Ruggles & Bohm, P.A.
Engineering, Surveying, Land Planning

924 N. Main
Wichita, Kansas 67203

(316) 264-8008
fax (316) 264-4621

www.rbkansas.com
info@rbkansas.com

September 19, 2012

Mr. Scott Lindebak
City of Wichita, Stormwater Management
455 N Main
Wichita, KS 67202

RE: Platting Bellechase 3rd Addition

Dear Mr. Lindebak,

We are submitting Bellechase 3rd Addition for platting approval. Bellechase 3rd is a re-plat of Bellechase 2nd Addition. Bellechase 2nd has an approved drainage plan and drainage characteristics proposed in the drainage plan will not be altered by re-platting. All detention ponds associated with the sub-division either existed before the original project or were constructed with previous phases. The water quality requirements will be managed in existing ponds in Reserves 'A' and 'B'. Weirs will be modified to handle the channel protection volume requirements. We will provide the appropriate water quality paperwork to your office with the associated storm water drain project.

Please feel free to contact me with any questions.

Thank you ,

Eric J Glover P.E.
Ruggles & Bohm, P.A.

Encl.

DRAINAGE ANALYSIS
BELLECHASE ADDITION
WICHITA, SEDGWICK COUNTY, KANSAS
FEBRUARY 2008

Ruggles & Bohm. P.A.
Eric J Glover P.E.

BELLECHASE 2nd ADDITION
WICHITA, SEDGWICK COUNTY, KANSAS
DRAINAGE ANALYSIS
NOVEMBER 2007

Belle Chase Addition is located near the northwest corner of the intersection of 127th Street East and Harry Street. The total addition consists of approximately 100.8 acres. From the National Cooperative Web Soil Survey 2.0, the predominant on-site soils are Rosehill silty clay and Clime silty clay, hydrologic soils group D and C respectively. For the sake of drainage analysis type D hydrologic group characteristics will be used. The site is currently used as pasture.

Belle Chase Addition is situated immediately south of Country Hollow Addition, Wichita, Sedgwick County, Kansas. A small portion of the southernmost part of the plat is within the floodway.

In the pre-developed condition offsite drainage comes from Country Hollow Addition to the north of the site. Spring Branch Creek flows just south of the addition. The site drains from north to south into the Spring Branch.

In the developed condition, the site will be subdivided into 222 single family lots. There is an existing pond in the Northeast corner of the plat that will be improved. A detention pond will be constructed along the South edge of the plat. The site will be drained into storm water systems and then into the drainage ponds. Some drainage will flow to the Spring Branch undetained. The Spring Branch of the Four-mile creek is a fully developed creek.

There are no local stormwater dranage systems that will be impacted. No wetlands exist on site to be impacted. There is no proposed construction near riparian areas. There will be a need for a LOMA to remove some lots from the floodplain. The floodway will not be impacted by construction.

HEC-HMS 3.0.1 was used for the hydraulic analysis of the site. For all rainstorm events studied, the total discharge from the site was reduced in the developed condition.

Storm Return Period	Existing Runoff (cfs)	Developed Runoff (cfs)
2 yr	236.6	231.3
5 yr	329.6	314.8
10 yr	405.7	381.8
25 yr	480.8	448.9
100 yr	640.2	590.1

Table 1: Peak runoff for each studied rainfall event.

Existing Conditions

The existing site is 100.8 acres of pasture with hydrologic group D and C soil. The Country Hollow Drainage plan was used to input discharge from Country Hollow onto Belle Chase. The time of concentration is 22.8 minutes for the West basin and 18.6 minutes for the East basin. Time of Concentration was found using the velocity method. Considering the soil types and land use, a curve number of 83 was used for the onsite areas. Existing runoff for each return period is shown in Table 1. Runoff from the West basin flows undetained to the Spring Branch. Runoff for the East basin flows into an existing pond. Existing Pond data is found in Table 2.

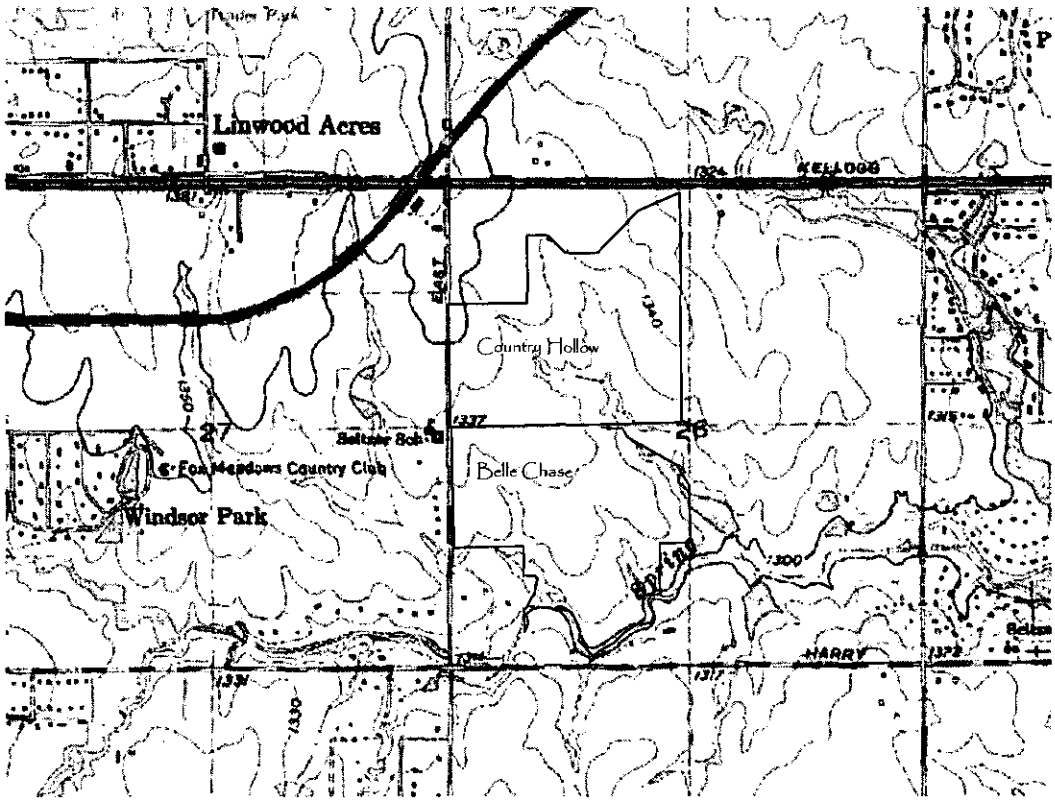
West Basin:
Tc = 300'/0.45 ft/sec (overland) + 300'/1.5 ft/sec (sheet flow) + 1260'/2.5 ft/sec (channel flow) = 1370 seconds = 22.8 minutes.

