to enable cultivation. On a slope of 0.3%, this channel would pass the maximum allowable discharge of 55 cubic feet per second at a depth of 1.9 ft. and a velocity of 1.95 ft./sec. Flows of greater frequency would be smaller in magnitude, depth and velocity.

2. Flow directed straight east along the south line of the Northwest Quarter of Section 4, discharging into the area proposed for the driving range in the West Half of the Northeast Quarter of Section 4 (Future Reflection Ridge 7th Addition). This trapezoidal channel would have a 4-foot flat bottom and 4:1 side slopes. On a grade of 0.3%, this channel would pass the maximum allowable discharge of 55 cubic feet per second at a depth of 2.1 feet and a velocity of 2.2 ft./sec.

Either of these options requires an agreement between Reflection Ridge and the landowner to permit construction and maintenance of a drainage channel across the Northwest Quarter of Section 4. We would recommend that this be obtained as a permanent drainage easement.

In evaluation of storage, the total volume of runoff to be expected from the 100-year, 24-hour storm of 7.8 inches was computed to be 3.8 acre-feet. Since the pond has approximately one acre of surface area at elevation 162.0, the required storage can be obtained by reserving the volume between elevation 158.0 and elevation 162.0 for flood storage. An emergency overflow route must still be provided for floods in excess of the design flood.

In raising the static pool elevation, it must be recognized that a significant part of the existing storm water sewers will be inundated. Since these are public improvements maintained by the City of Wichita, a permanent increase in the static pool elevation must be reviewed and approved by the City. Similar installations have been approved in the past, Lakepoint being one example of which we are aware.

In summary, if it is desired to raise the pond's static pool and if approved by the City of Wichita, our recommendations are as follows:

1. Operate the pond storage volume so that it does not exceed elevation 158.0.

2. Acquire a permanent drainage easement from the owner of the Northwest Quarter of Section 4 along one of two paths. This will provide Reflection Ridge, Inc. the right to maintain an unobstructed flow path at an elevation below elevation 162.

3. Construct emergency overflow at elevation 160.0 and construct an outlet channel along the easement described in 2 above. This channel is to serve as an outlet channel to the pond and to provide an addition measure of protection.

It is our opinion that the future developer of the property north of Lake Ridge will be responsible for the permanent routing of this overflow through their property (i.e. storm sewer systems, etc.).

The engineering computations are attached. If there are any questions, please advise.

Very truly yours,

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.

Michael W. Berry, P.E.

Michael W. Berry, P.E.
Project Engineer

MWB/cas

xc: Vicky Huang, P.E.
Clem Winter - Lake Ridge Homeowner's Association