STORM WATER DRAINAGE REPORT

STONE CANYON – NORTH PARK

LOT 1 thru 82, TRACTS A, B and C

INDEPENDENCE, JACKSON COUNTY, MISSOURI

E. 39TH STREET AND NW RD MIZE ROAD

PREPARED FOR

D&D DEVELOPMENT

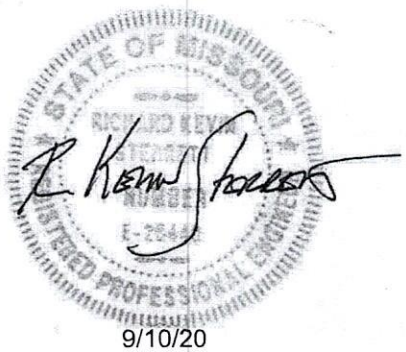
100 NE DELTA SCHOOL ROAD

LEE'S SUMMIT, MO 64064

PREPARED BY

HG CONSULT, INC.

SEPTEMBER 10, 2020



9/10/20

Project Overview

The proposed project is the development of a residential subdivision alongside of an existing golf course. Improvements to the site include the construction of a residential street with cul-de-sacs and utility construction including water lines, sanitary sewer lines and storm sewer improvements including public improvements on NW RD Mize Road.

Existing Conditions

The 57.36-acre site currently is a golf course. This development is centered between Holes 6 and 7. There are no existing buildings on this property. There are three drainage areas for this site. Drainage Area 1 (13.28 acres) drains from the south to the north onto private property then to an off-site pond. Drainage Area 2 (39.45 ac) drains from the north to the south into a public storm sewer system on 39th Street which drains to an off-site pond south of 39th Street. Drainage Area 3 (4.62 ac) drains east onto RD Mize Road which has no public storm sewer improvements and continues to drain to the east under RD Mize Road through a series of pipes and culverts onto private property. See the attached drainage map for the watershed break on this site.
There are no wetlands observed and no flood plain issues per FIRM Panel 312 of 625, Map Number 29095C0312G, dated January 20, 2017 Based on topography, there is no off-site drainage to the site that would influence the proposed or existing drainage patterns.
There is no change to Tracts A, B and C in drainage patterns or flows.

Proposed Conditions

The improvements to this site include curbed streets that channels the storm water through a series of catch basins and storm sewer piping to a series of existing catch basins on the north side of 39th Street and to a series of proposed catch basins on RD Mize Road. All catch basins on RD Mize Road drain to the existing catch basins on the north side of 39th Street. All storm catch basins drain under 39th Street by storm sewer piping and discharge into a dirt lined ditch which drains south west to a pond on the south side of 39th Street.

There are no improvements in this area that would change the drainage patterns as they are currently.
This is a three phase project and future improvements are anticipated as shown in the preliminary plat.

Design and Methodology

The rational method for evaluating the storm water discharge was used. Both Pre-Development and Post-Development conditions were considered and calculations for both are provided and shown on Sheet 1 of 1, Drainage Area Map. Using KCAPWA 5602.3 Runoff Coefficients for Undeveloped areas a runoff coefficient of 0.30 was obtained and used for Pre-Developed condition. For Post-Developed condition a runoff coefficient of 0.51 was used. A time of 5 minutes was used for the time of concentration in pre-developed and post-developed conditions.

Pre-Developed Drainage Area and CN Values

Land Use (Existing)	**Area**	**Area (SF)**	**Area (Ac)**	**Runoff Coefficient (Existing)**
Undeveloped (golf course)	1	710,140	16.30	0.30
Undeveloped (golf course)	2	505,714	11.61	0.30
Undeveloped (golf course)	3	198,089	4.54	0.30

Pre-Developed Flow Values

Land Use (Existing)	**Area**	**2-Year (cfs)**	**10-Year (cfs)**	**100-Year (cfs)**
Undeveloped (golf course)	1	26.45	35.95	50.46
Undeveloped (golf course)	2	18.84	25.60	35.94
Undeveloped (golf course)	3	7.37	10.01	14.05

Post-Developed Drainage Area and CN Values

Land Use (Proposed)	Area	Area (SF)	Area (Ac)	Runoff Coefficient (Proposed)
Developed (residential subdivision)	1	710,140	16.30	0.51
Developed (residential subdivision)	2	505,714	11.61	0.51
Developed (residential subdivision)	3	198,089	4.54	0.51

Post-Developed Flow Values

Land Use (Existing)	Area	2-Year (cfs)	10-Year (cfs)	100-Year (cfs)
Developed (residential subdivision)	1	44.97	61.10	50.46
Developed (residential subdivision)	2	32.03	43.52	35.94
Developed (residential subdivision)	3	12.52	17.01	23.89

Temporary Erosion and Sediment Control

During construction and prior to paving, it will be necessary to control erosion and sediment from the site during storms with in the construction timeframe. To insure that sediment does not enter the existing swale, perimeter containment is controlled by silt fence installation and inlet protection. To keep construction traffic from tracking mud onto the adjacent city street, a stabilized rock construction entrance will need to be installed. These erosion control devices, and their maintenance throughout the construction timeframe, are required by ordinance and the details for them are referenced by KCAPWA details.

Design Calculations and Exhibits

Existing and Developed Drainage Area Map showing the discharge for each

NCS Soil Survey