Ruggles & Bohm, P.A
Engineering, Surveying, Land Planning
924 N. Main
Wichita, Kansas 67203

SEP 03 2009

MEMO

Date: Wednesday, September 02, 2009

To: Scott Lindebak
8th Floor COW
455 N Main
Wichita, KS 67202

From: Eric Glover

Project: Hobbs Village Drainage Plan

RB Project No.: 3457P

Other Project Reference No.:

Description:
- ☐ Confirmation
- ☒ Transmittal
- ☐ Transmittal under separate cover by

Purpose:
- ☒ Approval
- ☐ Review & comment
- ☐ Use
- ☐ Other :
- ☐ Distribution
- ☐ Information
- ☐ Record

Enclosures/Attachments:
- ☐ Prints
- ☒ Originals
- ☐ Diskettes containing:
- ☐ Other:
- ☐ Change Order
- ☐ Shop Drawings

Copies	Description
1	Drainage Plan -- Hard copy

Remarks:

Copies to:

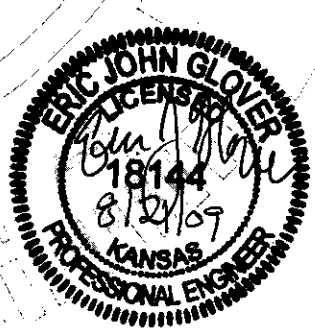
If checked below, please:
- ☐ Acknowledge receipt of enclosures
- ☐ Return enclosures to us.

Signed

If Enclosures are not as noted above, please inform us immediately

Phone (316) 264-8008 *Fax (316) 264-4621*

Hobbs Village Addition
Drainage Plan
August 2009



Adopted: February 23, 2007

CITY OF WICHITA

Public Works, Engineering Division
Final Drainage Plan Submittal Checklist

Reviewer: _____ Date: _____

Subdivision Name: Hobbs Village Location: 43rd South & Hydraulic

Total Land Area Of Ownership: 0.83 Acres

Type: X Residential _____ Commercial _____ Industrial _____ Recreation _____ Municipal _____ Other

Applicant: Habitat for Humanity Contact: _____ Phone #: _____

Engineer: Ruggles & Bohm Contact: Eric Glover Phone # 264-8008

Please check the appropriate box: I = Included; NA = Non-Applicable; R= Required prior to development
(If "NA" is checked, an explanation must be entered)

	Applicant			Engr	
Tab 1. Project Narrative	**I**	**NA**	**Explanation / Location in Plan**	**I**	**NA**
A. Site Location Map, using USGS Map	X		Sheet 2		
B. Discussion of development, existing conditions, and proposed impacts on stormwater, wetland, riparian, and flood plain	X		Sheet 1		
C. Discussion of offsite conditions	X		Sheet 1		
D. Summary of runoff calculations (pre/post development) No increase in peak discharge for all storm series	X		Sheet 1		
E. Narrative description of the type and function of the permanent best management practices that are incorporated into the site design	X		Sheet 6		
F. Copy of the plat	X		Sheet 2		
G. Preliminary grading plan (The final grading plan shall be sealed, signed and dated prior to Engineering receiving the final sanitary sewer plans. One plan sheet and PDF shall be submitted to the Subdivision Engineer.)	X		Sheet 7		
H. Professional Engineer seal, signature and date on cover of report	X				
I. CD of drainage plan in PDF format (one file) and one paper copy bound with this checklist included behind the cover	X				

	Applicant			Engr	
Tab 2. Existing Conditions Runoff Calculations	**I**	**NA**	**Explanation / Location in Plan**	**I**	**NA**
A. Copy of applicable orthophoto showing proposed project boundaries (preferable in color)	X		Sheet 2		
B. Runoff Method (Rational, Hydrograph Method, or other approved methods by Engineering)	X		Sheet 1		
C. Existing topography (no greater than 2-foot contours, 1-foot recommend)	X		Sheet 4		
D. Total Site Area and Total Impervious Area (acres)	X		Sheet 4		
E. Benchmarks used for site control	X		Sheet 4		
F. Streams, creeks, and waterway labeled		X	None present		
G. Predominant soils from USDA soil surveys, and/or on site soil borings	X		Sheet 1		
H. Location and boundaries of natural features such as wetlands, lakes, and ponds with the normal water elevation noted		X	None		
I. Location of existing roads, buildings, parking lots and other impervious areas.	X		Sheet 4		

Consulting Engineer Initials _____

J. Location of existing utilities (e.g., water, sewer, gas, electric) and easements	X		Sheet 8		
K. Location of existing conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	X		Sheet 8		
L. Flow paths	X		Sheet 5		
M. Location and dimensions of existing channels, bridges or culvert crossings		X	None		
N. Existing conditions hydrologic analysis for runoff rates, volumes and velocities showing methodologies used and supporting calculations (2, 5, 10, 25 & 100 year, 24-hour storm events) or Critical Duration	X		Sheet 1		
O. Assumed pre-developed runoff curve numbers		X	Rational Method		
P. Existing time of concentrations used in calculations		X	Rational Method		
Q. Evaluate immediate downstream drainage capacity, not to exceed more than 0.25 miles downstream of site		X			
R. Existing structural elevations (e.g., invert of pipes, manholes, etc.)	X		Sheet 8		
S. Cross-section data for open channels		X	None		
T. Ground water elevations, if applicable		X	Not Available		

