LEGACY 3RD ADDITION

DRAINAGE REPORT

NOVEMBER 2006

Ruggles & Bohm P.A

Engineering, Surveying, Land Planning

LEGACY 3RD ADDITION
WICHITA, SEDGWICK COUNTY, KANSAS
DRAINAGE REPORT
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INTRODUCTION

The subject property is in southwest Wichita in Sedgwick County, Kansas The property is located north of 47th Street South and west of Meridian in the southeast quarter of Section 13, Township 28 South, Range 1 West There are approximately 33 acres in the development The subject property was previously platted as a part of Legacy Addition and will be re-platted as Legacy 3rd addition and subdivided into 112 residential lots

EXISTING CONDITIONS

As mentioned, the site was previously platted as Legacy Addition Reserves were established at the north and west property lines to provide drainage swales to carry stormwater runoff to the downstream limits at the property corners No stormwater detention was provided with the original design The site is currently pasture and is not being used for agriculture There are no established floodplains, wetlands or riparian habitats that will be modified or impacted by the development of this site The east side of the project abuts the existing homes in Legacy Addition

Some consideration was made on adding a detention pond on the east side of the proposed development, but existing sanitary sewer and 12" water mains limited the flexibility of the site redesign There are existing bell telephone lines along the south property line that will limit grading in that area

The soil on the southwesterly half of the site is in the Punkin-Taver complex, which is a silty loam that is hydrologic Soil Group D The soil on the northeasterly half of the site is in the Naron complex, a fine sandy loam that is hydrologic soil group B

OFFSITE CONDITIONS

Due to the extremely flat topography of the area, it is difficult to determine the exact limits of the offsite drainage area A drainage area based on the USGS topographical map of the area indicates that there is approximately 17 acres of offsite drainage will be conveyed by the proposed swales of the replatted addition Based on the original Legacy Addition Drainage Report, an additional 341 acres of offsite drainage makes it to the existing drainage swale in Reserve E of Legacy Addition The offsite area to the north is primarily cultivated The soils in the offsite drainage area consist of Naron complex soils, hydrologic soil group B

DEVELOPED CONDITIONS

The site will be subdivided into 112 residential lots A detention pond is proposed along the west line of the subject property with concrete flumes, grassed swales and storm sewer transporting water to the pond The swale along the north property line will be improved as proposed in the original design A quadruple 12'x3' RCBC will be installed under 44th Street South to convey stormwater drainage in the existing channel in Reserve 'E' of the original Legacy Addition

Concrete flumes will be installed in backyard areas of Blocks 5, 6, and 7 to minimize the fill required on the site Every attempt is being made to minimize the modifications required to the existing water and sewer mains on the site

The proposed pond on the west side of the addition will spill over to an existing channel at the southwest corner that drains into an existing pond on the property to the south Following is a breakdown of the pre-developed and post-developed flows on the site

Location	2 Year		5 Year		10 Year		25 Year		100 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
West Onsite	12	24	19	37	25	47	32	57	45	80
West Pond Outflow	19	20	32	31	42	40	53	51	77	77
East Onsite	10	18	18	29	25	39	32	49	49	71
Discharge at SE Corner	173	173	283	282	378	377	478	475	698	692
Combined Flows from site	187	189	307	308	410	410	518	516	757	751

A review of the runoff summary shows that the post-developed runoff at the southeast property corner is equal or lower in every storm event The post developed west pond runoff increases by 1 cfs in the 2 year event but is decreased or equal in all subsequent events Due to the existing sanitary sewer and water main on the property, we were unable to increase the size of the pond to reduce the runoff more The proposed runoff is still significantly less than the amount that would have occurred if the plat had been developed in its original configuration with no detention at all

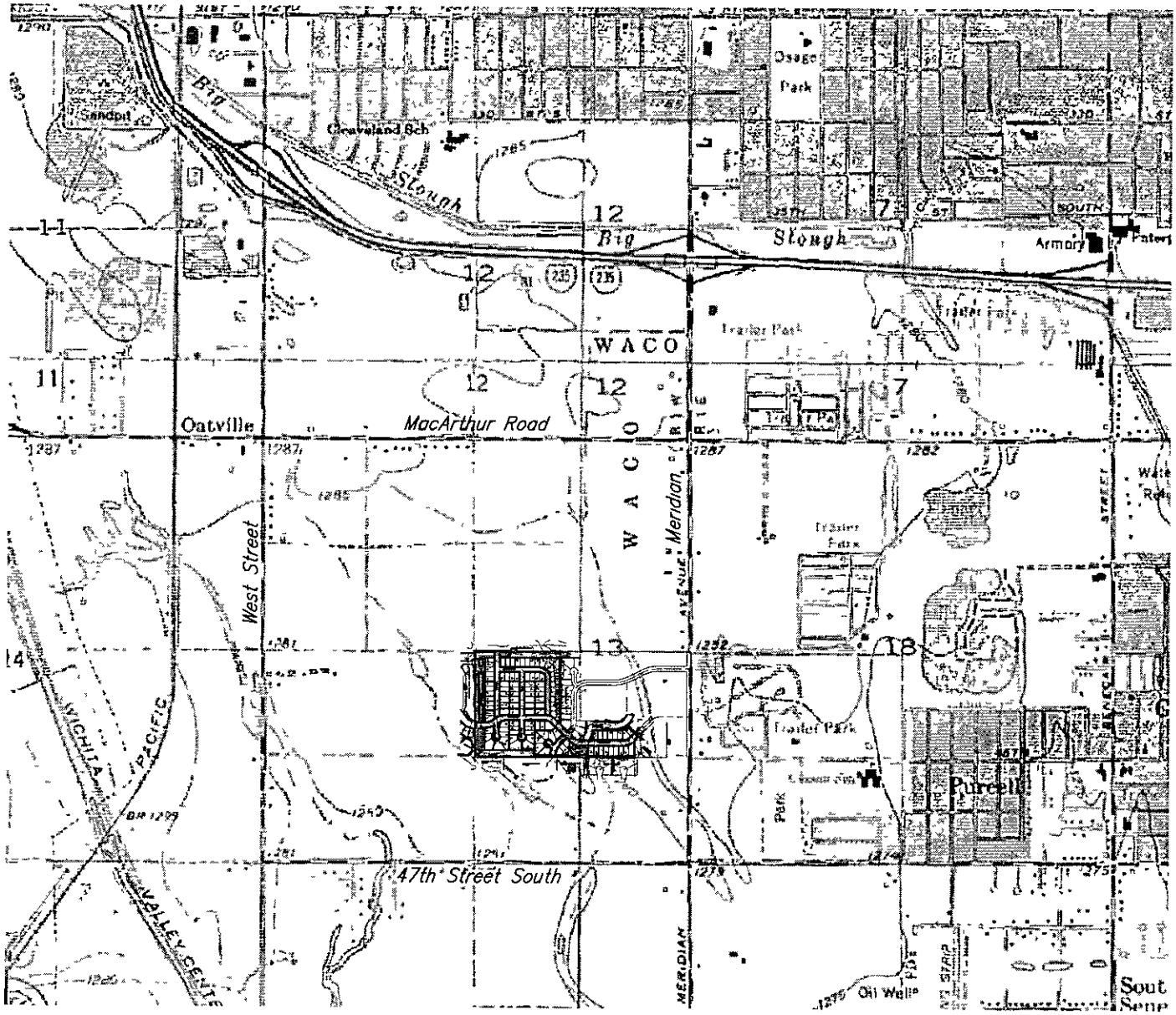
BEST MANAGEMENT PRACTICES

The proposed swales are flat enough to act as silt retention areas during construction Proposed ponds will provide the remaining silt containment for the site Due to the flat (0 40%) grades proposed on the concrete flumes in backyard drainage areas, silt transport is unlikely in the middle area of the site In addition to the proposed silt containment areas, the proposed onsite grading prevents stormwater from running off directly to adjacent properties, which will further reduce the likelihood of offsite silt transport During construction, ditch checks and silt fence will be used to limit silt transport until grass is established

Site Location Map

THE LEGACY 3RD ADDITION

Wichita, Sedgwick County, Kansas



SCALE
1" = 2000

Ruggles & Bohm, P.A.
Engineering, Surveying, Land Planning
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Wichita Kansas 67203
www.rbkansas.com
(316) 264 8008
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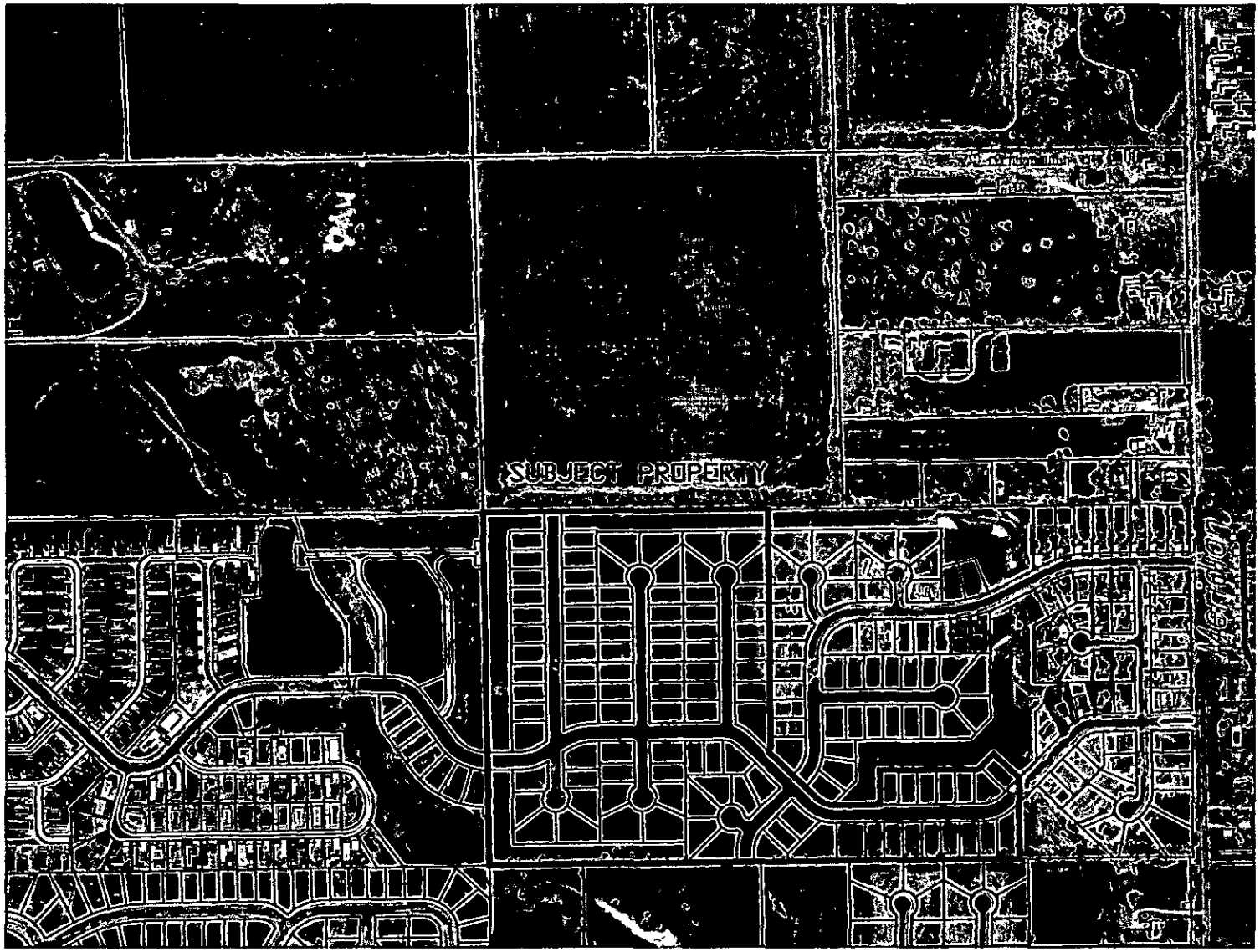
E mail info@rbkansas.com

Site Location Map

THE LEGACY 3RD ADDITION

Wichita, Sedgwick County, Kansas



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State of Kansas)
Sedgwick County) SS

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Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11, Block 1, Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39,40,41,42, 43, 44, 45 and 46, Block 2, Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24, Block 3, Lots 1, 2, 3 and 4, Block 4, Lots 1, 2, 3, 4, 5, 6, 7 and 8, Block 5, Lots 1, 2, 3, 4, 5, 6 and 7, Block 7, and Reserves A, E, F and that part of Reserve B lying west of the extended east line of Lot 1, Block 2 all in The Legacy Addition, an Addition to 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.

_____ 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 "THE LEGACY 3RD ADDITION", 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. Reserves "A", "B" and "C" are hereby reserved for irrigation, walls, walks, lighting, landscaping, berms, ponds, drainage, drainage structures, open space, and utilities confined to easements. Reserve "D" is hereby reserved for irrigation walks, open space, drainage, drainage structures, and utilities confined to easements. The Reserves are 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

Rivendale, LLC

_____ Member
Robert J. Armstrong

_____ Member
Timothy J Malone

State of Kansas)
Sedgwick County) SS

The foregoing instrument acknowledged before me, this _____ day of _____, 2006, by Robert J. Armstrong, Member, on behalf of Rivendale, LLC.

_____ Notary Public
Mildred E Franz

My appointment expires _____

State of Kansas)
Sedgwick County) SS

The foregoing instrument acknowledged before me, this _____ day of _____, 2006, by Timothy J. Malone, Member, on behalf of Rivendale, LLC

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Mildred E Franz

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We the undersigned, holders of a mortgage on a portion of the above described property, do hereby consent to this plat of "THE LEGACY 3RD ADDITION", Wichita, Sedgwick County, Kansas.

Legacy Bank, N.A.

