MEMORANDUM

DATE: June 9, 2009

TO: Kevin Lehmann – Engineer, Development Services Department

CC: Paul Grimes – Village Manager
Karie Friling – Director of Development Services
Pete Casey – Director of Public Works

FROM: Thomas T. Burke, PhD, PE
Travis M. Parry, EI, CFM

SUBJECT: Park Corners II – Stormwater Management Design Summary
(CBBEL Project No. 04-389R142)

The purpose of this memorandum is to summarize the design characteristics and requirements for the 0.99 acre Park Corners II development. The project was reviewed by the Village of Orland Park (Village) staff and Christopher B. Burke Engineering, Ltd. (CBBEL) for compliance with the Village's Land Development Code and standard engineering practices. The project was also independently reviewed and approved by the Cook County Highway Department (CCHD) based on their standards and requirements.

Undeveloped Conditions

The Park Corners II project site is located within a sub-watershed of Mill Creek that is approximately 7.8 acres and is tributary to the 135th Street Right Of Way (ROW) under the jurisdiction of the CCHD. The sub-watershed is delineated on the attached exhibit from the Village's orthophotographic mapping. As shown, the 135th Street ROW ditch collects stormwater runoff from Circle Drive development to the south, from LaGrange Road to the west, from 135th Street to the north and the residential area to the east. In addition, the exhibit illustrates the undeveloped condition where a portion of the Park Corners II project site and LaGrange Road ROW drains directly to the 135th Street ROW and a portion flows overland across Circle Drive before heading north to the 135th Street ROW ditch. The LaGrange Road ROW and Park Corners II development site contribute approximately 14% of the total runoff from the 7.8 acre sub-watershed to the 135th Street ROW ditch.

Developed Conditions

The Village stormwater management requirements for developments less than 1 acre of disturbed area dictate that the post-development runoff from a project must be less than or equal to the undeveloped runoff from the site. The management of the stormwater runoff can be achieved through traditional detention techniques, Best Management Practices (BMPs), or a combination of the two. Since the Park Corners II development is tributary to the CCHD ROW who required detention storage, the proposed design incorporates bio-swales and porous pavement with detention storage below in the stone voids. As is typical

due to loss of storage volume over time, only 33% of the stone volume counts towards the detention volume requirements. The purpose of the bio-swales is to slow down and treat the stormwater runoff by removing suspended solids, chemicals and other impurities being carried by the stormwater. The porous pavers also work to treat the stormwater runoff by filtering it and the voids in the stone below provide detention storage volume. The entire stormwater management system is controlled with a comprehensive underdrain network and is restricted at the downstream structure to control the release of runoff to the 135th Street ROW and downstream properties.

The project site is collecting approximately 1.57 acres of runoff from the development, the LaGrange Road ROW and the 135th Street ROW, of which 0.34 acres is tributary to the storm sewer installed under Circle Drive and the remaining 1.23 acres is tributary to the existing pipe in the 135th Street ROW. To verify that the proposed stormwater design was effectively managing the runoff from the developed site, a detailed Natural Resource Conservation Service (NRCS) TR-20 hydrologic model was prepared comparing the runoff rates from the developed and undeveloped conditions. The NRCS TR-20 modeling demonstrated a reduction in the proposed runoff from the site with a substantial impact on the short duration events.

Summary

The stormwater management system for the Park Corners II development has been designed appropriately based on the requirements of the Cook County Highway Department and the Village of Orland Park and has been found to meet applicable engineering standards by Christopher B. Burke Engineering, Ltd. The amount of stormwater runoff tributary to the 135th Street ROW has not been altered from the undeveloped conditions and the stormwater management system effectively mitigates the increase in impervious surface resulting in a reduction in runoff for all events up to and including the 100-year, 24-hour storm event.

