

DRAINAGE PLAN
FRENCH QUARTER
ADDITION
TO
WICHITA, SEDGWICK COUNTY, KANSAS

PREPARED BY



06 DECEMBER 2011



DRAINAGE PLAN FRENCH QUARTER ADDITON

FINAL REPORT

Prepared by Baughman Company, P.A.
06 December 2011

By Trevor R. Kurth, P.E., CFM
N. Brent Wooten, P.E., L.S.

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PROJECT NARRATIVE

EXISTING CONDITIONS

The site is located between 14th and 15th Streets North, and between Kansas and Minneapolis Avenues, respectively. The site is 4 acres in size and consists of multi-family multi-unit homes with associated street parking and sidewalks.

The existing ground is relatively flat with a 12" SWS running north and south down the center of the property. This pipe connects to a 42" RCP in 14th Street. The storm pipe is located in an easement along sanitary sewer and overhead electric, and others.

The site appears to drain to the surrounding streets with the internal SWS picking up runoff from in between buildings and nuisance water. There are sparse trees located throughout the property and its perimeter.

The property is located in a FEMA SFHA Zone X-Shaded as of this report. The drainage patterns as defined above can be seen on the Existing Conditions Exhibit.

PROPOSED CONDITIONS

The property will be razed and rebuilt with new multi-unit multi-family homes with associated parking and utilities. The proposed site plan is shown which portrays 17 duplex type units with a clubhouse. The interior of the site will drain via the existing 12" SWS. Water Quality will be provided via a HydroWorks Hydroguard unit installed over the SWS.

For a half-scale copy of the Plat, see Exhibit 3.

OFFSITE CONDITIONS

There is storm water sewer located in the area along 14th and 15th Streets. The existing system located on this property will continue to be utilized, with installation of a more drop and curb inlets and the installation of the water quality unit.

The area where this property is located is currently developed as this is a redevelopment project. The surrounding properties appear to drain to the surrounding streets and provide no detention or water quality protection as of this date. There does not appear to be any offsite runoff encroaching the property. The USGS Quadrangle Sheet can be seen with the site location plotted as Exhibit 1. The Aerial for this area can be viewed as Exhibit 2.

EXISTING CONDITIONS RUNOFF CALCULATIONS

DRAINAGE METHODS & STANDARDS

The following methods and standards, although not a complete list, were used in calculating the existing conditions runoff values.

- STORM SERIES
 - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 100-yr Storm Events Modeled
 - 2-yr Rainfall Depth = 3.5 in
 - 10-yr Rainfall Depth = 5.3 in
 - 100-yr Rainfall Depth = 7.9 in

- FLOW DATA
 - Areas per LIDAR data, USGS Quadrangle Sheet, Aerial Photos, and Site Visits
 - Rational Method used for Existing Flows (C = 0.68 Based on 38% Impervious Area)
 - Time of Concentration: Lag Method (minimum 15 min)

SITE CHARACTERISTICS

The site consists of approximately 4 acres of currently developed multi-family units with associated parking and utilities. The site is relatively flat and appears to drain to the surrounding streets.

The existing site characteristics can be seen from the aerial exhibit (Exhibit 2) and the Drainage Plan.

EXISTING CONDITIONS HYDROLOGIC ANALYSIS

The site was analyzed for existing conditions using the Rational Method. The Rational Method was used primarily since there the property is only 4 acres, is already developed with no detention, and is served by storm water sewer surrounding the property. A 'C' Factor of 0.68 was used based on a ¼ acre lot with 38% coverage in a Soil Type C. Although technically classified as a multi-family unit, the empty lot on the property will bring the impervious cover % down to the residential ¼ acre 'C' Factor. A time of concentration of 15 minutes was used. Based on the aerial, we estimate that there is currently 67,000 sq feet of impervious area on the site. This figure is accounting for buildings and sidewalks on the property.

DOWNSTREAM DRAINAGE CAPACITY

The surrounding area of this property is already developed into mostly residential housing. There is storm water sewer which drains this site along the south line located in 14th Street. The site drains via a 12" RCP which ties directly into the 36" SWS in 14th Street. This system drains the developed area east to Piatt Avenue to the Wichita Drainage Canal.

POST-DEVELOPMENT HYDROLOGIC ANALYSIS

DRAINAGE METHODS & STANDARDS

The following methods and standards, although not a complete list, were used in developing the drainage and grading plans.

- STORM SERIES
 - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 50-yr, 100-yr Storm Events Modeled
 - 1.2" Water Quality Flow
 - Rational Method utilized for Developed Flows
 - C = 0.73 (Soil Type C – 1/8 acre residential lot)
 - Time of Concentration; Lag Method, minimum Tc = 15min
 -

DEVELOPED CONDITIONS HYDROLOGIC ANALYSIS

Since the final site plan is not yet finalized, the preliminary site plan was used and portrayed a multi-family multi-unit development. Based on the proposed impervious cover, we estimate the approximately 50%, or 90,000 sq ft of property, will be impervious. The site is currently a multi-family multi-unit site, only a different layout and configuration. For this type of development, a 'C' factor of 0.73 was used. This 'C' factor is used for a 1/8 acre lot in a residential layout. The % of impervious cover is similar to the use of this property, so the corresponding 'C' factor was used.