_____, Executive Vice President
Brad Yaeger

State of Kansas)
Sedgwick County) SS

The foregoing instrument acknowledged before me this _____ day of _____, 2006, by Brad Yaeger, Executive Vice President of Legacy Bank, N.A., on behalf of the Bank

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This plat of "THE LEGACY 3RD 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 _____, 2006

Wichita-Sedgwick County Metropolitan Area Planning Commission

_____ Chair
Darrell A Downing

_____ 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 _____, 2006

At the Direction of the City Council

_____ Mayor
Carlos Mayans

_____ City Clerk
Karen Sublett

Reviewed in accordance with K.S.A 58-2005 on this _____ day of _____, 2006

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

Entered on transfer record this ____ day of _____, 2006

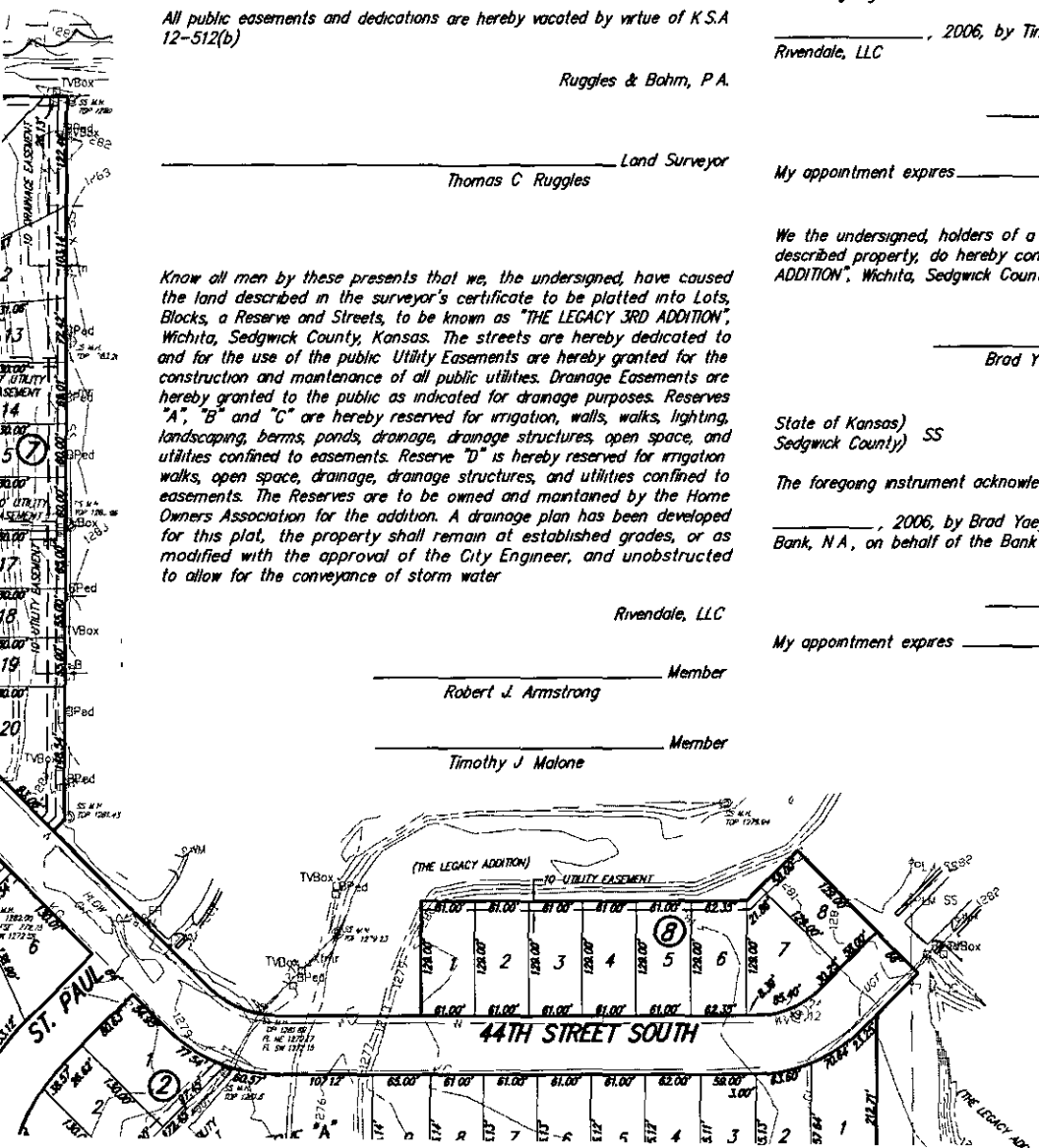
_____ County Clerk
Don Brace

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 _____, 2006, at ____ o'clock ____ M, and is duly recorded.

_____ Register of Deeds
Bill Meek

_____ Deputy
Tonya Buckingham



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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

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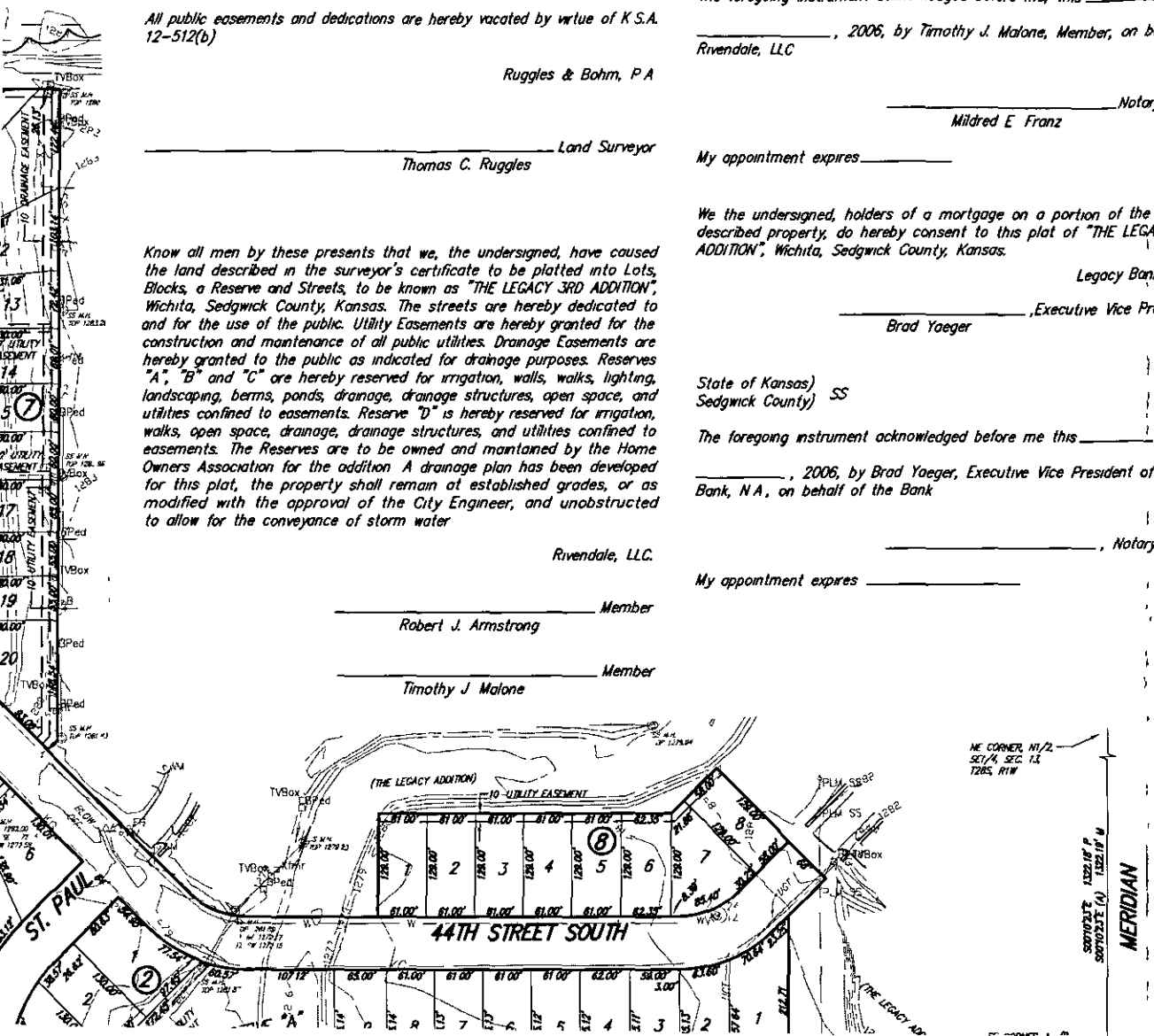
Rivendale, LLC.

_____ Member
Robert J. Armstrong

_____ Member
Timothy J. Malone



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Sedgwick County) SS

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_____ Notary Public
Mildred E. Franz

My appointment expires _____

State of Kansas)
Sedgwick County) SS

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Dated this ____ day of _____, 2006

Wichita-Sedgwick County Metropolitan Area Planning Commission

_____ Chair
Darrell A. Downing

_____ Secretary
John L. Schlegel

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At the Direction of the City Council

_____ Mayor
Carlos Mayans

_____ City Clerk
Karen Sublett

Reviewed in accordance with K.S.A. 58-2005 on this _____ day of _____, 2006

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

Entered on transfer record this ____ day of _____, 2006

_____ County Clerk
Don Brace

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Sedgwick County) SS

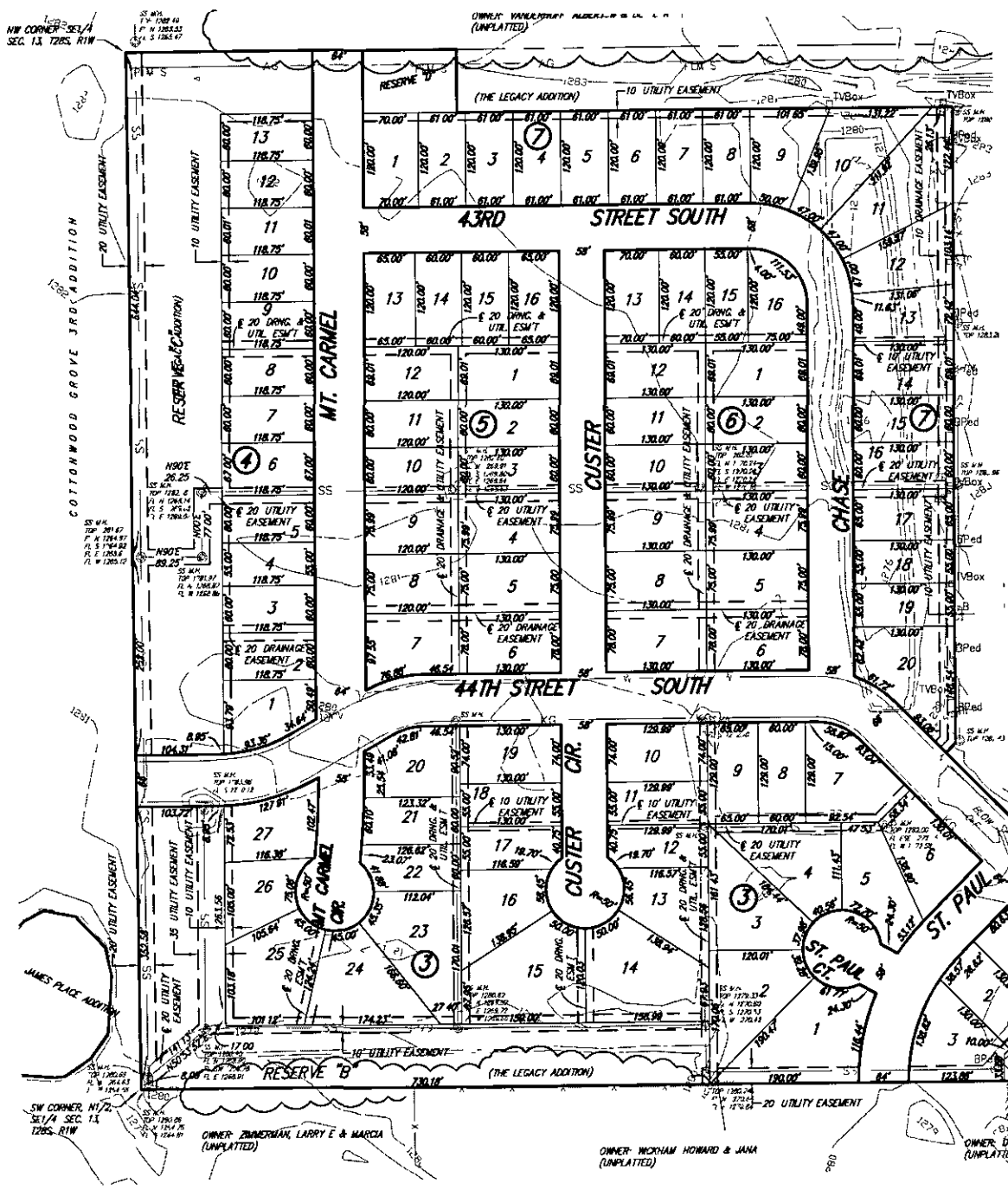
This is to certify that this plat has been filed for record in the office of the Register of Deeds, this ____ day of _____, 2006, at ____ o'clock ___ M, and is duly recorded.

_____ Register of Deeds
Bill Meek

_____ Deputy
Tonya Buckingham

THE LEGACY 3RD ADDITION

A replat of part of The Legacy Addition, Wichita, Sedgwick County, Kansas



BUILDING SETBACKS PER ZONING REGULATIONS

BENCH MARK: CITY OF WICHITA BENCH MARK AT MERIDIAN AND 43RD STREET SOUTH 44 FEET NORTH AND 30 FEET EAST OF THE N.E. CORNER OF THE SE1/4 OF SECTION 13, T28S, R1W OF THE 6TH P.M. ELEV = 1280.80 M.S.L.

