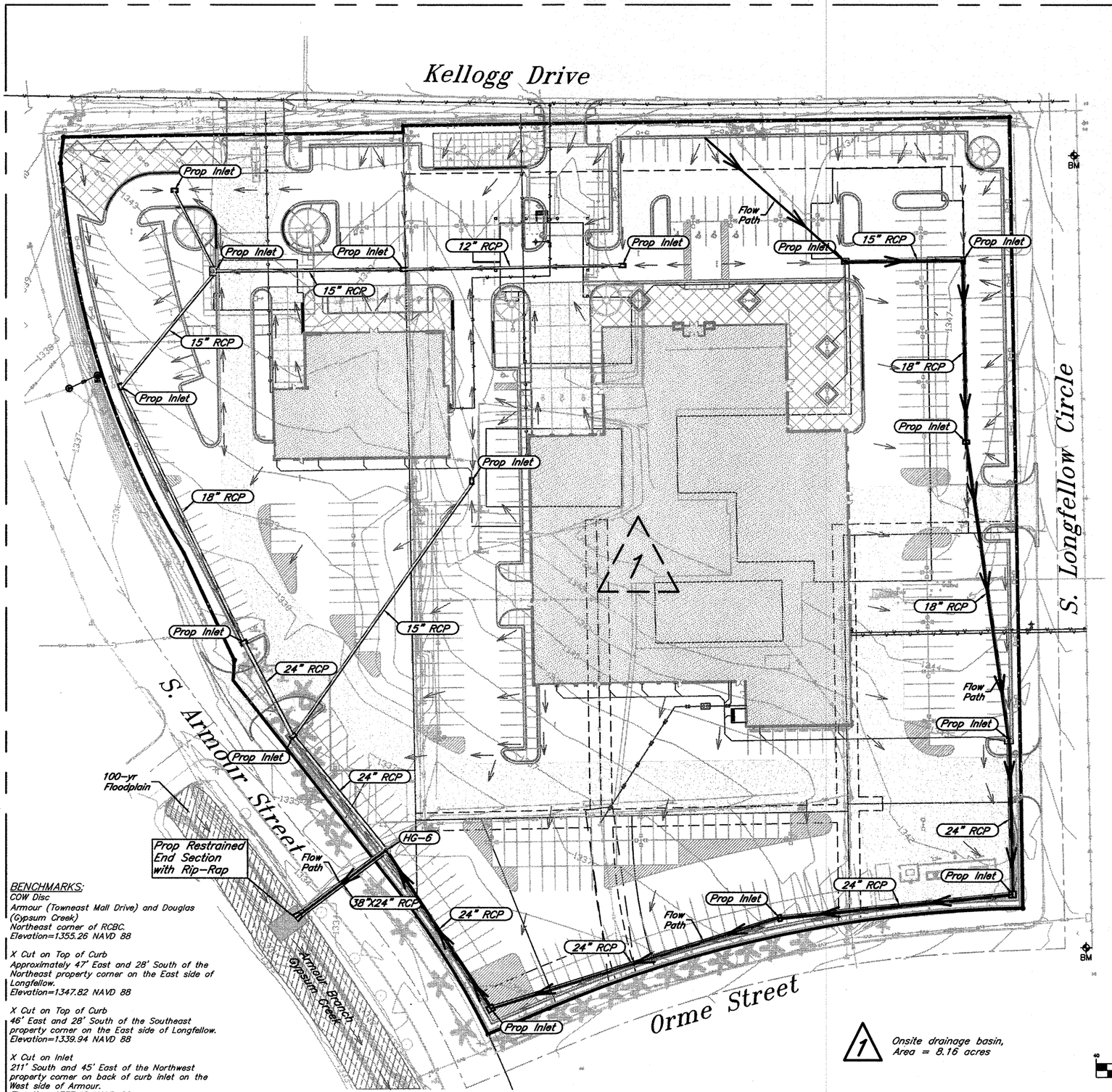

BENCHMARKS:

COW Disc
Armour (Towneast Mall Drive) and Douglas (Gypsum Creek)
Northeast corner of RCBC.
Elevation=1355.26 NAVD 88

