

Existing/Undeveloped Condition:
 Total Site Area = 2.89 Acres, Offsite = 0.25 Acres
 Impervious Area = 0.00 Acres, Offsite = 3.14 Acres
 Gross Area including offsite = 3.14 Acres
 Shallow Concentrated flow = 415 ft, Tc = 10.0 min
 Soil Group D with average slope less than 1%

Existing Drainage Calculations

Area #	Acres	Tc	24-hr rainfall depth (inches)	Curve Number (CN)	Existing Q, cfs	Remark								
Entire Site(1)	3.14	22	3.60	4.80	5.52	6.48	8.16	84	6.61	10.06	12.15	14.96	19.98	Entire Site-offsite draining to the northwest corner

Existing Tc Calculation:
 Flow Length = 0.25 ft, with average slope of ground 0.37%
 Tc = 10.0 min
 Total Tc = 22.3 min = 22 min

Water Quality Volume Calculation

Calculation for water quality volume (WQV=P*RA/12)	Soil Group 'D'	Calculation of Rv
85th percentile storm event (1.2 inches), P = 1.2	2.89	
Total area, A = 2.89	acres	
Rainfall Coeff. Rv = 0.524	cf	
Required Vol. for Water Quality = 0.15	ac-ft	
		Weighted Rv = 0.524

Water Quality Peak Flow Calculation

Aera = 2.89	acres
WQV = 0.628	inches
Pond and Swamp Factor, Fp = 0.700	
Calculated CN = 93.29	
S = 93.29	inches
la = 0.144	inches
la/P = 0.120	
qu = 730.0	cfs/sq.mil
Water quality peak flow = 1.45	cfs

Water quality volume is treated in Proprietary system (HG-6, as designed by Hydroworks). The HG-6 has capacity to treat the treatment flow of 2.1 cfs and can bypass 10.5 cfs of flow with 80% TSS removal for 200 micron particle size.