(A) = Assumed
M = Measured
P = Platted (The Legacy Addition)

SURVEY MARKER LEGEND

1/2" IRON PIPE (FOUND)
1/2" IRON PIPE W/CAP (FOUND)
3/4" IRON PIPE IN THIMBLE (FOUND)
1/2" REBAR W/CAP (FOUND)
5/8" REBAR W/RUGGLES & BOHM CAP (SET)

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_____ Member
Robert J. Armstrong

_____ Member
Timothy J Malone

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Sedgwick County) SS

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Mildred E Franz

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Wichita-Sedgwick County Metropolitan Area Planning Commission

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Darrell A Downing

_____ Secretary
John L. Schlegel

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At the Direction of the City Council

_____ Mayor
Carlos Mayans

_____ City Clerk
Karen Sublett

Reviewed in accordance with K.S.A. 58-2005 on this _____ day of _____, 2006

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

Entered on transfer record this____ day of _____ , 2006

_____ County Clerk
Don Brace

State of Kansas)
Sedgwick County) SS

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_____ Register of Deeds
Bill Meek

_____ Deputy
Tonya Buckingham

DWG FILE: SURVEY BASE
PROJECT NO. 2940P
NOVEMBER 9 2006

Ruggles & Bohm, P.A.
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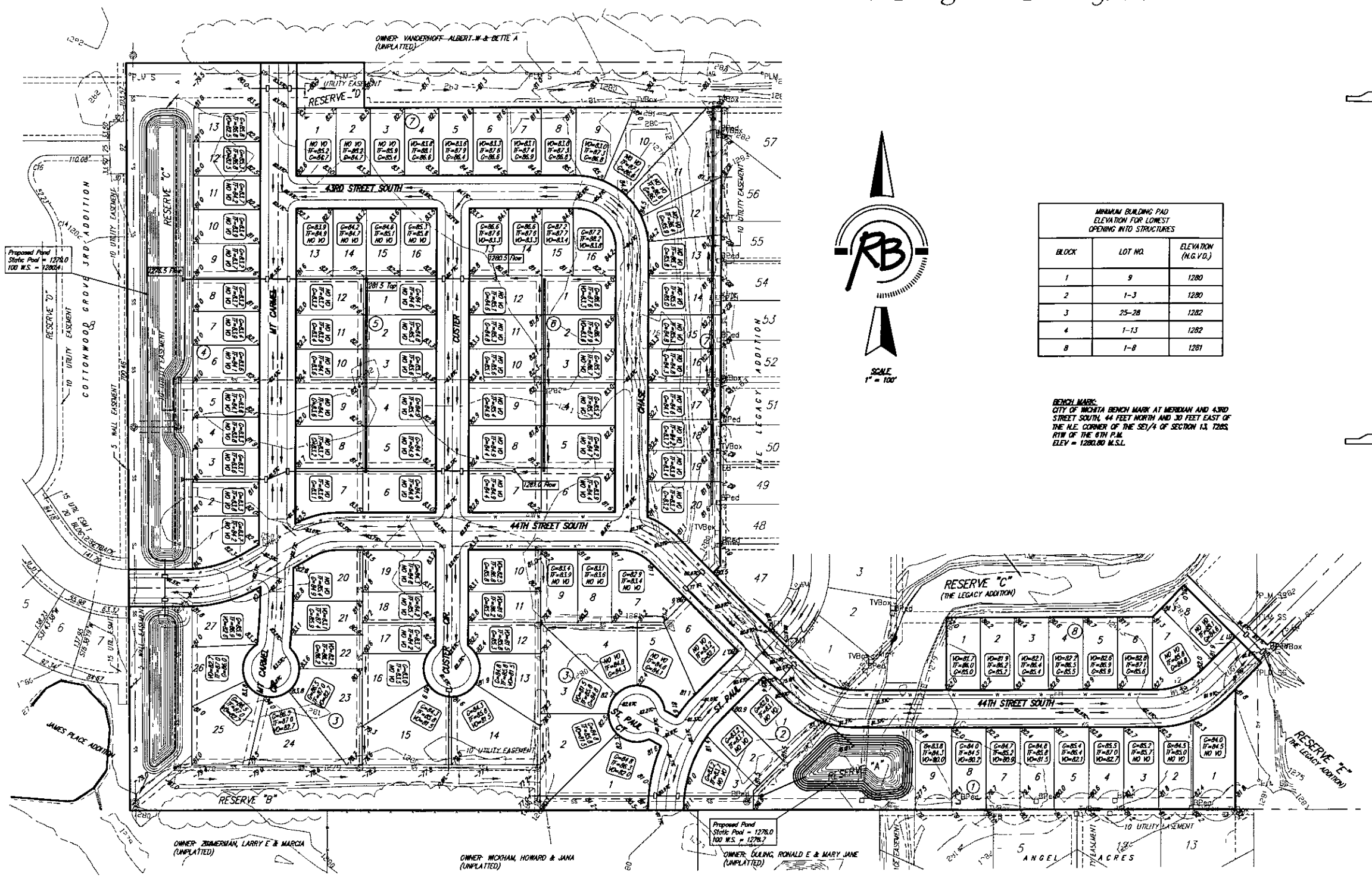
Four Corner Lot Grading

THE LEGACY 3RD ADDITION

Wichita, Sedgwick County, Kansas



SCALE
1" = 100'

MINIMUM BUILDING PAD ELEVATION FOR LOWEST OPENING INTO STRUCTURES		
BLOCK	LOT NO.	ELEVATION (N.G.V.D.)
1	9	1280
2	1–3	1280
3	25–28	1282
4	1–13	1282
8	1–8	1281

BENCH MARK:
CITY OF WICHITA BENCH MARK AT MERIDIAN AND 43RD STREET SOUTH, 44 FEET NORTH AND 30 FEET EAST OF THE N.E. CORNER OF THE SE1/4 OF SECTION 13, T28S, R1W OF THE 6TH P.M.
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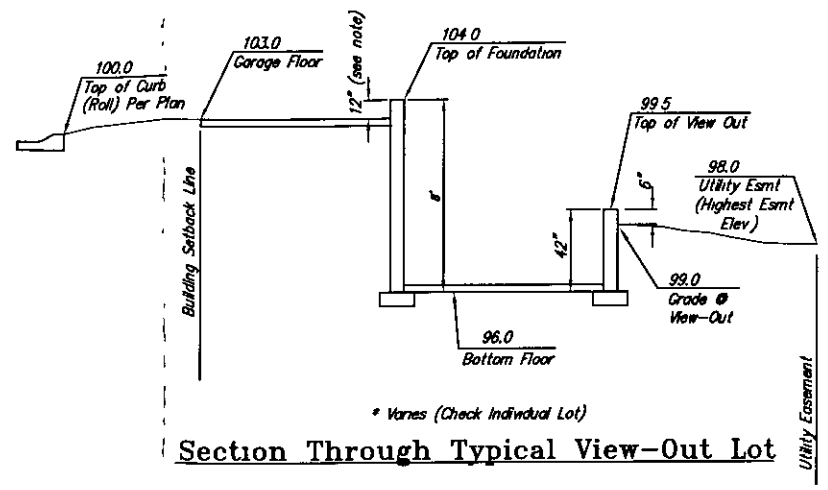
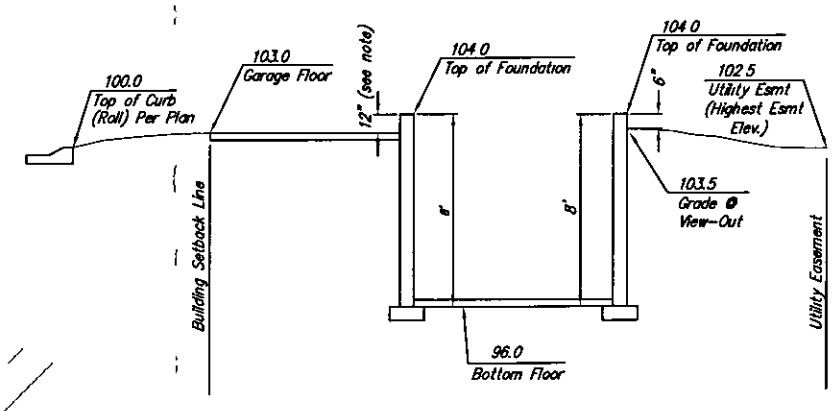


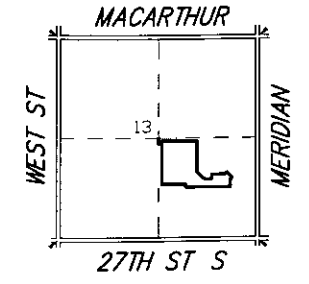
* Varies (Check Individual Lot)

Section Through Typical View-Out Lot



* Varies (Check Individual Lot)

Section Through Typical Full Basement



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EXISTING SITE ANALYSIS

HYDROLOGY

HEC-HMS 3 0 1 was used to calculate basın flows and pond analysıs Basıns were analyzed usıng a SCS Type II 24-hour raınfall dıstrıbutıon, standard SCS Dımensıonless Unıt Hydrograph, and SCS Curve Number method for determınıng losses Tımes of concentratıon were derıved usıng the velocıty method and a mınımum tıme of concentratıon of 15 mınutes was used

HYDROLOGIC DATA AND CALCULATIONS

EXISTING BASINS

Large Offsite (drains to old addition)
T_c = 300' @ 0 20 ft/s + 600' @1 0 ft/s + 3600' @ 3 ft/s = 55 mınutes
341 Acres = 0 533 sq, mı
CN = 73

Small Offsite (direct drainage to new addition)
T_c = 300' @ 0 20 ft/s + 800' @1 2 ft/s = 36 mınutes
12 2 Acres = 0 019 sq, mı
CN = 73

West Onsite
T_c = 300' @ 0 20 ft/s + 600' @1 0 ft/s + 550' @2 0 ft/s = 40 mınutes
17 5 acres = 0 0273 sq mı
CN = 76

East Onsıte
T_c = 300' @ 0 20 ft/s + 573' @1 0 ft/s = 35 mınutes
20 6 acres = 0 0323 sq mı
CN = 69

DEVELOPED BASINS

West Onsite
Tc = 200' @ 0 20 ft/s + 96' @2 5 ft/s + 200' @ 1 2 ft/s = 20 mınutes
17 5 acres = 0 0273 sq mı
CN = 81

East Onsite
T_c = 300' @ 0 29 ft/s + 630' @1 2 ft/s = 26 mınutes
20 6 acres = 0 0323 sq mı
CN = 75

The followıng summary sheets show the breakdowns of each basın and pond for the 2, 5, 10, 25, and 100 year storms for both exıstıng and developed basıns

HYDROLOGY

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20 6 acres = 0 0323 sq mı
CN = 69

DEVELOPED BASINS

West Onsite
Tc = 200' @ 0 20 ft/s + 96' @2 5 ft/s + 200' @ 1 2 ft/s = 20 mınutes
17 5 acres = 0 0273 sq mı
CN = 81

East Onsite
T_c = 300' @ 0 29 ft/s + 630' @1 2 ft/s = 26 mınutes
20 6 acres = 0 0323 sq mı
CN = 75

Existing 2 Year Run

HEC-HMS 3 0 1 [F \Projects\Projects 2900-2999\2940P (Replat of Legacy Addition)\Hydrology\I

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Junction-1	0 6116	187 23	21Nov2006, 00 54	1 25
Junction-2	0 5653	172 55	21Nov2006, 00 57	1 24
Junction-3	0 0463	19 26	21Nov2006, 00 33	1 27
Offsite Large	0 5330	167 27	21Nov2006, 00 51	1 26
Offsite small	0 0190	7 44	21Nov2006, 00 33	1 16
Onsite East	0 0323	9 82	21Nov2006, 00 33	0 94
Onsite West	0 0273	11 86	21Nov2006, 00 36	1 34
Reserve E P .	0 5330	166 16	21Nov2006, 00 57	1 26

Existing 5 Year Run

HEC-HMS 3 0 1 [F \Projects\Projects 2900-2999\2940P (Replat of Legacy Addition)\Hydrology\I

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Junction-1	0.6116	307 14	21Nov2006, 00 51	1 96
Junction-2	0 5653	282 98	21Nov2006, 00 54	1 95
Junction-3	0 0463	31 50	21Nov2006, 00 33	2 00
Offsite Large	0 5330	273 30	21Nov2006, 00 51	1 98
Offsite small	0 0190	12 53	21Nov2006, 00 30	1 87
Onsite East	0 0323	17 79	21Nov2006, 00 30	1 58
Onsite West	0 0273	19 05	21Nov2006, 00 33	2 10
Reserve E P	0 5330	271 18	21Nov2006, 00 54	1 98

Existing 10 Year Run

HEC-HMS 3 0 1 [F \Projects\Projects 2900-2999\2940P (Replat of Legacy Addition)\Hydrology\I

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Junction-1	0 6116	410 59	21Nov2006, 00 51	2 58
Junction-2	0 5653	378 12	21Nov2006, 00 54	2 57
Junction-3	0 0463	41 97	21Nov2006, 00 33	2 64
Offsite Large	0 5330	364 63	21Nov2006, 00 51	2 60
Offsite small	0 0190	16 92	21Nov2006, 00 30	2 48
Onsite East	0 0323	24 86	21Nov2006, 00 30	2 15
Onsite West	0 0273	25 20	21Nov2006, 00 33	2 74
Reserve E P	0 5330	362 05	21Nov2006, 00 54	2 60

Existing 25 Year Run

HEC-HMS 3 0 1 [F \Projects\Projects 2900-2999\2940P (Replat of Legacy Addition)\Hydrology\I