	Applicant			Engr	
Tab 3. Post-Development Hydrologic Analysis	**I**	**NA**	**Explanation / Location in Plan**	**I**	**NA**
A. Proposed (post-development) conditions hydrologic and hydraulic analysis for runoff rates, volumes, HGL, and velocities showing the methodologies used and supporting calculations for all applicable design storms (2, 5, 10, 25 & 100 year, 24-hour storm events)	X		Sheet 6		
B. Proposed time of concentrations used in calculations		X	Rational Method		
C. Assumed post-developed runoff curve numbers		X	Rational Method		
D. Proposed contours for detention facilities (to equal area used in outlet rating curves)		X	None		
E. Preliminary sizing calculations for stormwater controls including contributing drainage area, storage, and outlet configuration	X		Sheet 8		
F. Stage-storage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities		X	None		
G. Final analysis of potential upstream/downstream impact/effects of project, where necessary	X		Sheet 6		
H. Existing and proposed structural elevations (e.g., invert of pipes, manholes, etc.)	X		Sheet 8		
I. Design water surface elevations and normal pool elevation for ponds.		X	None		
J. Typical detail for outlet structures, embankments, spillways, grade control structures, conveyance channels, etc. To include height, width, elevation, and/or diameter.		X	None		
K. Proposed limits of clearing and grading	X		ENTIRE SITE		
L. Location of existing and proposed roads, buildings, parking lots and other impervious areas.	X		Sheet 8		
M. Location of existing and proposed utilities (e.g., water, sewer) and easements	X		Sheet 8		
N. Location of existing and proposed conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	X		Sheet 8		
O. Preliminary location and dimensions of proposed channel modifications, such as bridge or culvert crossings		X	None		

Consulting Engineer Initials _____

P. Preliminary selection and location of stormwater controls	X		Sheet 8		
Q. Emergency overflow structure's flow path	X		Sheet 7		
R. Detention facility provides one-foot of freeboard above the HWL and emergency outfall shown (top of berm elevation shown)		X	NONE		
S. The 100-year 24-hour HWL delineated on the plan for detention pond		X	NONE		
T. Lowest opening elevations table on the plat for structures located adjacent to channels or ponds		X	NONE		
U. Stormwater Management Facilities located within a Reserve		X	NONE		
V. Maintenance responsibility of stormwater management facility shall be specified in the platters text. (e.g. HOA, Lot Owners Association, or lot)		X	NONE		
W. Off-site drainage easements or agreements required, where necessary		X	NONE		

	Applicant			Engr	
Tab 4. Floodplain Submittal	**I**	**NA**	**Explanation / Location in Plan**	**I**	**NA**
A. Provide source of flood profile		X			
B. Nearest base flood elevations		X			
C. Delineation of pre-developed regulatory floodplain/floodway limits		X			
D. Delineation of post-developed regulatory floodplain and floodway limits		X			
E. Floodplain boundary determination per elevation (project limits shown)		X	Project not within FEMA Designated Floodway		
F. Provide source of floodway data table and discharges		X			
G. Provide all hydrologic and hydraulic study information for site-specific floodplain studies, unnumbered Zone A area elevation determinations and flood plain map revisions or required permits		X			
H. Provide regulatory floodway and four natural profile models (10,50,100, and 500-yr) for existing and future watershed conditions		X			
I. Location of floodplain/floodway limits and relationship of site to upstream/downstream properties (floodplain limits to be per elevation and scaled location)		X			
J. Flood plains and floodways located within a Reserve, where necessary		X			

	Applicant			Engr	
Tab 5. Federal, State and Local Permits (to be provided prior to construction unless otherwise specified)	**I/R**	**NA**	**Explanation / Location in Plan**	**I/R**	**NA**
		X			
A. US Army Corps of Engineers - Regulatory program permits (404 water quality certification)		X			
B. Kansas Department of Agriculture - Division of Water Resources Permits (Stream Obstruction, Channel Change, Flood Plain Fill, Levee, Water Appropriations, Dam safety permit, etc.)		X			
C. Federal Emergency Management Agency (FEMA) Letter of Map Changes (LOMA, LOMR, LOMR-f, CLOMR, etc.) Shall be included and approved when project modifies the limits of the floodway.		X			
D. Kansas Department of Transportation		X			
E. Sedgwick County Right-of-way Permit		X			

Consulting Engineer Initials _____

Hobbs Village Drainage Plan

Hobbs Village Addition is a 0.83 acre infill project site in South Wichita. The site will be subdivided into 5 residential lots. In the existing condition, water flows across the site onto an adjoining street and then into an existing storm sewer system. The elevation of the site is higher than the adjacent properties and therefore there is no offsite runoff that makes its way onto the proposed site. An existing storm sewer picks up runoff from the properties to the West. After development grassed lawns will prevent silt transportation in drainage easements.