DETENTION FACILITIES

There is no detention being proposed on the site. With the redevelopment of this site, the total impervious area of the site will not increase by more than 1 acre. Therefore, no detention is being proposed at this time.

DISCHARGE POINTS SUMMARY

The site is proposed to continue to discharge via the onsite 12" SWS which directly connects to the 36" RCP in 14th Street. The front yards/frontage areas will continue to sheet flow into the surrounding streets as it does today.

WATER QUALITY

Water quality will be provided on the site due to the disturbance of more than 1 acre. We anticipate this to be done via a HydroWorks Hydroguard Water Quality Unit installed along the 12" SWS at the south end of the property. This unit will be sized to treat the water quality flow before it leaves the site and flows into the existing SWS in 14th Street. The water quality calculations can be seen on the attached worksheet. We estimate that approximately 90,000 sq feet of impervious area will be on the site based on preliminary site plans – as shown on the Drainage Plan.

DOWNSTREAM CHANNEL PROTECTION

Due to the site not adding more than 1 acre of impervious surface, and the discharge directly into an existing SWS which drains to the Wichita Drainage Canal, no channel protection is needed on this site.

POTENTIAL UPSTREAM/DOWNSTREAM IMPACTS

Due to the site utilizing existing SWS in the area and on site, and no more than 1 acre of impervious surface will be added, no upstream or downstream impacts are anticipated with this development.

FLOODPLAIN SUBMITTAL

SOURCE OF FLOODPLAIN INFORMATION

The site lies within a FEMA Zone X - Shaded. The location of the property, on FEMA FIRM Panel 355 of 700 for Sedgwick County, Kansas, effective February 2, 2007, is attached as Exhibit 5.

FEDERAL, STATE, & LOCAL PERMITTING

US ARMY CORPS OF ENGINEERS

There does not appear to be any jurisdictional waters of the US on this site.

KANSAS DEPT OF AGRICULTURE – DWR PERMITTING

There does not appear to be any DWR permitting needed on the proposed site at this time. The areas of discharge do not account for more than 240 acres nor does this site lie within a 0.1% annual chance flood zone.

FEMA

No FEMA permitting is expected at this time.

KANSAS DEPT OF TRANSPORTATION

There does not appear to be any KDOT permitting needed on the proposed project.

SEDGWICK COUNTY PERMITTING

There does appear to be Sedgwick County permitting needed at this time.

EXHIBIT 1: Site Location Map

EXHIBIT 2: Aerial Photo Exhibit with Lidar Topography

EXHIBIT 3: Plat – Half Scale

EXHIBIT 4: Drainage Plan – Half Scale

EXHIBIT 5: Floodplain Location (FIRM)