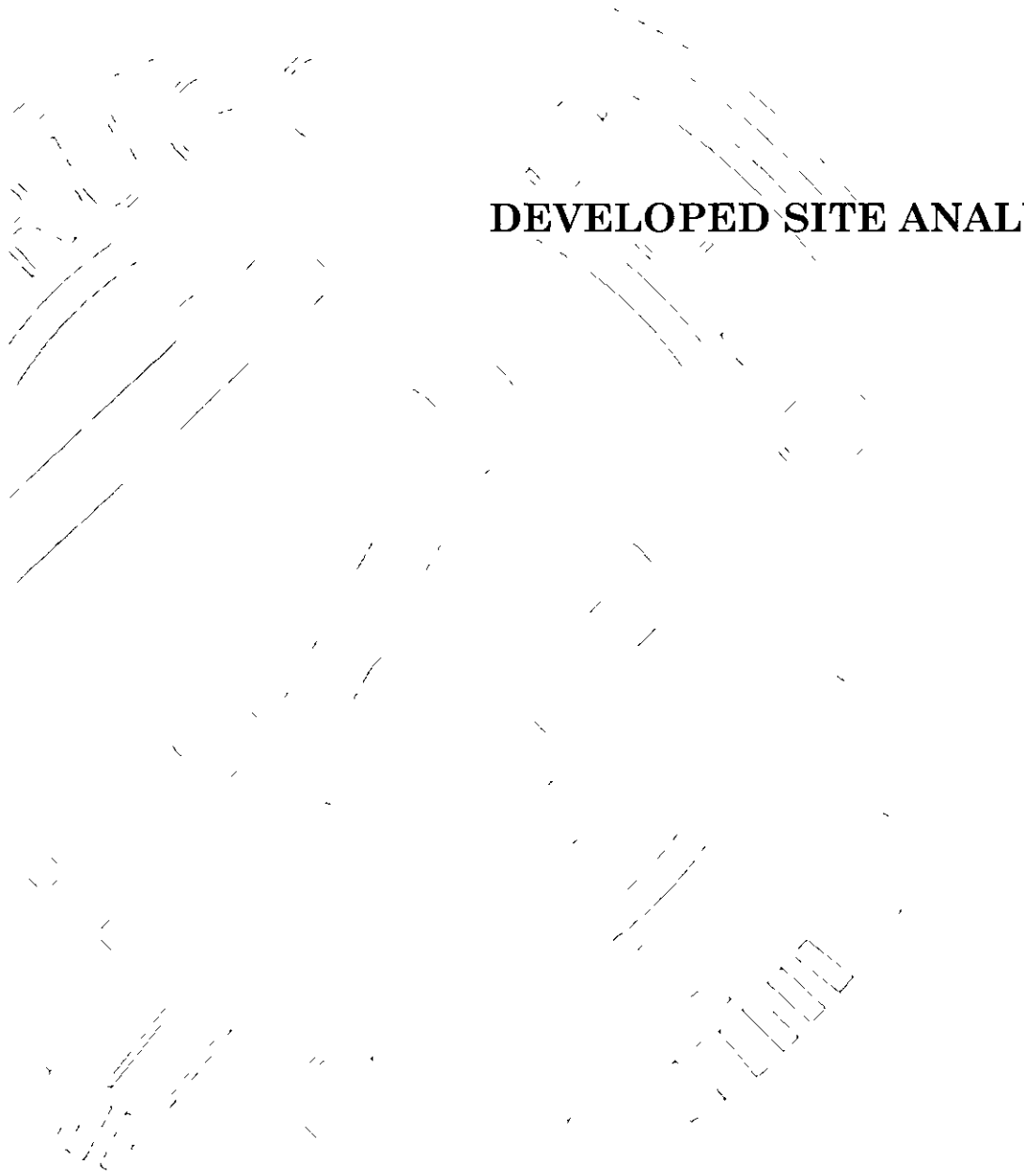
Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Junction-1	0 6116	518 66	21Nov2006, 00 51	3 22
Junction-2	0 5653	477 54	21Nov2006, 00 51	3 22
Junction-3	0 0463	52 82	21Nov2006, 00 33	3 30
Offsite Large	0 5330	459 77	21Nov2006, 00 51	3 25
Offsite small	0 0190	21 51	21Nov2006, 00 30	3 13
Onsite East	0 0323	32 34	21Nov2006, 00 30	2 75
Onsite West	0 0273	31 54	21Nov2006, 00 33	3 42
Reserve E P	0 5330	456 89	21Nov2006, 00 54	3 25

Existing 100 Year Run

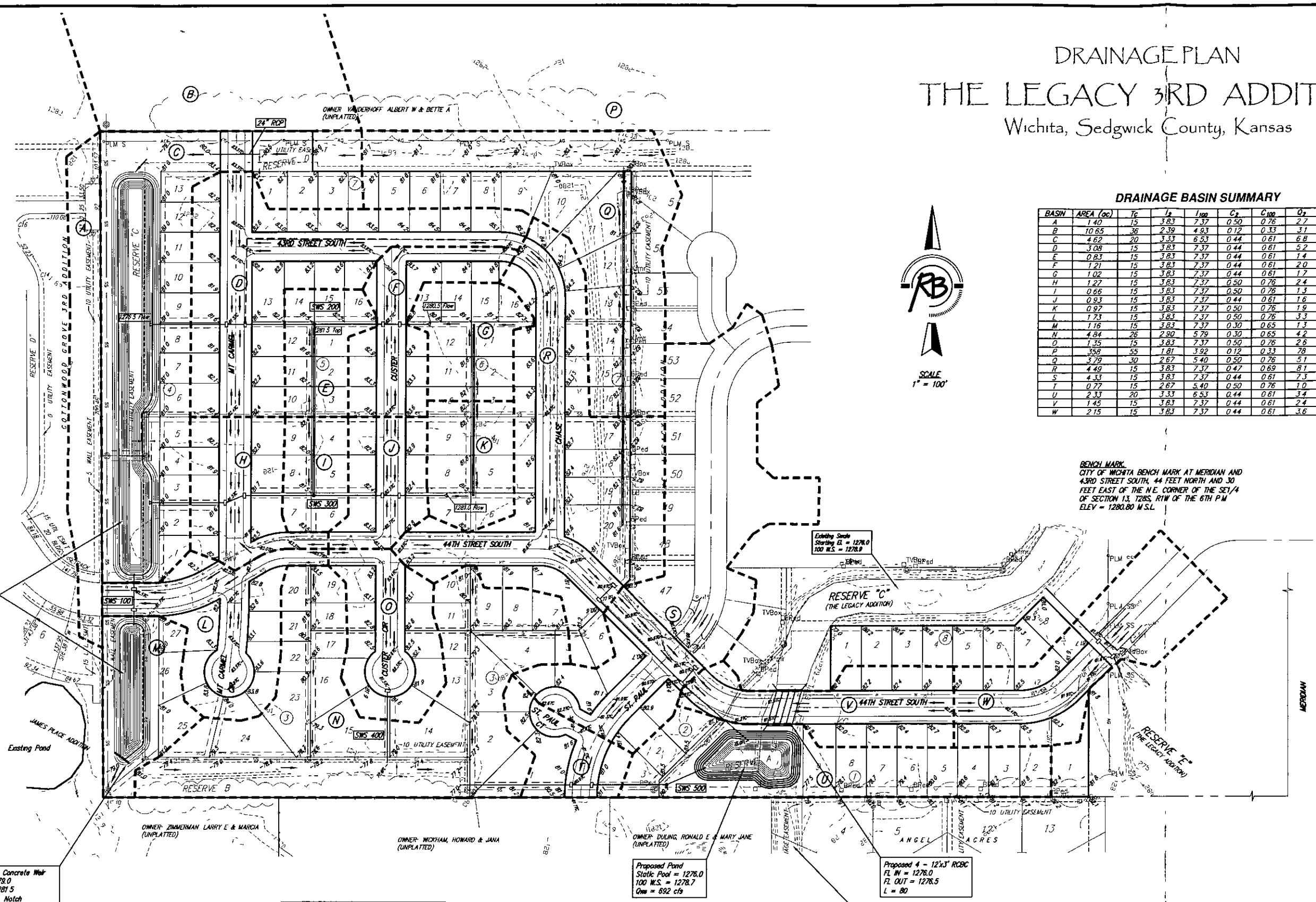
HEC-HMS 3 0 1 [F \Projects\Projects 2900-2999\2940P (Replat of Legacy Addition)\Hydrology\l

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Junction-1	0 6116	757 65	21Nov2006, 00 48	4 67
Junction-2	0.5653	698.08	21Nov2006, 00 51	4 66
Junction-3	0 0463	76 75	21Nov2006, 00 30	4 77
Offsite Large	0 5330	670.38	21Nov2006, 00 48	4 70
Offsite small	0 0190	31 64	21Nov2006, 00 30	4 58
Onsite East	0 0323	49 21	21Nov2006, 00 27	4 13
Onsite West	0 0273	45 42	21Nov2006, 00 33	4 91
Reserve E P	0 5330	666 04	21Nov2006, 00 54	4 69

DEVELOPED SITE ANALYSIS



DRAINAGE PLAN
THE LEGACY 3RD ADDITION
Wichita, Sedgwick County, Kansas



SCALE
1" = 100'

DRAINAGE BASIN SUMMARY

BASIN	AREA (ac)	Tc	I_2	I_{100}	C_2	C_{100}	Q_2	Q_{100}
A	1.40	15	3.83	7.37	0.50	0.76	2.7	7.8
B	10.65	36	2.39	4.63	0.12	0.33	3.1	17.3
C	4.62	20	3.33	6.53	0.44	0.61	6.8	18.4
D	3.08	15	3.83	7.37	0.44	0.61	5.2	13.8
E	0.83	15	3.83	7.37	0.44	0.61	1.4	3.7
F	1.21	15	3.83	7.37	0.44	0.61	2.0	5.4
G	1.02	15	3.83	7.37	0.44	0.61	1.7	4.6
H	1.27	15	3.83	7.37	0.50	0.76	2.4	7.1
I	0.66	15	3.83	7.37	0.50	0.76	1.3	3.7
J	0.93	15	3.83	7.37	0.44	0.61	1.6	4.2
K	0.97	15	3.83	7.37	0.50	0.76	1.9	5.4
L	1.73	15	3.83	7.37	0.50	0.76	3.3	9.7
M	1.16	15	3.83	7.37	0.30	0.65	1.3	5.6
N	4.84	26	2.90	5.79	0.30	0.65	4.2	18.2
O	1.35	15	3.83	7.37	0.50	0.76	2.6	7.6
P	35.8	55	1.81	3.92	0.12	0.33	7.8	46.3
Q	5.79	30	2.67	5.40	0.50	0.76	5.1	15.6
R	4.49	15	3.83	7.37	0.47	0.69	8.1	22.8
S	4.33	15	3.83	7.37	0.44	0.61	7.3	19.5
T	0.77	15	2.67	5.40	0.50	0.76	1.0	3.2
U	2.33	20	3.33	6.53	0.44	0.61	3.4	9.3
V	1.45	15	3.83	7.37	0.44	0.61	2.4	6.5
W	2.15	15	3.83	7.37	0.44	0.61	3.6	9.7

BENCH MARK
CITY OF WICHITA BENCH MARK AT MERIDIAN AND 43RD STREET SOUTH, 44 FEET NORTH AND 30 FEET EAST OF THE N.E. CORNER OF THE SE1/4 OF SECTION 13, T28S, R1W OF THE 6TH P.M.
ELEV. = 1280.80 M.S.L.

SOIL TYPES
40% Punker-Tavr Complex (Soil Group D)
60% Naron Complex (Soil Group B)

IMPERVIOUS AREA
Pre-Developed = 0.0 Acres
Post-Developed = 12.5 Acres

GROSS AREA
1,428,375.5 Sq. Ft.±
32.79 Acres±

DATE OF TOPOGRAPHY
OCTOBER 20, 2006

MINIMUM BUILDING PAD ELEVATION FOR LOWEST OPENING INTO STRUCTURES		
BLOCK	LOT NO.	ELEVATION (N.G.V.D.)
1	9	1280
2	1-3	1280
3	25-28	1282
4	1-13	1282
8	1-8	1281

DWG FILE: SURVEY BASE
PROJECT NO. 2940P
NOVEMBER 9, 2006

Ruggles & Bohm, P.A.
Engineering, Surveying, Land Planning
924 North Main
Wichita, Kansas 67203
www.rbkansas.com
(316) 264-6008
(316) 264-4621 fax
E-mail: info@rbkansas.com

STAGE-STORAGE-DISCHARGE INFORMATION FOR PONDS

West Pond (13' Weir)		
Elev	Area	Discharge
1279	1 42	0
1280	1 63	45
1281	1 85	128
1282	2 1	235

East Pond (35' Channel)		
Elev	Area	Discharge
1276	0 26	0
1277	0 3	117
1278	0 35	391
1279	0 4	812
1280	0 45	1385

Reserve E Pond (RCBC)		
Elev	Area	Discharge
1276	1 05	1 05
1277	1 12	1 12
1278	1 63	1 63
1279	1 75	1 75
1280	1 9	1 9
1281	2 06	2 06
1282	2 5	2 5

The following summary sheets show the breakdowns of each basin and pond for the 2, 5, 10, 25, and 100 year storms for both existing and developed basins

Developed 2 Year Run

HEC-HMS 3 0 1 [F \Projects\Projects 2900-2999\2940P (Replat of Legacy Addition)\Hydrology\I

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
East Pond	0 5653	172 89	21Nov2006, 00 57	1 26
Junction-1	0 6116	189 17	21Nov2006, 00 54	1 28
Junction-2	0 5653	172 89	21Nov2006, 00 57	1 26
Junction-3	0 0463	29 50	21Nov2006, 00 15	1 48
Offsite Large	0 5330	167 27	21Nov2006, 00 51	1 26
Offsite small	0 0190	7 44	21Nov2006, 00 33	1 16
Onsite East	0 0323	17 90	21Nov2006, 00 21	1 29
Onsite West	0 0273	24 45	21Nov2006, 00 12	1 70
Reserve E P	0 5330	166 16	21Nov2006, 00 57	1 26
West Pond	0 0463	19 54	21Nov2006, 00 33	1 46