Runoff Summary:

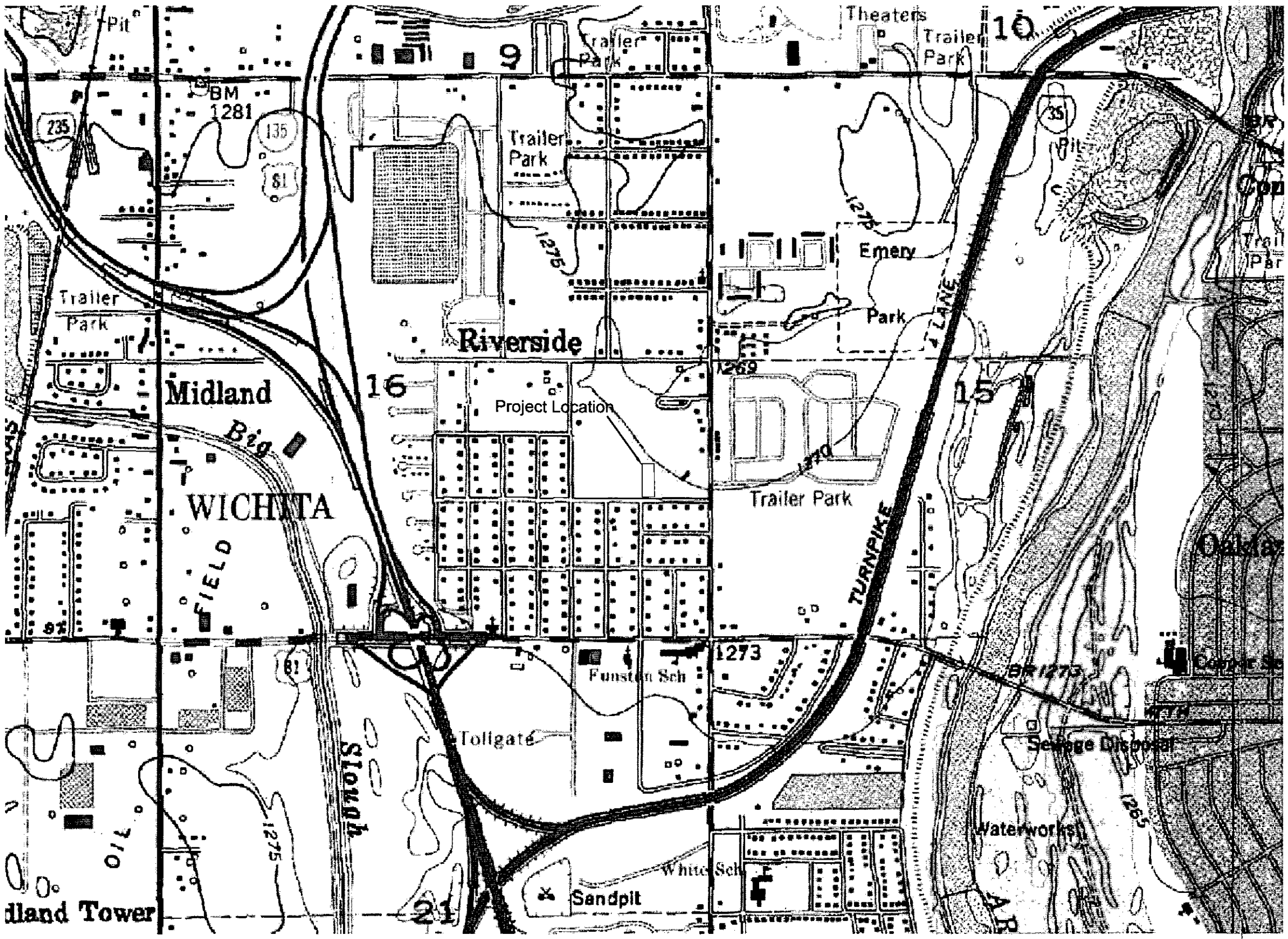
Return Period	2yr	5yr	10yr	25yr	100yr
Existing Q_{100} (cfs)	1.05	1.32	1.73	2.16	3.11
Developed Q_{100} (cfs)	1.66	2.04	2.56	3.16	4.10

Existing Site Conditions

The site is currently not used in any capacity. From the web soil survey the onsite soils are Candian-Waldeck fine sandy loam, hydrologic soil group B. The site is not in any FEMA Flood designation area. There are no wetland, riparian or flood plain areas located within the proposed site.

Storm	2yr	5yr	10yr	25yr	100yr
C	0.33	0.35	0.40	0.43	0.51
I (in/hr)	3.83	4.56	5.22	6.06	7.37
A (acres)	0.83	0.83	0.83	0.83	0.83
Q (cfs)	1.05	1.32	1.73	2.16	3.11

jects\Projects 3400-3499\3457P (Hobbs Village - Habitat)\DRAINAGE BASE.dwg, USGS, 8/21/2009 3:35:31 PM,



