

Hobbs Village Addition
Drainage Plan
August 2009





Public Works, Engineering Division Final Drainage Plan Submittal Checklist

Reviewer: _____	Date: _____
Subdivision Name: <u>Hobbs Village</u>	Location: <u>43rd South & Hydraulic</u>
Total Land Area Of Ownership: <u>0.83</u> Acres	
Type: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Recreation <input type="checkbox"/> Municipal <input type="checkbox"/> Other	
Applicant: <u>Habitat for Humanity</u>	Contact: _____ Phone #: _____
Engineer: <u>Ruggles & Bohm</u>	Contact: <u>Eric Glover</u> Phone # <u>241-8008</u>

Please check the appropriate box:

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

Tab 1. Project Narrative	Applicant			Engr	
	I	NA	Explanation / Location in Plan	I	NA
A. Site Location Map, using USGS Map	<input checked="" type="checkbox"/>		Sheet 2		
B. Discussion of development, existing conditions, and proposed impacts on stormwater, wetland, riparian, and flood plain	<input checked="" type="checkbox"/>		Sheet 1		
C. Discussion of offsite conditions	<input checked="" type="checkbox"/>		Sheet 1		
D. Summary of runoff calculations (pre/post development) No increase in peak discharge for all storm series	<input checked="" type="checkbox"/>		Sheet 1		
E. Narrative description of the type and function of the permanent best management practices that are incorporated into the site design	<input checked="" type="checkbox"/>		Sheet 6		
F. Copy of the plat	<input checked="" type="checkbox"/>		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.)	<input checked="" type="checkbox"/>		Sheet 7		
H. Professional Engineer seal, signature and date on cover of report	<input checked="" type="checkbox"/>				
I. CD of drainage plan in PDF format (one file) and one paper copy bound with this checklist included behind the cover	<input checked="" type="checkbox"/>				

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



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		

Tab 3. Post-Development Hydrologic Analysis	Applicant			Engr	
	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		



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 plat text. (e.g. HOA, Lot Owners Association, or lot)		X	NONE		
W. Off-site drainage easements or agreements required, where necessary		X	NONE		

Tab 4. Floodplain Submittal	Applicant			Engr	
	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		
F. Provide source of floodway data table and discharges		X	within FEMA		
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	Designated Floodway		
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			

Tab 5. Federal, State and Local Permits (to be provided prior to construction unless otherwise specified)	Applicant			Engr	
	I/R	NA	Explanation / Location in Plan	I/R	NA
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			

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.

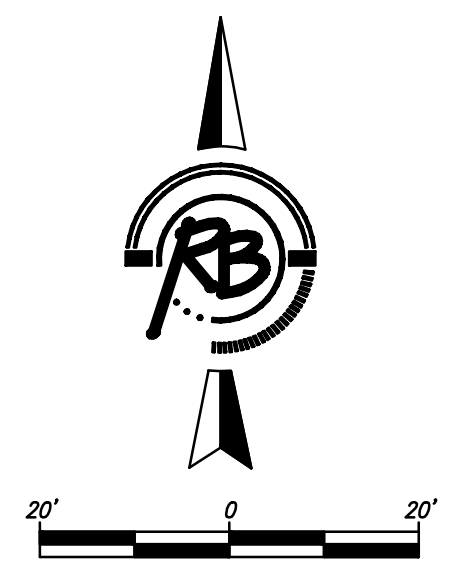
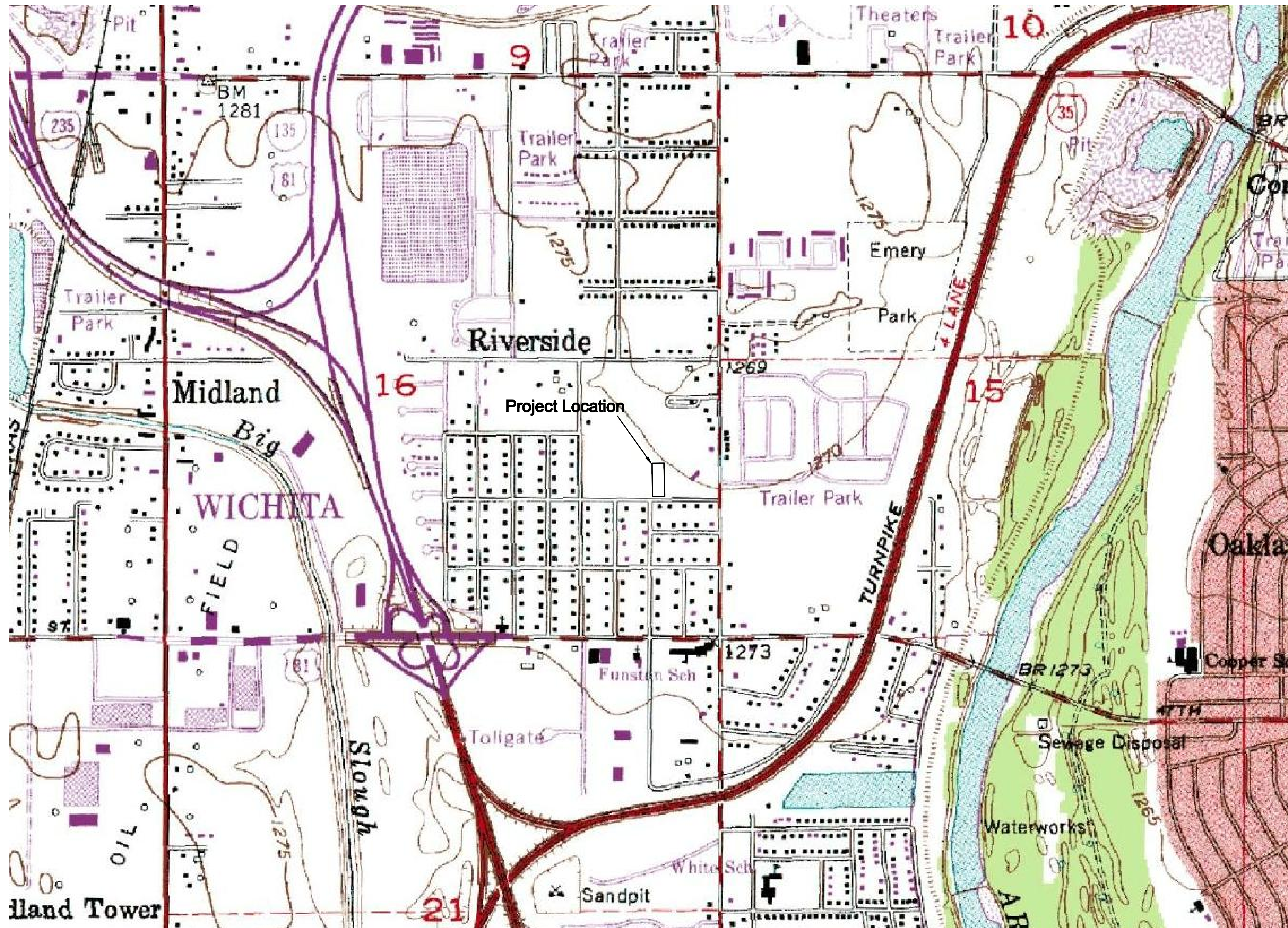
Runoff Summary:


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.

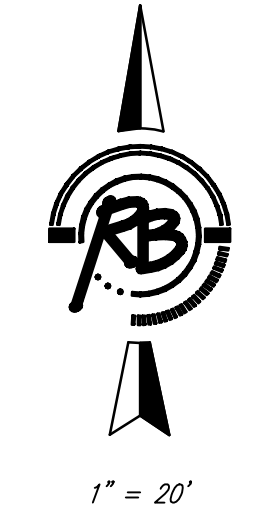
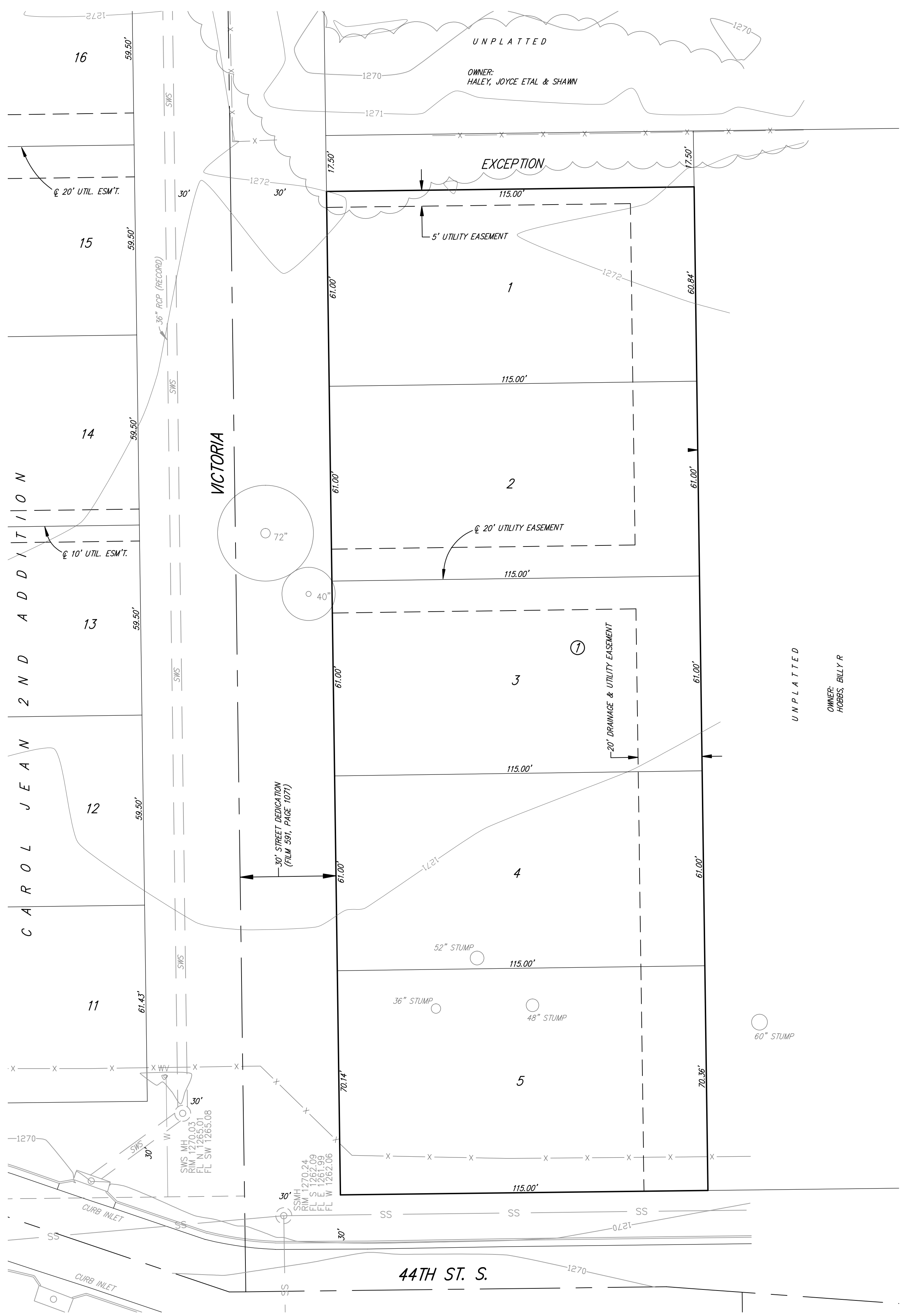
Storm	2yr	5yr	10yr	25yr	100yr
C	0.33	0.35	0.40	0.43	0.51
I (in/hr)	3.83	4.56	5.22	6.06	7.37
A (acres)	0.83	0.83	0.83	0.83	0.83
Q (cfs)	1.05	1.32	1.73	2.16	3.11