Developed 5 Year Run

HEC-HMS 3 0 1 [F \Projects\Projects 2900-2999\2940P (Replat of Legacy Addition)\Hydrology\I

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
East Pond	0 5653	282 21	21Nov2006, 00 54	1 98
Junction-1	0 6116	307 93	21Nov2006, 00 54	2 00
Junction-2	0 5653	282 21	21Nov2006, 00 54	1 98
Junction-3	0 0463	45 61	21Nov2006, 00 15	2 26
Offsite Large	0 5330	273 30	21Nov2006, 00 51	1 98
Offsite small	0 0190	12 53	21Nov2006, 00 30	1 87
Onsite East	0 0323	29 09	21Nov2006, 00 18	2 03
Onsite West	0 0273	36 83	21Nov2006, 00 12	2 53
Reserve E P	0 5330	271 18	21Nov2006, 00 54	1 98
West Pond	0 0463	30 51	21Nov2006, 00 33	2 24

Developed 10 Year Run

HEC-HMS 3 0 1 [F \Projects\Projects 2900-2999\2940P (Replat of Legacy Addition)\Hydrology\I

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
East Pond	0 5653	376 51	21Nov2006, 00 54	2 60
Junction-1	0 6116	409 97	21Nov2006, 00 51	2 62
Junction-2	0 5653	376 51	21Nov2006, 00 54	2 60
Junction-3	0 0463	59 09	21Nov2006, 00 15	2 92
Offsite Large	0 5330	364 63	21Nov2006, 00 51	2 60
Offsite small	0 0190	16 92	21Nov2006, 00 30	2 48
Onsite East	0 0323	38 71	21Nov2006, 00 18	2 67
Onsite West	0 0273	47 06	21Nov2006, 00 12	3 23
Reserve E P	0 5330	362 05	21Nov2006, 00 54	2 60
West Pond	0 0463	39 74	21Nov2006, 00 33	2 90

Developed 25 Year Run

HEC-HMS 3 0 1 [F \Projects\Projects 2900-2999\2940P (Replat of Legacy Addition)\Hydrology\I

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
East Pond	0 5653	474 90	21Nov2006, 00 54	3 25
Junction-1	0 6116	516 44	21Nov2006, 00 51	3 28
Junction-2	0 5653	474 90	21Nov2006, 00 54	3 25
Junction-3	0 0463	72 90	21Nov2006, 00 15	3 61
Offsite Large	0 5330	459 77	21Nov2006, 00 51	3 25
Offsite small	0 0190	21 51	21Nov2006, 00 30	3 13
Onsite East	0 0323	48 68	21Nov2006, 00 18	3 34
Onsite West	0 0273	57 44	21Nov2006, 00 12	3 95
Reserve E P	0 5330	456 89	21Nov2006, 00 54	3 25
West Pond	0 0463	50 84	21Nov2006, 00 33	3 59

Developed 100 Year Run

HEC-HMS 3 0 1 [F \Projects\Projects 2900-2999\2940P (Replat of Legacy Addition)\Hydrology\I

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
East Pond	0 5653	691 89	21Nov2006, 00 51	4 70
Junction-1	0 6116	750 71	21Nov2006, 00 51	4 73
Junction-2	0 5653	691 89	21Nov2006, 00 51	4 70
Junction-3	0 0463	102 84	21Nov2006, 00 15	5 13
Offsite Large	0 5330	670 38	21Nov2006, 00 48	4 70
Offsite small	0 0190	31 64	21Nov2006, 00 30	4 58
Onsite East	0 0323	70 53	21Nov2006, 00 18	4 82
Onsite West	0 0273	79 72	21Nov2006, 00 12	5 52
Reserve E P	0 5330	666 04	21Nov2006, 00 54	4 69
West Pond	0 0463	76 92	21Nov2006, 00 30	5 10

Culvert Calculator

All calculator output should be verified prior to design use

Entered Data:

Shape	Rectangular
Number of Barrels	4
Solving for	Headwater
Chart Number	8
Scale Number	1
Chart Description	BOX CULVERT WITH FLARED WINGWALLS, NO INLET TOP EDGE BEVEL
Scale Description	WINGWALLS FLARED 30 TO 75 DEGREES
Overtopping	Off
Flowrate	940 0000 cfs
Manning's n	0.0130
Roadway Elevation	1281 0000 ft
Inlet Elevation	1276 0000 ft
Outlet Elevation	1275 5000 ft
Height	3 0000 ft
Width	12.0000 ft
Length	80 0000 ft
Entrance Loss	0 0000
Tailwater	1.4266 ft

Computed Results:

Headwater	1280.0011 ft Inlet Control
Slope	0 0063 ft/ft
Velocity	11 1415 fps

DIS-CHARGE Flow cfs	HEAD-WATER ELEV ft	INLET CONTROL DEPTH ft	OUTLET CONTROL DEPTH ft	FLOW TYPE	NORMAL DEPTH ft	CRITICAL DEPTH ft	OUTLET VEL fps	OUTLET DEPTH ft	TAILWATER VEL. fps	TAILWATER DEPTH ft
20 00	1276.26	0 26	0 00	NA	0 16	0.18	2 62	0 16	0.96	0 15
40 00	1276.42	0 42	0.00	NA	0.24	0 28	3 44	0.24	1 26	0.22
60 00	1276 56	0 56	0 00	NA	0 31	0 36	4 03	0.31	1.47	0 28
80 00	1276.68	0 68	0 00	NA	0.37	0 44	4 50	0.37	1 65	0.33
100 00	1276 79	0 79	0 00	NA	0 42	0 51	4 90	0 42	1.79	0 38
120.00	1276.90	0 90	0 00	NA	0.48	0 58	5 26	0.48	1 92	0.43
140 00	1277 00	1.00	0 00	NA	0 52	0 64	5 58	0 52	2 03	0 47
160 00	1279 06	3 06	0.00	NA	0.57	0.70	5 86	0.57	2 14	0.51
180 00	1279.07	3.07	0 00	NA	0.61	0 76	6.13	0 61	2.24	0 54

200.00	1279 08	3.08	0 00	NA	0.65	0 81	6 38	0 65	2.33	0.58
220.00	1279 10	3 10	0 00	NA	0 69	0 87	6.61	0.69	2 41	0 61
240.00	1279 11	3 11	0 00	NA	0 73	0 92	6 83	0 73	2 49	0 64
260.00	1279 12	3 12	0 00	NA	0 77	0.97	7 04	0 77	2 56	0.67
280.00	1279 14	3 14	0 00	NA	0 81	1 02	7 23	0 81	2.63	0.70
300.00	1279 15	3.15	0.00	NA	0 84	1 07	7.42	0.84	2.70	0.73
320.00	1279.17	3.17	0 00	NA	0 88	1.11	7.60	0 88	2 76	0.76
340.00	1279.18	3 18	0 00	NA	0 91	1.16	7 77	0 91	2 83	0.79
360.00	1279 20	3 20	0 00	NA	0.95	1 20	7 93	0 95	2 89	0.82
380.00	1279 22	3 22	0 00	NA	0 98	1 25	8.09	0 98	2.94	0.84
400.00	1279 24	3 24	0.00	NA	1 01	1 29	8.24	1.01	3 00	0.87
420.00	1279 25	3.25	0 00	NA	1 04	1.34	8.39	1.04	3 05	0.89
440.00	1279 27	3 27	0 00	NA	1 07	1 38	8.53	1 07	3.10	0 92
460.00	1279 29	3 29	0.00	NA	1 11	1 42	8.67	1.11	3 15	0 94
480.00	1279.31	3.31	0 00	NA	1 14	1.46	8.80	1.14	3 20	0.97
500.00	1279 33	3.33	0 00	NA	1.17	1 50	8.93	1.17	3.25	0 99

West Pond Weir.txt

```
#Units=Structural Dimensions,ft,Flowrate,cfs
#Weir Rating Curve Data
#Depth - ft   Flowrate - cfs
#------------ -------------
     0.00000000,      0 00000000
     0.25000000,      5 64862820
     0.50000000,     15 97673320
     0 75000000,     29 35113308
     1.00000000,     45 18902556
     1.25000000,     63 15358312
     1.50000000,     83 01754095
     1 75000000,    104.61405817
     2 00000000,    127 81386564
     2 25000000,    152 51296127
     2 50000000,    178 62530752
     2 75000000,    206 07818334
     3 00000000,    234.80906465
     3 25000000,    264.76344171
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     3 75000000,    328.15564393
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     4 25000000,    395 92814170
     4.50000000,    431 37179652
     4 75000000,    467 81418997
     5 00000000,    505 22866495
```
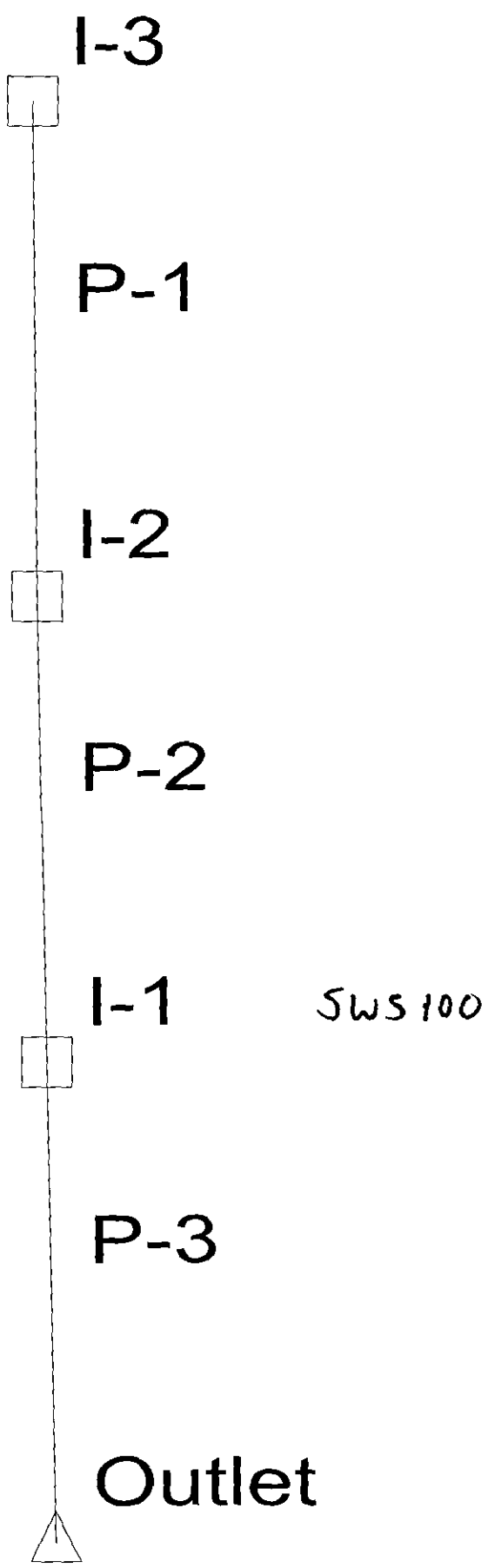

STORMCAD OUTPUT

HYDRAULICS

Onsite storm sewer has been designed to carry the 100 year storm event StormCAD output and profiles are included in the appendix of this report The rational method was used to determine flow rates for each pipe in the system Time of concentration was determined using the velocity method Following is a summary table of the hydraulic calculations Refer to the Drainage Plan for Basin Locations Areas A, H, I, K, L, M, N, O, R, and T are Hydrologic Soil Group D soils Areas B, C, D, E, F, G, J, P, Q, S, U, V, and W are all Hydrologic Soil Group B soils

Basin	Area	Tc	I2	I100	C2	C100	Q2	Q100
A	1 40	15	3 83	7 37	0 5	0 76	2 7	7 8
B	10 65	36	2 39	4 93	0 12	0 33	3 1	17 3
C	4 62	20	3 33	6 53	0 44	0 61	6 8	18 4
D	3 08	15	3 83	7 37	0 44	0 61	5 2	13 8
E	0 83	15	3 83	7 37	0 44	0 61	1 4	3 7
F	1 21	15	3 83	7 37	0 44	0 61	2 0	5 4
G	1 02	15	3 83	7 37	0 44	0 61	1 7	4 6
H	1 27	15	3 83	7 37	0 5	0 76	2 4	7 1
I	0 66	15	3 83	7 37	0 5	0 76	1 3	3 7
J	0 93	15	3 83	7 37	0 44	0 61	1 6	4 2
K	0 97	15	3 83	7 37	0 5	0 76	1 9	5 4
L	1 73	15	3 83	7 37	0 5	0 76	3 3	9 7
M	1 16	15	3 83	7 37	0 3	0 65	1 3	5 6
N	4 84	26	2 9	5 79	0 3	0 65	4 2	18 2
O	1 35	15	3 83	7 37	0 5	0 76	2 6	7 6
P	341	55	1 81	3 92	0 12	0 33	74 1	441 1
Q	3 79	30	2 67	5 4	0 5	0 76	5 1	15 6
R	4 49	15	3 83	7 37	0 47	0 69	8 1	22 8
S	4 33	15	3 83	7 37	0 44	0 61	7 3	19 5
T	0 77	15	2 67	5 4	0 5	0 76	1 0	3 2
U	2 33	20	3 33	6 53	0 44	0 61	3 4	9 3
V	1 45	15	3 83	7 37	0 44	0 61	2 4	6 5
W	2 15	15	3 83	7 37	0 44	0 61	3 6	9 7



