CALCULATIONS SHOWN BASED ON 15 YEAR, 20 MINUTE STORM
THIS SHEET IS FOR DRAINAGE PURPOSES ONLY. DO NOT USE THIS PLAN FOR CONSTRUCTION.

PROVIDED WATER QUALITY VOLUME

THE 1 YEAR 24 HOUR STORM PROVIDES 29,298 CU. FT. OF VOLUME. THEREFORE, AS PART OF THE EXTENDED DETENTION THE DRY DETENTION BASIN MEETS ITS PURPOSE FOR 60% TSS. THE EXISTING GRASS SWALE THAT IS THE OUTFALL FOR THE PROPOSED EXTENDED DETENTION DRY BASIN PROVIDES 40% TSS. THEREFORE THE DEVELOPMENT WILL HAVE 80% TSS REMOVAL BY TREATMENT TRAIN. THE SECOND WATER QUALITY FEATURE BY TREATMENT TRAIN REDUCES TSS BY 50%.

WEIR FORMULA FOR DETENTION BASIN

Q TO WEIR (Q) =	25.52 CFS	
WEIR (C) =	3	(MAY VARY DEPENDING ON WEIR. 3.0 IS FOR A MANHOLE RISER OR GRATE INLET)
LENGTH OF WEIR (L)	10 FT	2 GRATE INLET = 15.0'
WEIR FORMULA:	$h = [q/(c*l)]^{2/3}$	
h =	0.90 FT	
HIGHWATER IN BASII	WEIR ELEVATION + h	
WEIR ELEVATION =	633.00 ft.	
HW IN BASIN =	633.90	
TOP OF POND =	635.00	

(shaded) denotes input cell

Project Name: CVS/Pharmacy NEC Feise and Bryan Road

COMPUTATIONS FOR WQ_V:

Drainage Area	Impervious Area	Percent Impervious
1.84 Ac.	1.31 Ac.	71.2 %

The following computational procedure follows the methodology detailed in Appendix D.10 of the Maryland Stormwater Design Manual.

1. Determine R_V (Volumetric Runoff Coefficient)

$Q_a = (P)(R_v)$

Where:

P=Water quality storm event depth 1.14 "