SITE LOCATION EXHIBIT
FRENCH QUARTER ADDITION
WICHITA, SEDGWICK COUNTY, KANSAS

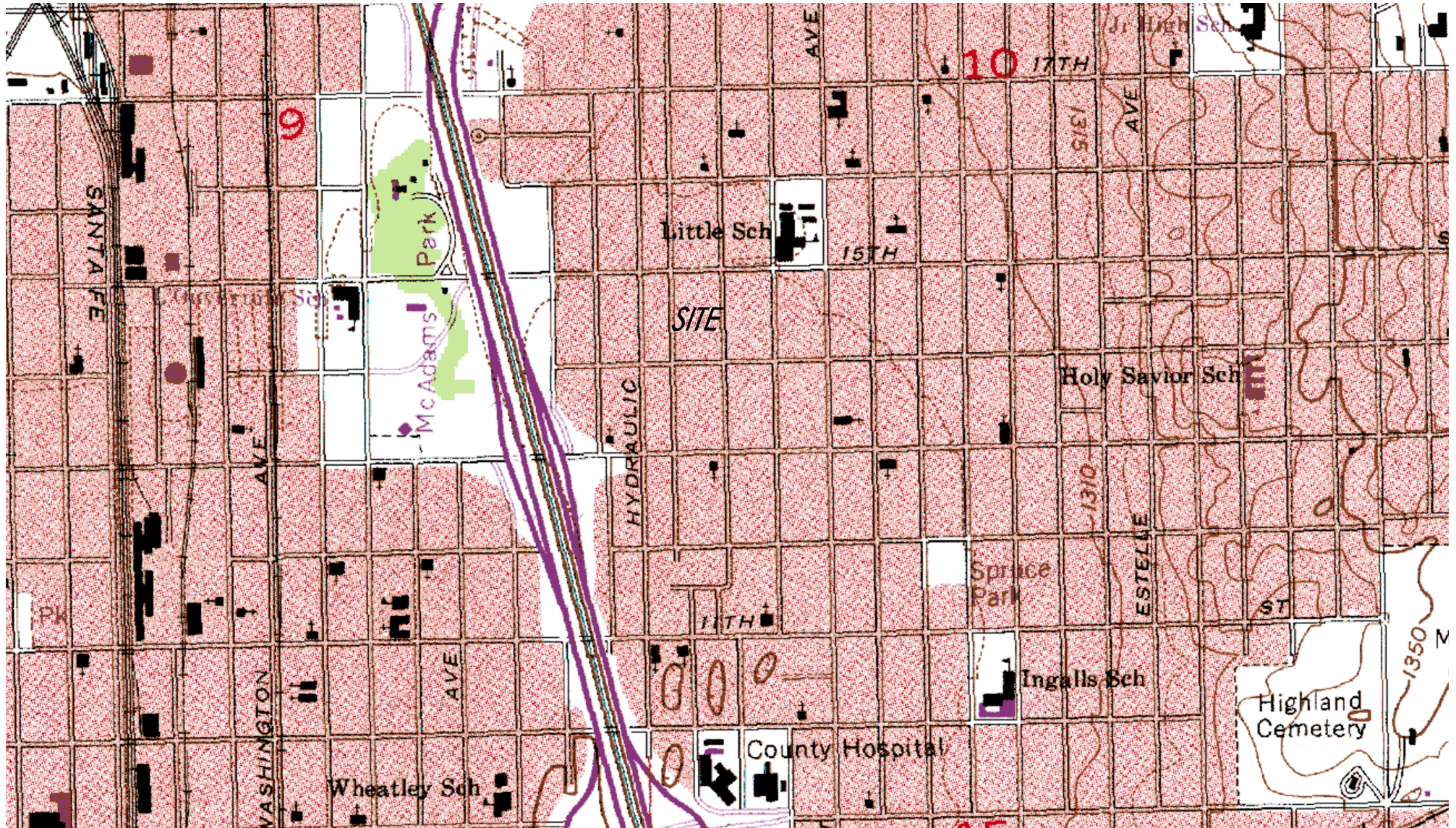
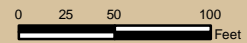


EXHIBIT 1
FRENCH QUARTER ADDITION

Baughman Company, P.A.
135 E. 9th St. Wichita, KS 67201 | P: 316-262-7271 | F: 316-262-0189
Baughman ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE



**FRENCH QUARTER ADDITION
LiDAR and SWS Exhibit**



ONE-STEP FINAL PLAT

FRENCH QUARTER ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

State of Kansas) SS We, Baughman Company, P.A., Surveyors in Sedgwick County) do hereby certify that we have surveyed and platted "FRENCH QUARTER ADDITION", Wichita, Sedgwick County, Kansas and that the accompanying plat is a true and correct exhibit of the property surveyed, described as all of 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 3, and the alley in said Block 3, all as platted and dedicated in vacated Ohio Addition to the City of Wichita, Kansas, Sedgwick County, Kansas, TOGETHER with the east half of the south 18.8 feet of Lot 41 and the east half of Lots 43 and 45, Block 4, in said Ohio Addition.

Existing public easements and dedications being vacated by virtue of K.S.A. 12-512(b).

Baughman Company, P.A.

Michael G. Conrey, Surveyor

This plat of "FRENCH QUARTER 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 _____, 2011.
Wichita-Sedgwick County Metropolitan Area Planning Commission

Shawn Farney, Chair

John L. Schlegel, Secretary

This plat approved and all dedications shown hereon accepted by the City Council of the City of Wichita, Kansas, this _____ day of _____, 2011.

Carl Brewer, Mayor

Karen Sublett, City Clerk

Reviewed in accordance with K.S.A. 58-2005 on this _____ day of _____, 2011.

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

Mennonite Housing Rehabilitation Services, Inc.
a Kansas corporation

Andrew L. Bias, President

Entered on transfer record this _____ day of _____, 2011.

Kelly B. Arnold, County Clerk

State of Kansas) SS The foregoing instrument acknowledged before me, this _____ day of _____, 2011, by Andrew L. Bias, President of Mennonite Housing Rehabilitation Services, Inc., a Kansas corporation, on behalf of the corporation.