East Basin:
Tc = 300'/0.45 ft/sec (overland) + 300'/1.5 ft/sec (sheet flow) + 630'/2.5 ft/sec (channel flow) = 1116 seconds = 18.6 minutes.

The existing pond is controlled by a 12" CMP and ultimately a low area acts as a weir.

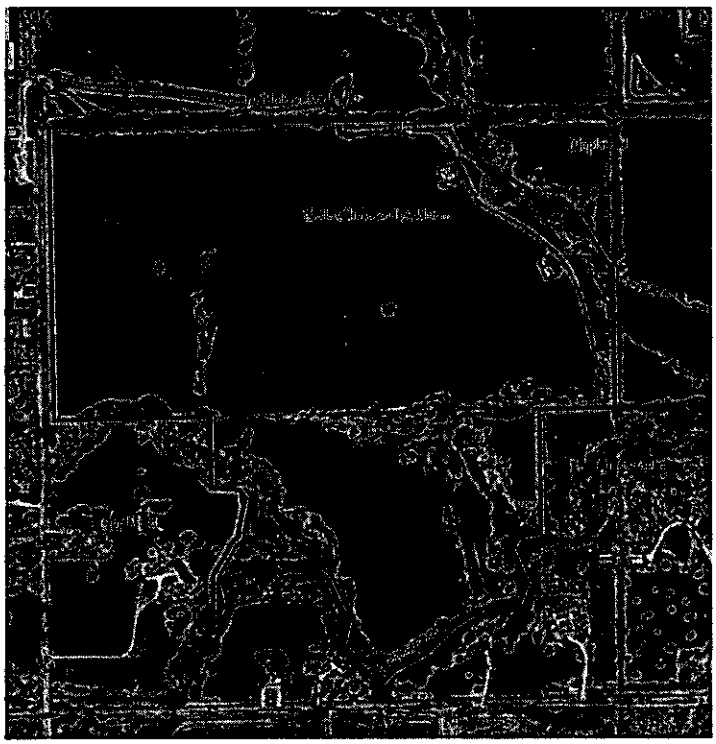
Elevation	Area (acres)	Discharge (cfs)
1313.5	1.16	0.0
1314.0	1.30	0.8
1314.5	1.63	2.1
1315.0	1.95	3.3
1315.5	2.37	54.0
1316.0	2.78	185.0
1316.5	3.33	425.0
1317.0	3.88	792.0

Table 2: Existing Pond data.



