July 7, 2005

Mr. Phil Meyer, LA
Baughman Company, P.A.
315 Ellis
Wichita, KS 67211

SUBJECT: Drainage Plan
Lillie Addition
Wichita, Kansas

Dear Phil:

We have re-evaluated the original approved drainage plan for the Lillie Addition to insure the proposed development as it relates to stormwater will not make conditions worse for the adjacent property owners. We recognize that this area floods and know that this development will not prevent future flooding. However, we need the below comments addressed prior to Monday evening's district advisory board meeting to have the level of assurance necessary to represent the development. We understand the time frame may not allow for these items to be addressed in detail, but need assurance that a new plan will be submitted that can satisfy these requirements.

The items submitted for our review were as follows:

1. Plan sheet entitled "Drainage Plan, Lillie Addition, Wichita, Sedgwick County, Kansas" prepared by Baughman Company dated May 24, 2005.

2. HEC-HMS detention pond calculations for the east and west drainage areas dated May 23, 2005.

Based upon the above items, we offer the following comments:

1. A project narrative should be supplied which details the proposed work. This narrative should include, but not limited to: information on the existing site condition, total site area, proposed conditions, and total area to be disturbed. In addition to the above items, a detention summary should be included in the narrative which details the following: off-site flows, on-site flows, detention requirements, release rates for the storm events modeled under both existing conditions and proposed conditions, and storm sewer calculations for the entire storm sewer system to be constructed on the project site. These items should be submitted in a bound package with all supporting documentation and calculations as necessary for review.

2. The plan and calculations should be stamped and signed by a Kansas Licensed Professional Engineer, including the P.E. expiration date.

3. A copy of the Flood Insurance Rate Map and FIS profile with the site location marked should be included for review.

4. The drainage plan should locate the existing FEMA cross-section and elevations as it relates to the site.

5. The floodway, 10- , 100-, and 500- year existing and proposed floodplain limits should be shown on the drainage plan. The floodway limits should be based on scaled location and the floodplain limits should be shown per elevation.

6. Any fill in the 100-year floodplain will be require to provide compensatory storage equal to at least the volume of fill displaced.

7. The City of Wichita requires that all projects show site-specific topography using NGVD datum.

8. A copy of the Sedgwick County soils mapping with the project location marked should be included in the submittal.

9. A project location map should be included in the submittal.

10. Please provide design calculations for the storm sewer, including, but not limited to, catchment area for each inlet, rainfall intensity, pipe sizing calculations, hydraulic grade line calculations, and design flow velocities. All storm sewers should be designed to convey a minimum 5-year design storm event under gravity conditions.

11. Hydraulic grade line calculations for the storm sewer system should be submitted for the 5-year and 100-year storm events. The calculations should use the 5-year and 100-year HWL at the ponds. The rim elevations of all structures should be checked to insure that if any rim elevation is located below the 100-year HGL at that rim, overflow does not leave the site from that inlet undetained.

12. Inlet capacity calculations should be submitted for east street inlets to show that all flow in the 100-year storm enters the stormwater system and does not bypass to the Maize Road right-of-way.

13. An analysis should be submitted for the receiving downstream system. It should be shown that the system could accommodate the inflow with no effect to downstream structures.

14. It appears that the east detention pond’s stage-storage provided in the submittal do not match the stage-storage input in the HEC-HMS model and do not match the relationship shown on the plan set. The modeling, calculations and plan set should match.

15. The input variables for the HEC-HMS pond routing are not provided, including curve numbers, time of concentration, stage/storage/discharge table for the outlet structure and drainage area. A digital copy of runs should be included for review.

16. The time of concentration for existing and proposed should be based on actual conditions and not use the assumed standard fifteen minutes.

17. It appears that the existing conditions are based on the Rational Method and the proposed conditions were modeled using HEC-HMS. These two methodologies are different and should not be used to compare between existing and proposed conditions. The following method should be followed to demonstrate effective detention for this development:

    i. Develop existing condition outflow hydrographs for the 2-, 5-, 10-, 25-, 50-, and 100-year 24-hour events.

    ii. Develop proposed condition outflow hydrographs for the 2-, 5-, 10-, 25-, 50-, and 100-year 24-hour events. Separate hydrographs must be developed for the full range of downstream conditions.

    iii. Demonstrate that the outflow from the proposed detention facility does not exceed the existing condition outflow for all storm events (2-, 5-, 10-, 25-, 50-, 100-year, 24-hour storm events.) This analysis must also consider the full range of downstream conditions. This means that the pond has sufficient storage volume necessary to detain the site's runoff under maximum tailwater conditions.

    iv. A narrative description, summary table(s) and calculations clearly demonstrating conformance with all of the requirements listed above must be provided.

18. The proposed contours should be clearly labeled and coincide with the areas used in the stage-storage-discharge relationship. This relationship should be included on the plan sheet.

19. Detailed calculations should be provided for the stage-storage-discharge relationship used for the 15-inch pond outfalls. It appears that the pond routings are only for the 100-year storm event and not sized for all ranges of events.

20. The detention facilities shall provide an overflow structure and overflow path that can safely pass excess flows through the development site. The location of the proposed overflow from the detention facility should be shown on the plan set.

21. A detail of the overflow weir should be included on the plan set including all relevant dimensions and elevations.

22. The City of Wichita requires a minimum of one-foot free board to be provided on all detention facilities.

23. It appears that runoff in each basin may be draining south undetained. A drainage swale or other means may be necessary along the south property boundary to redirect drainage to the detention basins.

24. A drainage basin map delineating the on- and off-site flow areas should be included for review. It is unclear what the existing drainage patterns north and west of the site.

25. Drainage Easements need to be provided over/about the on-site storm sewer system, and over land drainage swales, which are necessary to convey the 100 year storm runoff to either detention facility, unless otherwise located in a dedicated reserve for said purpose.

If you have any questions or concerns regarding this review, please contact me by phone at 268-4624 or email at slindebak@wichita.gov.

Sincerely,

Scott C. Lindebak, P.E.
Civil Engineer

cc: file

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