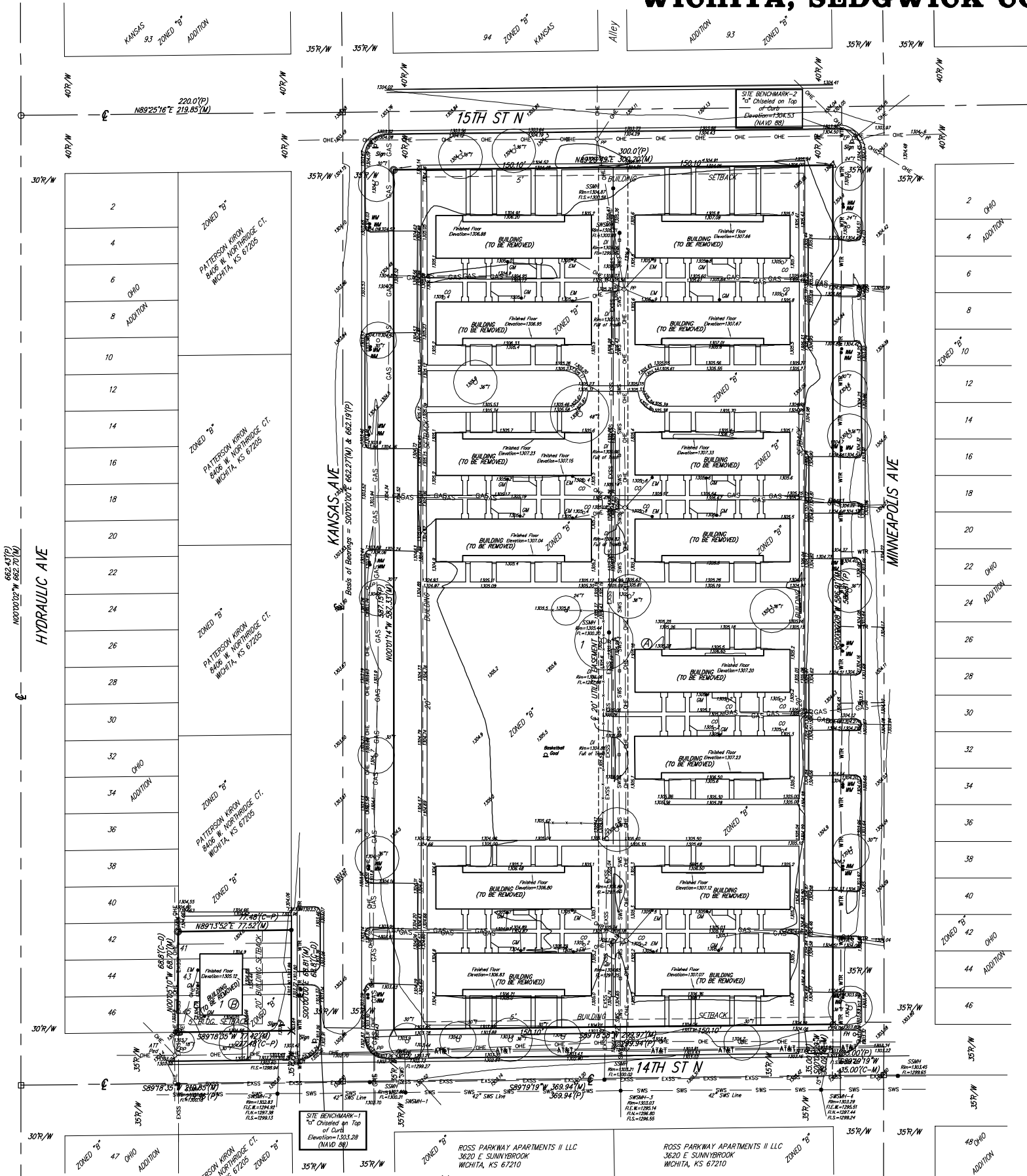
_____, Notary Public

My App't. Exp. _____

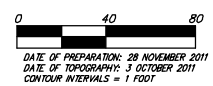
State of Kansas) SS This is to certify that this plat has been filed for record in the office of the Register of Deeds, this _____ day of _____, 2011 at _____ o'clock _____ M; and is duly recorded.

Bill Meek, Register of Deeds

Tonya Buckingham, Deputy



- (C) = Calculated
- CH = Chord Length
- Ch. Br. = Chord Bearing
- A = Delta Angle
- D = Degree of Curve
- (D) = Described
- L = Arc Length
- (M) = Measured
- (P) = Platted
- (Pr) = Prorated
- R = Radius
- = #4 Baughman Rebar Set
- = 1 1/4" Iron Pipe in Thimble Found
- = 3/4" Iron Pipe in Thimble Found
- △ = 3/4" Iron Pipe Found
- × = Chiseled "X" Set
- = 1/2" Iron Pipe Found
- ⊙ = #4 LS 950 Rebar Found
- ATT = ATT Ped = A.L.T. Telephone Pedestal
- CO = CO = Cement
- DI = DI = Drop Inlet
- EM = EM = Electrometer
- FM = FM = Fire Hydrant
- GM = GM = Gas Meter
- GP = GP = Gas Piping
- LP = LP = Light Pole
- SP = SP = Storm Pipe
- SSM = SSM = Stormwater Sewer Manhole
- SM = SM = Stormwater Sewer Manhole
- WM = WM = Water Meter



NOTE:
A master grading plan for drainage has been developed for this subdivision and is on file with the City of Wichita, Kansas. All drainage easements, right-of-ways, or reserves shall remain at established grades or as modified with the approval of the City Engineer of the City of Wichita, Kansas. No obstructions which impede the flow of this drainage system shall be allowed.