Hobbs Village Addition
USGS MAP
WICHITA, KANSAS

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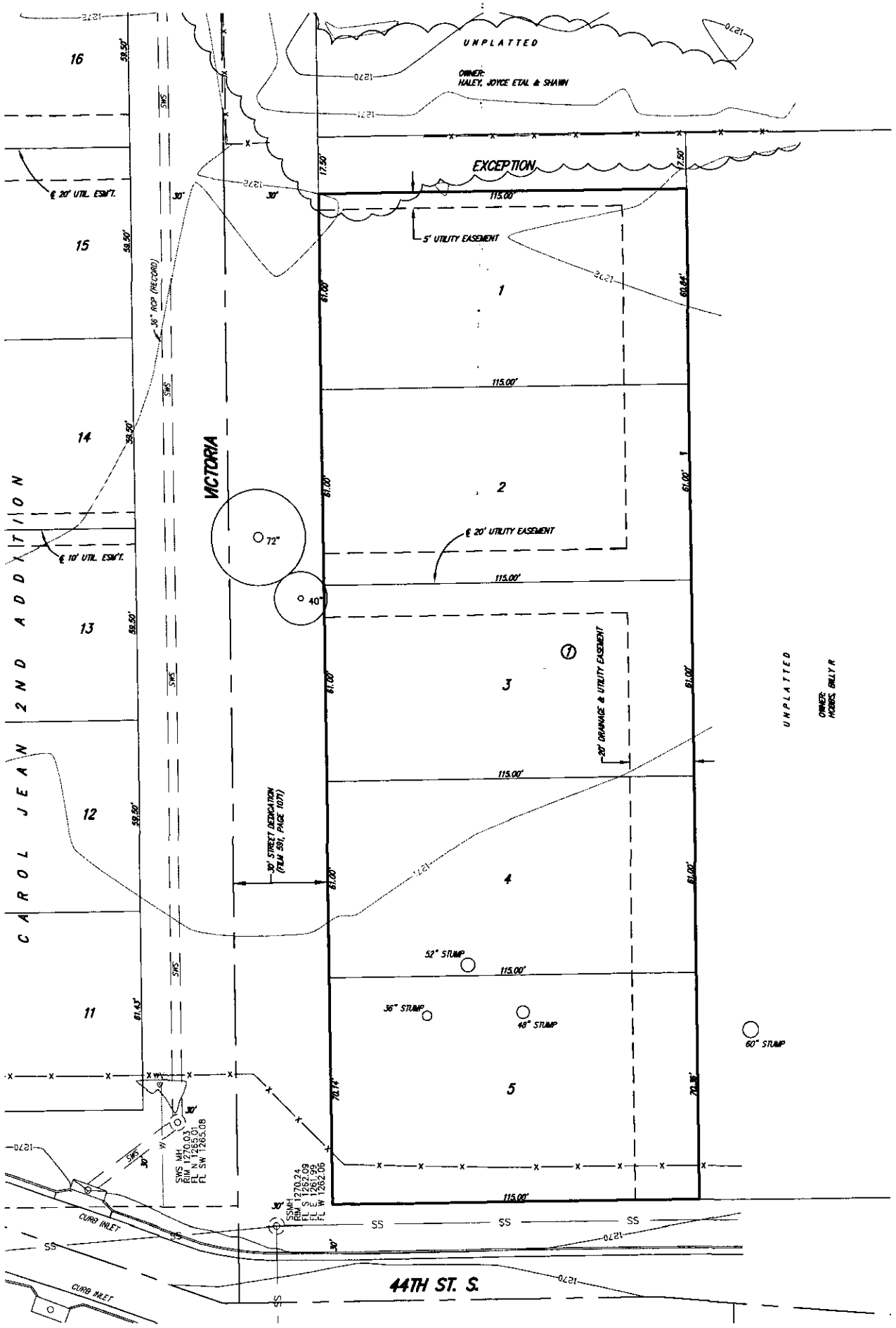
924 North Main
Wichita, Kansas 67203
www.rbkansas.com
(316) 264-8008
(316) 264-4621 fax
E-mail: info@rbkansas.com

DESIGN	EJC
DRAWN	EJC
REVIEW	
UTILITY	
DATE	Aug. 21, 2009
RB JOB	3457P
SHEET	2 OF 9
DRAWING FILE	DRAINAGE BASE (USGS)
PROJECT NUMBER	



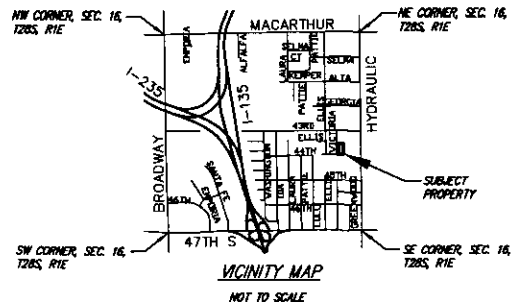
Preliminary Plat
HOBBS VILLAGE
an Addition to Wichita, Sedgwick County, Kansas

1" = 20'

LEGEND

SS . . . . . SANITARY SEWER (CITY OF WICHITA)
SWS . . . . . STORM WATER SEWER (CITY OF WICHITA)
OHE . . . . . OVERHEAD ELECTRIC (WESTAR)
W . . . . . WATER MAIN (CITY OF WICHITA)
WV . . . . . WATER VALVE
WM . . . . . WATER METER
MB . . . . . MAIL BOX
PP . . . . . POWER POLE (WESTAR)
LP . . . . . LIGHT POLE
SS M.H. . . . . SANITARY SEWER MANHOLE (CITY OF WICHITA)
SWS M.H. . . . . STORM WATER SEWER MANHOLE (CITY OF WICHITA)
. . . . . DECIDUOUS TREE (CALIPER INDICATED)

BENCH MARK: CHISELED SQUARE AT THE WEST CURB RETURN AT THE SOUTHWEST CORNER OF VICTORIA AND 44TH ST. S. ELEVATION = 1270.50 (NAVD88)



VICINITY MAP
NOT TO SCALE

LEGAL DESCRIPTION:
The East 115.00 feet of the West 145.00 feet of a tract beginning 330.00 feet south of the Northeast corner of the SE1/4 of Sec. 16, T28S, R1E of the 6th P.M., Sedgwick County, Kansas; thence South 330.00 feet; thence West 660.00 feet; thence North 330.00 feet; thence East 660.00 feet to the point of beginning, EXCEPT the north 17.50 feet thereof.