Hobbs Village Addition USGS MAP WICHITA, KANSAS			Ruggles & Bohm, P.A. Engineering, Surveying, Land Planning		EUG EUG EUG EUG	3457P 2 0
624 North Main Wichita, Kansas 67208 www.rblaw.com			(316) 264-6900 (316) 264-4821 fax E-mail: info@rblaw.com			
DRAINAGE BASE {USGS}		PROJECT NUMBER		DATE Aug. 21, 2009		

Preliminary Plat HOBBS VILLAGE

an Addition to Wichita, Sedgwick County, Kansas

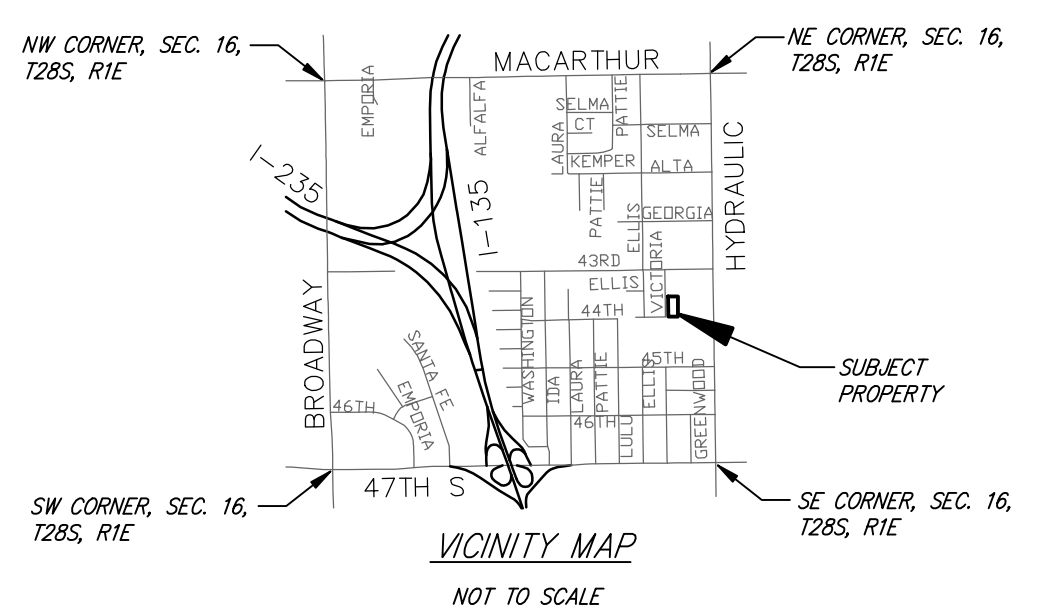


1" = 20'

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
- ⊙ S.S.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)