TP
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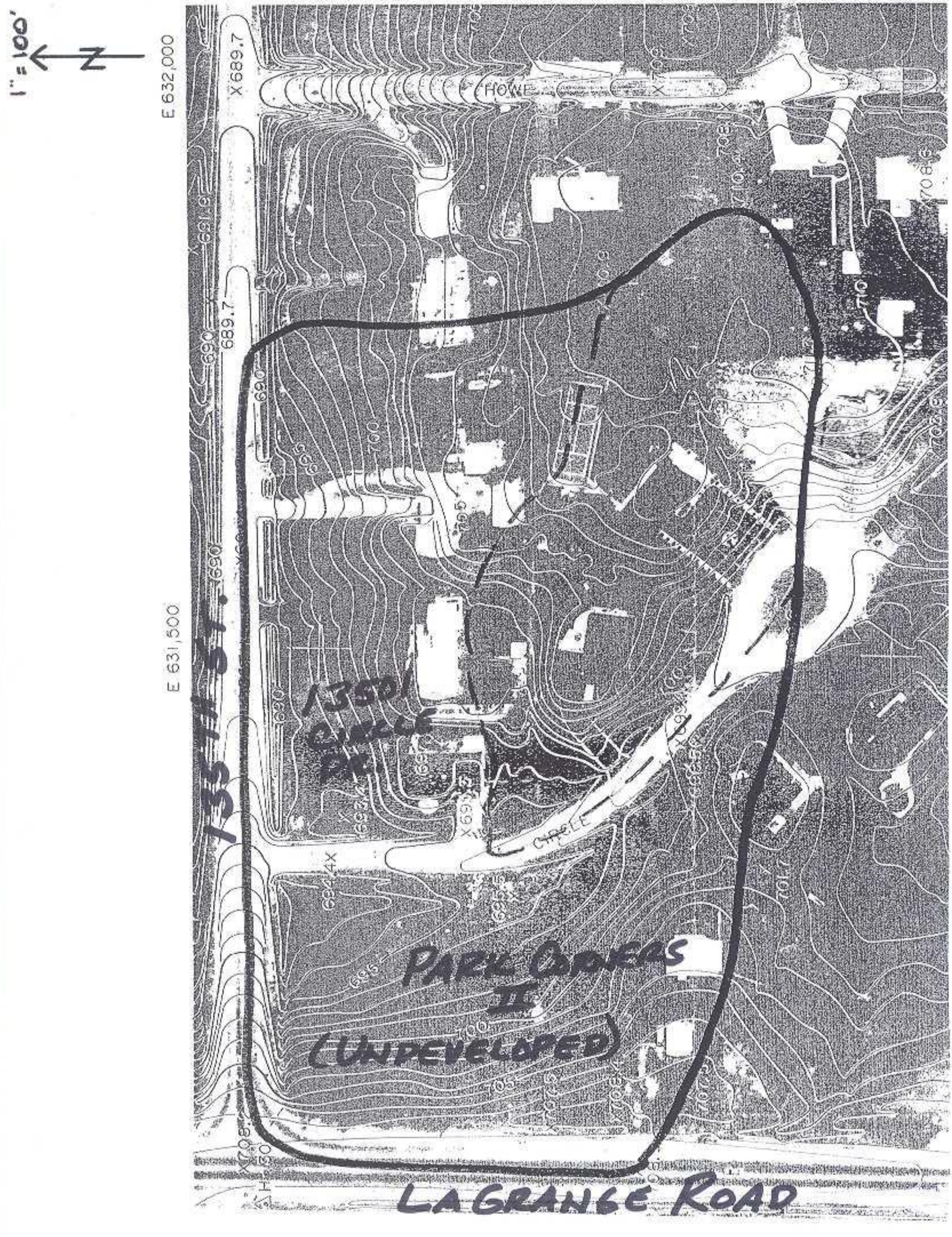

1" = 100'
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E 632,000
E 631,500
HOWE
CIRCLE
135th St.
1350 Circle Dr.
Park Owners II (Undeveloped)
LaGrange Road