OWNER:
Habitat for Humanity
Attn: Linda Stewart
P.O. Box 114
Wichita, KS 67201-0114

Ph. (316) 269-0755

SURVEYOR & ENGINEER:
Ruggles & Bohm P.A.

EXISTING ZONING:
Subject property and the rest of the surrounding property is zoned SF-5. Existing use is vacant ground

FLOOD ZONE:
According to the FEMA/FIRM Map No. 20173C0505E, effective February 2, 2007; the property shown hereon is located in Zone X

GROSS AREA:
72,259.8 Sq. Ft.±
1.66 Acres±

DATE OF TOPOGRAPHY:
APRIL 29, 2009

DWG FILE: SURVEY BASE
PROJECT NO. 3457P
AUGUST 11, 2009

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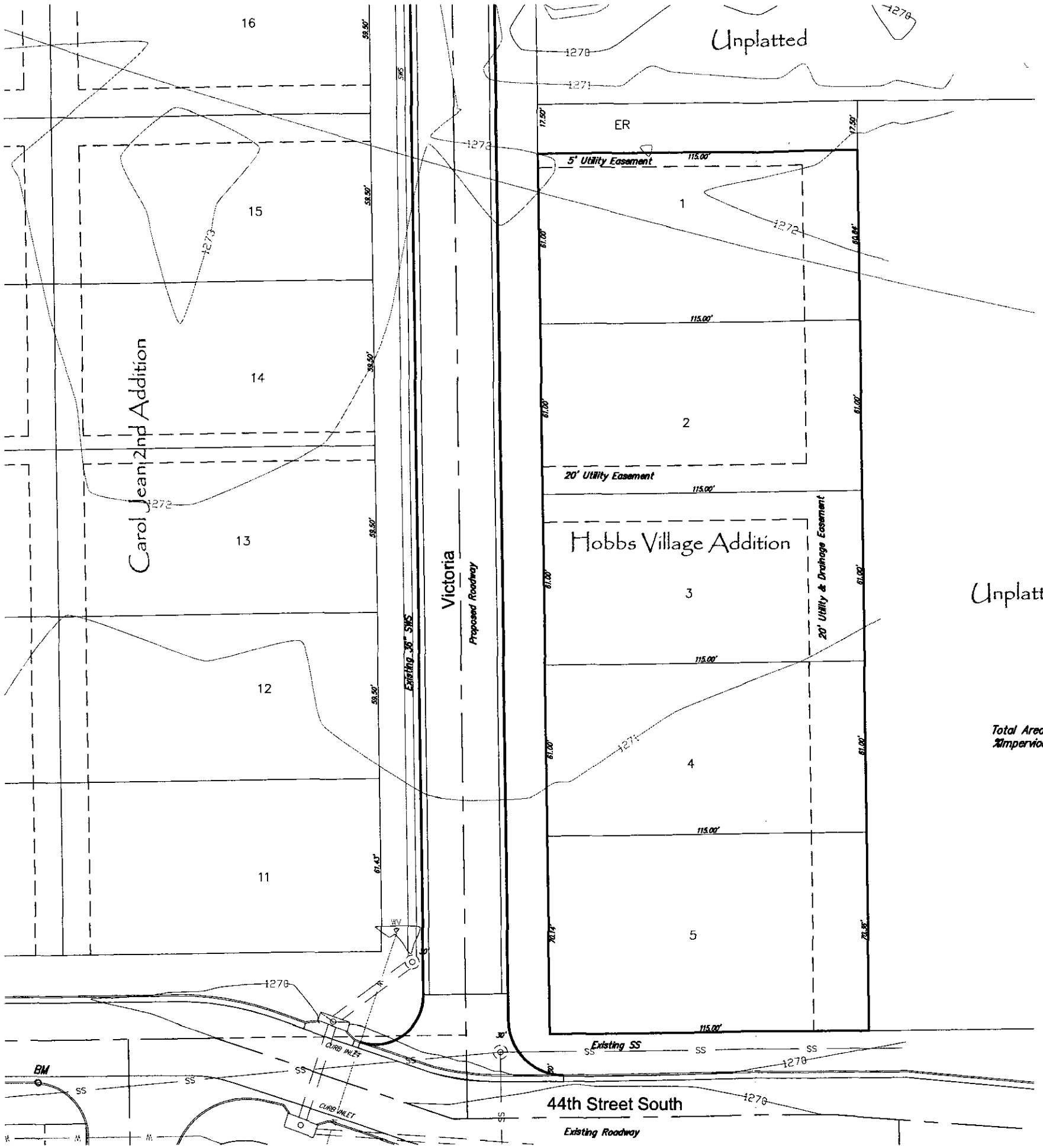

Total Area = 0.83 Acres
%Impervious = 0%

BENCH MARKS

BENCH MARK #1: CHISELED SQUARE AT THE WEST CURB RETURN AT THE SOUTHWEST CORNER OF VICTORIA AND 44TH STREET SOUTH
ELEVATION = 1270.50 (NAVD88)

HOBBS VILLAGE ADDITION
Existing Contours
WICHITA, KANSAS

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E-mail: info@rbkansas.com

DESIGN	EJG
DRAWN	EJG
REVIEW	
UTILITY	
DRAWING FILE	DRAINAGE BASE [Existing Contours]
PROJECT NUMBER	.
DATE	Aug. 21, 2009
R.B. JOB	3457E
SHEET	4 OF 9