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

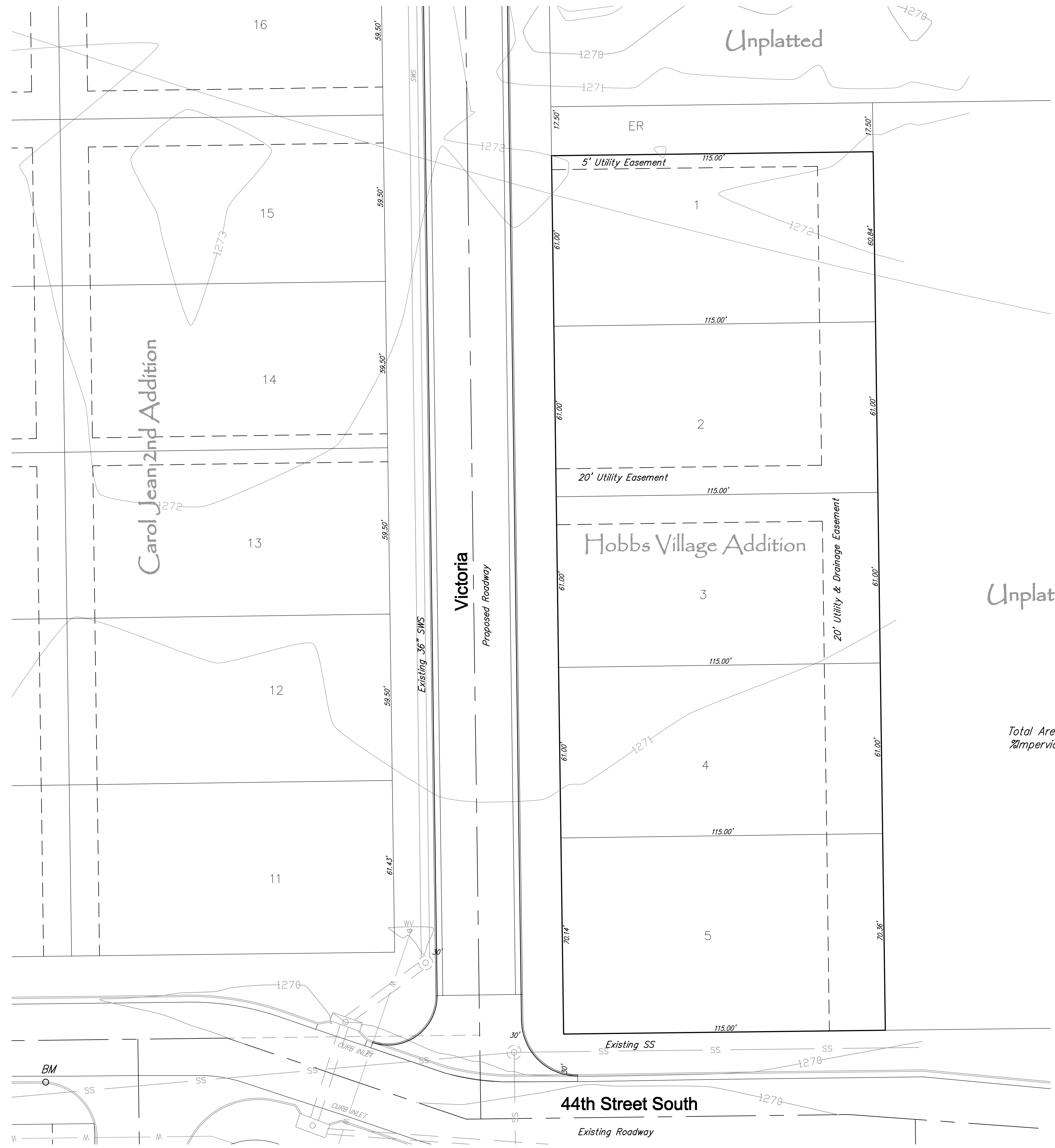
GROSS AREA:
72,259.8 Sq. Ft.±
1.66 Acres±

DATE OF TOPOGRAPHY:
APRIL 29, 2009



Ruggles & Bohm, P.A.
Engineering, Surveying, Land Planning
924 North Main
Wichita, Kansas 67203
www.rbkansas.com
(316) 264-8008
(316) 264-4821 fax
E-mail: info@rbkansas.com