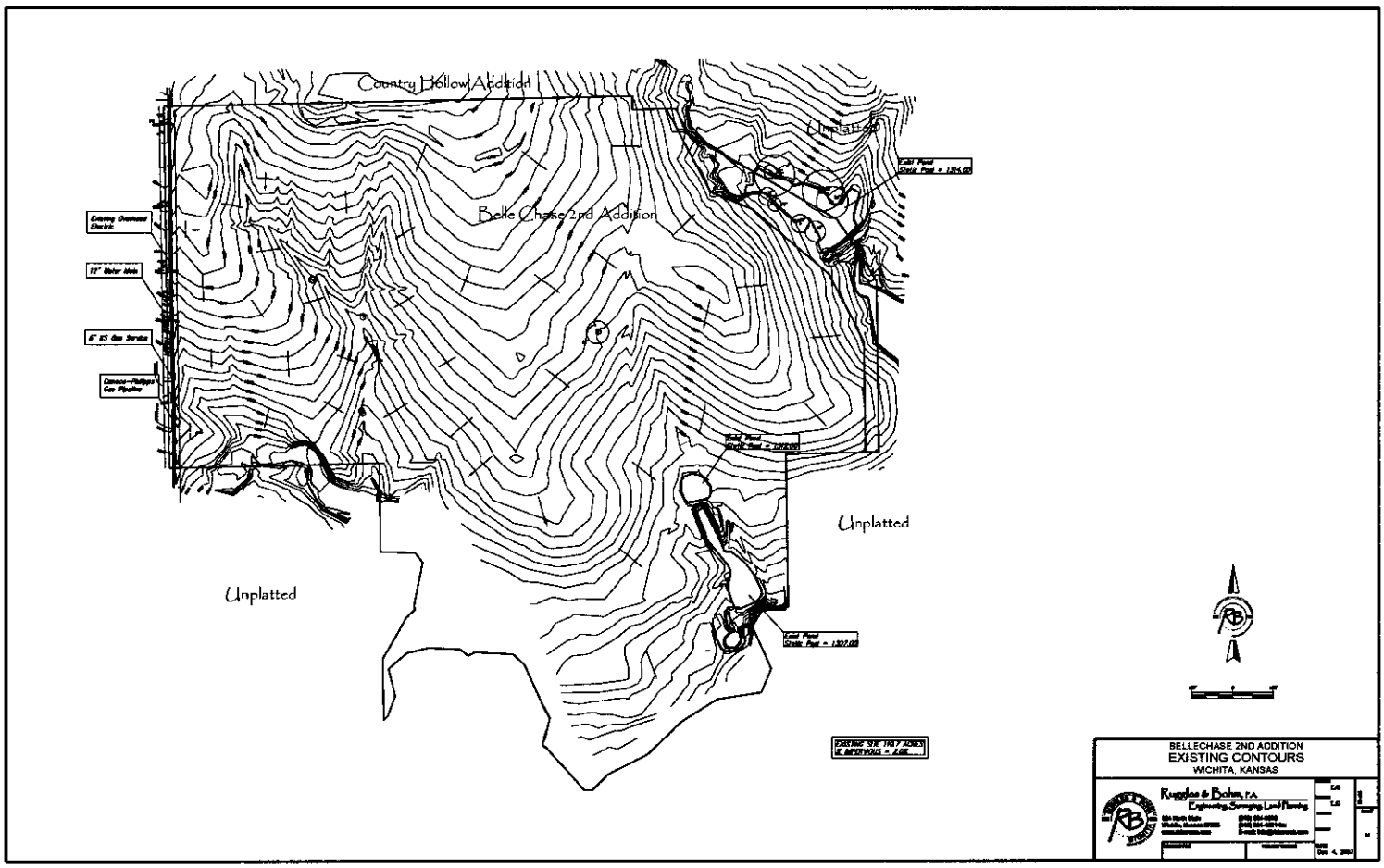
BELLECHASE 2ND ADDITION
USGS
WICHITA, KANSAS

Ruggles & Bohm, P.A.
Engineering Surveying Land Planning



BELLECHASE 2ND ADDITION
AERIAL
WICHITA, KANSAS

Russell & Dodson, P.A.
Engineering, Surveying, Land Planning


Country Hollow Addition
Unplatted
Belle Chase 2nd Addition
Unplatted
Unplatted
BELLECHASE 2ND ADDITION
EXISTING CONTOURS
WICHITA, KANSAS

Developed Conditions

The developed condition for Belle Chase Addition is 222 single family residential lots. 80.0 acres will be developed into lots with the remaining 30.7 left as reserves. The existing detention pond will be improved and controlled with a weir. A new detention pond will be constructed and controlled by a weir. A portion of the site will continue to drain to the Spring Branch undetained. However the overall discharge for the developed site will be decreased from the existing condition. The Country Hollow runoff was recreated using drainage model information furnished by MKEC.

Basin	Peak Discharge (cfs)				
	2-year	5-year	10-year	25-year	100-year
Onsite West	107.2	147.2	179.0	210.8	277.8
Pond Basin	27.2	37.3	45.3	53.3	70.2
Exist Pond	27.2	37.3	45.3	53.3	70.2
Onsite Southeast	19.6	27.9	32.7	38.5	50.6

Table 3 – Developed Basin Discharges.

Developed Drainage Basins

Onsite West
Undetained Drainage to Spring Branch
Area = 49.2 acres
CN = 90
Time of Concentration = 18 minutes

Pond Basin
Onsite Drainage to Proposed Pond
Area = 11.3 acres
CN = 90
Time of Concentration = 15 minutes

Existing Pond
Onsite Drainage to Existing Pond
Area = 11.3 acres
CN = 90
Time of Concentration = 15 minutes

Southeast Basin
Undetained Drainage to Spring Branch
Area = 8.2 acres
CN = 90
Time of Concentration = 15 minutes

Pond Ratings

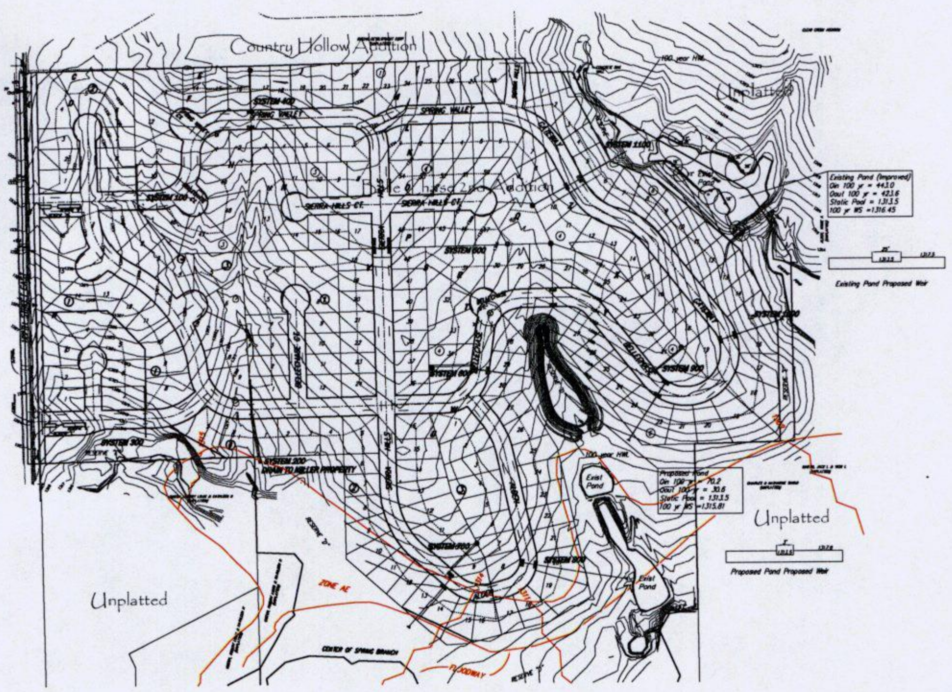
The following tables represent the data associated with the onsite detention ponds.