30 0 30

BENCH MARKS

BENCH MARK #1: CHISELED SQUARE AT THE WEST CURB RETURN AT THE SOUTHWEST CORNER OF VICTORIA AND 44TH STREET SOUTH
ELEVATION = 1270.50 (NAVD88)

HOBBS VILLAGE ADDITION
Aerial Photo
WICHITA, KANSAS

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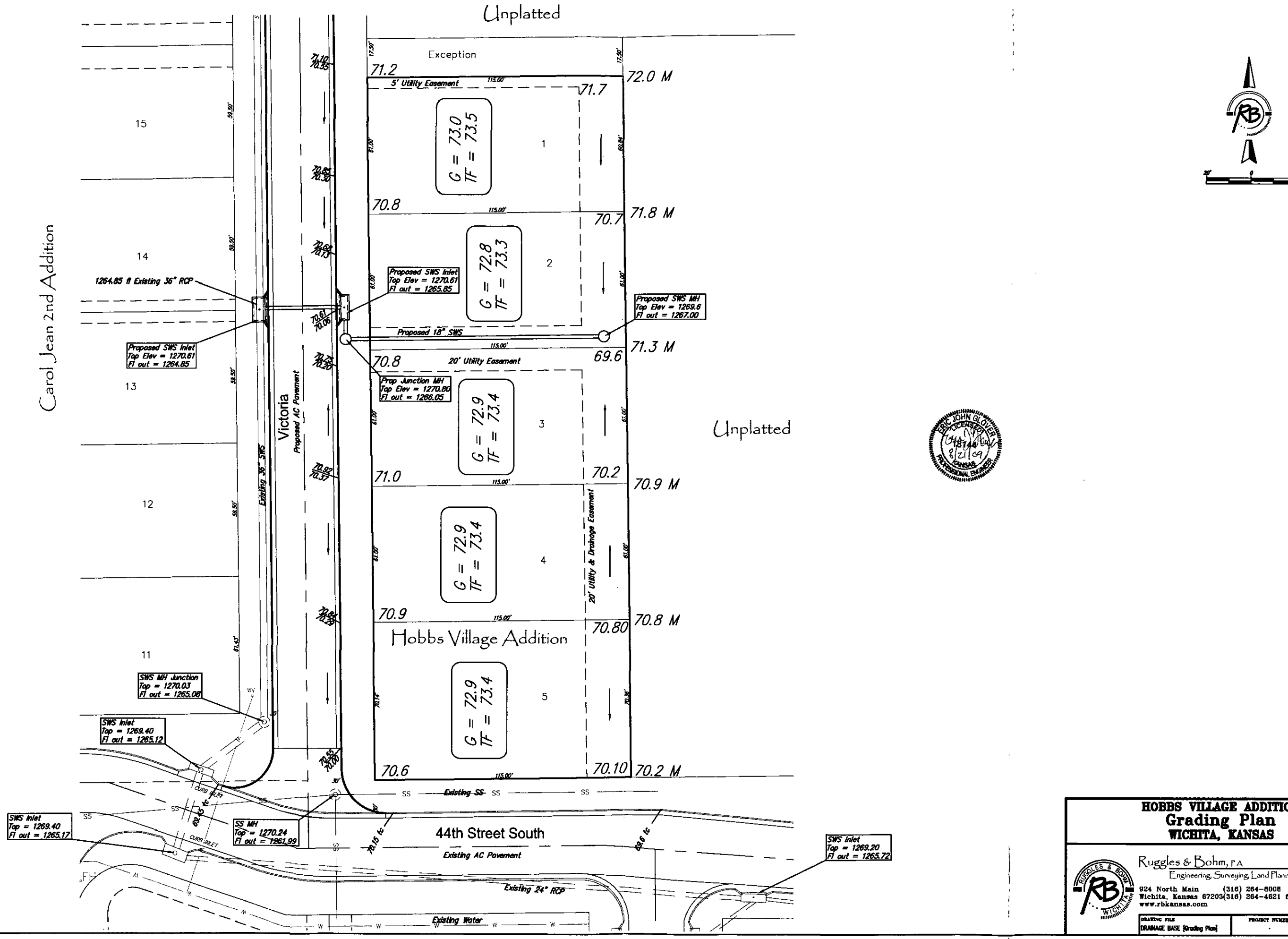
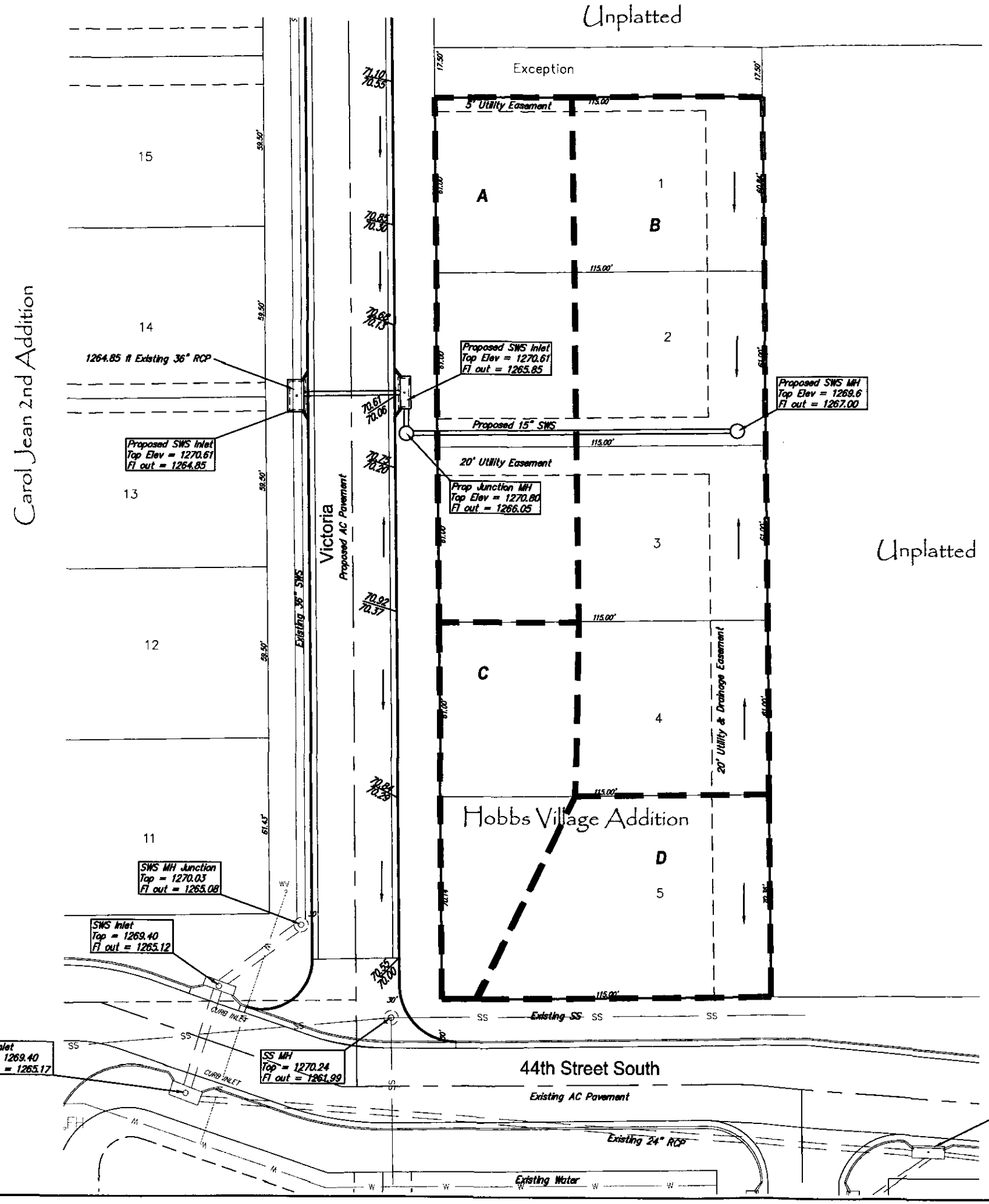
www.rbkansas.com