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

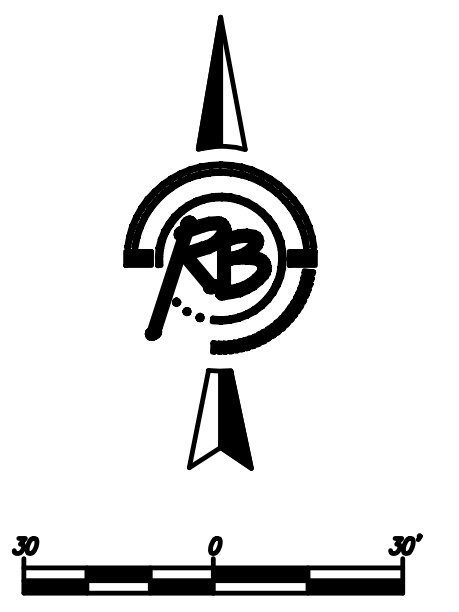
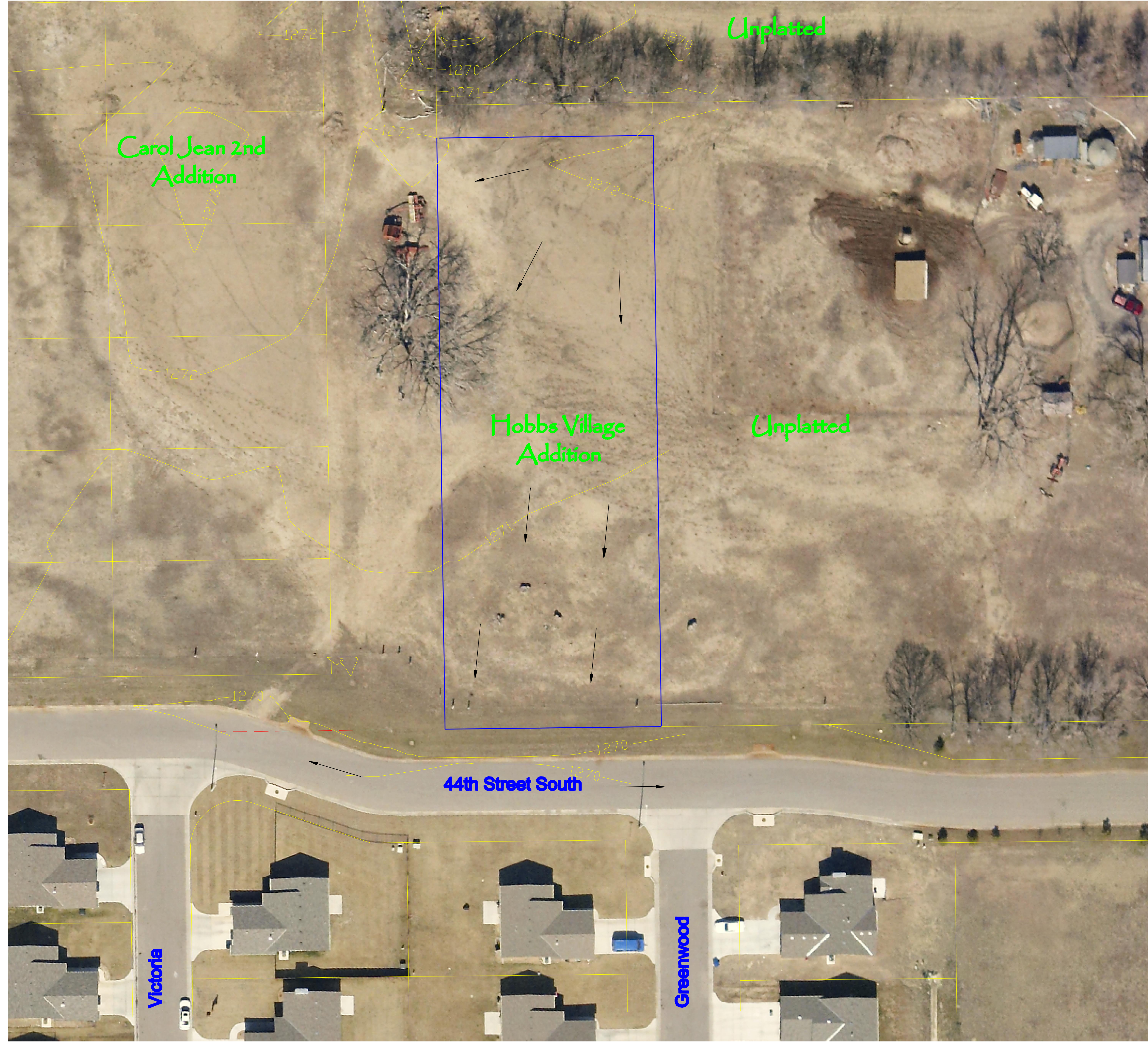


Total Area = 0.83 Acres
 %Impervious = 0%

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			Ruggles & Bohm, P.A. Engineering, Surveying, Land Planning		SHEET 4 OF 9
624 North Main Wichita, Kansas 67208 www.rbkansas.com			(316) 264-4000 (316) 264-4001 fax E-mail: info@rbkansas.com		
DRAINAGE FILE DRAINAGE BASE [Existing Contours]		PROJECT NUMBER .		DATE Aug. 21, 2009	



