

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 and on-site 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 of Rv	
Calculation for water quality volume (WQV=F*RV*AI/2)	Soil Group 'C'	Calculation of Rv	
85th percentile storm event (1.2 inches), p =	1.20	inches	
Total area, A =	6.97	acres	
Rainfall Coeff. Rv =	0.841	d	Coeff. Area
Required Vol. for Water Quality =	0.59	ac-ft	Coeff for undisturbed area, Rv,u = 0.04
			Coeff for turf cover, disturbed, Rv,d = 0.22
			Coeff for impervious area, Rv,i = 0.95
Corresponding Water Quality Peak Flow =	8.13	cfs	Weighted, Rv = 0.841

Water Quality Peak Flow Calculation	
Area =	6.97 acres
WQV =	1.009 inches
Pond and Swamp Factor, Fp =	1.00
Calculated CN =	98.2
S =	0.179 inches
laP =	0.036 inches
laP =	0.030
qu	740.0 cfs/sq mil/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 used to discharge the pond. The site is very flat and drains very slow to the downstream.

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

EXISTING CONDITION:
 On-site Area, A1 = 6.97 acres, Hydrological Soil Group = C
 Impervious Area = None, Grass Area = 100%

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

DEVELOPED CONDITION:
 On-site Area, A1 = 6.97 acres, Impervious Area = 85% for commercial use, Grass Area = 15%, Land use: GC
 Hydrological Soil Group = C

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

A sump pump with the capacity 955 gal/min (2.13 cfs) will be used to drain the 100 yr 24 hr storm. Sump pump will take 24 hrs to empty the basin.

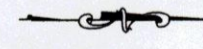
Engineer's Notes:

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 (FRW Panel 2017SC04855, 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 site encloses.