DESIGN	EJG
DRAWN	EJG
REVIEW	
UTILITY	
DATE	Aug. 21, 2009
RB JOB	3457E
SHEET	5 of 9
DRAWING FILE	DRAINAGE BASE [Existing Contours]
PROJECT NUMBER	

Developed Conditions

Single family homes are to be constructed on each of the 5 proposed lots. The rear yards will drain through a swale within a drainage easement and then into a proposed storm sewer to be connected to an existing system. The rest of the site will drain into streets and then into an existing storm sewer system. The Q is increased in the developed condition for each storm event but considering the insignificance of the volumes for each event there should be no noticeable impact on the existing system.


Unplatted
Exception
71.2
5' Utility Easement
115.00'
71.7
72.0 M
G = 73.0
TF = 73.5
1
70.8
115.00'
70.7
71.8 M
G = 72.8
TF = 73.3
2
Proposed SWS Inlet
Top Elev = 1270.61
Fl out = 1265.85
Proposed SWS MH
Top Elev = 1269.6
Fl out = 1267.00
1264.85 lf Existing 36" RCP
Proposed 18" SWS
115.00'
71.3 M
Proposed SWS Inlet
Top Elev = 1270.61
Fl out = 1264.85
70.8
20' Utility Easement
69.6
Prop Junction MH
Top Elev = 1270.80
Fl out = 1266.05
G = 72.9
TF = 73.4
3
71.0
115.00'
70.2
70.9 M
Carol Jean 2nd Addition
15
14
13
12
11
Victoria
Proposed AC Pavement
Existing 36" SWS
59.50'
61.43'
59.50'
59.50'
59.50'
59.50'
61.00'
61.00'
61.00'
61.00'
61.00'
61.00'
61.00'
61.00'
17.50'
17.50'
70.40
70.35
70.85
70.80
70.64
70.79
70.61
70.06
70.77
70.20
70.92
70.37
70.84
70.29
70.55
70.00
G = 72.9
TF = 73.4
4
20' Utility & Drainage Easement
70.9
115.00'
70.80
70.8 M
Hobbs Village Addition
G = 72.9
TF = 73.4
5
70.6
115.00'
70.10
70.2 M
Unplatted
SWS MH Junction
Top = 1270.03
Fl out = 1265.08
SWS Inlet
Top = 1269.40
Fl out = 1265.12
CURB INLET
SS
Existing SS
SS
SS
SWS Inlet
Top = 1269.40
Fl out = 1265.17
SS MH
Top = 1270.24
Fl out = 1261.99
CURB INLET
68.15 lc
70.15 lc
69.6 lc
44th Street South
Existing AC Pavement
SWS Inlet
Top = 1269.20
Fl out = 1265.72
Existing 24" RCP
Existing Water
W
W
W