FRENCH QUARTER ADDITION

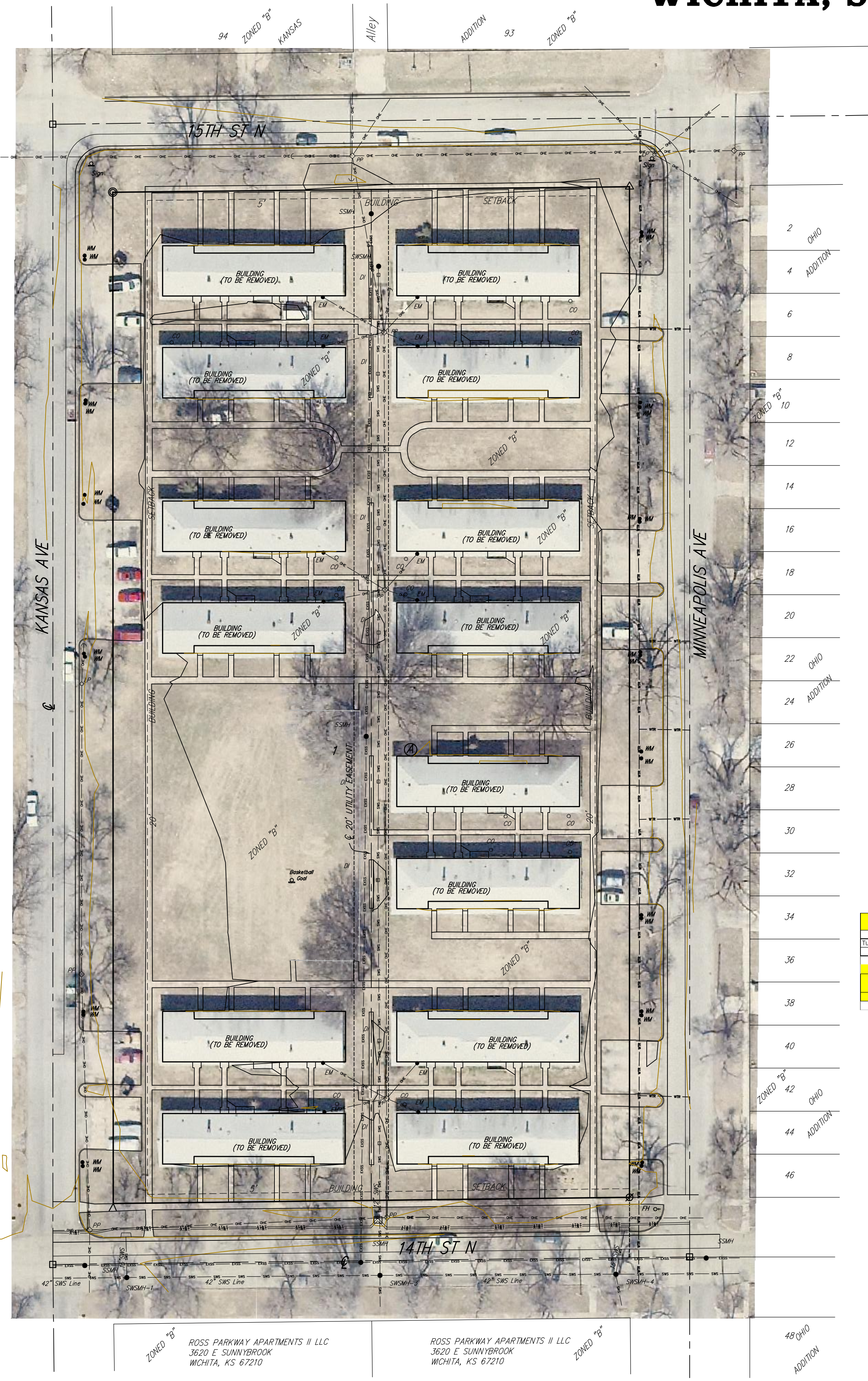
28 NOVEMBER 2011

Baughman Company, P.A.
315 Ellis St. Wichita, KS 67211 P 316-262-7271 F 316-262-0149
ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE
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DRAINAGE PLAN