West 47th Addition
 Drainage Plan
 Wichita, Kansas

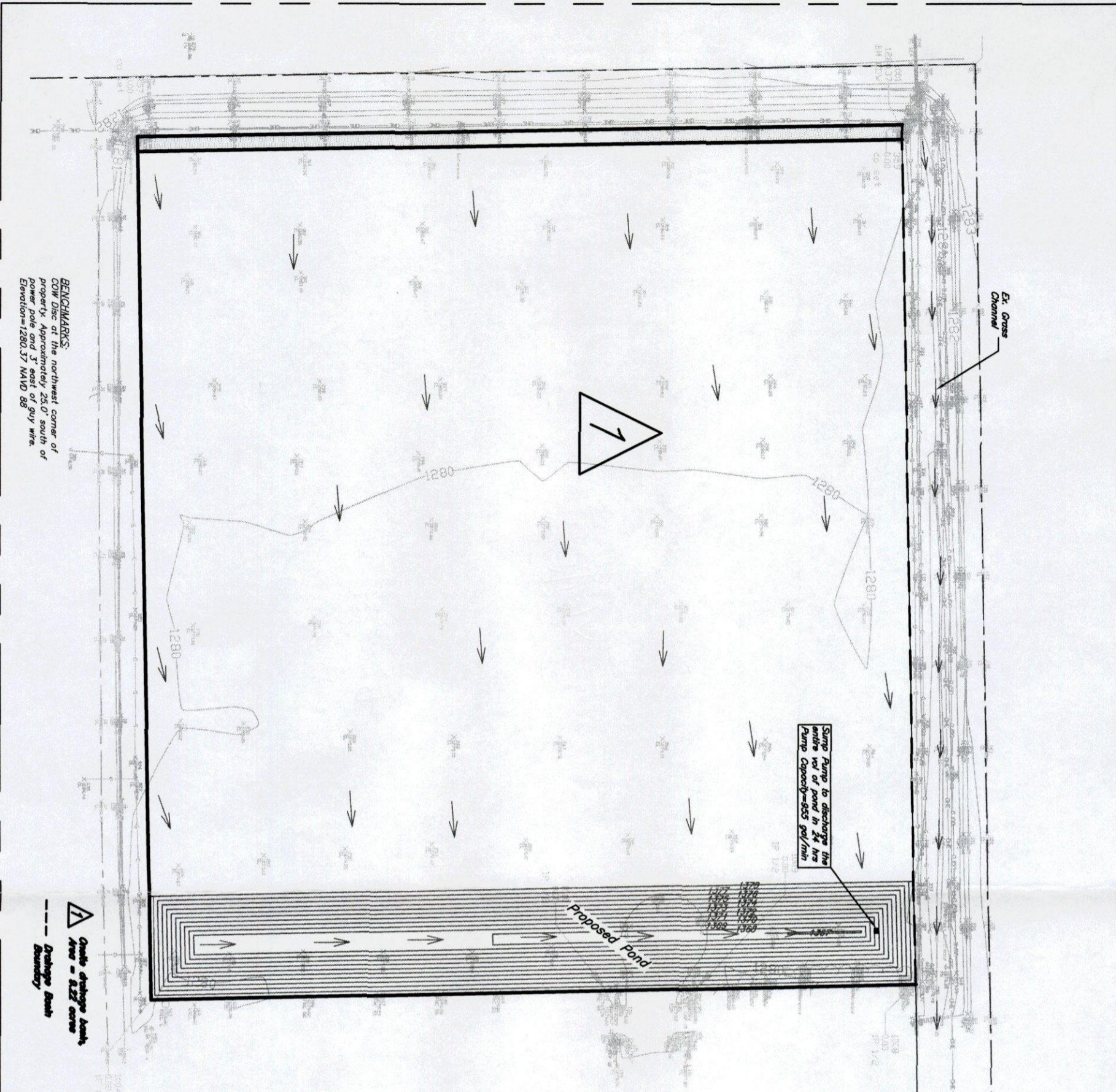
PROJECT NUMBER

	SHEET NO. 12155 DATE 02/2013 DESIGN DR/AM REVISION	SHEET 1.0
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△ Grade drainage look
 Area = 827 acres
 --- Drainage Basin Boundary

BENCHMARKS:
 COM 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



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 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 and another drainage basin of the north turnpike ditch which drains to the south through culverts. The drainage condition remains same in developed condition. An extended detention basin is proposed of southeast corner for channel protection and flood detention.

Water Quality and TSS Removal Calculation:

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Calculation for water quality volume (WQV= $P \cdot R_v \cdot A / 12$)	Soil Group 'C'	Calculation of Rv	
85th percentile storm event (1.2 inches), P =	1.20	inches	
Total area, A =	6.97	acres	
Rainfall Coeff. Rv =	0.841	cf	
Required Vol. for Water Quality =	0.69	ac-ft	
Corresponding Water Quality Peak Flow =	8.13	cfs	
		Weighted Rv =	0.841

Water Quality Peak Flow Calculation	
Area =	6.97 acres
WQV =	1.009 inches
Pond and Swamp Factor, Fp =	1.00
Calculated CN =	98.2
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la =	0.036 inches
la/P =	0.030
qu	740.0 cfs/sq mil/in
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Channel Protection Volume Detention

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

EXISTING CONDITION:
 Onsite Area, A1 = 6.97 acres, Gross Area = 100%, Hydrological Soil Group = C
 Impervious Area = None, Gross Area = 100%

DRAINAGE AREA		EXISTING SITE		DEVELOPED SITE		REMARKS		
ACRES	Tc MIN	CN	Q2	Q5	Q10	Q100		
On-site (1)	6.97	47	80	7.10	10.84	13.55	23.95	Onsite draining Northeast

