

DRAINAGE PLAN
KANSAS STATE BANK
ADDITION
TO
WICHITA, SEDGWICK COUNTY, KANSAS

PREPARED BY



27 APRIL 2007



DRAINAGE PLAN RENNICK COMMERCIAL ADDITION

FINAL REPORT

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PROJECT NARRATIVE

EXISTING CONDITIONS

The site is located just north of the intersection of Maize Road and Kellogg Avenue (US-54). The site is just west of the Cowskin Creek and fronts to Maize Road. The proposed property is approximately 1.3 acres and currently has 2 residential homes built there. The topography of the site falls to the east and into the Cowskin Creek. A small portion drains through the existing driveways and into the Maize Road ROW. There is no FEMA SFHA on the proposed property as of April 26, 2007. The floodplain and floodway boundaries lie just to the east of the east property line.

PROPOSED CONDITIONS

The site is proposed to be developed into a commercial site with associated parking, and utilities. The proposed plat is intended for one lot. Upon development, the site may drain a portion of the frontage to the Maize ROW and the remainder of the site to drain to the east and eventually into the Cowskin Creek. The drainage plan depicts the entire site to drain to the east, if possible upon site development. Since existing conditions depict some flow to the Maize Street ROW, equal developed flow should be allowed to drain to this ROW.

OFFSITE CONDITIONS

The site generally drains to the east and fronts Maize Road. A portion of the site drains to the Maize Road ROW. There is no significant amount of offsite drainage encroaching the site. The adjacent Maize Road appears to have a high point adjacent to our site making the pavement drain to the north and south.

EXISTING CONDITIONS RUNOFF CALCULATIONS

DRAINAGE METHODS & STANDARDS

The following methods and standards, although not a complete list, were used in calculating the existing conditions runoff values.

- Ø STORM SERIES
 - Rational Method utilized for site runoff
 - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 50-yr, 100-yr Storm Events

- Ø DRAINAGE AREAS
 - Areas per existing topography and site visits
 - Hydraflow Hydrograph utilized for flow calculations
 - Time of Concentration using City of Wichita minimum 15 min

SITE CHARACTERISTICS

The proposed site is currently residential homes. There are 2 homes on the property as well as outbuildings near the rear of the lot. A rational 'C' factor of 0.67 was used for the residential lots. The Maize Road frontage portion, approximately 0.2 acres, drains to the west and into the ROW. The remainder of the site sheet drains to the west onto the adjacent property and into the Cowskin Creek. A minimum time of concentration of 15 minutes was used for this site. The soil type for the site is Type B. The soil survey can be seen in Appendix A.

EXISTING CONDITIONS HYDROLOGIC ANALYSIS

The site produces a total runoff of approximately 6.1 cfs during the 100-year storm event. A portion of this runoff, 1 cfs, flows to Maize Road. The remainder of the runoff flows via sheet flow to the adjacent property to the east and into the Cowskin Creek. There is no FEMA SFHA on the property

DOWNSTREAM DRAINAGE CAPACITY

The site is near the Cowskin Creek, which has a history of flooding. No detention will be provided on this site due its location downstream of historical flooding. After sheet flowing onto the adjacent property, the runoff drains directly into the Cowskin Creek. There appears to be capacity downstream as it then passes under Kellogg Avenue

POST-DEVELOPMENT HYDROLOGIC ANALYSIS

DRAINAGE METHODS & STANDARDS

The following methods and standards, although not a complete list, were used in developing the drainage and grading plans.

- Ø STORM SERIES
 - Rational Method utilized for site runoff
 - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 50-yr, 100-yr Storm Events

- Ø DRAINAGE AREAS
 - Areas per existing topography and site visits
 - Hydraflow Hydrograph utilized for flow calculations
 - Time of Concentration using City of Wichita minimum 15 min

DETENTION FACILITIES

There is no detention provided on the proposed site. The site is located downstream of historical flooding problems on the Cowskin Creek. Therefore, no detention is provided on the proposed site. Based on our understanding of this basin, runoff at this point along the creek should be allowed to flow un-detained to allow for more conveyance once the entire basin drains.

PROPOSED CONDITIONS HYDROLOGIC ANALYSIS

The site will generate approximately 1.2 cfs more of runoff than the existing site for a total of 7.3 cfs. The site is developed into residential currently, and will be commercial when re-developed. We expect to drain the front 50' of the site to the Maize Road ROW. The remaining portion of the site will continue to sheet flow to the east onto the adjacent property.

POTENTIAL UPSTREAM/DOWNSTREAM IMPACTS

No potential upstream impacts are expected with this development. The site will not detain its developed runoff. We expect this site to drain its runoff into the Cowskin Creek before the entire basin drains.

No downstream impacts are expected upon development.

FLOODPLAIN SUBMITTAL

SOURCE OF FLOODPLAIN INFORMATION

The site lies within a FEMA Zone X. The site is not located within a mapped FEMA floodplain. The location of the property, on FEMA FIRM Panel 340 of 700, map 20173C0340E, is attached as Exhibit 6 (for Sedgwick County, effective February 2, 2007).

FEDERAL, STATE, & LOCAL PERMITTING

US ARMY CORPS OF ENGINEERS

There does not appear to be any USACOE permitting needed on the proposed project.

KANSAS DEPT OF AGRICULTURE – DWR PERMITTING

There does not appear to be any DWR permitting needed on the proposed site at this time.

FEMA

There is no mapped floodplain located upon the proposed site. Therefore, no FEMA permitting is expected at this time.

KANSAS DEPT OF TRANSPORTATION

There does not appear to be any KDOT permitting needed on the proposed project.

SEDGWICK COUNTY ROW

There does not appear to be any Sedgwick County Permitting on the proposed project. Although the a portion of the drainage continues to drain into the Maize Road ROW.

DRAINAGE/GRADING PLAN

Scale 1:50

SUPPORTING CALCULATIONS

APPENDIX A: USGS Soils Survey

APPENDIX B: HydraFlow Hydrographs

USGS Soils Survey

HydraFlow Hydrograph