Elevation	Area (ac)	Discharge (cfs)	Storage (ac-ft)
1313.5	0.98	0.0	0
1314.0	1.55	29.5	0.63
1314.5	1.82	83.4	1.40
1315.0	2.09	153.3	2.30
1315.5	2.46	236.0	3.44
1316.0	2.83	329.8	4.76
1316.5	3.27	433.5	6.38
1317.0	3.71	546.3	8.21

Table 4 – Existing pond (Improved) data.

Elevation	Area (ac)	Discharge (cfs)	Storage (ac-ft)
1313.5	0.79	0.0	0.0
1314.0	0.84	3.1	0.41
1314.5	0.89	8.7	0.84
1315.0	0.94	16.0	1.30
1315.5	0.99	24.6	1.78
1316.0	1.04	34.4	2.29
1316.5	1.09	45.2	2.82
1317.0	1.14	56.9	3.38

Table 5 – Proposed Pond Data.



Basin	Area	C	I	Q
A	1.23	0.68	7.37	6.16
B	1.77	0.68	7.37	8.87
C	1.79	0.68	7.37	8.97
D	4.13	0.76	7.37	23.13
E	0.59	0.68	7.37	2.96
F	1.85	0.76	7.37	10.36
G	1.22	0.76	7.37	6.83
H	5.77	0.68	7.37	28.92
I	8.94	0.76	7.37	50.07
J	1.39	0.68	7.37	6.97
K	1.54	0.68	7.37	7.72
L	1.49	0.76	7.37	8.35
M	1.60	0.76	7.37	8.96
N	1.97	0.76	7.37	11.03
O	2.25	0.76	7.37	12.60
P	0.95	0.68	7.37	4.76
Q	1.26	0.68	7.37	6.31
R	1.63	0.76	7.37	9.13
S	1.43	0.68	7.37	7.17
T	1.65	0.76	7.37	9.24
U	2.08	0.68	7.37	10.42
V	5.31	0.76	7.37	29.74
W	3.69	0.76	7.37	20.67
X	1.19	0.68	7.37	5.96
Y	2.61	0.76	7.37	14.62
Z	4.19	0.76	7.37	23.47

