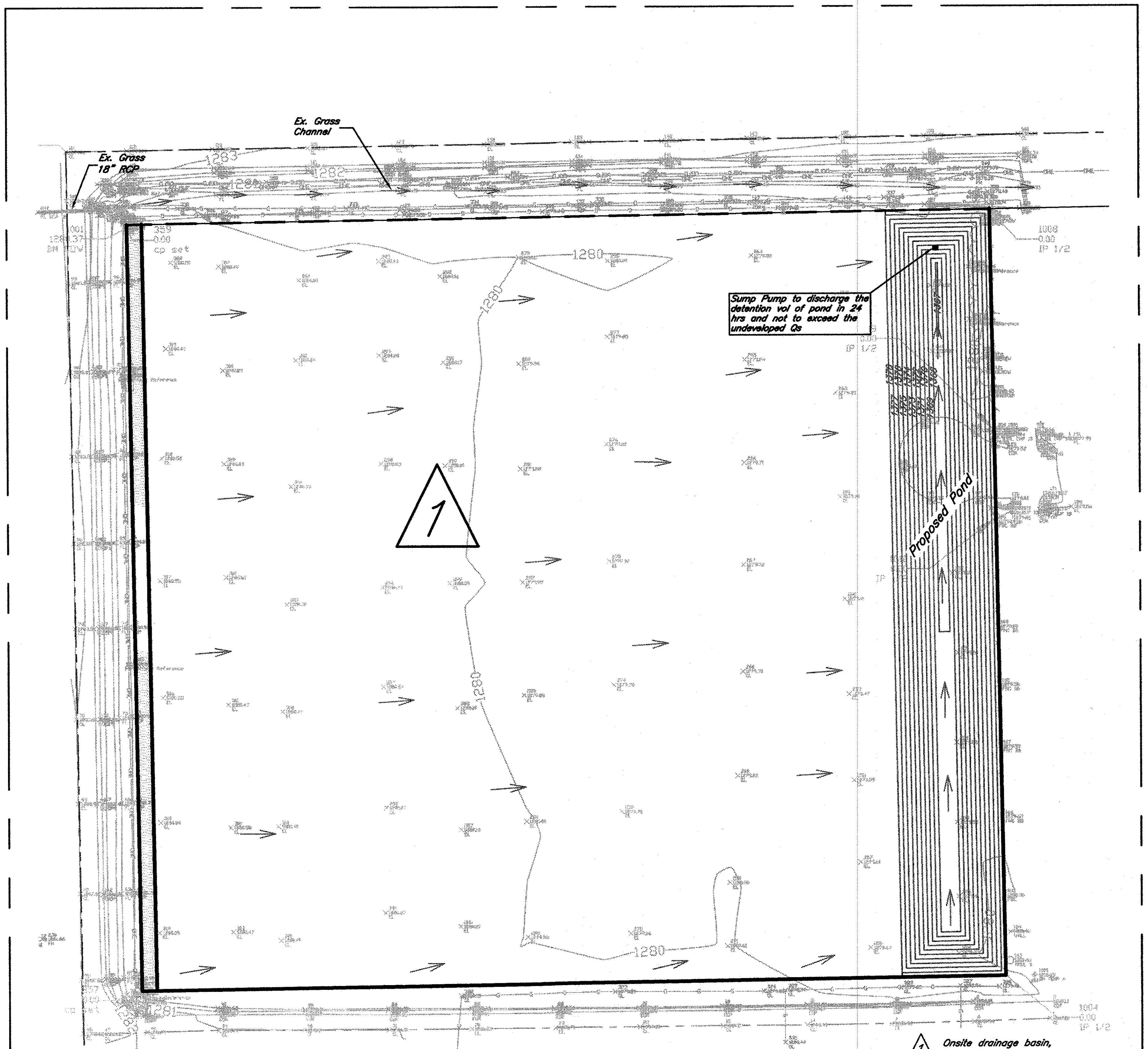

BENCHMARKS:
COW Disc at the northwest corner of property. Approximately 25.0' south of power pole and 3' east of guy wire. Elevation=1280.37 NAVD 88

1 Onsite drainage basin, Area = 6.97 acres

– – – Drainage Basin Boundary

HORIZONTAL SCALE
(IN FEET)
1 inch = 40 ft.

