

Final Drainage Plan
CASA BELLA 2ND ADDITION
WICHITA, KANSAS
APRIL 2008

Final Drainage Plan
 Casa Bella 2nd Addition
 Wichita, Kansas

Existing Conditions

Casa Bell 2nd Addition is a proposed 70 acre addition in southeast Wichita. It is northwest of the intersection of Pawnee and 127th Street East. The site is not being used for any specific purpose at this time.

The entire site was graded with the Casa Bella Storm Water Project (COW project #468 84073). Ponds were constructed to handle drainage from Casa Bella and most of the future Casa Bella 2nd Addition. A pond was also constructed with the Tara Creek Addition Storm Water Drain Project (COW project #468 84358) that handles drainage from the Northeast portion of Casa Bella 2nd. The drainage plans for Casa Bella and Tara Creek were accepted by the City of Wichita. Therefore this drainage plan is a focus on the portions of Casa Bella 2nd Addition that do not drain through Casa Bella and/or Tara Creek. The Northeast corner of Casa Bella 2nd Addition drains undetained in the current state to a pond in Tara Falls Addition. The Tara Falls pond is sized for the pre-developed conditions of Casa Bella 2nd Addition. With any reduction in discharge from the developed condition, the developed discharge will be well within the capacity of the Tara Falls pond. The undeveloped drainage area is 42 acres including offsite drainage. Offsite drainage comes from the adjacent property. Drainage flows across properties and into ditches adjacent to the street. Eventually it makes it to a drainage swale that directs the discharge to the rear lots adjoining Casa Bella 2nd. Using the velocity method the Tc was found to be 57.8 minutes. A curve number of 83 is used considering the site was not maintained and hydrologic group D type soils. The runoffs for each storm return period were found using HEC-HMS and can be found in Table-1.

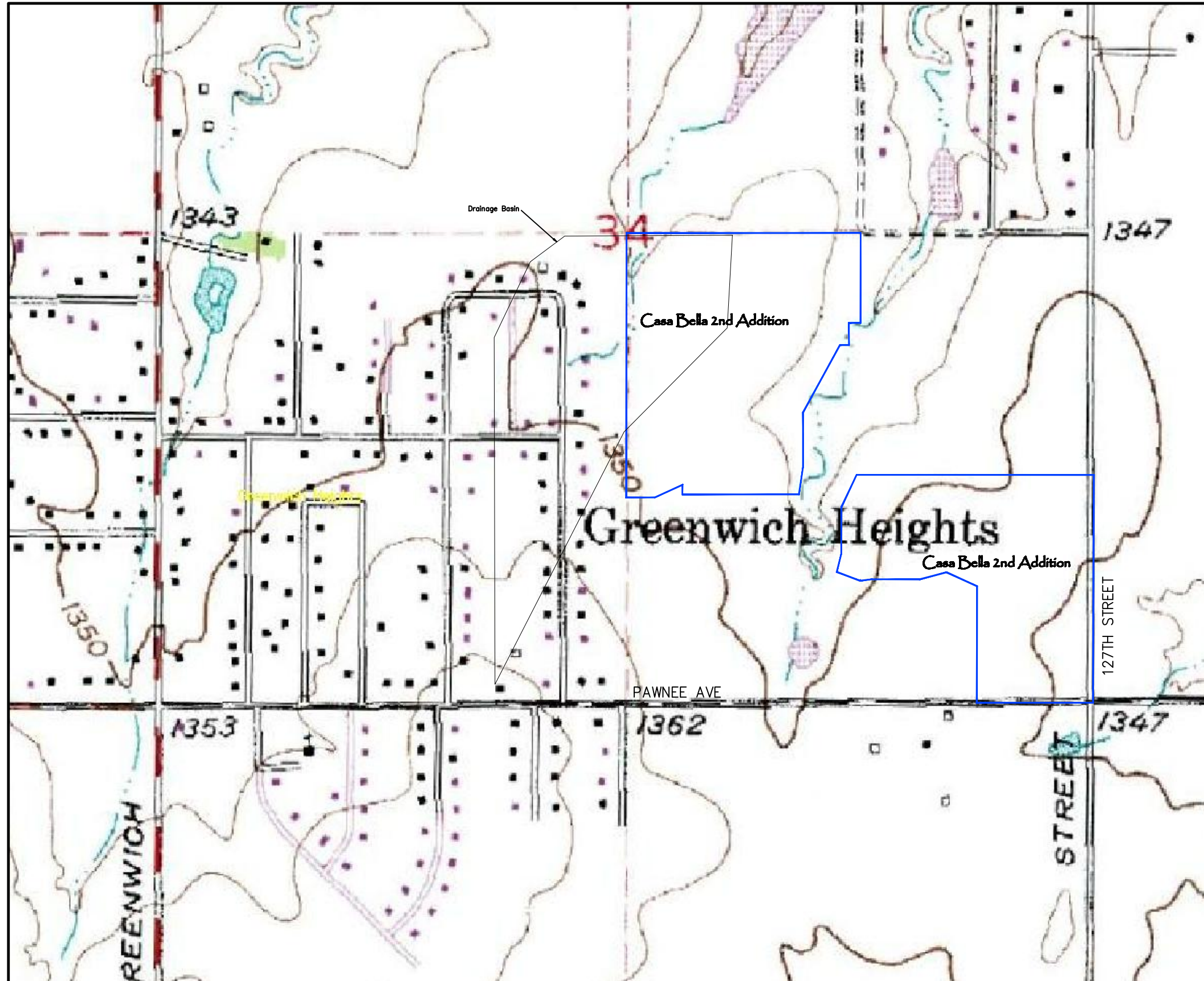
Length of longest reach = 3000' (0.6% slope)

$$T_c = 400'/(0.21)(60) + 400'/(0.86)(60) + 2200'/(2.0)(60) = 57.8 \text{ min}$$


(sheet flow) (grassed waterway) (channel flow)

Storm Return Period	Existing Q (cfs)	Developed Q (cfs)
2 year	31.3	24.9
5 year	46.3	36.7
10 year	58.6	46.3
25 year	71.1	56.1
100 year	97.8	77.0