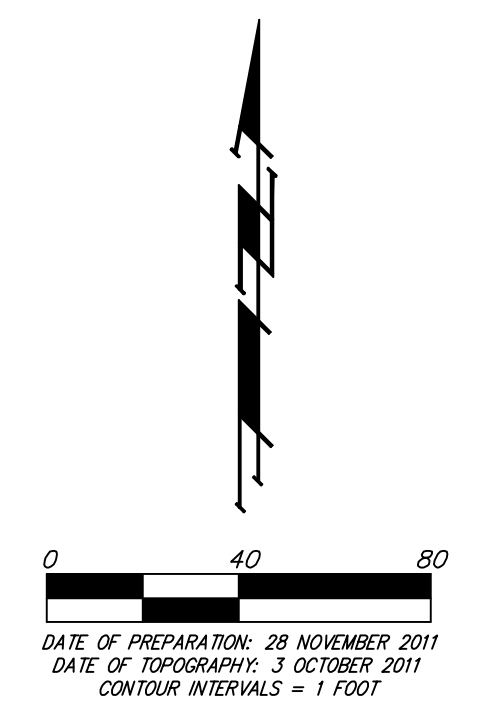
FRENCH QUARTER ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS



EXISTING
 (38% Imp Area)
 Area = 4 acres
 C = 0.68
 Tc = 15 min
 Q₂ = 10 cfs
 Q₅ = 12 cfs
 Q₁₀ = 14 cfs
 Q₂₅ = 16 cfs
 Q₁₀₀ = 20 cfs

DEVELOPED
 (50% Imp Area)
 Area = 4 acres
 C = 0.73
 Tc = 15 min
 Q₂ = 11 cfs
 Q₅ = 13 cfs
 Q₁₀ = 15 cfs
 Q₂₅ = 18 cfs
 Q₁₀₀ = 22 cfs



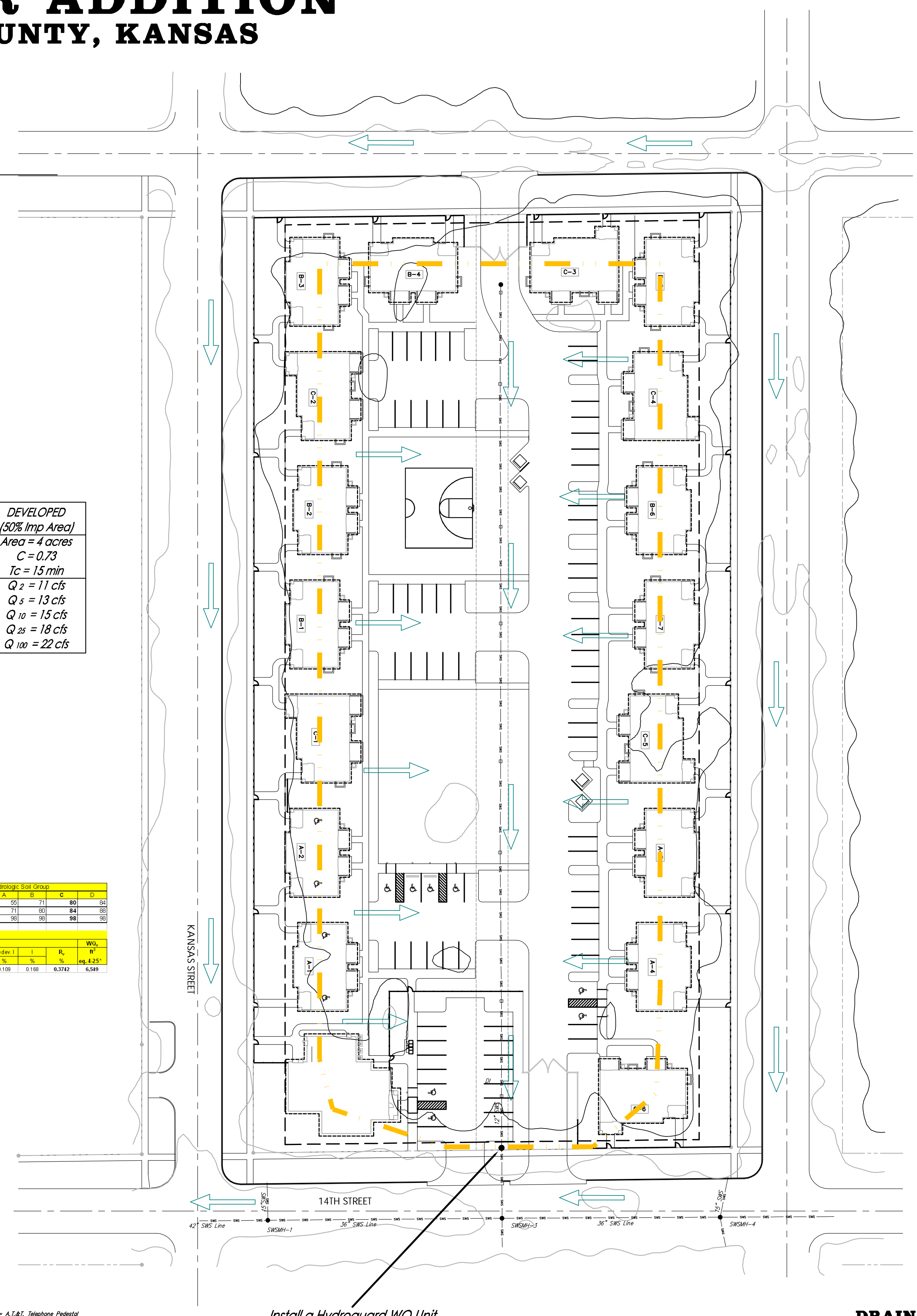
Land Use	Hydrologic Soil Group				Land Use	Hydrologic Soil Group			
	A	B	C	D		A	B	C	D
Unimproved	0.02	0.03	0.04	0.05	Unimproved	55	71	80	84
Turf or Disturbed Soils	0.15	0.2	0.22	0.25	Turf or Disturbed Soils	71	80	84	88
Impervious Cover	0.95	0.95	0.95	0.95	Impervious Cover	98	98	98	98