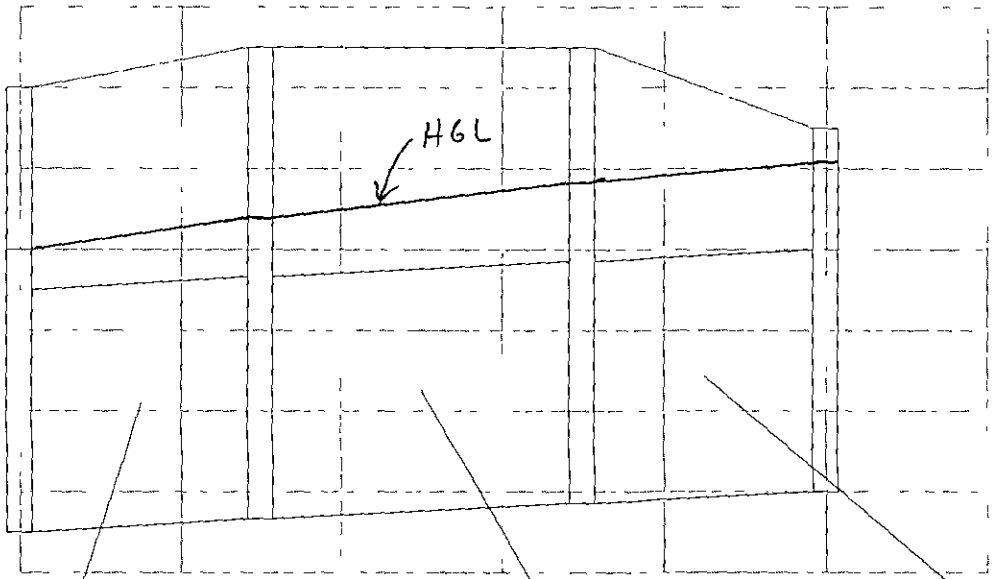
SWS 100

Outlet: Outlet
Rim: 1,281.00 ft
Sump: 1,275.50 ft

Inlet: I-1
Rim: 1,281.50 ft
Sump: 1,275.65 ft

Inlet: I-2
Rim: 1,281.50 ft
Sump: 1,275.85 ft

Inlet: I-3
Rim: 1,280.50 ft
Sump: 1,276.00 ft



Pipe: P-1
Up Invert: 1,276.00 ft
Dn Invert: 1,275.85 ft
Length: 30.00 ft
Size: 36 inch

Pipe: P-3
Up Invert: 1,275.65 ft
Dn Invert: 1,275.50 ft
Length: 30.00 ft
Size: 36 inch

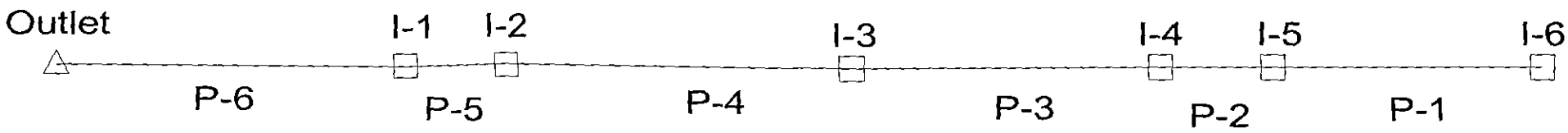
Pipe: P-2
Up Invert: 1,275.85 ft
Dn Invert: 1,275.65 ft
Length: 40.00 ft
Size: 36 inch

Combined Pipe/Node Report

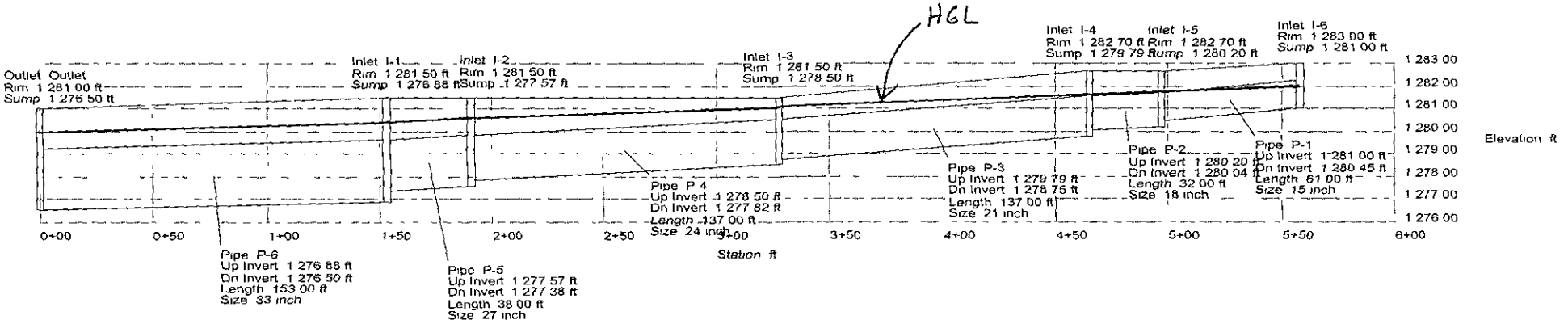
Pipe	Up Node	Dn Node	Length (ft)	Size	Cap (cfs)	V avg (ft/s)	Up Invert (ft)	Dn Invert (ft)	S (ft/ft)	Description	Q (cfs)
P-1	I-3	I-2	30 00	36 inch	47 16	8 35	1,276 00	1,275 85	0 005000		59 00
P-2	I-2	I-1	40 00	36 inch	47 16	9 62	1,275 85	1,275 65	0 005000		68 00
P-3	I-1	Outlet	30 00	36 inch	47 16	10 89	1,275 65	1,275 50	0 005000		77 00

Pipe Report

Pipe	Up Node	Dn Node	Q (cfs)	Length (ft)	S (ft/ft)	Size	Roughness	Cap (cfs)	Up Invert (ft)	Dn Invert (ft)	Up Cover (ft)	Dn Cover (ft)	Up HGL (ft)	Dn HGL (ft)
P-1	I-3	I-2	59 00	30 00	0 005000	36 inch	0 013	47 16	1,276 00	1,275 85	1 50	2 65	1,280 05	1,279 82
P-2	I-2	I-1	68 00	40 00	0 005000	36 inch	0 013	47 16	1,275 85	1,275 65	2 65	2 85	1,279 82	1,279 40
P-3	I-1	Outlet	77 00	30 00	0 005000	36 inch	0 013	47 16	1,275 65	1,275 50	2 85	2 50	1,279 40	1,279 00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A



SWS-200

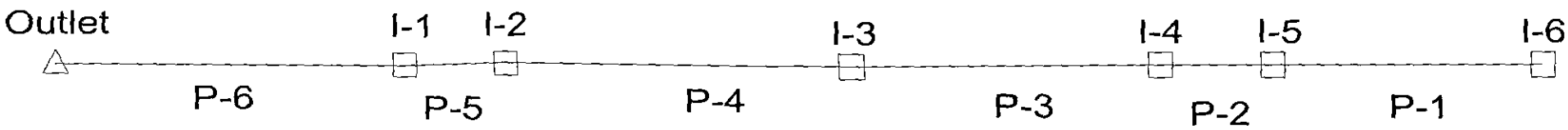

HGL
Outlet Outlet
Rim 1 281 00 ft
Sump 1 276 50 ft
Inlet I-1
Rim 1 281 50 ft
Sump 1 276 88 ft
Inlet I-2
Rim 1 281 50 ft
Sump 1 277 57 ft
Inlet I-3
Rim 1 281 50 ft
Sump 1 278 50 ft
Inlet I-4
Rim 1 282 70 ft
Sump 1 279 79 ft
Inlet I-5
Rim 1 282 70 ft
Sump 1 280 20 ft
Inlet I-6
Rim 1 283 00 ft
Sump 1 281 00 ft
Pipe P-6
Up Invert 1 276 88 ft
Dn Invert 1 276 50 ft
Length 153 00 ft
Size 33 inch
Pipe P-5
Up Invert 1 277 57 ft
Dn Invert 1 277 38 ft
Length 38 00 ft
Size 27 inch
Pipe P-4
Up Invert 1 278 50 ft
Dn Invert 1 277 82 ft
Length 137 00 ft
Size 24 inch
Pipe P-3
Up Invert 1 279 79 ft
Dn Invert 1 278 75 ft
Length 137 00 ft
Size 21 inch
Pipe P-2
Up Invert 1 280 20 ft
Dn Invert 1 280 04 ft
Length 32 00 ft
Size 18 inch
Pipe P-1
Up Invert 1 281 00 ft
Dn Invert 1 280 45 ft
Length 61 00 ft
Size 15 inch
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
4+00
4+50
5+00
5+50
6+00
Station ft
1 283 00
1 282 00
1 281 00
1 280 00
1 279 00
1 278 00
1 277 00
1 276 00
Elevation ft

Pipe Report

Pipe	Up Node	Dn Node	Q (cfs)	Length (ft)	S (ft/ft)	Size	Roughness	Cap (cfs)	Up Invert (ft)	Dn Invert (ft)	Up Cover (ft)	Dn Cover (ft)	Up HGL (ft)	Dn HGL (ft)
P-1	I-6	I-5	4 60	61 00	0 009016	15 inch	0 013	6 13	1,281 00	1,280 45	0 75	1 00	1,282 00	1,281 78
P-2	I-5	I-4	7 30	32 00	0 005000	18 inch	0 013	7 43	1,280 20	1,280 04	1 00	1 16	1,281 78	1,281 63
P-3	I-4	I-3	10 00	137 00	0 007591	21 inch	0 013	13 80	1,279 79	1,278 75	1 16	1 00	1,281 63	1,281 08
P-4	I-3	I-2	13 70	137 00	0 005000	24 inch	0 013	16 00	1,278 50	1,277 82	1 00	1 68	1,281 08	1,280 58
P-5	I-2	I-1	20 60	38 00	0 005000	27 inch	0 013	21 90	1,277 57	1,277 38	1 68	1 87	1,280 58	1,280 41
P-6	I-1	Outlet	27 50	153 00	0 002451	33 inch	0 013	26 18	1,276 88	1,276 50	1 87	1 75	1,280 41	1,280 00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Combined Pipe/Node Report

Pipe	Up Node	Dn Node	Length (ft)	Size	Cap (cfs)	V avg (ft/s)	Up Invert (ft)	Dn Invert (ft)	S (ft/ft)	Description	Q (cfs)
P-1	I-6	I-5	61 00	15 inch	6 13	4 05	1,281 00	1,280 45	0 009016		4 60
P-2	I-5	I-4	32 00	18 inch	7 43	4 13	1,280 20	1,280 04	0 005000		7 30
P-3	I-4	I-3	137 00	21 inch	13 80	4 16	1,279 79	1,278 75	0 007591		10 00
P-4	I-3	I-2	137 00	24 inch	16 00	4 36	1,278 50	1,277 82	0 005000		13 70
P-5	I-2	I-1	38 00	27 inch	21 90	5 18	1,277 57	1,277 38	0 005000		20 60
P-6	I-1	Outlet	153 00	33 inch	26 18	4 63	1,276 88	1,276 50	0 002451		27 50



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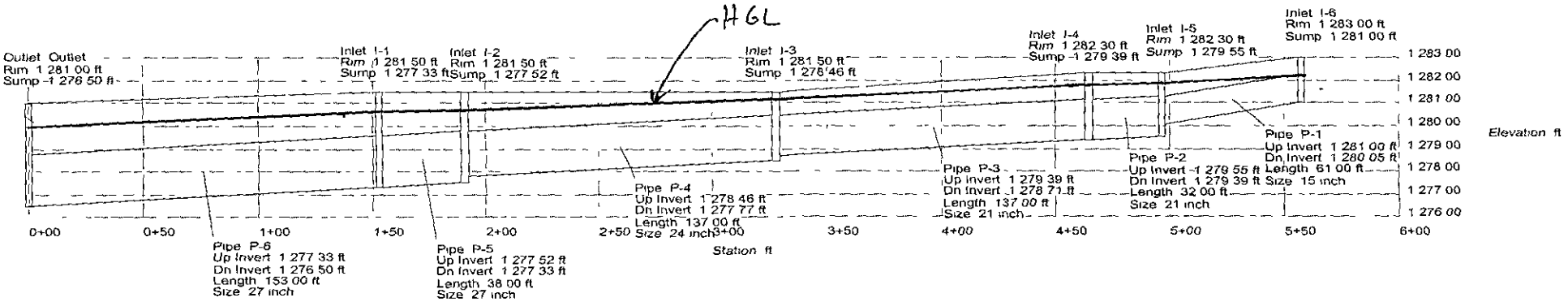
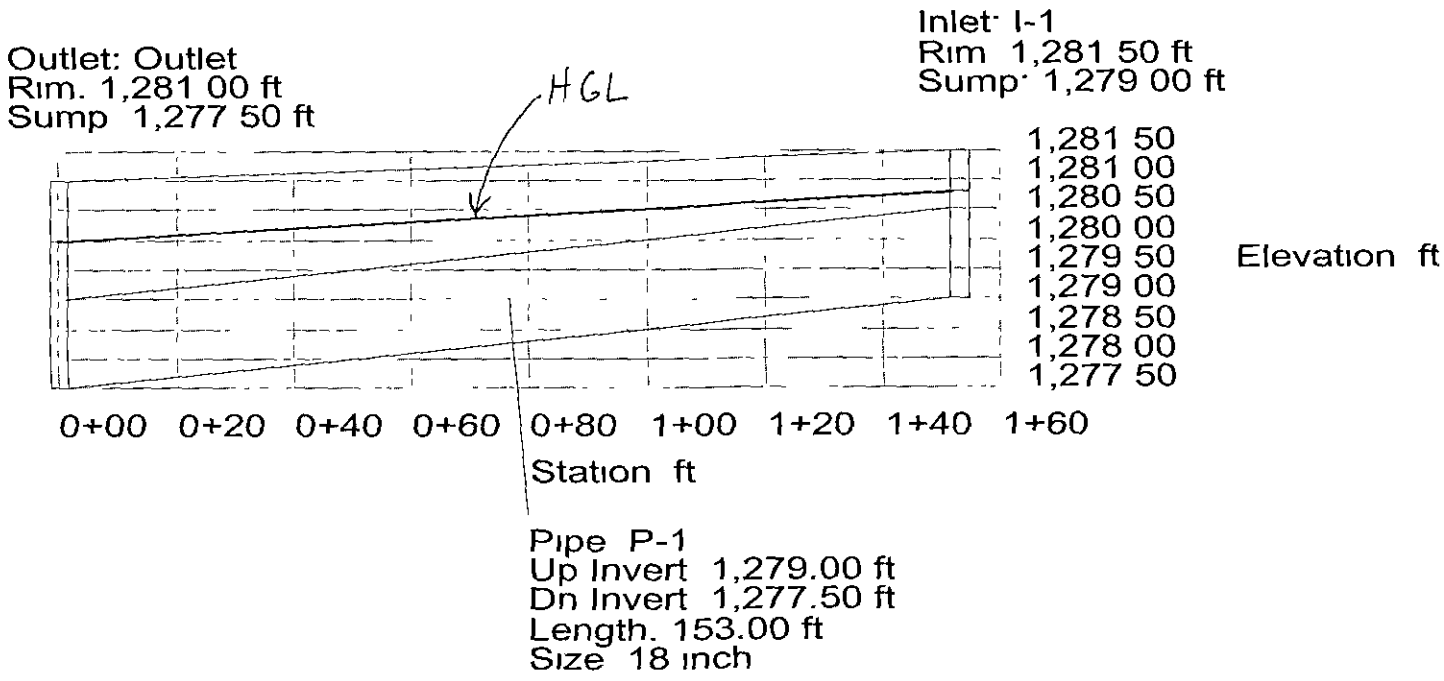