Table 1: Existing and Developed storm runoff

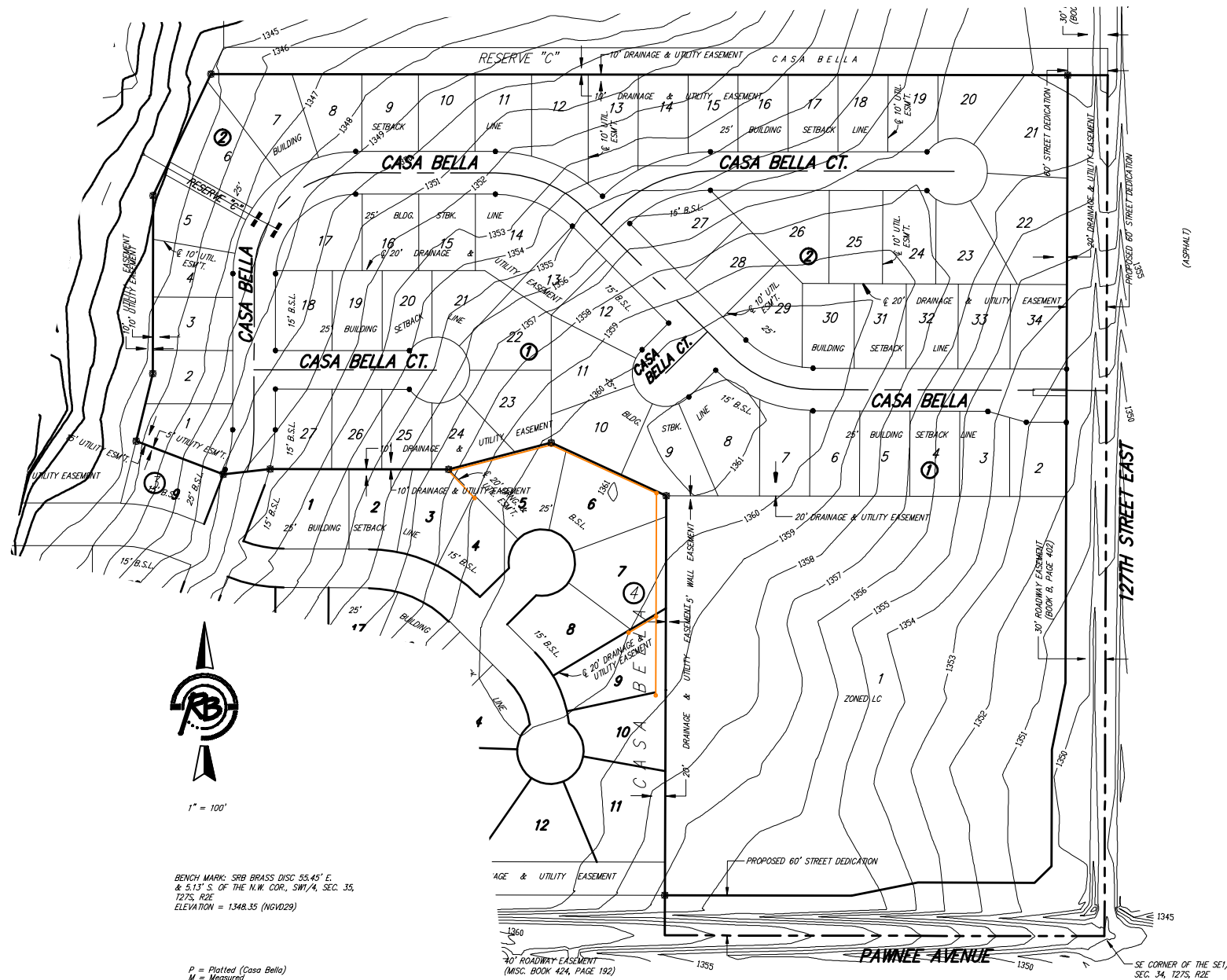


Scale: 1" = 200'

Casa Bella 2nd Addition USGS WICHITA, KANSAS	
 Ruggles & Bohm, P.A. Engineering, Surveying, Land Planning <small>204 West 10th Wichita, Kansas 67202 www.rugglesandbohm.com</small>	EUG EUG 2 11
	SURVEY BASE {USGS} Apr. 14, 2008

CASA BELLA SECOND ADDITION

Wichita, Sedgwick County, Kansas



BENCH MARK: SRB BRASS DISC 55.45' E.
& 5.13' S. OF THE N.W. COR., SW1/4, SEC. 35,
T27S, R2E
ELEVATION = 1348.35 (NGVD29)

P = Platted (Casa Bella)
M = Measured

- SURVEY MARKER LEGEND**
- PK NAIL IN CONCRETE (FOUND - ORIGIN UNKNOWN)
 - 1/2" IRON PIPE (FOUND - ORIGIN UNKNOWN)
 - 3/4" IRON PIPE (FOUND - ORIGIN UNKNOWN)
 - 5/8" REBAR W/GARBER CAP (FOUND)
 - 1" BAR (FOUND - ORIGIN UNKNOWN)
 - 5/8" REBAR W/SRB CAP (FOUND)
 - 5/8" REBAR W/RAB CAP (FOUND)
 - 5/8" REBAR W/RAB CAP (SET)

BLOCK	LOT NO.	ELEVATION (NGVD29)
2	1, 2, 3, 4, 5, 6, 7	1345.4
3	10, 11, 12	1345.4
3	1, 2, 3, 4, 5, 6, 7, 8, 9	1338.4
6	1, 2, 3, 4, 5	1336.8

SHEET 1 OF 2

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 "CASA BELLA SECOND ADDITION", Wichita, Sedgwick County, Kansas, and that the accompanying plat is a true and correct exhibit of the property surveyed, described as follows:

LEGAL DESCRIPTION:
The SE1/4 of Section 34, T27S, R2E of the 6th P.M., Sedgwick County, Kansas, EXCEPT the NE1/4 of said SE1/4, AND EXCEPT that portion platted as Casa Bella, Wichita, Sedgwick County, Kansas.

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

Ruggles & Bohm, P.A.

Thomas C. Ruggles
Land Surveyor

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, Reserves and Streets, to be known as "CASA BELLA SECOND ADDITION", Wichita, Sedgwick County, Kansas. 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. Reserves "A" and "B" are hereby reserved for irrigation, lighting, landscaping, gazebos, playground, structures, picnic areas/tables with canopies, and utilities confined to easements. Reserve "C" is hereby reserved for irrigation, walls, signage, gazebos, playground structures, picnic areas/tables with canopies, walks, lighting, landscaping, berms, lakes, drainage, drainage structures and utilities confined to easements. Reserve "D" is hereby reserved for irrigation and entry features. The Reserves shall be owned and maintained by the Home Owners Association for the addition. The streets are hereby dedicated to and for the use of the public. Access Controls as indicated are hereby granted to the appropriate governing body. A drainage plan has been developed for this plat; all drainage easements and reserves 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.