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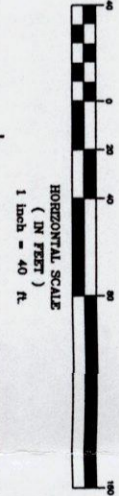
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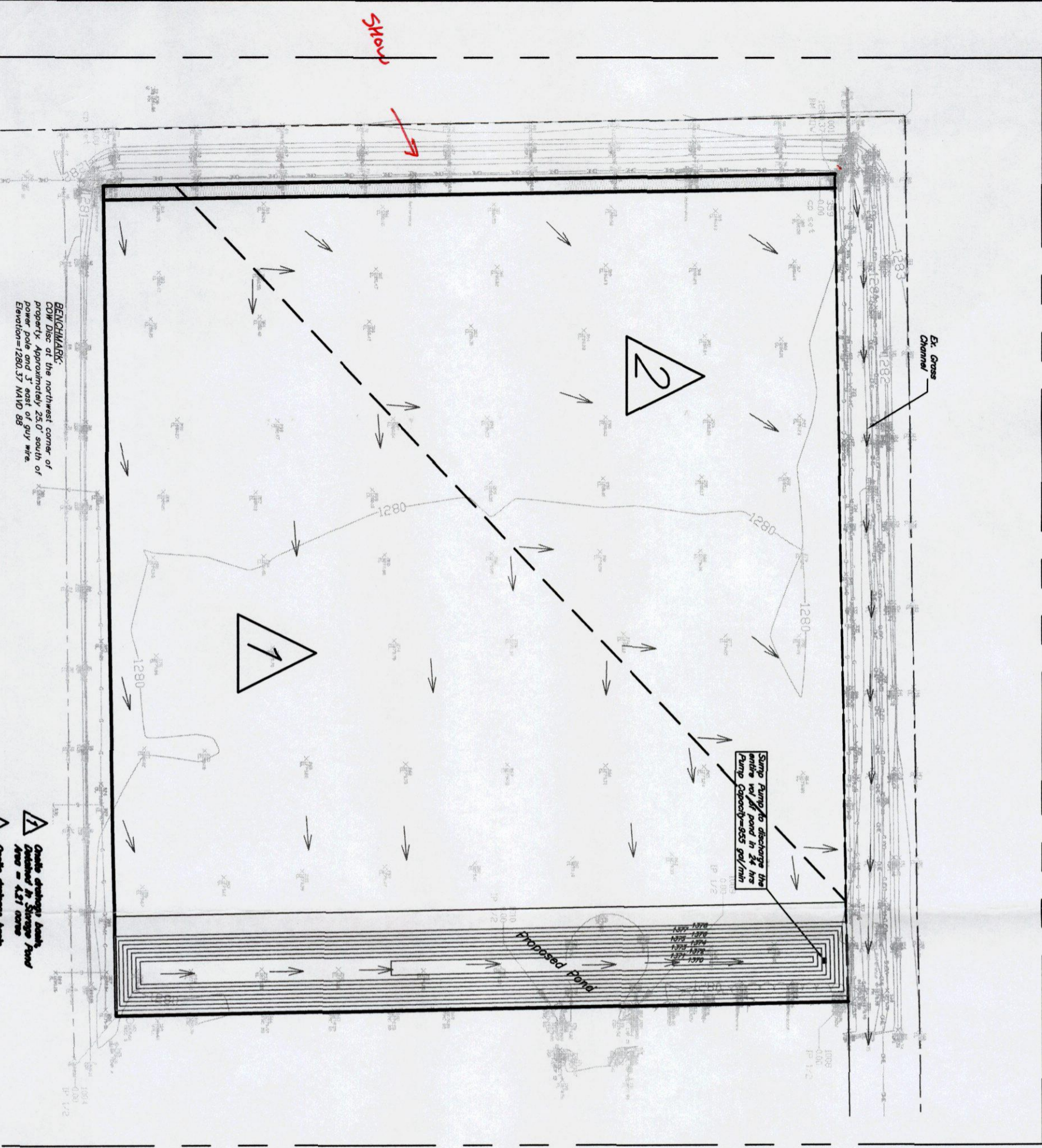
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- The site drainage will be maintained to the south ditch of the 47th St. South. A sump pump will be used to discharge the pond to the ditch.
- Future grading plan shall follow the drainage pattern as shown on plan indicated by flow arrows.
- The property is not in designated 100-yr floodplain (FRM Panel 2017300485E, February, 2 2007).
- Design of internal storm sewer system and/or surface drainage is required to drain all of the site to the proposed detention basin when site encloses.

**West 47th Addition
 Drainage Plan**
 Wichita, Kansas



Kemiller Engineering

DESIGN	DATE	SHEET
DRYAN	02/2013	1.0
REVISION		



BENCHMARK:
 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

- △ Grade drainage basin delineated by Storage Pond Area = 4.51 acres
- △ Grade drainage basin delineated by Storage Pond Area = 2.78 acres
- Drainage Basin Boundary