BENCH MARKS

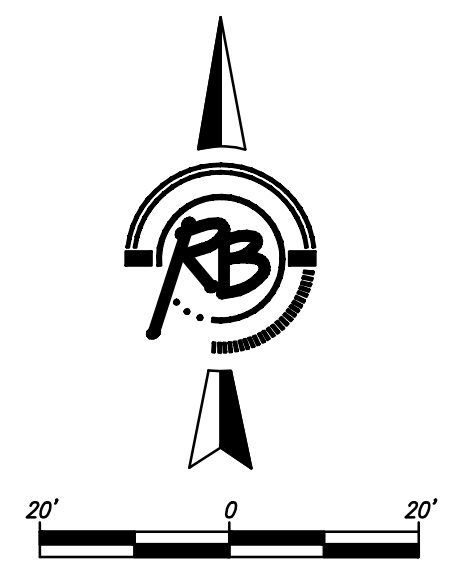
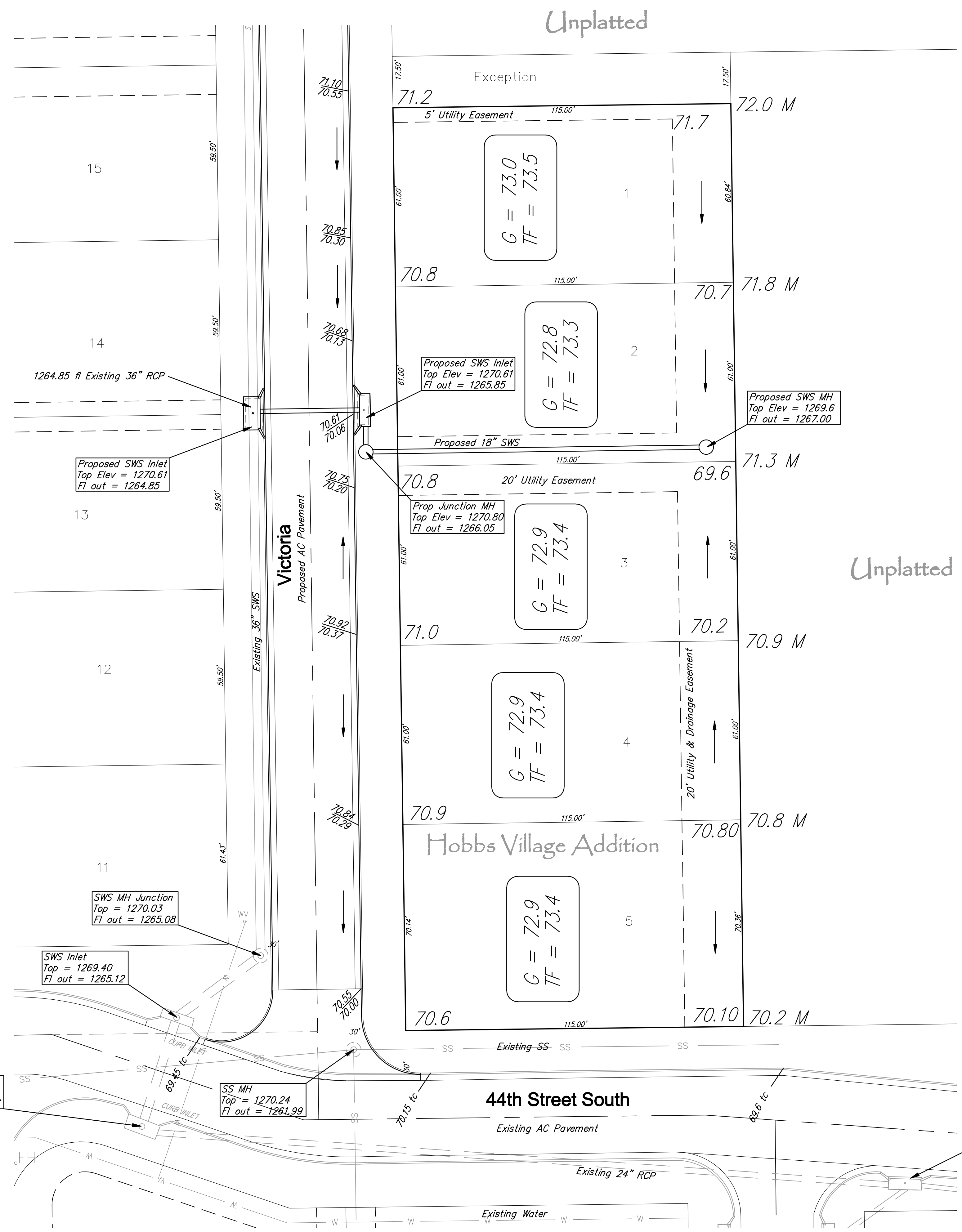
BENCH MARK #1: CHISELED SQUARE AT THE WEST CURB
 RETURN AT THE SOUTHWEST CORNER OF VICTORIA AND
 44TH STREET SOUTH
 ELEVATION = 1270.50 (NAVD88)

HOBBS VILLAGE ADDITION Aerial Photo WICHITA, KANSAS			
	Ruggles & Bohm, P.A. Engineering, Surveying, Land Planning		DESIGN EJG DRAWN EJG REVIEW EJG UTILITY EJG
	924 North Main (316) 264-8008 Wichita, Kansas 67203(316) 264-4621 fax www.rbkansas.com		DATE Aug. 21, 2009
DRAWING FILE DRAINAGE BASE (Existing Contours)	PROJECT NUMBER 	DATE Aug. 21, 2009	SHEET 5 OF 9