Tara Development Inc.

Eugene Vitarelli
President

State of Kansas)
Sedgwick County) SS

The foregoing instrument acknowledged before me, this _____ day of _____, 2008, by Eugene Vitarelli, President of Tara Development Inc., on behalf of the corporation.

Mildred E. Franz
Notary Public

My appointment expires _____

We the undersigned, holders of a mortgage on a portion of the above described property, do hereby consent to this plat of "CASA BELLA SECOND ADDITION" Wichita, Sedgwick County, Kansas.

Commerence Bank, N.A.

Collin Stieben
Assistant Vice President

State of Kansas)
Sedgwick County) SS

The foregoing instrument acknowledged before me this _____ day of _____, 2008, by Collin Stieben, Assistant Vice President of Commerce Bank, N.A., on behalf of the Bank.

Notary Public

My appointment expires _____

This plat of "CASA BELLA SECOND ADDITION", 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

Chairman
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

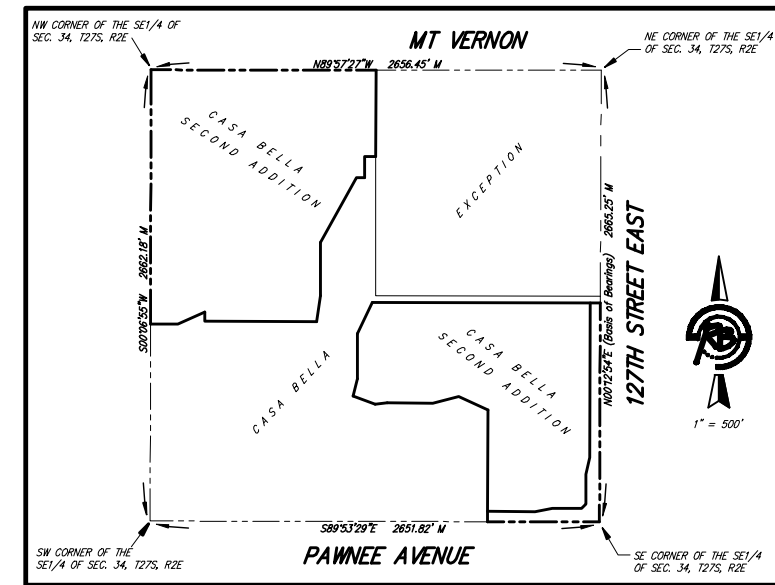
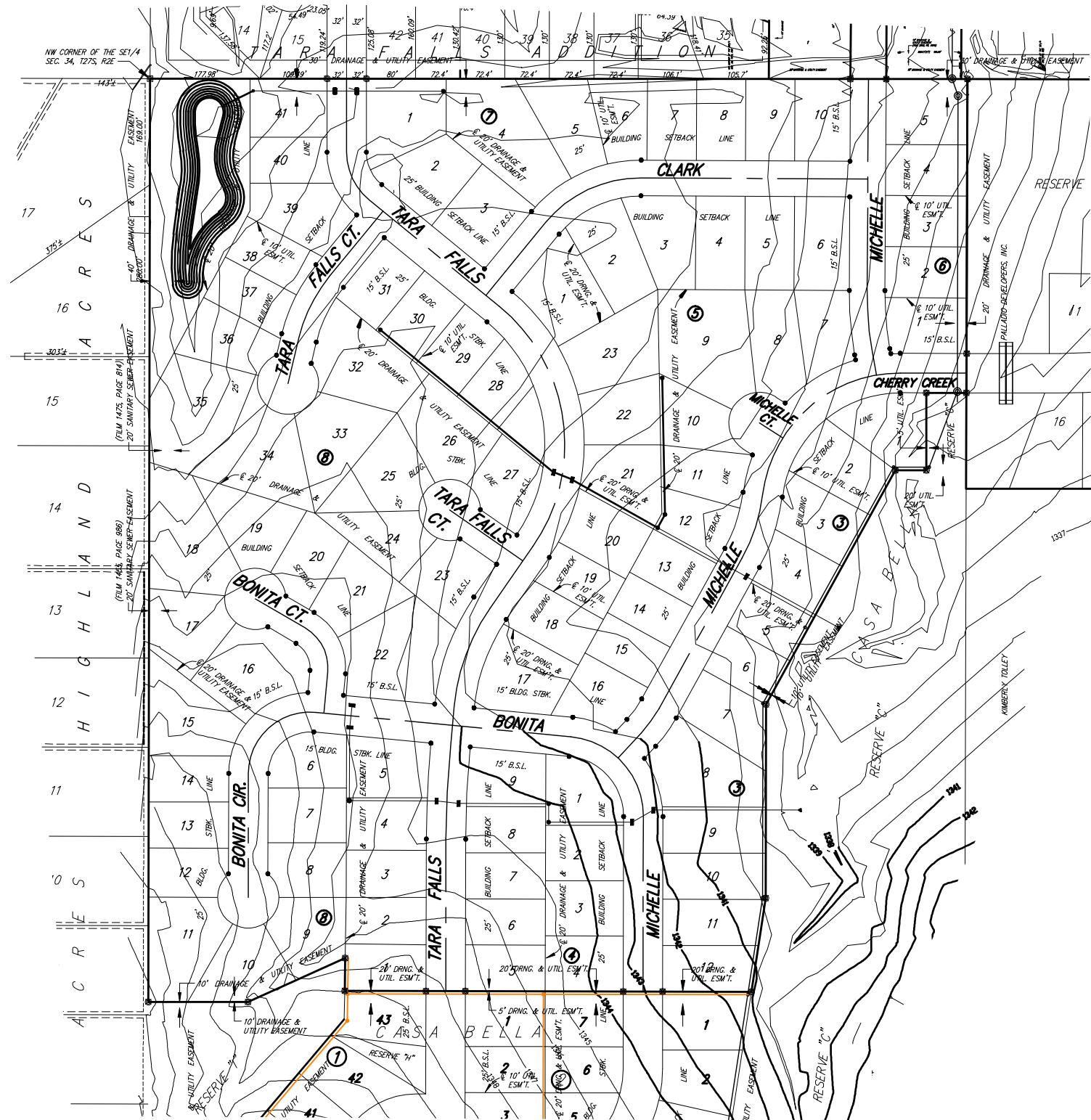
Ruggles & Bohm, P.A.
Engineering, Surveying, Land Planning