BELLECHASE 2ND ADDITION

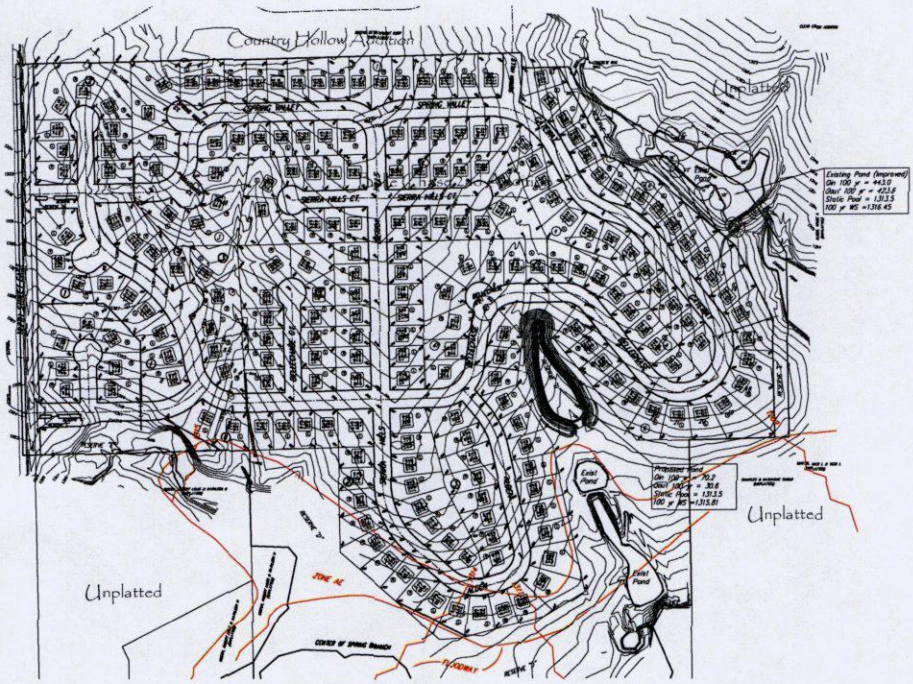
DRAINAGE BASINS

WICHITA, KANSAS

Ruggles & Bohm, P.A.
Engineering, Surveying, Land Planning

EJG
EJG

Dec. 4, 2007



BELLECHASE 2ND ADDITION
4 CORNER LOT GRADING
WICHITA, KANSAS

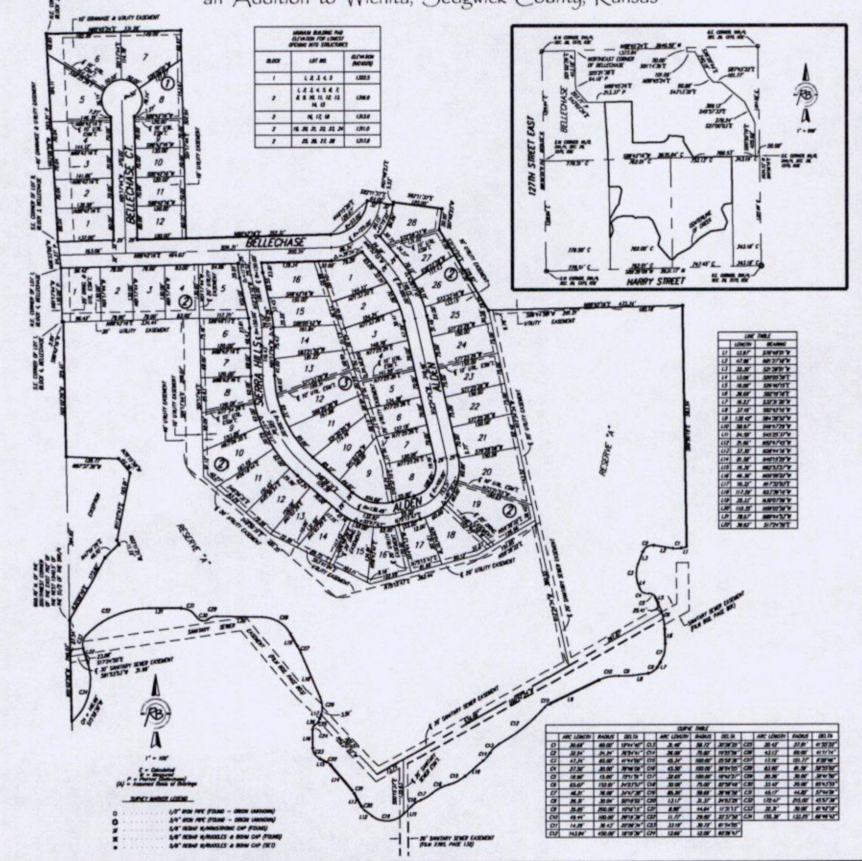
Ruggles & Bohm, P.A.
Engineering, Surveying, Land Planning

Dec. 4, 2007

BELLECHASE SECOND ADDITION

an Addition to Wichita, Sedgwick County, Kansas

MINIMUM BUILDING PAD ELEVATION FOR LOWEST OPENING INTO STRUCTURES		
BLOCK	LOT NO.	ELEVATION (NGVD29)
1	1, 2, 3, 4, 5	1,333.5
2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	1,336.0
2	16, 17, 18	1,313.0
2	19, 20, 21, 22, 23, 24	1,311.0
2	25, 26, 27, 28	1,317.0



SURVEY MARKER LEGEND

- 1/2" IRON PIPE (FOUND – ORIGIN UNKNOWN)
- 3/4" IRON PIPE (FOUND – ORIGIN UNKNOWN)
- 5/8" REBAR W/ARMSTRONG CAP (FOUND)
- 5/8" REBAR W/RUGGLES & BOHM CAP (FOUND)
- 5/8" REBAR W/RUGGLES & BOHM CAP (SET)

LINE TABLE		
	LENGTH	BEARING
L1	13.87'	S70°48'07"W
L2	47.86'	N81°27'18"W
L3	32.30'	S21°30'01"W
L4	13.08'	S00°05'36"E
L5	16.08'	S26°40'15"E
L6	38.69'	S02°18'18"E
L7	16.33'	S32°31'30"W
L8	37.18'	S00°47'16"W
L9	132.42'	S84°38'52"W
L10	58.87'	S49°47'29"W
L11	24.59'	S45°25'37"W
L12	21.66'	N52°47'45"W
L13	37.30'	N38°44'18"W
L14	81.58'	N40°15'06"W
L15	18.36'	N62°53'27"W
L16	46.30'	N06°59'32"W
L17	10.32'	N17°32'03"E
L18	117.39'	N23°36'16"W
L19	28.33'	N30°07'38"W
L20	110.35'	N89°03'56"W
L21	78.67'	N89°44'53"E
L22	34.63'	S17°24'36"E