$R_v = 0.05 + (0.009)(\%\text{impervious area})$

$R_v = 05 + (0.009)(71.2)$

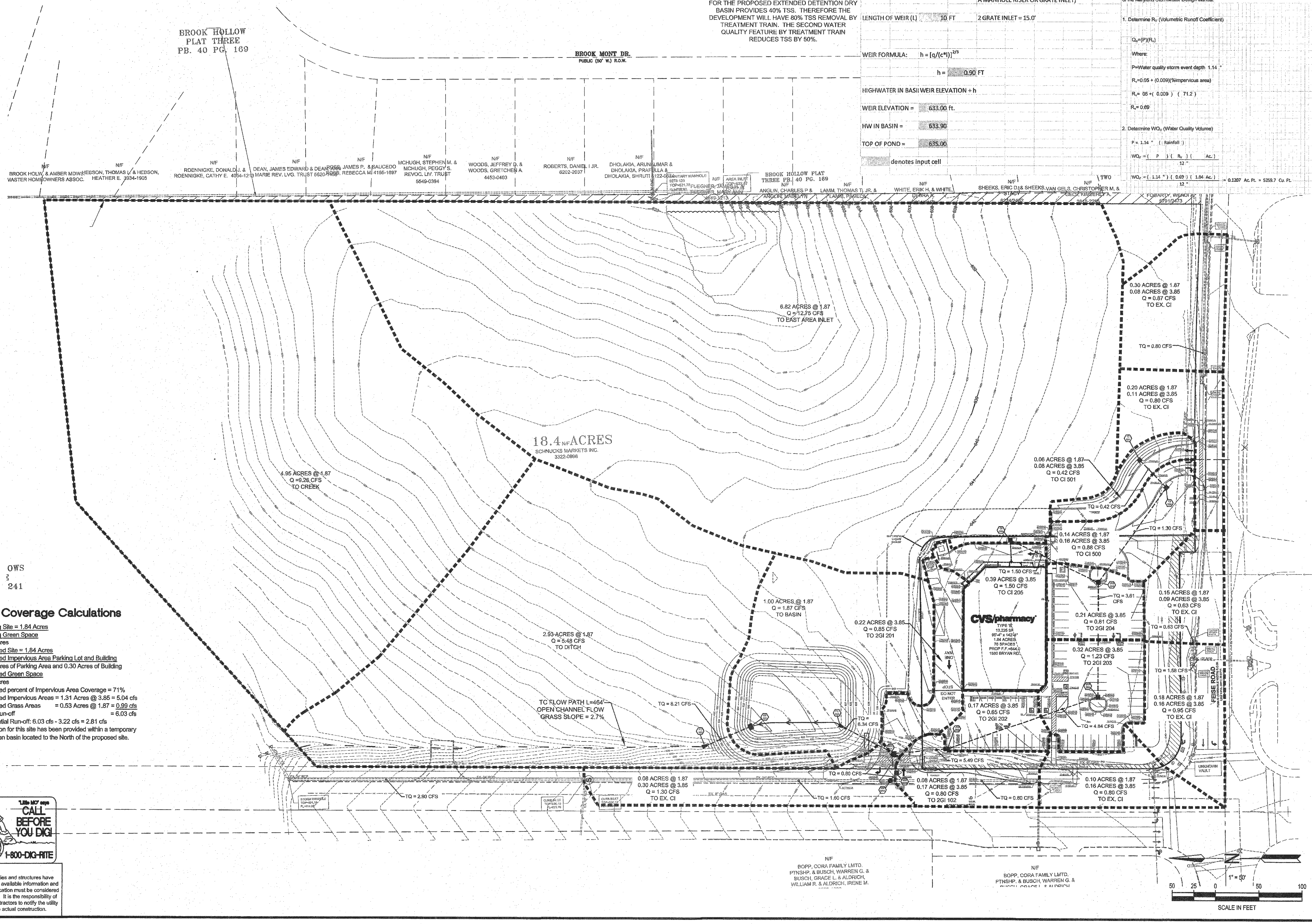
$R_v = 0.69$

2. Determine WQ_V (Water Quality Volume)

P = 1.14 " (Rainfall)

$WQ_V = \frac{(P)(R_V)(\ Ac.)}{12"}$

$WQ_V = \frac{(1.14")(0.69)(1.84\ Ac.)}{12"} = 0.1207$ Ac. Ft. = 5259.7 Cu. Ft.



Site Coverage Calculations

Existing Site = 1.84 Acres
Existing Green Space
1.84 Acres
Proposed Site = 1.84 Acres
Proposed Impervious Area Parking Lot and Building
1.01 Acres of Parking Area and 0.30 Acres of Building
Proposed Green Space
0.53 Acres
Proposed percent of Impervious Area Coverage = 71%
Proposed Impervious Areas = 1.31 Acres @ 3.85 = 5.04 cfs
Proposed Grass Areas = 0.53 Acres @ 1.87 = 0.99 cfs
Total Run-off = 6.03 cfs
Differential Run-off: 6.03 cfs - 3.22 cfs = 2.81 cfs
Detention for this site has been provided within a temporary detention basin located to the North of the proposed site.

"Little MO" says CALL BEFORE YOU DIG! 1-800-DIG-RITE

NOTE:
Underground utilities and structures have been plotted from available information and therefore, their location must be considered approximate only. It is the responsibility of the individual contractors to notify the utility companies before actual construction.

\\Vault-pc\vault\CIVIL 3D PROJECTS\2013\136101 NEC FEISE AND BRYAN\CONSTRUCTION DOCUMENTS\Post Developed Drainage Area Map.dwg

CVS pharmacy

PROJECT TITLE
NORTHERN 13,225-RIGHT CHAMFER DRIVE-THRU
STORE NUMBER: 10546
NEC FEISE ROAD AND BRYAN ROAD
O'FALLON, MO
PROJECT TYPE: NEW CONSTRUCTION
DEAL TYPE: Fee for Service
CS PROJECT NUMBER: 69591

NORR
ARCHITECTS ENGINEERS PLANNERS
719 Griswold Street
Suite 1000
Detroit, MI 48226
(313) 324-3113

PREMIER CIVIL ENGINEERING
308 TCW Court
Lake Saint Louis, MO 63367
Phone: (314) 925-7444 Fax: (314) 925-7457
Missouri Certificate of Authority # E-2011000031
Missouri Certificate of Authority # LS-2012007849

ENGINEERS AUTHENTICATION
The responsibility for professional engineering liability on this project is hereby limited to the set of plans authenticated by the seal, signature, and date hereunder attached. Responsibility is disclaimed for all other engineering plans involved in this project and specifically excludes revisions after this date unless reauthenticated.

STATE OF MISSOURI STEVE MARION NUMBER PE2006007195 PROFESSIONAL ENGINEER

STEVE MARION P.E.
ENGINEER
PE2006007195

Developer / Owner Information
T.M. CROWLEY & ASSOCIATES

Post Developed Drainage Area Map

P+Z No. 01-15 & 01.15.01
APPROVED 1-15-15
City No.

Sheet Number:
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PCE PROJECT NO. 136101