Developed Conditions

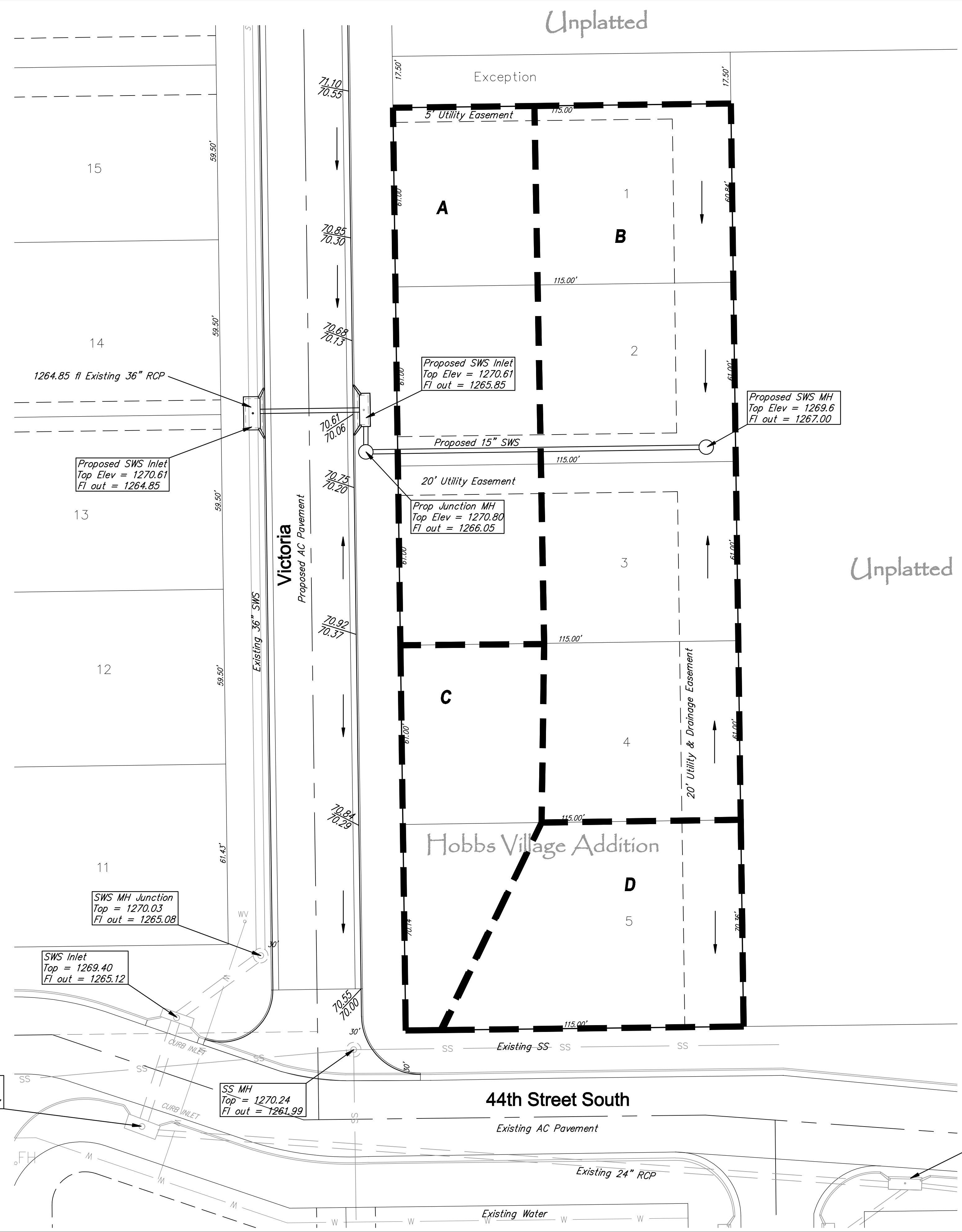
Single family homes are to be constructed on each of the 5 proposed lots. The rear yards will drain through a swale within a drainage easement and then into a proposed storm sewer to be connected to an existing system. The rest of the site will drain into streets and then into an existing storm sewer 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.

Carol Jean 2nd Addition



HOBBS VILLAGE ADDITION Grading Plan WICHITA, KANSAS	
 Ruggles & Bohm, P.A. Engineering, Surveying, Land Planning 924 North Main (316) 264-8008 Wichita, Kansas 67203 (316) 264-4621 fax www.rbkansas.com	DESIGN: E.J.G. DRAWN: E.J.G. REVIEW: UTILITY:
	DRAWING FILE: DRAINAGE BASE {Grading Plan} PROJECT NUMBER: DATE: Aug. 21, 2009
SHEET 7 OF 9	REV. NO. DATE

Carol Jean 2nd Addition



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: I₂ = 3.83; I₅ = 4.56; I₁₀ = 5.22; I₂₅ = 6.06; I₁₀₀ = 7.37