Weighted Volumetric Runoff Coef. (R _v) (eq. 4.24)												
Basin #	Unimp. #	Unimp. Area #	Dist. #	Dist. Area #	New Imp. #	New Imp. Area #	U	D	Revel. I	R _v	WQ ₁₀₀	
												%
1		77,000		67,000	35,000	175,000	0.000	0.007	0.109	0.188	0.3742	6,549

Water Quality Peak Flow	
Basin # 1	
EQ 1-10'	EQ 1-10' A' Area * Ep
CH =	82 Table 4-6
BP =	0.73
TC =	23 Table 4-6
EQ =	87.5 Table 4-6
A =	175,000 sq ft
EQ =	4.02 Table 4-6
EQ =	0.00627 Table 4-6
R _v =	0.3742 (eq. 4.24)
P =	7.5 (eq. 4.25)
EQ =	0.4490 (eq. 4.25)
EQ =	1.00 (Table 4-6)
EQ =	1.9 (eq. 4.25)

- = #4 Baughman Rebar Set
- = 1 1/4" Iron Pipe in Thimble Found
- = 3/4" Iron Pipe in Thimble Found
- △ = 3/4" Iron Pipe Found
- × = Chiseled "X" Set
- ⊙ = 1/2" Iron Pipe Found
- ⊖ = #4 LS 950 Rebar Found

- ATT Ped = ATT Ped = A.T.&T. Telephone Pedestal
- CO = CO = Caisson
- DI = DI = Drop Inlet
- EM = EM = Electric Meter
- FN = FN = Fire Hydrant
- GA = GA = Guy Anchor
- LP = LP = Light Pole
- SP = SP = Sign
- SSM = SSM = Sanitary Sewer Manhole
- SSM = SSM = Stormwater Sewer Manhole
- MM = MM = Meter Manhole

