Baughman

TRANSMITTAL

TO:	FROM:
Scott Lindebak, PE	Trevor Kurth, PE CFM
COMPANY:	DATE:
City of Wichita	6-1-10
ADDRESS:	PROJECT:
8th Floor City Hall	Neal Cline Addition
CITY/ STATE:	PROJECT NUMBER:
Wichita, Kansas	

RE:
Neal Cline Addition Drainage Plan

VIA: DELIVERY

We are sending you ☒ ATTACHED ☐ UNDER SEPARATE COVER

☒ PLANS ☐ PRINTS ☐ SHOP DRAWINGS ☐ SAMPLES ☐ SPECS
☐ COPY OF LETTER ☐ CHANGE ORDER ☐ DISK ☐ OTHER

COPIES	DATE	DESCRIPTION
1	6-1-10	Neal Cline Addition Drainage Plan

☐ URGENT ☒ FOR APPROVAL ☐ FOR YOUR INFO ☒ FOR REVIEW & COMMENT
☐ APPROVED, AS NOTED ☐ REVISE AS NOTED ☐ REVISE AND RETURN
☐ AS REQUESTED ☐ PLEASE REPLY ☐ FOR BIDS DUE ☐

NOTES/ COMMENTS:

Scott,
Please review and comment.

SIGNED: _____
Trevor R. Kurth, P.E. CFM

Copy: file

ENGINEERING
SURVEYING
PLANNING
LANDSCAPE ARCHITECTURE

Baughman Company, P.A.
315 Ellis Street
Wichita, Kansas 67203
P 316.262.7271
F 316.262.0149

DRAINAGE PLAN

NEAL-CLINE ADDITION

TO

WICHITA, SEDGWICK COUNTY, KANSAS

PREPARED BY

Baughman
ENGINEERING | SURVEYING | PLANNING
LANDSCAPE ARCHITECTURE

01 JUNE 2010

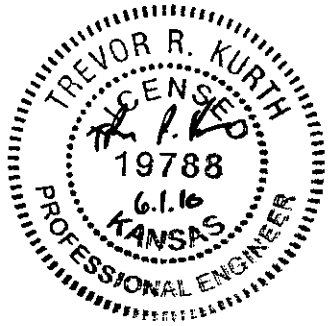
ENGINEERING | SURVEYING | PLANNING
LANDSCAPE ARCHITECTURE

DRAINAGE PLAN
NEAL-CLINE ADDITION

FINAL REPORT

Prepared by Baughman Company, P.A.
01 June 2010

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



REPORT CONTENTS

Adopted: February 23, 2007

WICHITA

Public Works, Engineering Division
Final Drainage Plan Submittal Checklist

Reviewer: _____ Date: _____

Subdivision Name: NEAL-CLINE ADDITION Location: 47th S & MERIDIAN

Total Land Area Of Ownership: ± 3 Acres

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

Applicant: TERESA NEAL-CLINE Contact: – Phone #: _____

Engineer: BAUGHMAN CO Contact: TREVOR KUBIK, PE, CFM Phone # 262.7271

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 I	Applicant NA	Applicant Explanation / Location in Plan	Engr I	Engr NA
A. Site Location Map, using USGS Map	X				
B. Discussion of development, existing conditions, and proposed impacts on stormwater, wetland, riparian, and flood plain	X				
C. Discussion of offsite conditions	X				
D. Summary of runoff calculations (pre/post development) No increase in peak discharge for all storm series	X				
E. Narrative description of the type and function of the permanent best management practices that are incorporated into the site design	X				
F. Copy of the plat	X				
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				
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				

Tab 2. Existing Conditions Runoff Calculations	Applicant I	Applicant NA	Applicant Explanation / Location in Plan	Engr I	Engr NA
A. Copy of applicable orthophoto showing proposed project boundaries (preferable in color)	X				
B. Runoff Method (Rational, Hydrograph Method, or other approved methods by Engineering)	X				
C. Existing topography (no greater than 2-foot contours, 1-foot recommend)	X				
D. Total Site Area and Total Impervious Area (acres)	X				
E. Benchmarks used for site control	X				
F. Streams, creeks, and waterway labeled	X				
G. Predominant soils from USDA soil surveys, and/or on site soil borings	X				
H. Location and boundaries of natural features such as wetlands, lakes, and ponds with the normal water elevation noted	X				
I. Location of existing roads, buildings, parking lots and other impervious areas.	X				