SWS Inlet
Top = 1269.40
Fl out = 1265.17

SWS Inlet
Top = 1269.40
Fl out = 1265.12

SWS MH Junction
Top = 1270.03
Fl out = 1265.08

SS MH
Top = 1270.24
Fl out = 1261.99


Proposed SWS Inlet
Top Elev = 1270.61
Fl out = 1265.85

Prop Junction MH
Top Elev = 1270.80
Fl out = 1266.05

Proposed SWS MH
Top Elev = 1269.6
Fl out = 1267.00

SWS Inlet
Top = 1269.20
Fl out = 1265.72

HOBBS VILLAGE ADDITION
Drainage Basins
WICHITA, KANSAS



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

924 North Main (316) 264-8008
Wichita, Kansas 67203(316) 264-4621 fax
www.rbkansas.com

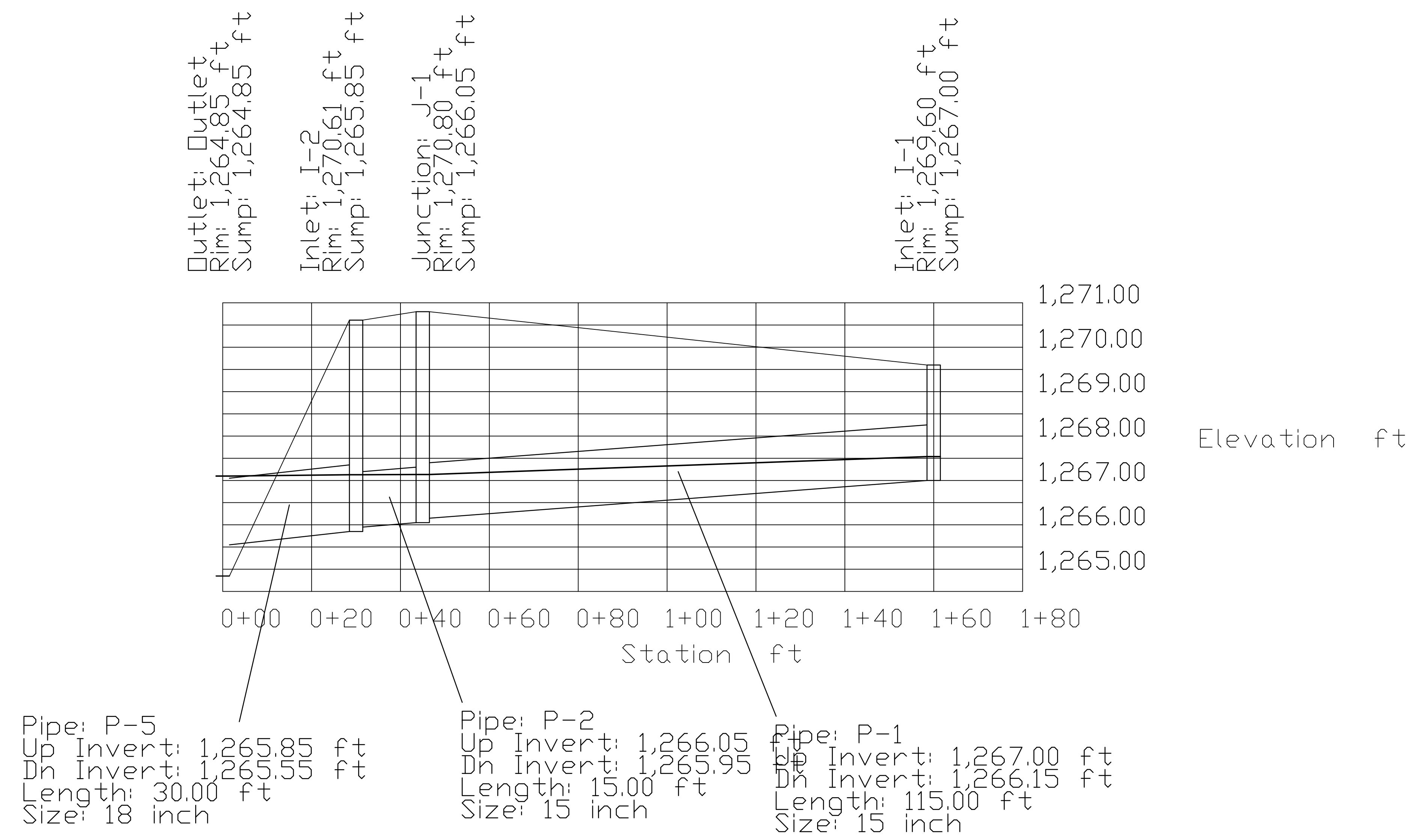
DESIGN: E.J.G.
DRAWN: E.J.G.
REVIEW:
UTILITY:
DATE: Aug. 21, 2009


DRAWING FILE: DRAINAGE BASE [Drainage Basins]

PROJECT NUMBER:

DATE: Aug. 21, 2009

DESIGN: E.J.G.
DRAWN: E.J.G.
REVIEW:
UTILITY:
DATE: Aug. 21, 2009



ADDITION			
StormCAD Profiles			
WICHITA, KANSAS			
	Ruggles & Bohm, P.A. Engineering, Surveying, Land Planning		EJC EJC EJC EJC
	624 North Main Wichita, Kansas 67208 www.rbkansas.com		(316) 264-6900 (316) 264-4821 fax E-mail: info@rbkansas.com
	PROJECT FILE DRAINAGE BASE {StormCAD}		PROJECT NUMBER .