HGL
Outlet Outlet
Rim 1 281 00 ft
Sump 1 276 50 ft
Inlet I-1
Rim 1 281 50 ft
Sump 1 277 33 ft
Inlet I-2
Rim 1 281 50 ft
Sump 1 277 52 ft
Inlet I-3
Rim 1 281 50 ft
Sump 1 278 46 ft
Inlet I-4
Rim 1 282 30 ft
Sump 1 279 39 ft
Inlet I-5
Rim 1 282 30 ft
Sump 1 279 55 ft
Inlet I-6
Rim 1 283 00 ft
Sump 1 281 00 ft
Pipe P-6
Up Invert 1 277 33 ft
Dn Invert 1 276 50 ft
Length 153 00 ft
Size 27 inch
Pipe P-5
Up Invert 1 277 52 ft
Dn Invert 1 277 33 ft
Length 38 00 ft
Size 27 inch
Pipe P-4
Up Invert 1 278 46 ft
Dn Invert 1 277 77 ft
Length 137 00 ft
Size 24 inch
Pipe P-3
Up Invert 1 279 39 ft
Dn Invert 1 278 71 ft
Length 137 00 ft
Size 21 inch
Pipe P-2
Up Invert 1 279 55 ft
Dn Invert 1 279 39 ft
Length 32 00 ft
Size 21 inch
Pipe P-1
Up Invert 1 281 00 ft
Dn Invert 1 280 05 ft
Length 61 00 ft
Size 15 inch
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
4+00
4+50
5+00
5+50
6+00
Station ft
1 283 00
1 282 00
1 281 00
1 280 00
1 279 00
1 278 00
1 277 00
1 276 00
Elevation ft

Combined Pipe/Node Report

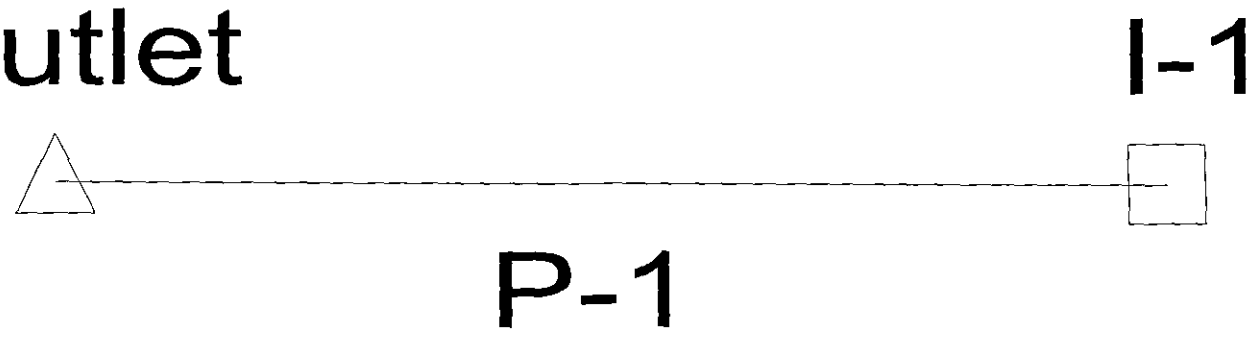
Pipe	Up Node	Dn Node	Length (ft)	Size	Cap (cfs)	V avg (ft/s)	Up Invert (ft)	Dn Invert (ft)	S (ft/ft)	Description	Q (cfs)
P-1	I-6	I-5	61 00	15 inch	8 06	4 40	1,281 00	1,280 05	0 015574		5 40
P-2	I-5	I-4	32 00	21 inch	11 20	3 12	1,279 55	1,279 39	0 005000		7 50
P-3	I-4	I-3	137 00	21 inch	11 20	3 99	1,279 39	1,278 71	0 005000		9 60
P-4	I-3	I-2	137 00	24 inch	16 00	4 23	1,278 46	1,277 77	0 005000		13 30
P-5	I-2	I-1	38 00	27 inch	21 90	4 25	1,277 52	1,277 33	0 005000		16 90
P-6	I-1	Outlet	153 00	27 inch	22 81	5 13	1,277 33	1,276 50	0 005425		20 40

Pipe Report

Pipe	Up Node	Dn Node	Q (cfs)	Length (ft)	S (ft/ft)	Size	Roughness	Cap (cfs)	Up Invert (ft)	Dn Invert (ft)	Up Cover (ft)	Dn Cover (ft)	Up HGL (ft)	Dn HGL (ft)
P-1	I-6	I-5	5 40	61 00	0 015574	15 inch	0 013	8 06	1,281 00	1,280 05	0 75	1 00	1,282 25	1,281 83
P-2	I-5	I-4	7 50	32 00	0 005000	21 inch	0 013	11 20	1,279 55	1,279 39	1 00	1 16	1,281 83	1,281 75
P-3	I-4	I-3	9 60	137 00	0 005000	21 inch	0 013	11 20	1,279 39	1,278 71	1 16	1 05	1,281 75	1,281 25
P-4	I-3	I-2	13 30	137 00	0 005000	24 inch	0 013	16 00	1,278 46	1,277 77	1 05	1 73	1,281 25	1,280 78
P-5	I-2	I-1	16 90	38 00	0 005000	27 inch	0 013	21 90	1,277 52	1,277 33	1 73	1 92	1,280 78	1,280 66
P-6	I-1	Outlet	20 40	153 00	0 005425	27 inch	0 013	22 81	1,277 33	1,276 50	1 92	2 25	1,280 66	1,280 00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A


Outlet: Outlet
Rim. 1,281 00 ft
Sump 1,277 50 ft
HGL
Inlet: I-1
Rim 1,281 50 ft
Sump: 1,279 00 ft
1,281 50
1,281 00
1,280 50
1,280 00
1,279 50
1,279 00
1,278 50
1,278 00
1,277 50
Elevation ft
0+00 0+20 0+40 0+60 0+80 1+00 1+20 1+40 1+60
Station ft
Pipe P-1
Up Invert 1,279.00 ft
Dn Invert 1,277.50 ft
Length. 153.00 ft
Size 18 inch

SWS 400

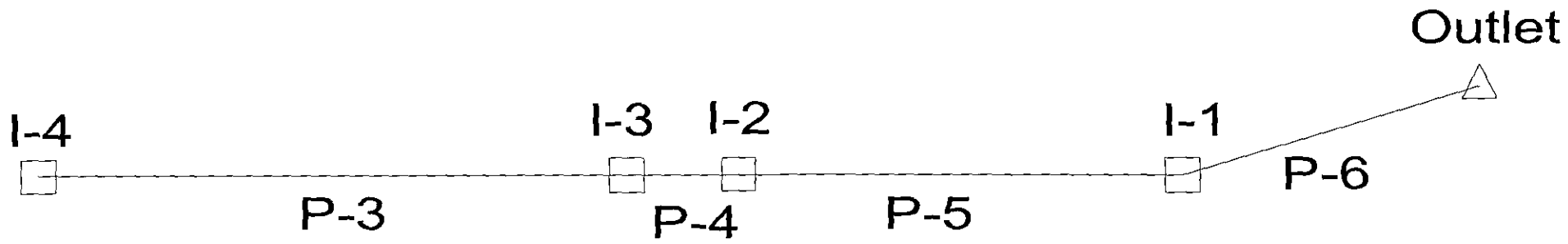

Outlet
I-1
P-1

Pipe Report

Pipe	Up Node	Dn Node	Q (cfs)	Length (ft)	S (ft/ft)	Size	Roughness	Cap (cfs)	Up Invert (ft)	Dn Invert (ft)	Up Cover (ft)	Dn Cover (ft)	Up HGL (ft)	Dn HGL (ft)
P-1	I-1	Outlet	7 60	153 00	0 009804	18 inch	0 013	10 40	1,279 00	1,277 50	1 00	2 00	1,280 80	1,280 00
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Combined Pipe/Node Report

Pipe	Up Node	Dn Node	Length (ft)	Size	Cap (cfs)	V avg (ft/s)	Up Invert (ft)	Dn Invert (ft)	S (ft/ft)	Description	Q (cfs)
P-1	I-1	Outlet	153 00	18 inch	10 40	4 30	1,279 00	1,277 50	0 009804		7 60



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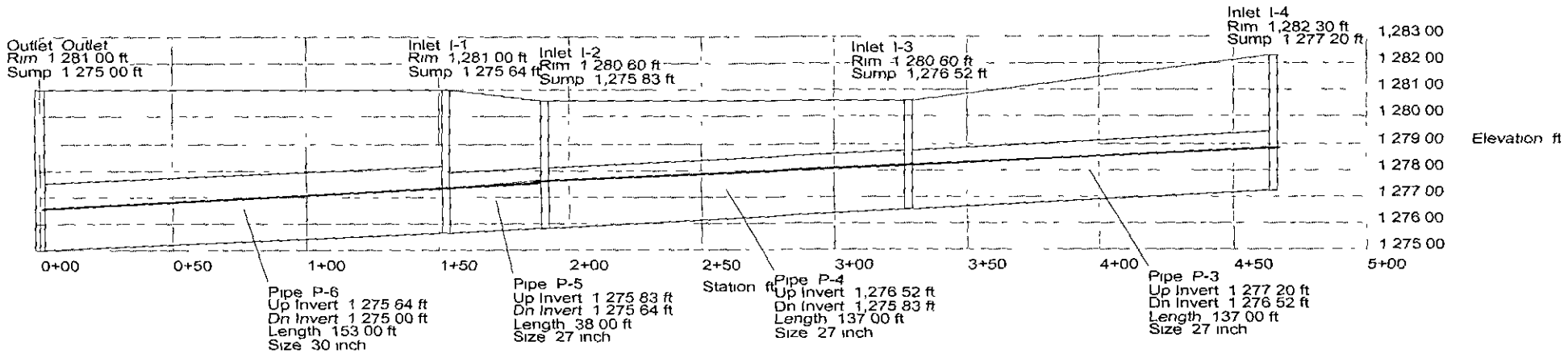

Outlet Outlet
Rim 1 281 00 ft
Sump 1 275 00 ft
Inlet I-1
Rim 1,281 00 ft
Sump 1 275 64 ft
Inlet I-2
Rim 1 280 60 ft
Sump 1,275 83 ft
Inlet I-3
Rim 1 280 60 ft
Sump 1,276 52 ft
Inlet I-4
Rim 1,282 30 ft
Sump 1 277 20 ft
1,283 00
1 282 00
1 281 00
1 280 00
1 279 00
1 278 00
1 277 00
1 276 00
1 275 00
Elevation ft
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
4+00
4+50
5+00
Station ft
Pipe P-6
Up Invert 1 275 64 ft
Dn Invert 1 275 00 ft
Length 153 00 ft
Size 30 inch
Pipe P-5
Up Invert 1 275 83 ft
Dn Invert 1 275 64 ft
Length 38 00 ft
Size 27 inch
Pipe P-4
Up Invert 1,276 52 ft
Dn Invert 1,275 83 ft
Length 137 00 ft
Size 27 inch
Pipe P-3
Up Invert 1 277 20 ft
Dn Invert 1 276 52 ft
Length 137 00 ft
Size 27 inch

SWS-500

Combined Pipe/Node Report

Pipe	Up Node	Dn Node	Length (ft)	Size	Cap (cfs)	V avg (ft/s)	Up Invert (ft)	Dn Invert (ft)	S (ft/ft)	Description	Q (cfs)
P-3	I-4	I-3	137 00	27 inch	21 90	5 89	1,277 20	1,276 52	0 005000		18 20
P-4	I-3	I-2	137 00	27 inch	21 90	6 15	1,276 52	1,275 83	0 005000		20 20
P-5	I-2	I-1	38 00	27 inch	21 90	6 52	1,275 83	1,275 64	0 005000		21 40
P-6	I-1	Outlet	153 00	30 inch	26 53	6 30	1,275 64	1,275 00	0 004183		21 40