X Cut on Top of Curb
Approximately 47' East and 28' South of the Northeast property corner on the East side of Longfellow.
Elevation=1347.82 NAVD 88

X Cut on Top of Curb
46' East and 28' South of the Southeast property corner on the East side of Longfellow.
Elevation=1339.94 NAVD 88

X Cut on Inlet
211' South and 45' East of the Northwest property corner on back of curb inlet on the West side of Armour.
Elevation=1337.48 NAVD 88

Project Narrative:
The site is located on southeast corner of Kellogg and Armour. The site is about 8.16 acres and has buildings, parking and other facilities for car dealership. The entire site is covered by impervious surface. The scope of the project is to demolish existing building, parking and construct new building, parking and other facilities for car dealership. The use of site in proposed condition remains same as existing. Only 30% of the total water quality volume needs to be treated for redevelopment site as per City of Wichita Stormwater Design Manual. The entire site is the drainage basin of Armour branch of Gypsum creek and drains without detention in existing condition. The flood detention and channel protections are not considered for this project.

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		Calulation of Rv		
Total area, A =	8.16	acres			Coeff.	Area
Rainfall Coeff, Rv, =	0.875	cf		Coeff for undisturbed area,R_{VU}=	0.05	0.00
Required Vol. for Water Quality =	0.71	ac-ft		Coeff for turf cover,disturbed,R_{VT}=	0.25	0.88
Corresponding Water Quality Peak Flow =	9.90	cfs		Coeff for impervious area, R_{Vi}=	0.95	7.28
				Weighted, Rv =	0.875	

Total water quality flow needs to be treated for proposed development is 30% of total water quality volume from the entire site. Corresponding water quality treatment flow = 9.90x0.30 = 2.97 cfs.

Proposed Hydroguard unit (HG-6) is sized to accommodate the 2.97 cfs of treatment flow.

Hydroguard Sizing:
Critical Peclet # =0.0033*200+0.0045=0.6645
Treatment flow based on critical Peclet # for 6' diameter unit, Q=Vs*h*d/Peclet #
Treatment Q =(0.0631*6.0*6)/0.6645=3.42 cfs

Water Quality Peak Flow Calculation		
Aera=	8.16	acres
WQv=	1.049	inches
Pond and Swamp Factor, Fp=	1.000	
Calculated CN=	98.6	
S=	0.138	inches
Ia=	0.028	inches
Ia/P=	0.023	
qu	740.0	cfs/sq.mi/in
Water quality peak flow	**9.90**	**cfs**

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

EXISTING CONDITION:
Total Area, A1 = 8.16 acres,
Total Impervious Area =8.04 acres,
Grass Area= 0.12 acres
Land Use: Car Dealership
Hydrological Soil Group =D

EXISTING SITE									
DRAINAGE AREA	ACRES	Tc min	CN	Q2	Q5	Q10	Q25	Q100	REMARKS
Entire Site	8.16	15	98	30.32	39.16	45.33	53.25	68.20	Existing condition

DEVELOPED CONDITION:
Total Area, A1 = 8.16 acres,
Total Impervious Area =7.28 acres,
Grass Area= 0.89 acres
Hydrological Soil Group =D

DEVELOPED SITE									
DRAINAGE AREA	ACRES	Tc min	CN	Q2	Q5	Q10	Q25	Q100	REMARKS
Entire Site	8.16	15	97	29.92	38.82	45.03	52.99	67.99	Developed condition

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Notes:

1. *Existing and developed flows are calculated using the SCS Hydrograph method. "CN" & "I" values are established from "City of Wichita Stormwater Design Manual."*
2. *The existing and developed peak flows are routed to Armour branch of Gypsum creek. The SWS under Armour St. will be replaced to convey the design storm from the site.*
3. *Flood detention and extended detention for channel protection are not considered as the site is already developed and there will not be increase in flow from existing to developed condition.*

Davis Moore 15th Addition
Drainage Plan
Wichita, Kansas

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

PROJECT NUMBER			
KEM NO. 12142	FILE drainage	DATE 01/2013	SHEET 1.0
DESIGN GP	DRAWN GP	REVISED	