924 North Main (316) 264-8008
Wichita, Kansas 67203 (316) 264-4621 fax
www.rbkansas.com E-mail: info@rbkansas.com

DWG FILE: SURVEY BASE
PROJECT NO. 3253P
APRIL 8, 2008

CASA BELLA SECOND ADDITION

Wichita, Sedgwick County, Kansas



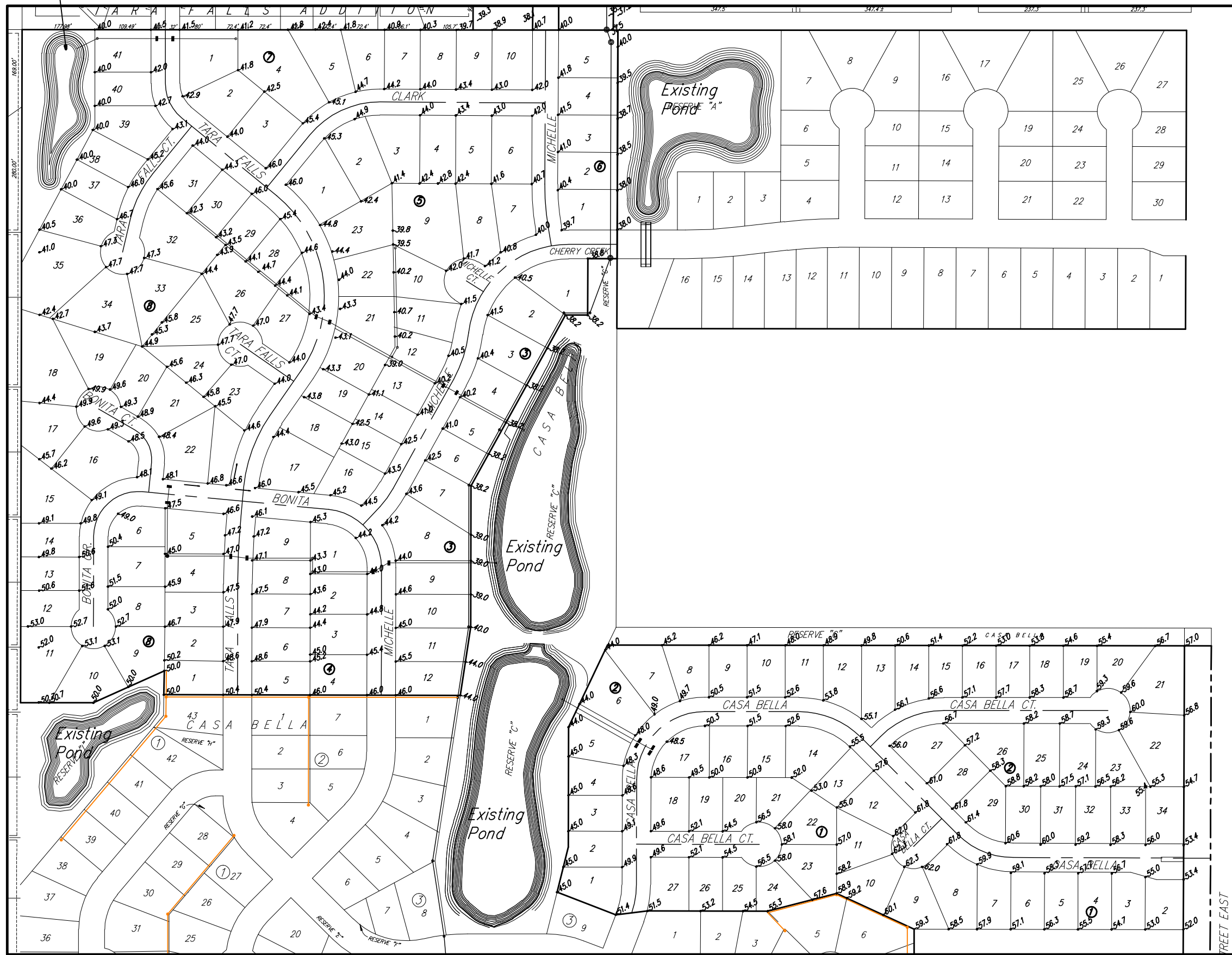
BENCH MARK: SRB BRASS DISC 55.45' E.
& 5.13' S. OF THE N.W. COR., SW 1/4, SEC. 35,
T27S, R2E
ELEVATION = 1348.35 (NGVD29)

- P* = Plotted (Casa Bella)
M = Measured
- SURVEY MARKER LEGEND**
- PK NAIL IN CONCRETE (FOUND - ORIGIN UNKNOWN)
 - 1/2" IRON PIPE (FOUND - ORIGIN UNKNOWN)
 - 3/4" IRON PIPE (FOUND - ORIGIN UNKNOWN)
 - ⊗ 5/8" REBAR W/CARBUR CAP (FOUND)
 - ⊗ 1" BAR (FOUND - ORIGIN UNKNOWN)
 - ⊗ 5/8" REBAR W/SRB CAP (FOUND)
 - ⊗ 5/8" REBAR W/RAB CAP (FOUND)
 - 5/8" REBAR W/RAB CAP (SET)

BLOCK	LOT NO.	ELEVATION (NGVD29)
2	1, 2, 3, 4, 5, 6, 7	1,345.4
3	10, 11, 12	1,345.4
3	1, 2, 3, 4, 5, 6, 7, 8, 9	1,339.4
6	1, 2, 3, 4, 5	1,336.8



Proposed Pond



Scale: 1" = 150'

**Casa Bella 2nd Addition
4 Corner Grading Plan
WICHITA, KANSAS**



Ruggles & Bohm, P.A.
 Engineering, Surveying, Land Planning
 224 North Main
 Wichita, Kansas 67202
 www.rugglesandbohm.com
 (316) 262-4422
 (316) 262-4423
 (316) 262-4424

SURVEY BASE [4 Corner]

EJG
 EJG
 5
 3/25/08
 Apr. 14, 2008
 11

Final Drainage Plan
 Casa Bella 2nd Addition
 Wichita, Kansas

Developed Conditions

The proposed Casa Bella 2nd addition consists of 70 acres of single family residential lots. The proposed total impervious area = 28 acres. The drainage in the northeast portion of the plat will be handled by a detention pond controlled by a concrete weir. Other storm sewer systems will be constructed to convey the interior drainage for the entire Casa Bella 2nd Addition. The ultimate discharge of these systems was included in the drainage study of Casa Bella and Tara Creek Additions. The proposed pond was modeled using HEC-HMS. The results can be seen in Table 1. Table 2 shows the data associated with the proposed pond including discharges for a 144” wide weir control. Storm sewer systems are needed to drain proposed lots. Proposed Storm Sewer systems have been sized using StormCAD and those results can be found at the end of this drainage plan.