CURVE TABLE											
	ARC LENGTH	RADIUS	DELTA		ARC LENGTH	RADIUS	DELTA		ARC LENGTH	RADIUS	DELTA
C1	20.68'	60.00'	19°44'40"	C13	31.46'	58.72'	30°38'29"	C25	20.42'	27.91'	41°55'33"
C2	32.54'	24.34'	76°54'41"	C14	26.08'	75.00'	19°55'58"	C26	43.13'	60.00'	41°11'14"
C3	47.34'	65.00'	41°44'00"	C15	45.34'	100.00'	25°58'36"	C27	17.16'	151.77'	6°28'46"
C4	27.50'	20.00'	78°46'06"	C16	65.58'	100.00'	37°34'35"	C28	83.80'	81.58'	58°55'02"
C5	18.98'	15.00'	72°11'51"	C17	32.65'	100.00'	18°42'37"	C29	20.36'	30.00'	38°41'50"
C6	65.07'	152.81'	24°23'57"	C18	30.06'	75.00'	22°58'48"	C30	33.42'	25.00'	85°43'55"
C7	46.21'	76.08'	34°47'28"	C19	85.30'	58.69'	28°46'58"	C31	45.17'	44.87'	57°44'08"
C8	26.31'	30.04'	50°16'55"	C20	13.17'	31.37'	24°03'29"	C32	172.47'	215.00'	45°57'38"
C9	35.85'	200.00'	10°16'15"	C21	8.98'	44.64'	11°31'13"	C33	32.31'	30.00'	61°42'13"
C10	49.44'	100.00'	28°19'38"	C22	11.77'	29.80'	22°37'58"	C34	155.38'	133.25'	66°46'42"
C11	14.29'	38.43'	21°18'34"	C23	33.19'	30.72'	61°54'05"				
C12	143.84'	450.00'	18°18'38"	C24	12.66'	12.00'	60°26'47"				

State of Kansas)
Sedgwick County) SS

We, Ruggles & Bohm, P.A., Land Surveyors in aforesaid county and state, do hereby certify that, under the supervision of the undersigned, we have surveyed and platted "BELLECHASE SECOND ADDITION", an Addition to Wichita, Sedgwick County, Kansas, and that the accompanying plat is a true and correct exhibit of the property surveyed, described as follows:

That part of the N1/2, SW1/4, Sec. 26, T27S, R2E of the 6th P.M., Sedgwick County, Kansas described as beginning at the N.W. corner of said N1/2; thence N88°45'24"E along the north line of said N1/2, 1766.84 feet; thence S01°14'36"E, 50.00 feet; thence N88°45'24"E, parallel with said north line, 101.09 feet; thence S28°20'44"E, 340.19 feet; thence S43°13'32"E, 90.88 feet; thence S87°45'22"E, 101.77 feet; thence S49°57'33"E, 369.12 feet; thence S27°00'03"E, 279.24 feet to a point 50.00 feet West of the east line of said N1/2; thence S00°50'19"E, parallel with said east line, 405.68 feet to the south line of said N1/2; thence S88°42'16"W along said south line, 2585.83 feet to the S.W. corner of said N1/2; thence N01°02'26"W along the west line of said N1/2, 1329.64 feet to the place of beginning. EXCEPT that part platted as Bellechase, An Addition to Wichita, Sedgwick County, Kansas, AND EXCEPT that part described as beginning at the northeast corner of said addition; thence N88°45'24"E along said north line, 1373.84 feet; S01°14'36"E, 50.00 feet; thence N88°45'24"E, parallel with said north line, 101.09 feet; thence S28°20'44"E, 340.19 feet; thence S43°13'32"E, 90.88 feet; thence S87°45'22"E, 101.77 feet; thence S49°57'33"E, 369.12 feet; thence S27°00'03"E, 279.24 feet to a point 50.00 feet West of the east line of said N1/2; thence S00°50'19"E, parallel with said east line, 405.68 feet to the south line of said N1/2; thence S88°42'16"W along said south line, 766.53 feet; thence N31°37'02"W, 229.82 feet; thence N07°48'23"E, 50.90 feet; thence N82°11'37"W, 120.00 feet; thence S07°48'23"W, 5.53 feet; thence N82°11'37"W, 64.00 feet to a point of curve to the right having a radius of 93.00 feet, a central angle of 80°53'53", and a chord bearing S48°15'19"W, 120.67 feet; thence southwesterly along said curve a distance of 131.31 feet to a point of tangency of said curve; thence S88°42'16"W, 352.31 feet; thence N01°17'44"W, 502.64 feet; thence S88°45'24"W, parallel with said north line, 331.28 feet to the northeast corner of Lot 5, Block 3, in said addition; thence S88°45'24"W along the north line of said Lot 5, 213.37 feet to the northwest corner of Lot 4, Block 3, in said addition; thence N43°03'34"W along the northeast line of said Lot 4, 207.71 feet to the northeast corner of Lot 1, Block 3, in said addition; thence N05°21'38"W, 64.18 feet to the southeast corner of Lot 9, Block 2, in said addition; thence N01°02'26"W, 413.18 feet to the place of beginning.

The east 762 feet of the west 1540.5 feet of the S1/2 of the SW1/4 of Sec. 26, T27S, R2E of the 6th P.M., Sedgwick County, Kansas, lying north of the centerline of the creek, EXCEPT that part described as: Commencing at the S.W. corner of said east 762 feet; thence North on the west line of said east 762 feet, with an assumed bearing of N00°32'58"W, a distance of 608.70 feet to the point of beginning; thence N00°32'58"W, a distance of 394.82 feet; thence S87°08'11"E, a distance of 128.77 feet; thence S38°46'30"E, a distance of 44.36 feet; thence S11°57'15"W, a distance of 165.81 feet; thence S21°41'53"E, a distance of 11.72 feet; thence S47°30'57"W, a distance of 46.10 feet; thence S29°18'56"W, a distance of 70.61 feet; thence S31°33'22"W, a distance of 103.23 feet to the point of beginning.

The S1/2 of the SW1/4 of Sec. 26, T27S, R2E of the 6th P.M., Sedgwick County, Kansas, EXCEPT the east 343.18 feet thereof; AND EXCEPT the west 1540.5 feet thereof; AND EXCEPT that part south of the centerline of the creek.