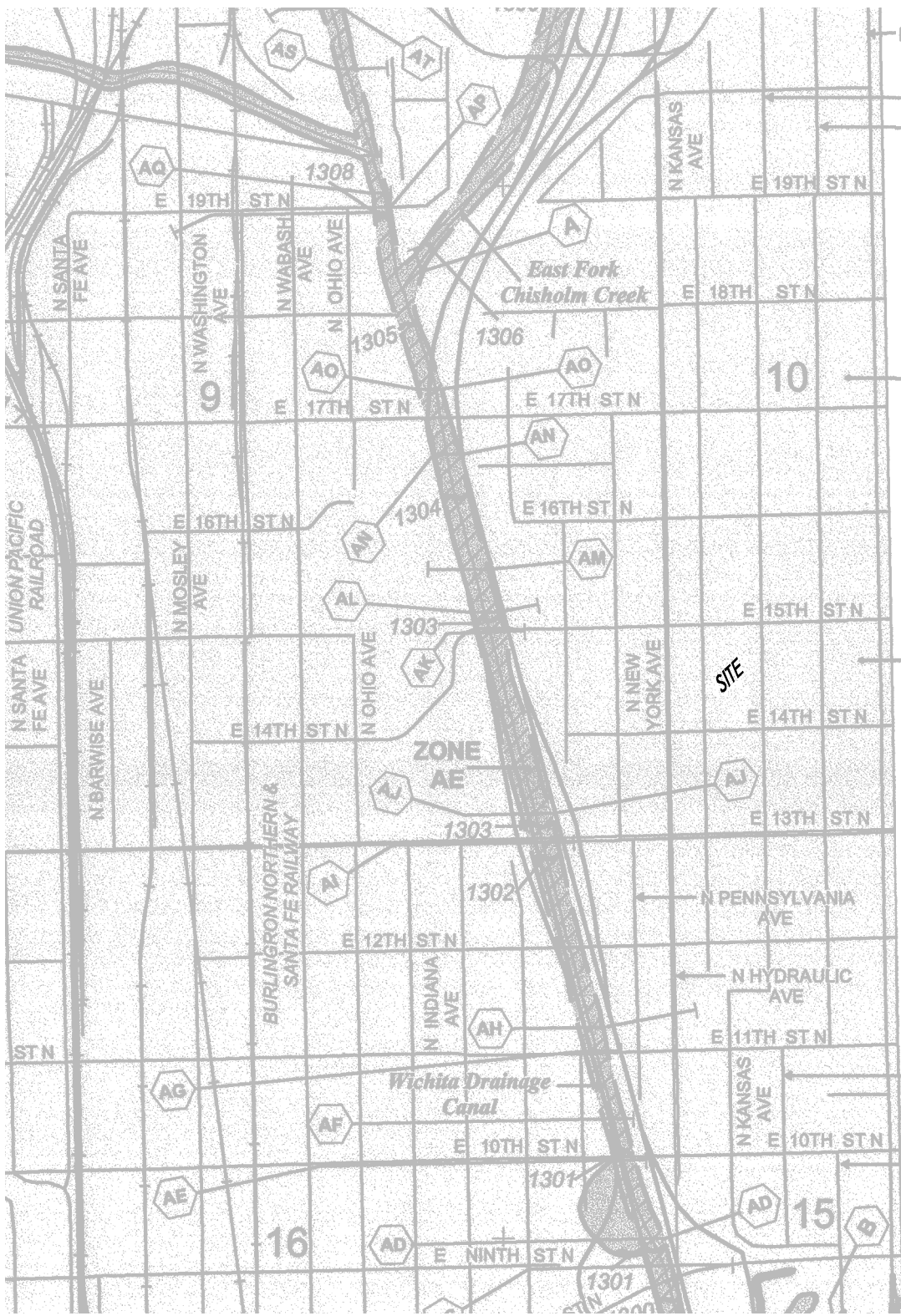


EXISTING

PROPOSED

DRAINAGE PLAN
FRENCH QUARTER ADDITION
 06 DEC 2011

Baughman Company, P.A.
 315 Ellis St., Wichita, KS 67211 P 316-262-7271 F 316-262-0149
 ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE



N PIATT AVE
 N MINNEAPOLIS AVE
 N MINNESOTA AVE

WARNING! THIS AREA IS SHOWN AS BEING PROTECTED FROM THE 1-PERCENT ANNUAL CHANCE FLOOD HAZARD BY LEVEE, DIKE, OR OTHER STRUCTURE. OVERTOPPING OR FAILURE OF THIS STRUCTURE IS POSSIBLE WHICH COULD RESULT IN DESTRUCTIVE FLOOD ELEVATIONS AND WATER VELOCITIES. PROPER PROTECTION, FLOOD INSURANCE, AND ADHERENCE TO EVACUATION PROCEDURES ARE STRONGLY RECOMMENDED. FOR ADDITIONAL INFORMATION, SEE THE NOTES TO USERS.

ZONE X

JOINS PANEL 0358

N MINNEAPOLIS AVE
 N MINNESOTA AVE



MAP SCALE 1" = 1000'

NFIP PANEL 0355E

FIRM
 FLOOD INSURANCE RATE MAP
 SEDGWICK COUNTY,
 KANSAS
 AND INCORPORATED AREAS

PANEL 355 OF 700
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
 COMMUNITY NUMBER: 20355
 CITY OF: WICHITA

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER: 20173C0355E
 EFFECTIVE DATE: FEBRUARY 2, 2007
 Federal Emergency Management Agency

SUPPORTING CALCULATIONS

APPENDIX A : Water Quality Worksheet

Water Quality Worksheet

Table 4-13 Volumetric Runoff Coefficients by Land Use and Hydrologic Soil Group

Land Use	Hydrologic Soil Group				Land Use	Hydrologic Soil Group			
	A	B	C	D		A	B	C	D
Undisturbed	0.02	0.03	0.04	0.05	Undisturbed	55	71	80	84
Turf or Disturbed Soils	0.15	0.2	0.22	0.25	Turf or Disturbed Soils	71	80	84	88
Impervious Cover	0.95	0.95	0.95	0.95	Impervious Cover	98	98	98	98

Weighted Volumetric Runoff Coef. (R _v) (eq. 4-24*)											
Basin #	Undist. ft ²	Dist. ft ²	Total Prop Imp Area		Total Area ft ²	U %	D %	Redev. I %	I %	R _v %	WQ _v ft ³ eq. 4-25*
			Ex. Imp. ft ²	New Imp. ft ²							
1		77,000	67,000	31,000	175,000	0.000	0.097	0.109	0.168	0.3742	6,549
CN	0	37	38	17	92						

Water Quality Peak Flow	
Basin # 4	
eq. 4-18*	
Qp = qu * A * Qwv * Fp	
CN =	92 Table 4-9
la/P =	0.13
Tc =	15 min
qu =	675 Figure 4-6
A =	175,000 ft ²
	4.02 acre
	0.0062773 mi ²
Rv =	0.3742 Eq. 4-24
P =	1.2 Sedg. Std.
Qwv =	0.44904 eq. 4-26
Fp =	1.00 Table 4-10
Qp =	1.90 cfs

Drainage Plan
1:40 Scale