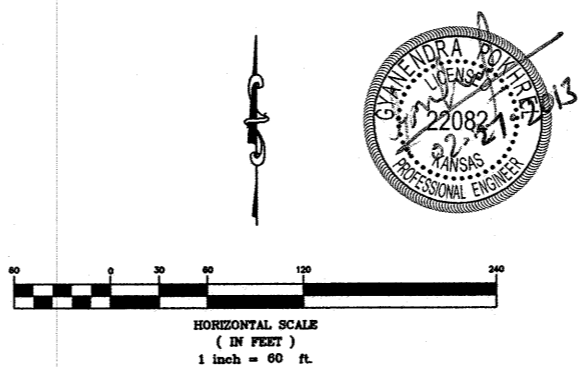


Concrete Weir Detail

- Engineer's Notes:**
1. Site drainage calculations were developed using the SCS Method for peak flow. Weighted CN and S values were established based on existing and proposed site conditions. Impervious area is assumed for commercial development with 85% of as indicated in drainage manual.
 2. The site drainage will be maintained to the north ditch of I-35. A permit will be applied to the KTA to drain the pond to the KTA ditch.
 3. Future grading plan shall follow the drainage pattern as shown on plan indicated by flow arrows.
 4. The property is not in designated 100-yr floodplain (FIRM Panel 20173C0387E, February, 2 2007.)
 5. Design of internal storm sewer system and/or surface drainage is required to drain all of the site to the proposed detention basin when the site evolves.
 6. East 0.77 and West 0.23 acres of offsite area will continue to drain as existing condition through the property. A cross lot drainage agreement will be made as part of the drainage plan.



Project Narrative:
The site is located between Kellogg and I-35 (Kansas Turnpike), about 1/4 mile west of the intersection. The total site is about 9.22 acres. The entire site is undeveloped and covered by grass. Site is zoned limited commercial (LC) and will remain same in developed condition. The proposed use of the land is to develop in to a commercial area with buildings, parking lot and other impervious stone display area for stone company. The entire site is the drainage basin of the north turnpike ditch which drains to the south of turnpike through culverts. The drainage condition remains same in developed condition. An extended detention basin is proposed at southeast corner for channel protection and flood detention.

Water Quality and TSS Removal Calculation

Water Quality Volume (WQv) Calculation			
Calculation for water quality volume (WQv=P*Rv*A/12)		Soil Group 'D'	
85th percentile storm event (1.2 inches), P =	1.20	inches	Calculation of Rv
Total area, A =	9.22	acres	Coeff.
Rainfall Coeff, Rv =	0.845	cf	Area
Required Vol. for Water Quality =	0.78	ac-ft	Coeff for undisturbed area, Rv _U =
			0.05
			Coeff for turf cover, disturbed, Rv _T =
			0.25
			Coeff for impervious area, Rv _I =
			0.95
Corresponding Water Quality Peak Flow =	7.57	cfs	Weighted, Rv =
			0.845

Total water quality volume will be treated in one or more proprietary systems. Total water quality flow needs to treated = 7.57 cfs

Water Quality Peak Flow Calculation	
Aera =	9.22 acres
WQv =	1.014 inches
Pond and Swamp Factor, Fp =	0.700
Calculated CN =	98.3
S =	0.174 inches
la =	0.035 inches
la/P =	0.029
qu	740.0 cfs/sq mi/hr
Water quality peak flow	7.57 cfs

No of HG-5 (Hydroguard) unit required = 3. Each Hydroguard unit (HG-5) will be sized to accommodate about 2.70 cfs of treatment flow for 80 % TSS removal. The location and drainage basin for each hydroguard unit will be designed as the site evolves.

Channel Protection Volume Detention

Channel protection volume for entire site (1) is detained in extended detention basin located at southeast corner of the property. The required extended detention is archived by 3" orifice located at an elevation of 1351.0 on the wall of proposed weir structure. Detention time for CPv = 24.05 hrs (centroid-centroid)

Channel Protection Volume Calculation									
Drainage Basin	Acres	Developed				Existing			
		24 hr 1 yr Storm	Curve Number (CN)	S	Runoff Volume inches	24 hr 1 yr Storm	Curve Number (CN)	S	Runoff Volume inches
1	9.22	2.80	96	0.417	2.36	2.80	84	1.905	1.35

Runoff Calculations (2-, 5-, 10-, 25-, and 100-yr)

EXISTING CONDITION:
Onsite Area, A1 = 9.22 acres,
Impervious Area = None, Grass Area = 100%, Hydrological Soil Group = D

EXISTING SITE									
DRAINAGE AREA	ACRES	Tc min	CN	Q2	Q5	Q10	Q25	Q100	REMARKS
On-site (1)	9.22	21	84	19.15	27.76	33.86	41.78	56.81	Onsite draining south
Off-site (2)	0.81	15	96	2.94	3.84	4.46	5.28	6.77	Kellogg Right of Way
Off-site (3)	1.00	15	97	3.69	4.79	5.56	6.54	8.39	East and West offsite

DEVELOPED CONDITION:
Onsite Area, A1 = 9.22 acres,
Impervious Area = 85% for commercial use, Grass Area = 15%, Land use: LC
Hydrological Soil Group = D

DRAINAGE AREA	ACRES	Tc min	CN	Q2	Q5	Q10	Q25	Q100	REMARKS
On-site (1)	9.22	15	96	33.47	43.68	50.79	59.90	77.03	Onsite draining south
Off-site (2)	0.81	15	96	2.94	3.84	4.46	5.28	6.77	Kellogg Right of Way
Off-site (3)	1.00	15	97	3.69	4.79	5.56	6.54	8.39	East and West offsite

OUTFLOW							
DRAINAGE AREA	ACRES	Q2	Q5	Q10	Q25	Q100	REMARKS
Onsite+Offsite (1+2+3)	11.03	7.39	19.65	31.24	46.55	71.52	Total area draining to basin

BENCHMARK:
COW Disc in the center median on the west side of the intersection of Zelta and Kellogg. Approximately 57 feet southwest of a fire hydrant and 11 feet south of the south edge of asphalt of the westbound lane.
Elevation = 1362.64 NAVD 88

Absolute Natural Stone Addition
Drainage Plan
Wichita, Kansas

kemiller engineering

PROJECT NUMBER

KEM NO. 12018	FILE drainage	DATE 02/2013	SHEET 1.0
DESIGN GP	DRAWN GP	REVISED 02/26/2013	