All public easements and dedications are hereby vacated by virtue of K.S.A. 12-512(b).

Ruggles & Bohm, P.A.

______________________ Land Surveyor
Thomas C. Ruggles

Know all men by these presents that we, the undersigned, have caused the land described in the surveyor's certificate to be platted into Lots, Blocks, a Reserve and Streets, to be known as "BELLECHASE SECOND ADDITION", an Addition to Wichita, Sedgwick County, Kansas. The streets are hereby dedicated to and for the use of the public. Utility Easements are hereby granted for the construction and maintenance of all public utilities. Drainage Easements are hereby granted to the public as indicated for drainage purposes. Reserve "A" is hereby reserved for irrigation, gazebos, playground structures, picnic areas/ tables with canopies, walks, lighting, landscaping, lakes, drainage, drainage structures, and utilities confined to easements. The Reserve is to be owned and maintained by the Home Owners Association for the addition. A drainage plan has been developed for this plat; the property shall remain at established grades, or as modified with the approval of the City Engineer, and unobstructed to allow for the conveyance of storm water.

BELLECHASE DEVELOPMENT L.L.C.

______________________ President
Stephen G. Miller

BENCH MARK: RAILROAD SPIKE IN SOUTH FACE OF POWER POLE 70' SOUTH SOUTHEAST OF THE WEST QUARTER CORNER OF SEC. 26, T27S, R2E
ELEVATION = 1337.48 (NGVD29)

DWG FILE: SURVEY BASE
PROJECT NO. 3163P
JANUARY 10, 2008

State of Kansas)
Sedgwick County) SS

The foregoing instrument acknowledged before me, this ________ day of ________________, 2008, by Stephen G. Miller, President, on behalf of BELLECHASE DEVELOPMENT L.L.C.

______________________ Notary Public

My appointment expires __________

We, the undersigned, holders of a mortgage on the above described property, do hereby consent to this plat of "BELLECHASE SECOND ADDITION", an Addition to Wichita, Sedgwick County, Kansas, this ________ day of __________, 2008.

Garden Plain State Bank

______________________ President
Patrick F. Waldon

State of Kansas)
Sedgwick County) SS

The foregoing instrument acknowledged before me, this ________ day of ________________, 2008, by Patrick F. Waldon, President of Garden Plain State Bank on behalf of the Bank.

______________________ Notary Public

My appointment expires __________

This plat of "BELLECHASE SECOND ADDITION", an Addition to Wichita, Sedgwick County, Kansas, has been submitted to and approved by the Wichita-Sedgwick County Metropolitan Area Planning Commission, Wichita, Kansas.

Dated this _____ day of ______________, 2008.

Wichita-Sedgwick County Metropolitan Area Planning Commission

______________________ Chair
M.S. Mitchell

______________________ Secretary
John L. Schlegel

This plat approved and all dedications shown hereon accepted by the City Council of the City of Wichita, Kansas, this ___ day of ________, 2008.

At the Direction of the City Council

______________________ Mayor
Carl Brewer

______________________ City Clerk
Karen Sublett

Reviewed in accordance with K.S.A. 58-2005 on this ________ day of ____________, 2008.

______________________ Deputy County Surveyor
Sedgwick County Kansas
Tricia L. Robello, LS #1246

Entered on transfer record this _____ day of ____________, 2008.

______________________ County Clerk
Don Brace

State of Kansas)
Sedgwick County) SS

This is to certify that this plat has been filed for record in the office of the Register of Deeds, this _____ day of ____________, 2008, at _____ o'clock ___M, and is duly recorded.

______________________ Register of Deeds
Bill Meek

______________________ Deputy
Tonya Buckingham

Ruggles & Bohm, P.A.
Engineering, Surveying, Land Planning
924 North Main
Wichita, Kansas 67203
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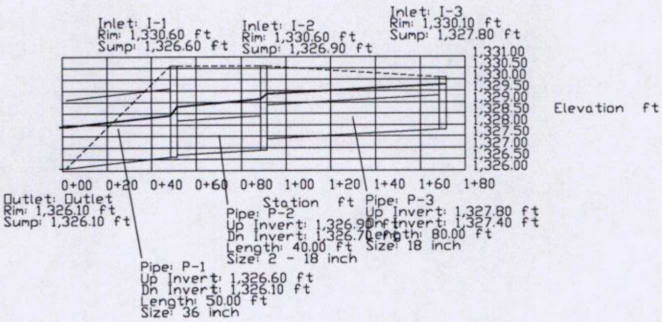
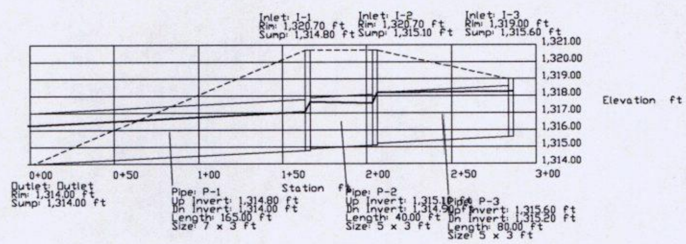
E-mail: info@rbkansas.com