The time of concentration for the onsite pond basins is 15 minutes. The reach length of the offsite basin is unchanged from the pre-developed conditions. The time of concentration for the offsite basin is 57.8 minutes. The developed runoff curve number is assumed to be 87.

Proposed Pond Data:

Static Pool = 1337.00

Pond Bottom = 1332.00

100 year Water Surface = 1338.5

Elevation	Area	Discharge (cfs)
1337.0	0.48	0
1337.5	0.52	14
1338.0	0.57	41
1338.5	0.61	76
1339.0	0.66	118
1339.5	0.84	164

Table 2: Proposed Pond Stage-Area-Discharge.

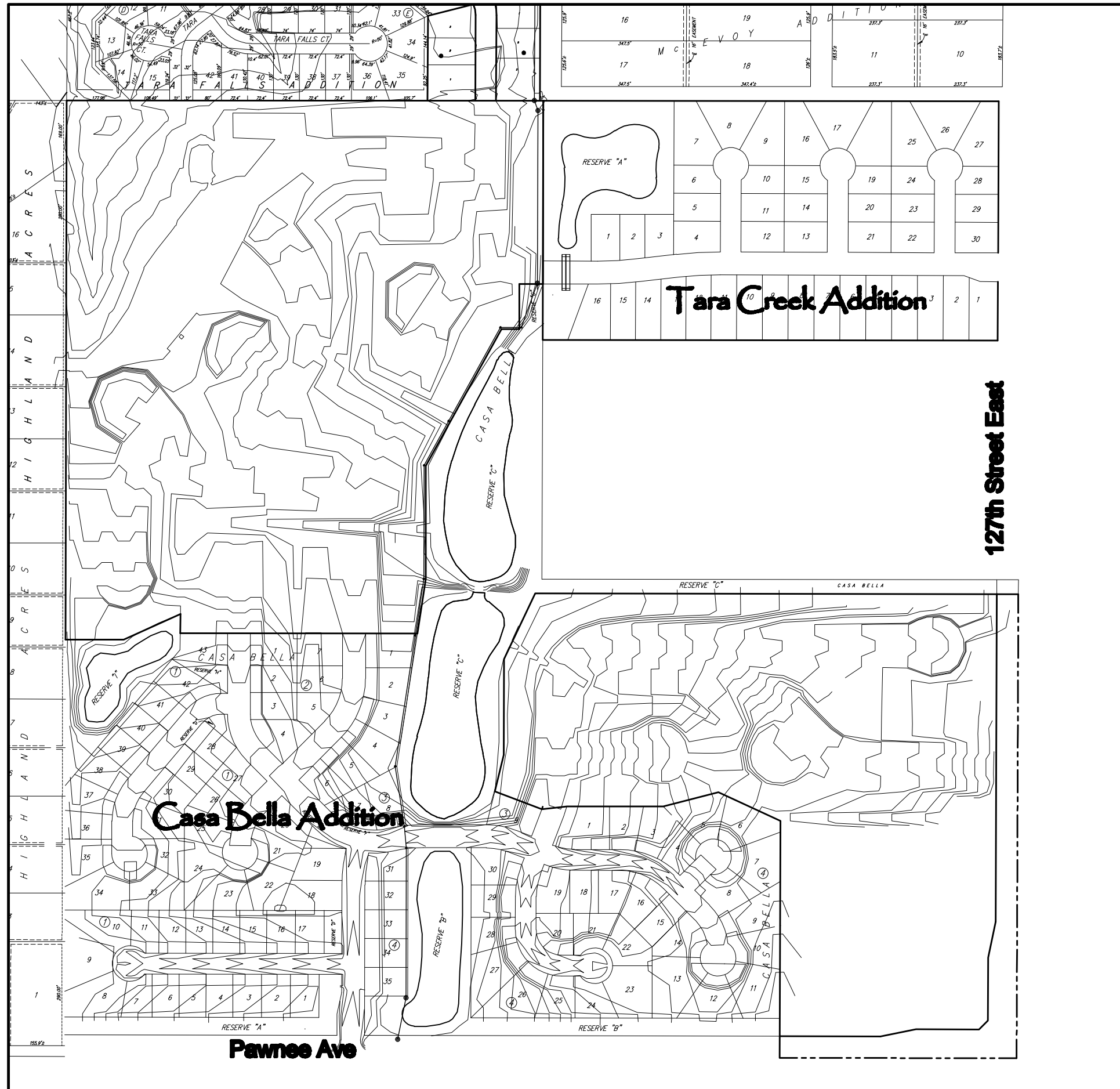


The contours on this sheet represent the natural site as it was prior to the Casa Bella Addition Storm Water Drain Project.



Scale: 1" = 200'


Casa Bella 2nd Addition Aerial Image WICHITA, KANSAS		EJG	3/25/08
Ruggles & Bohm, P.A. Engineering, Surveying, Land Planning <small>224 West Main Wichita, Kansas 67202 www.rba.com</small>		EJG	
SURVEY BASE {aerial}		7	11
		Apr. 14, 2008	