Project Narrative:
The site is located on southeast corner of 47th St. South and West Street. The total site is about 6.97 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 and parking lot. The site is very flat. The overall drainage pattern indicates that the overflow from the site drains towards the northeast corner. The south ditch along the 47th St. South collects the runoff and drains to the channel located east of the proposed site.

Water Quality and TSS Removal Calculation

Water Quality Volume (WQv) Calculation

Calculation for water quality volume (WQv=P*Rv*A/12)				Soil Group 'C'		
85th percentile storm event (1.2 inches),P =	1.20	inches		Calulation of Rv		
Total area, A =	6.97	acres			Coeff.	Area
Rainfall Coeff, Rv, =	0.841	cf		Coeff for undisturbed area,R_{VU}=	0.04	0.00
Required Vol. for Water Quality =	**0.59**	ac-ft		Coeff for turf cover,disturbed,R_{VT}=	0.22	1.05
Corresponding Water Quality Peak Flow =	**8.13**	cfs		Coeff for impervious area, R_{VI}=	0.95	5.92
				Weighted, Rv =	**0.841**	

Elevn	Area	Acre	Cumulative Area
1367	100	0.002	0.002
1368	2027	0.047	0.049
1369	6437	0.148	0.197
1370	9316	0.214	0.410
1371	12267	0.282	0.692
1372	15290	0.351	1.043
1373	18385	0.422	1.465
1374	21552	0.495	1.960
1375	24791	0.569	2.529
1376	28102	0.645	3.174
1377	31485	0.723	3.897
1378	34940	0.802	4.699

Water Quality Peak Flow Calculation

Aera=	6.97	acres
WQv=	1.009	inches
Pond and Swamp Factor, Fp=	1.00	
Calculated CN=	98.2	
S=	0.179	inches
Ia=	0.036	inches
Ia/P=	0.030	
qu	740.0	cfs/sq.mi/in
Water quality peak flow	**8.13**	**cfs**

The water quality volume will be treated in pond. A dead storage of water quality volume is provided at the bottom of pond.
Total water quality volume needs to be treated = 8.13 cfs and corresponding vol.= 0.59 ac–ft.
Elevation of pump intake pipe = 1370.64

Channel Protection Volume Detention

Channel protection volume detention is not required as the pump is proposed to discharge the pond. The site is very flat and drains very slowly to the downstream.

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

EXISTING CONDITION:
Onsite Area (1) = 6.97 acres,
Impervious Area = None, Grass Area= 100%, Hydrological Soil Group =C

EXISTING SITE

DRAINAGE AREA	ACRES	Tc min	CN	Q2	Q5	Q10	Q25	Q100	REMARKS
On-site (1)	6.97	47	80	7.10	10.84	13.55	17.12	23.95	Onsite draining Northeast

DEVELOPED CONDITION:
Onsite Area (1) = 6.97 acres, Impervious Area =85% for commercial use, Grass Area= 15%, Land use: GC Hydrological Soil Group =C

DEVELOPED SITE

DRAINAGE AREA	ACRES	Tc min	CN	Q2	Q5	Q10	Q25	Q100	REMARKS
On-site (1)	6.97	15	96	25.31	33.02	38.40	45.28	58.23	Onsite draining Northeast

A sump pump shall be designed in such a way that the discharge shall not exceed the undeveloped Qs and there shall be enough storage available in the basin after 24 hrs of rainfall.

Engineer's Notes:

1. *Site drainage calculations were developed using the SCS Method for peak flow. Weighted CN and I 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 south ditch of the 47th St. South. A sump pump will be used to discharge the pond to the 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 20173C0485E, February, 2 2007.)*
5. *The site plan is not available now. Location of stormwater detention pond may change. The reserve or easement for the detention basin shall be dedicated during the site design.*
6. *Design of internal storm sewer system and/or surface drainage is required to drain all of the site to the proposed detention basin during the site design.*

GYANENDRA POKHREL LICENSED 22082 03/25/13 KANSAS PROFESSIONAL ENGINEER

West 47th Addition
Drainage Plan
Wichita, Kansas

kemiller engineering
516 S. Market, Wichita, KS 67202 (316)264-0242

PROJECT NUMBER			
KEM NO. 12155	FILE drainage	DATE 02/2013	SHEET 1.0
DESIGN GP	DRAWN GP	REVISED	