BASIN	AREA	C_2	Q_2	C_5	Q_5	C_{10}	Q_{10}	C_{25}	Q_{25}	C_{100}	Q_{100}
A	0.20	0.52	0.40	0.54	0.49	0.59	0.62	0.63	0.76	0.67	0.99
B	0.37	0.52	0.74	0.54	0.91	0.59	1.14	0.63	1.41	0.67	1.83
C	0.12	0.52	0.24	0.54	0.30	0.59	0.37	0.63	0.46	0.67	0.59
D	0.14	0.52	0.28	0.54	0.34	0.59	0.43	0.63	0.53	0.67	0.69

RAINFALL INTENSITIES: I_2 = 3.83; I_5 = 4.56, I_{10} = 5.22; I_{25} = 6.06; I_{100} = 7.37

HOBBS VILLAGE ADDITION
Drainage Basins
WICHITA, KANSAS

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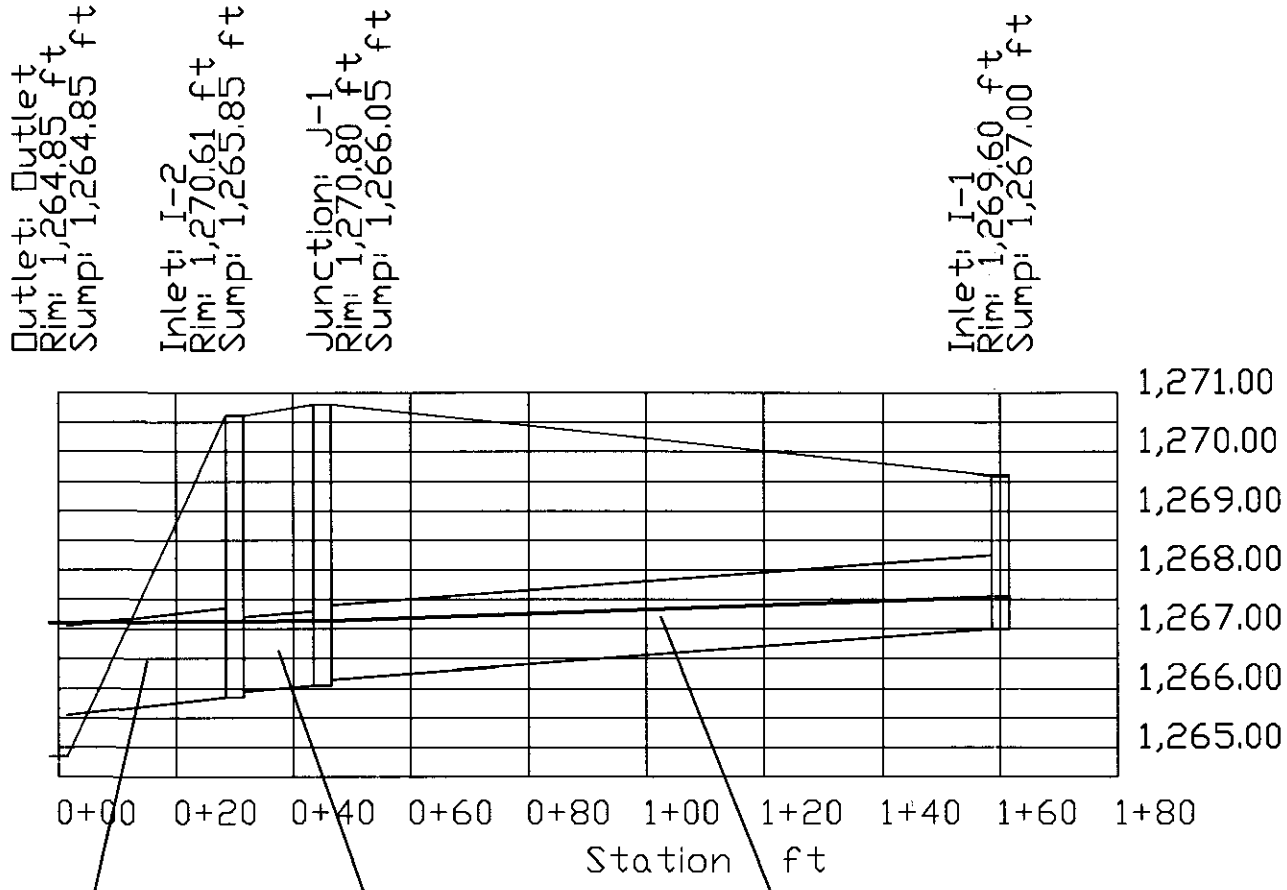
DESIGN EJG
DRAWN EJG
REVIEW
UTILITY
JOB NO. 3457E
SHEET 8 OF 9
DRAWING FILE: DRAINAGE BASE (Drainage Basins)
PROJECT NUMBER:
DATE: Aug. 21, 2009



ADDITION
StormCAD Profiles
WICHITA, KANSAS

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E-mail: info@rbkansas.com

DESIGN: EJG
DRAWN: EJG
REVIEW:
UTILITY:
DRAWING FILE: DRAINAGE BASE {StormCAD}
PROJECT NUMBER:
DATE: Aug. 21, 2009
R.P. JOB: 3457P
SHEET: 9 of 9