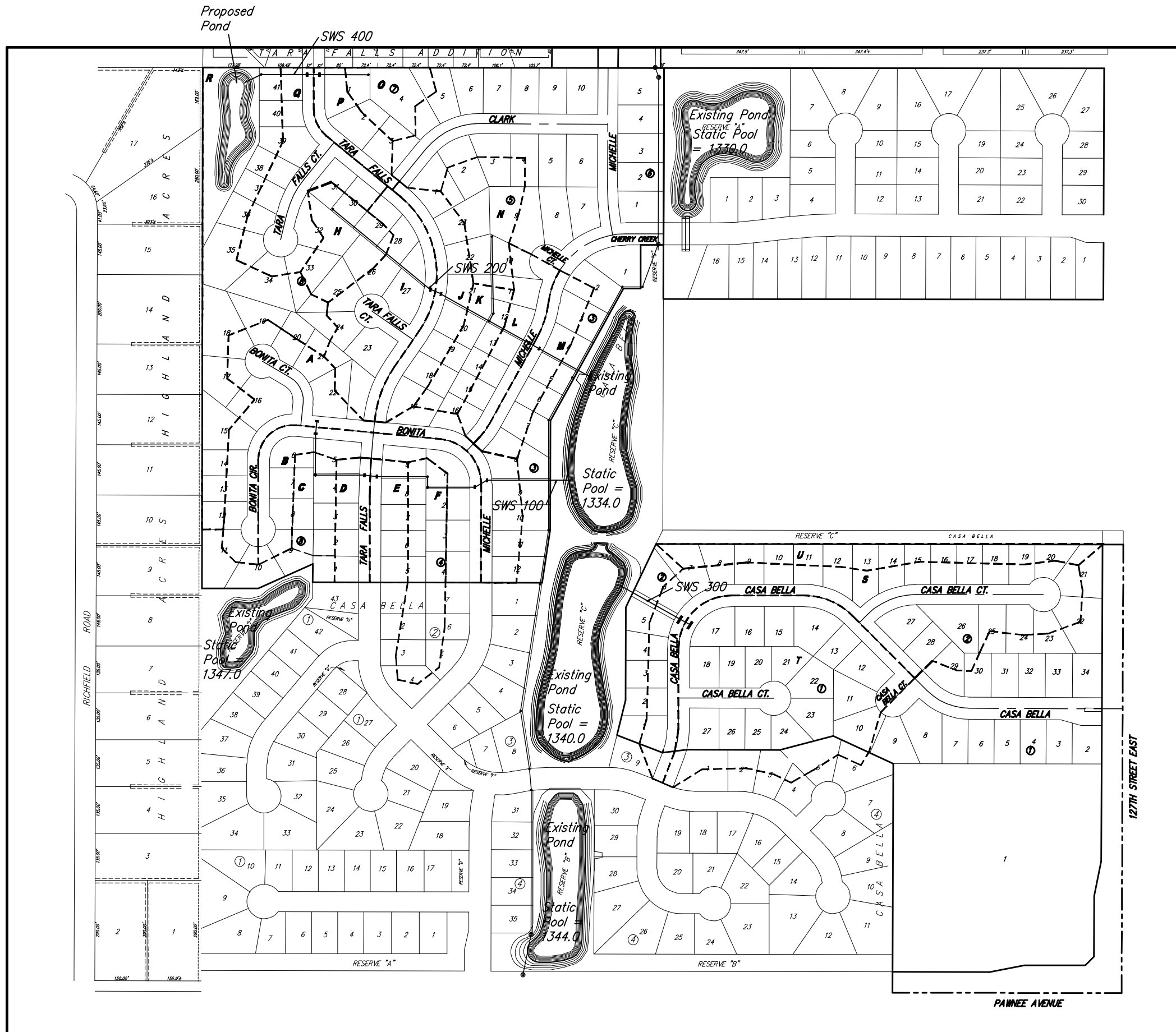


The contours on this sheet represent the site grading done with the Casa Bella Addition Storm Water Drain Project.



Scale: 1" = 200'

Casa Bella 2nd Addition Current Site Conditions WICHITA, KANSAS		EJG
 Ruggles & Bohm, P.A. Engineering, Surveying, Land Planning		EJG
<small>224 North Main Wichita, Kansas 67202 www.rugglesandbohm.com</small>		3/25/08
<small>913-261-6100 913-261-6101 913-261-6102</small>		8
<small>SURVEY BASE {aerial (2)}</small>		<small>Apr. 14, 2008</small> 11



Basin	Area (Ac)	Tc (min)	I2 (in/hr)	I100 (in/hr)	C2	C100	Q2 (cfs)	Q100 (cfs)
A	4.2	15	3.83	7.37	0.5	0.76	8.0	23.5
B	2.5	15	3.83	7.37	0.5	0.76	4.8	14.0
C	0.8	15	3.83	7.37	0.5	0.76	1.5	4.5
D	0.8	15	3.83	7.37	0.5	0.76	1.5	4.5
E	0.9	15	3.83	7.37	0.5	0.76	1.7	5.0
F	1.7	15	3.83	7.37	0.5	0.76	3.3	9.5
H	1.3	15	3.83	7.37	0.5	0.76	2.5	7.3
I	2.6	15	3.83	7.37	0.5	0.76	5.0	14.6
J	1.7	15	3.83	7.37	0.5	0.76	3.3	9.5
K	1	15	3.83	7.37	0.5	0.76	1.9	5.6
L	1.3	15	3.83	7.37	0.5	0.76	2.5	7.3
M	1.3	15	3.83	7.37	0.5	0.76	2.5	7.3
N	1.4	15	3.83	7.37	0.5	0.76	2.7	7.8
O	0.9	15	3.83	7.37	0.5	0.76	1.7	5.0
P	0.9	15	3.83	7.37	0.5	0.76	1.7	5.0
Q	2.4	15	3.83	7.37	0.5	0.76	4.6	13.4
R	4.9	15	3.83	7.37	0.5	0.76	9.4	27.4
S	5.8	15	3.83	7.37	0.5	0.76	11.1	32.5
T	6.6	15	3.83	7.37	0.5	0.76	12.6	37.0
U	1.7	15	3.83	7.37	0.5	0.76	3.3	9.5



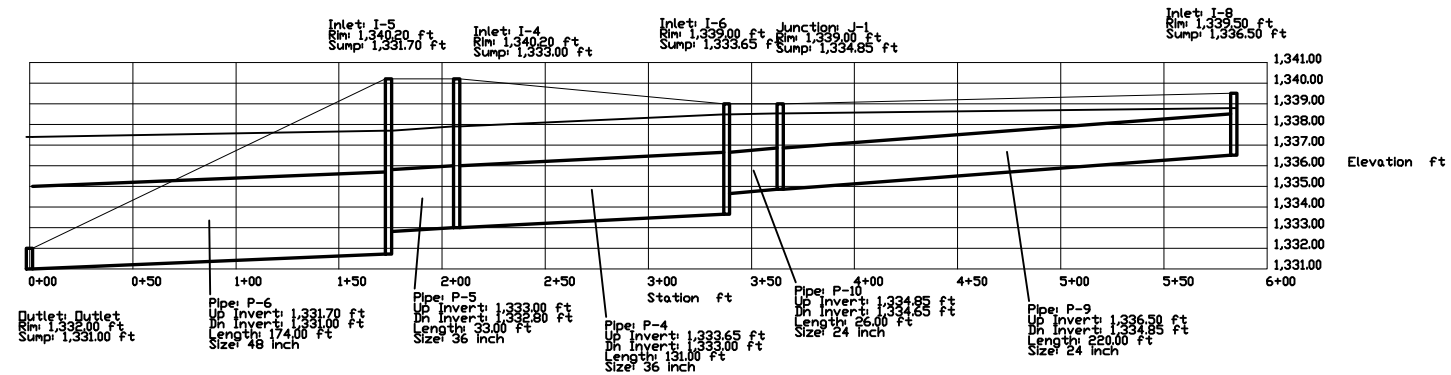
Scale: 1" = 200'