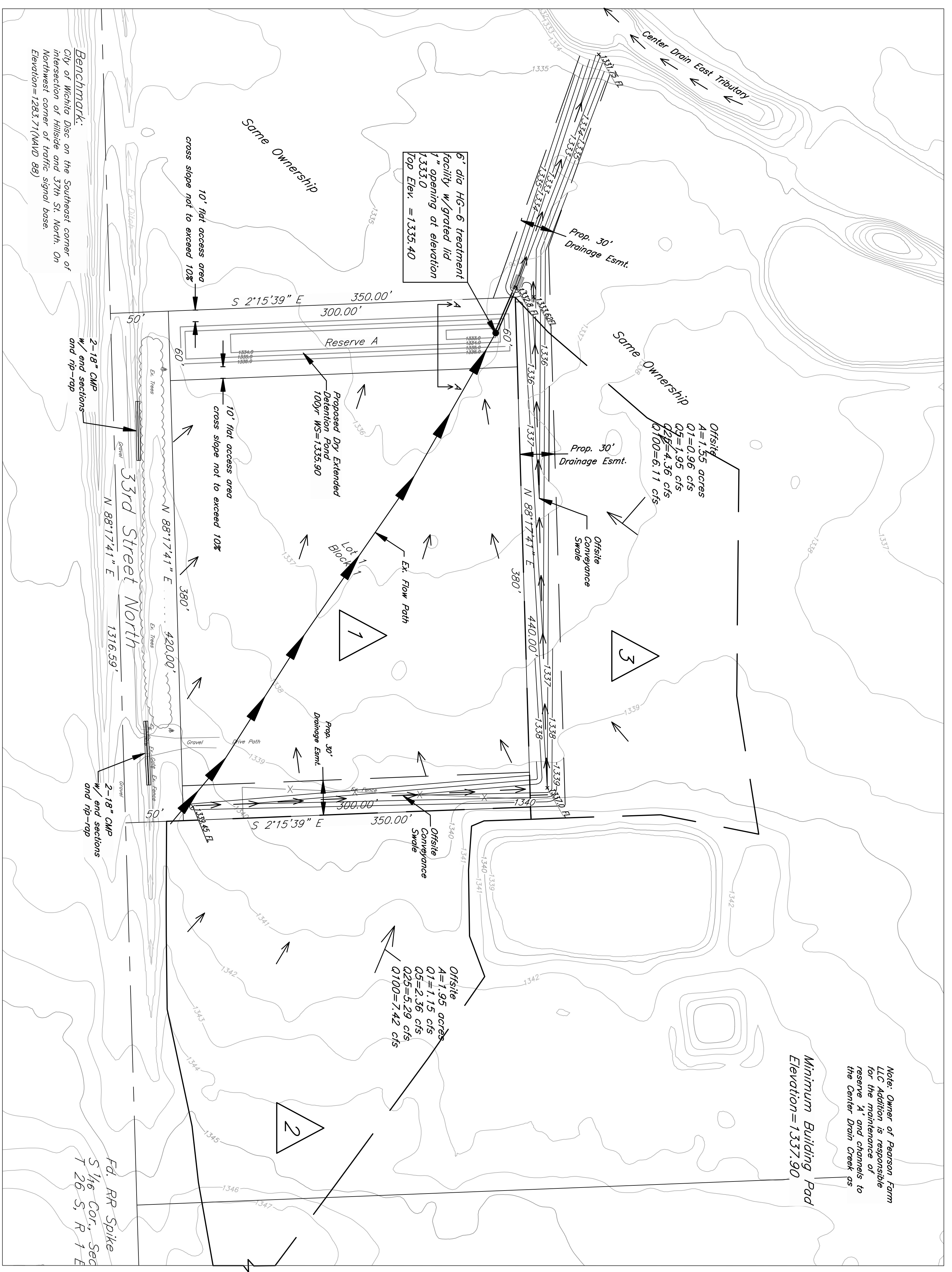
Channel Protection Volume Calculation

Drainage Area	Acres	24 hr 1 yr Storm Curve Number (CN)	Water volume 24 hr 1 yr Storm	Existing Curve Number (CN)	Existing Volume
Entire Site	2.89	2.88	0.870	2.05	2.88
					84
					1.905
					1.42

Detention Pond Volume

Elevation	Area sq. ft.	Area acres	Storage ac-ft	Cumulative Storage ac-ft
1333.0	340.8	0.01	0.01	0.01
1333.5	1570.6	0.04	0.03	0.04
1334.0	3725.2	0.09	0.05	0.09
1334.5	5439.9	0.12	0.07	0.16
1335.0	6623.9	0.15	0.08	0.25
1335.5	7839.9	0.18	0.10	0.34
1336.0	9087.9	0.21		

Channel protection volume is detained in Extended Detention Pond as located in plan by 1" orifice @ 1333.0. The grate of manhole at elevation 1335.5 will drain the excess runoff through 18" RCP. Detention time for CPV = 27.2 hrs (centroid-centroid)



Note: Owner of Pearson Farm LLC Addition is responsible for the maintenance of reserve A and channels to the Center Drain Creek as

Minimum Building Pad Elevation = 1337.90

Approximate Flood Detention analysis for Center Drain East Tributary

Approximate Drainage Area at intersection to 33rd Street N = 1152 acres
 Curve Number used, CN=61

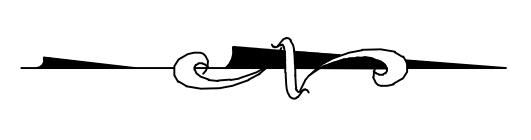
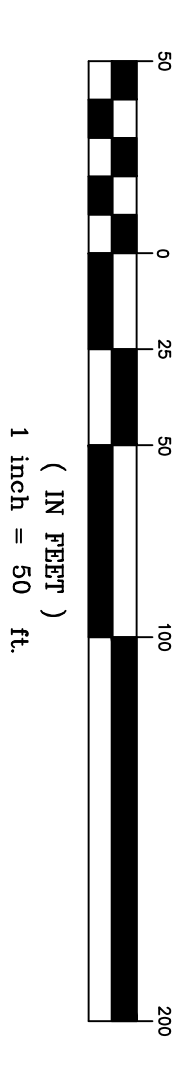
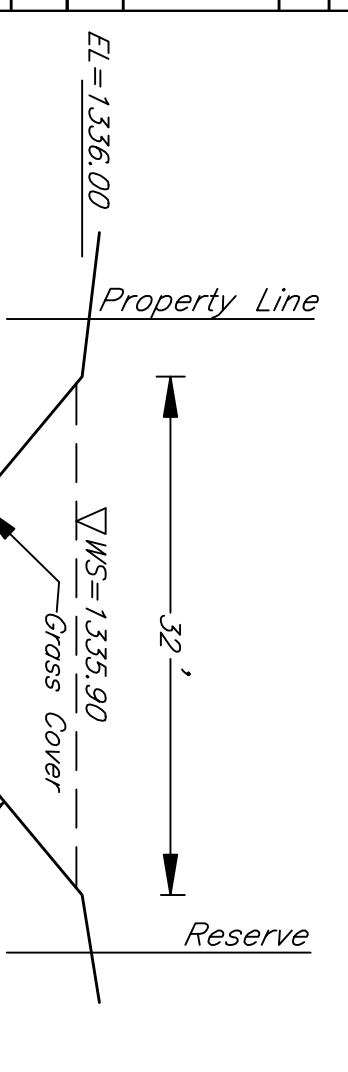
Storm Event	Peak Flow cfs	Time to peak Flow, hrs
2-yr	197	13.29
5-yr	467	13.19
10-yr	684	13.16
25-yr	955	13.13
100-yr	1515	13.11

Developed Site analysis

Storm Event	Peak Flow	Time to peak Flow, hrs
2-yr	10.98	12.05
5-yr	15.35	12.05
10-yr	17.95	12.05
25-yr	21.4	12.05
100-yr	27.40	12.05

Comparison between onsite peak and peak flows in Creek

Storm Event	Onsite Time to Peak	Flow in creek at Onsite Peak	Increase in peak In Creek ?
2-yr	12.05	0.37	No
5-yr	12.05	3.54	No
10-yr	12.05	13.25	No
25-yr	12.05	41.07	No
100-yr	12.05	115.97	No



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**Pearson's Farm LLC Addition
 Proposed Drainage plan
 Wichita, Kansas**

PROJECT NUMBER	FILE	DATE	SHEET
	10145	03/7/2011	1
	DESIGN	GP	
	DRWN	GP	
	REVISED		