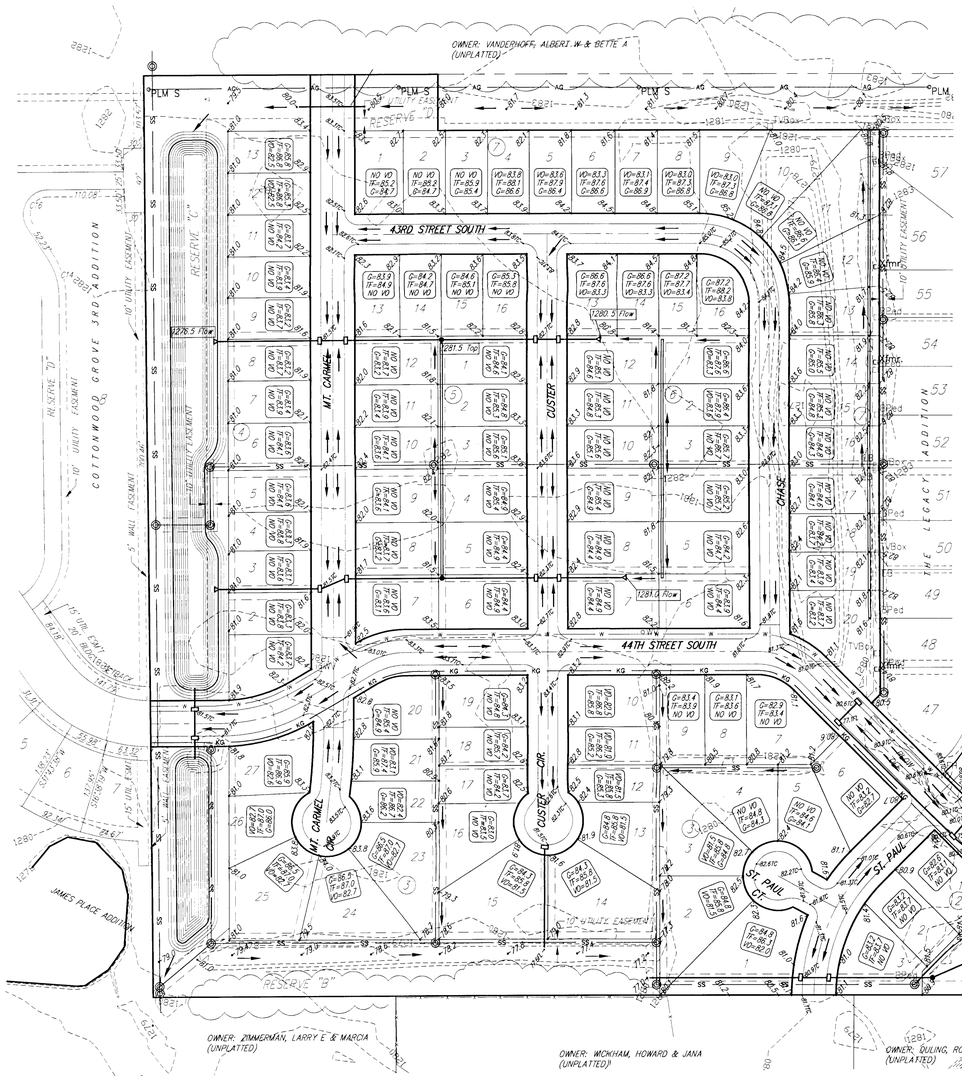
Pipe Report

Pipe	Up Node	Dn Node	Q (cfs)	Length (ft)	S (ft/ft)	Size	Roughness	Cap (cfs)	Up Invert (ft)	Dn Invert (ft)	Up Cover (ft)	Dn Cover (ft)	Up HGL (ft)	Dn HGL (ft)
P-3	I-4	I-3	18 20	137 00	0 005000	27 inch	0 013	21 90	1,277 20	1,276 52	2 85	1 83	1,278 77	1,278 22
P-4	I-3	I-2	20 20	137 00	0 005000	27 inch	0 013	21 90	1,276 52	1,275 83	1 83	2 52	1,278 22	1,277 59
P-5	I-2	I-1	21 40	38 00	0 005000	27 inch	0 013	21 90	1,275 83	1,275 64	2 52	3 11	1,277 59	1,277 34
P-6	I-1	Outlet	21 40	153 00	0 004183	30 inch	0 013	26 53	1,275 64	1,275 00	2 86	3 50	1,277 34	1,276 57
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Four Corner Lot Grading

THE LEGACY 3RD ADDITION

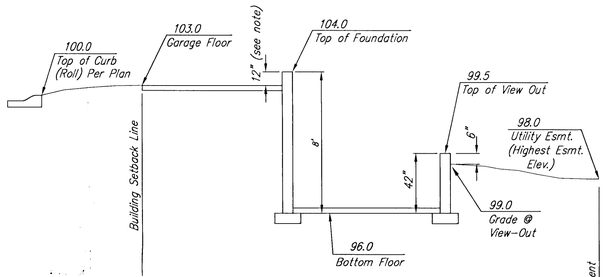
Wichita, Sedgwick County, Kansas



SCALE
1" = 100'

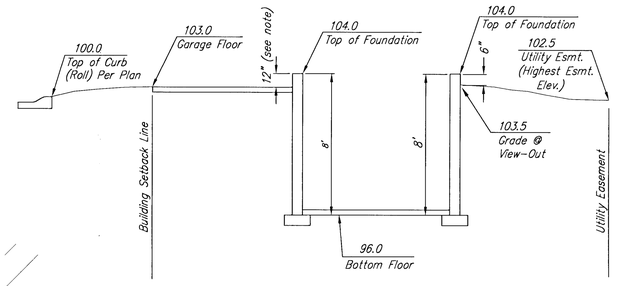
MINIMUM BUILDING PAD ELEVATION FOR LOWEST OPENING INTO STRUCTURES		
BLOCK	LOT NO.	ELEVATION (N.G.V.D.)
1	9	1280
2	1-3	1280
3	25-28	1282
4	1-13	1282
8	1-8	1281

BENCH MARK:
CITY OF WICHITA BENCH MARK AT MERIDIAN AND 43RD STREET SOUTH, 44 FEET NORTH AND 30 FEET EAST OF THE N.E. CORNER OF THE SE1/4 OF SECTION 13, 128S, R1W OF THE 6TH P.M.
ELEV = 1280.80 M.S.L.



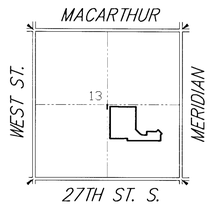
* Varies (Check Individual Lot)

Section Through Typical View-Out Lot



* Varies (Check Individual Lot)

Section Through Typical Full Basement



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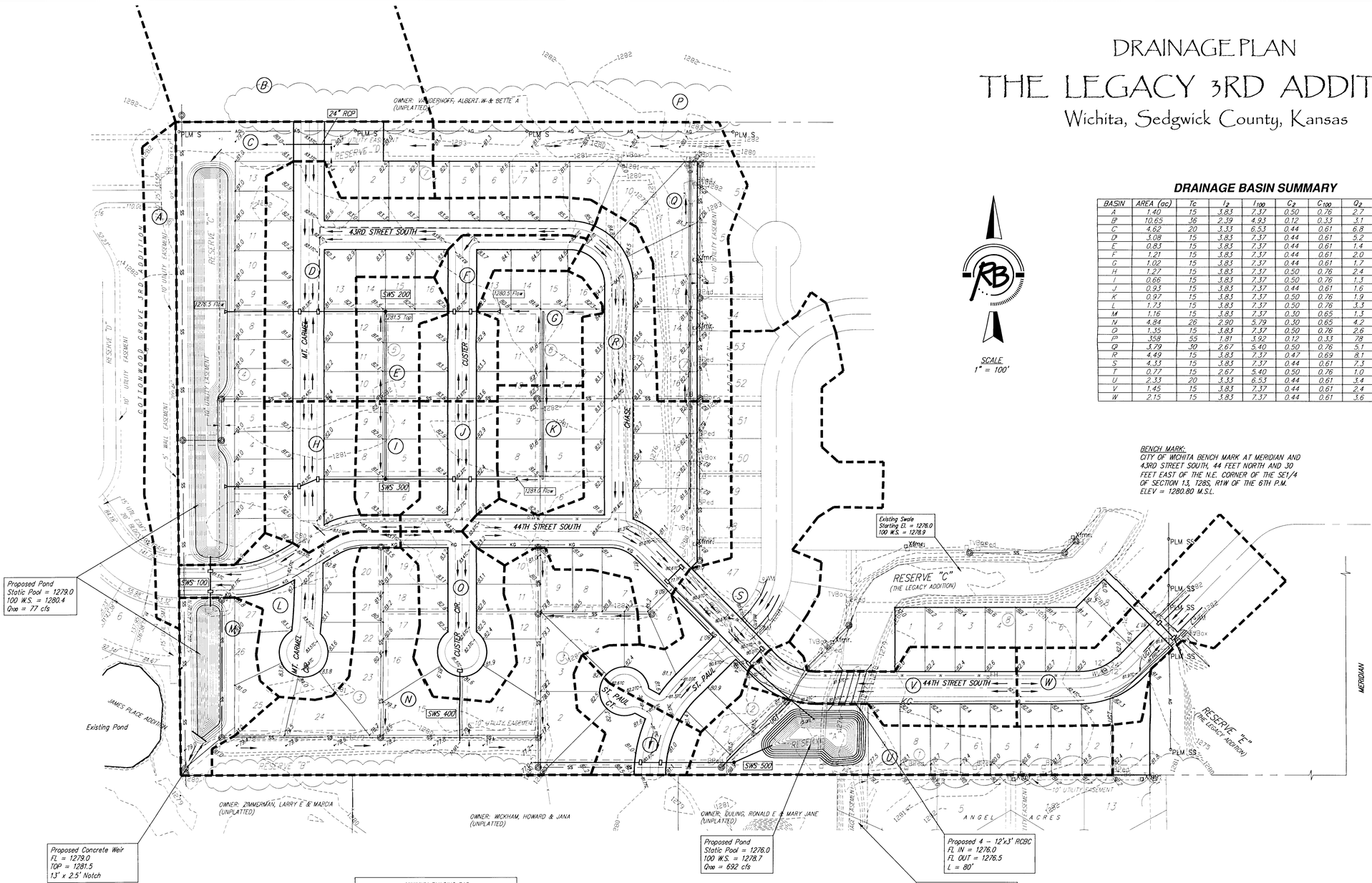
(316) 264-4621 fax
E-mail: info@rbkansas.com

DRAINAGE PLAN
THE LEGACY 3RD ADDITION
Wichita, Sedgwick County, Kansas



SCALE
1" = 100'

DRAINAGE BASIN SUMMARY

BASIN	AREA (ac)	Tc	I_2	I_{100}	C_2	C_{100}	Q_2	Q_{100}
A	1.40	15	3.83	7.37	0.50	0.76	2.7	7.8
B*	10.65	36	2.39	4.93	0.12	0.33	3.1	17.3
C	4.62	20	3.33	6.53	0.44	0.61	6.8	18.4
D	3.08	15	3.83	7.37	0.44	0.61	5.2	13.8
E	0.83	15	3.83	7.37	0.44	0.61	1.4	3.7
F	1.21	15	3.83	7.37	0.44	0.61	2.0	5.4
G	1.02	15	3.83	7.37	0.44	0.61	1.7	4.6
H	1.27	15	3.83	7.37	0.50	0.76	2.4	7.1
I	0.66	15	3.83	7.37	0.50	0.76	1.3	3.7
J	0.93	15	3.83	7.37	0.44	0.61	1.6	4.2
K	0.97	15	3.83	7.37	0.50	0.76	1.9	5.4
L	1.73	15	3.83	7.37	0.50	0.76	3.3	9.7
M	1.16	15	3.83	7.37	0.30	0.65	1.3	5.6
N	4.84	26	2.90	5.79	0.30	0.65	4.2	18.2
O	1.35	15	3.83	7.37	0.50	0.76	2.6	7.6
P*	358	55	1.81	3.92	0.12	0.33	78	463
Q	3.79	30	2.67	5.40	0.50	0.76	5.1	15.6
R	4.49	15	3.83	7.37	0.47	0.69	8.1	22.8
S	4.33	15	3.83	7.37	0.44	0.61	7.3	19.5
T	0.77	15	2.67	5.40	0.50	0.76	1.0	3.2
U	2.33	20	3.33	6.53	0.44	0.61	3.4	9.3
V	1.45	15	3.83	7.37	0.44	0.61	2.4	6.5
W	2.15	15	3.83	7.37	0.44	0.61	3.6	9.7

BENCH MARK:
CITY OF WICHITA BENCH MARK AT MERIDIAN AND 43RD STREET SOUTH, 44 FEET NORTH AND 30 FEET EAST OF THE N.E. CORNER OF THE SE1/4 OF SECTION 13, T28S, R1W OF THE 6TH P.M.
ELEV = 1280.80 M.S.L.

SOIL TYPES:
40% Punker-Tavir Complex (Soil Group D)
60% Naron Complex (Soil Group B)

IMPERVIOUS AREA
Pre-Developed = 0.0 Acres
Post-Developed = 12.5 Acres

GROSS AREA:
1,428,375.5 Sq. Ft.±
32.79 Acres±

DATE OF TOPOGRAPHY:
OCTOBER 20, 2006

MINIMUM BUILDING PAD ELEVATION FOR LOWEST OPENING INTO STRUCTURES		
BLOCK	LOT NO.	ELEVATION (N.G.V.D.)
1	9	1280
2	1-3	1280
3	25-28	1282
4	1-13	1282
8	1-8	1281

DWG FILE: SURVEY BASE
PROJECT NO. 2940P
NOVEMBER 8, 2006

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