**Casa Bella 2nd Addition
Drainage Basins
WICHITA, KANSAS**

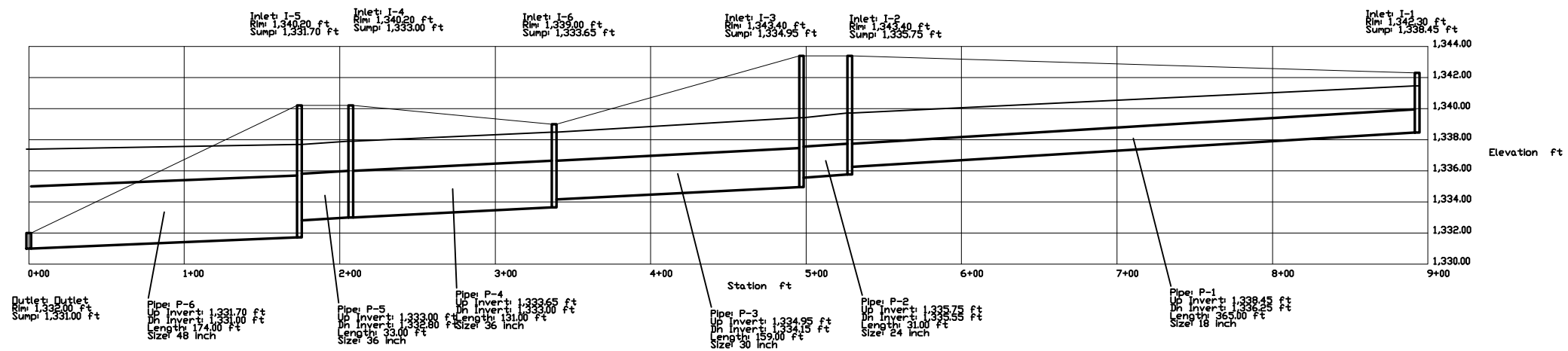
Ruggles & Bohm, P.A.
Engineering, Surveying, Land Planning
224 North Main
Wichita, Kansas 67202
www.rugglesandbohm.com