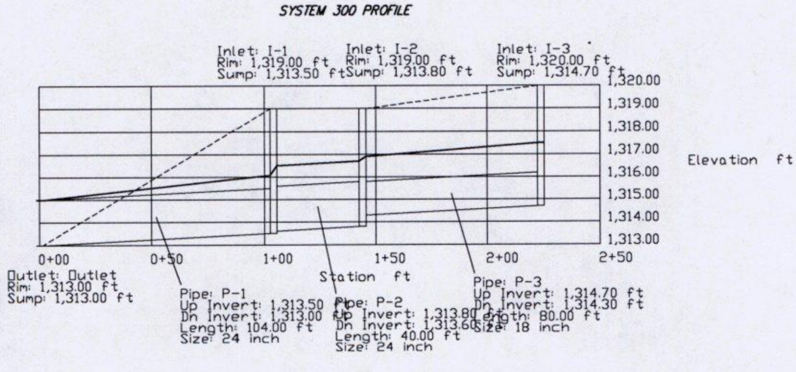
SYSTEM 100 PROFILE



SYSTEM 200 PROFILE



SYSTEM 300 PROFILE

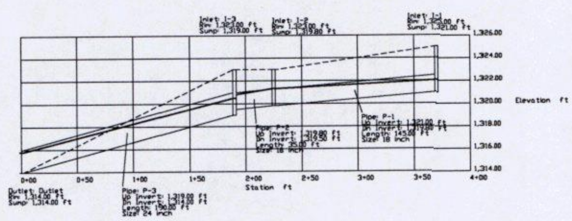


BELLE CHASE 2nd ADDITION
SWS PROFILES

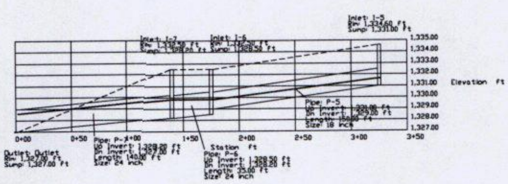
Ruggles & Bohm, P.A.
Engineering, Surveying, Land Planning
924 North Main
Wichita, Kansas 67203
www.rbkansas.com
(316) 264-8008
(316) 264-4621 fax
E-mail: info@rbkansas.com

EJG
EJG
SWS Profiles
Dec. 4, 2007

SYSTEM 600 PROFILE



SYSTEM 400 PROFILE



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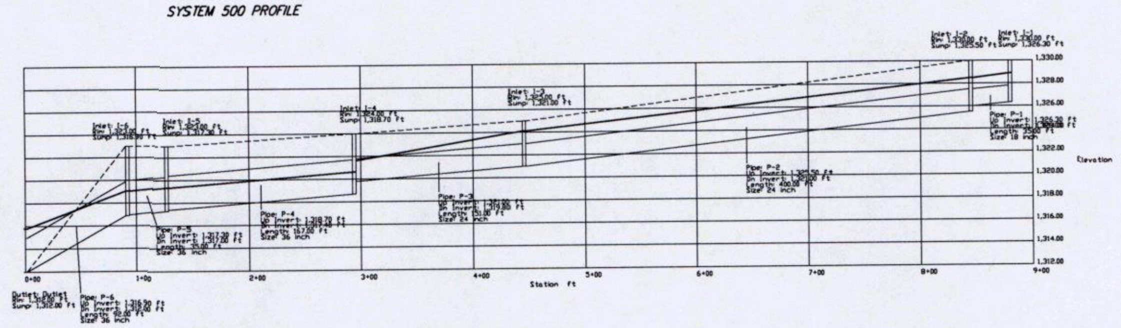

BELLE CHASE 2nd ADDITION
SWS PROFILES

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Designed	EJG
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Date	Dec. 4, 2007

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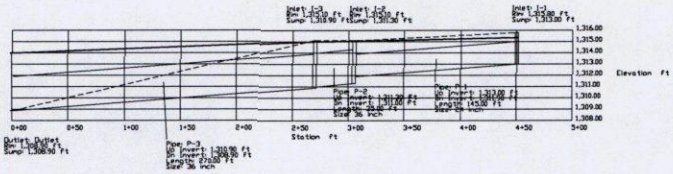

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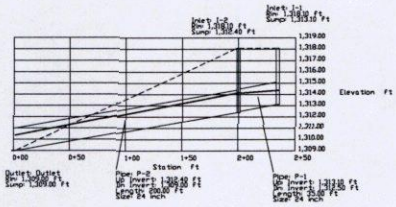

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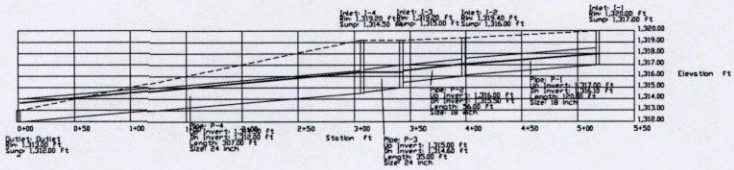

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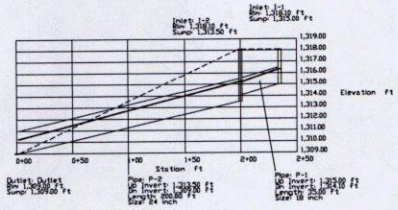

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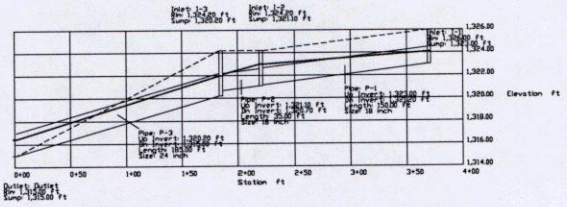

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