EJG
EJG
9
11

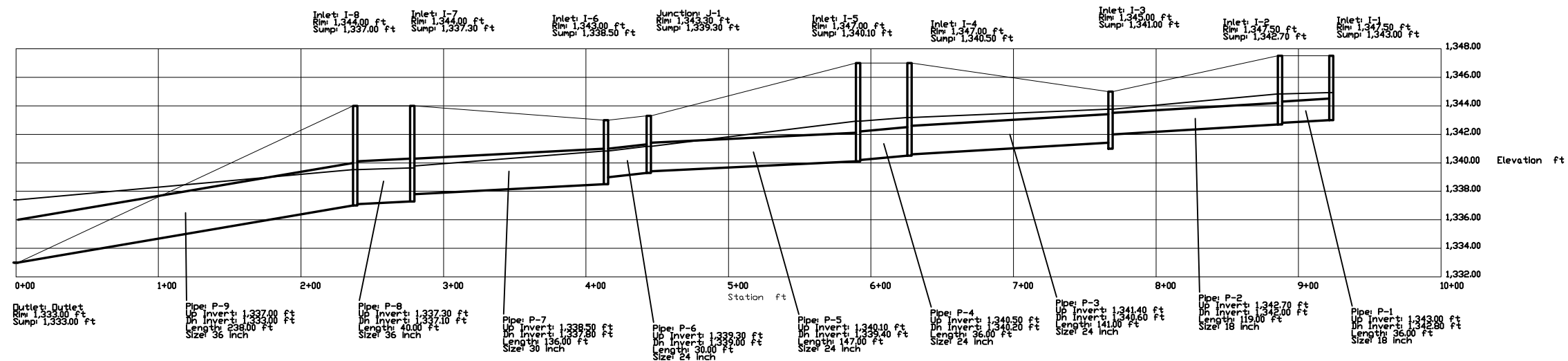
SURVEY BASE [Basins] Apr. 14, 2008



System 200




System 200



System 100

**Casa Bella 2nd Addition
StormCAD
WICHITA, KANSAS**



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

224 West Main
Wichita, Kansas 67202
www.rugglesandbohm.com

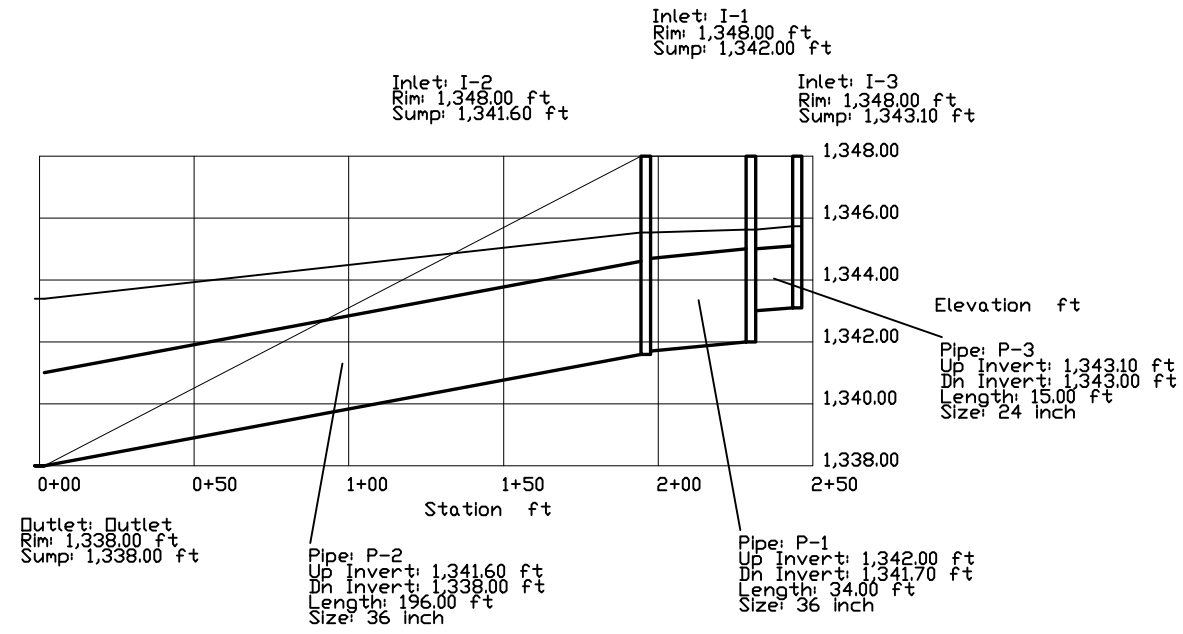
620-293-6922
620-293-6923
620-293-6924

EJG
EJG

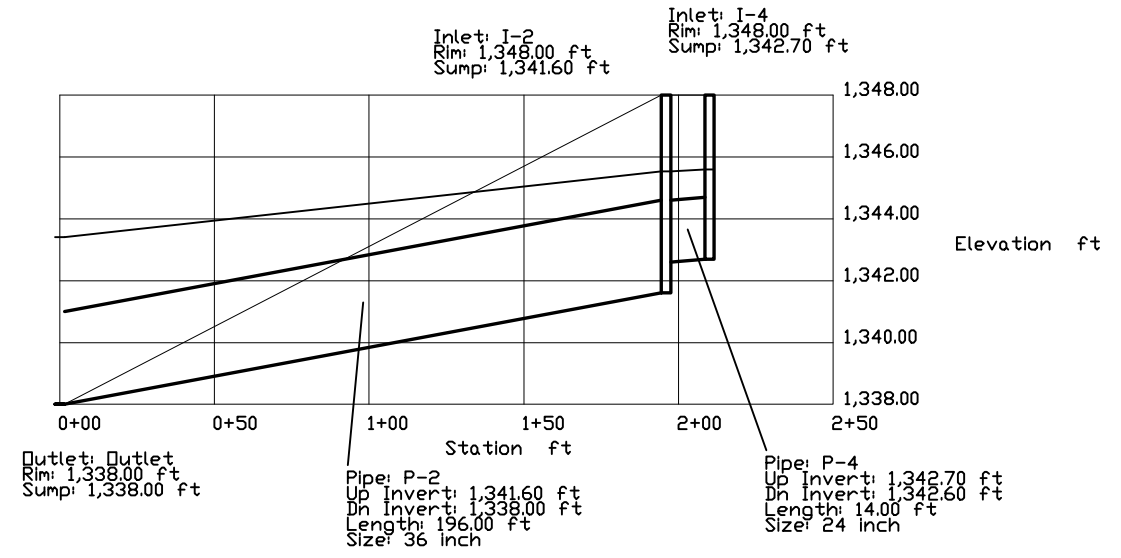
10
11

Apr. 14, 2008

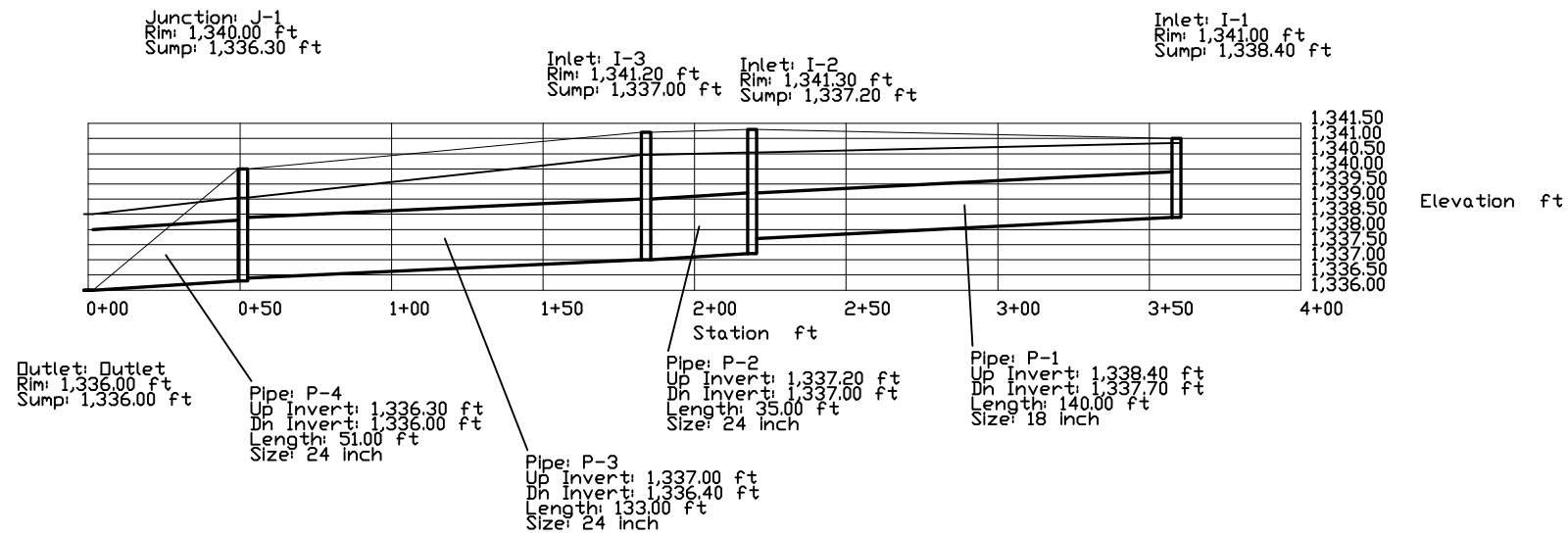
SURVEY BASE [StormCAD]



SYSTEM 300




SYSTEM 300



SYSTEM 400

**Casa Bella 2nd Addition
StormCAD
WICHITA, KANSAS**



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

224 West Main
Wichita, Kansas 67202
www.ruggles.com

620-294-6222
620-294-6223
620-294-6224

EJG
EJG

11
11

Apr. 14, 2008

SURVEY BASE [StormCAD]