Consulting Engineer Initials TKK

J. Location of existing utilities (e.g., water, sewer, gas, electric) and easements	x				
K. Location of existing conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	x				
L. Flow paths	x				
M. Location and dimensions of existing channels, bridges or culvert crossings	x				
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				
O. Assumed pre-developed runoff curve numbers	x				
P. Existing time of concentrations used in calculations	x				
Q. Evaluate immediate downstream drainage capacity, not to exceed more than 0.25 miles downstream of site		x	NA		
R. Existing structural elevations (e.g., invert of pipes, manholes, etc.)	x				
S. Cross-section data for open channels	x				
T. Ground water elevations, if applicable	x				

	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				
B. Proposed time of concentrations used in calculations	x				
C. Assumed post-developed runoff curve numbers	x				
D. Proposed contours for detention facilities (to equal area used in outlet rating curves)		x	NA		
E. Preliminary sizing calculations for stormwater controls including contributing drainage area, storage, and outlet configuration	x				
F. Stage-storage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities		x	NA		
G. Final analysis of potential upstream/downstream impact/effects of project, where necessary	x				
H. Existing and proposed structural elevations (e.g., invert of pipes, manholes, etc.)	x				
I. Design water surface elevations and normal pool elevation for ponds.		x	NA		
J. Typical detail for outlet structures, embankments, spillways, grade control structures, conveyance channels, etc. To include height, width, elevation, and/or diameter.		x	NA		
K. Proposed limits of clearing and grading	x				
L. Location of existing and proposed roads, buildings, parking lots and other impervious areas.	x				
M. Location of existing and proposed utilities (e.g., water, sewer) and easements		x	See Utility Plan		
N. Location of existing and proposed conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	x				
O. Preliminary location and dimensions of proposed channel modifications, such as bridge or culvert crossings	x				

Consulting Engineer Initials _____

P. Preliminary selection and location of stormwater controls	x				
Q. Emergency overflow structure's flow path	x				
R. Detention facility provides one-foot of freeboard above the HWL and emergency outfall shown (top of berm elevation shown)		x	NA		
S. The 100-year 24-hour HWL delineated on the plan for detention pond		x	NA		
T. Lowest opening elevations table on the plat for structures located adjacent to channels or ponds		x	NA		
U. Stormwater Management Facilities located within a Reserve		x	NA		
V. Maintenance responsibility of stormwater management facility shall be specified in the platters text. (e.g. HOA, Lot Owners Association, or lot)	x				
W. Off-site drainage easements or agreements required, where necessary	x				

			Applicant	Engr	
Tab 4. Floodplain Submittal	I	NA	Explanation / Location in Plan	I	NA
A. Provide source of flood profile		x	No SFHA on Property		
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			
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
A. US Army Corps of Engineers - Regulatory program permits (404 water quality certification)		x	NA		
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		Possible		

Consulting Engineer Initials TRF

PROJECT NARRATIVE

EXISTING CONDITIONS

The site is located just south of 47th Street South on the west side of Meridian Avenue in Wichita, Sedgwick County, Kansas. The site is a residential homesite with an associated barns and outbuildings. There are trees interspersed throughout the approximately 3 acres of land. The site is relatively flat but appears to sheet flow to the south and west onto the surrounding farmland.

There is no FEMA Special Flood Hazard Area (SFHA) located on this property as of this report.

Existing trees will be retained and left at existing grades, where applicable.

PROPOSED CONDITIONS

The property is expected to stay as existing with the addition of a garage/building structure located near the back half of the property. All grades around the perimeter are expected to remain as existing with all sheet flow continuing to flow onto the surrounding agricultural land.

If the site is razed and re-developed in the future, all drainage should be re-directed to the east and into the Meridian Avenue ROW. Any stormwater quantity and quality policies at that time may be applied to the re-development.

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

OFFSITE CONDITIONS

There does not appear to be any offsite drainage encroaching this property. This property sheet drains to the surrounding properties. The surrounding properties are currently agricultural farmland and do not appear to flood or pond (based on site visits and aerial photography).

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' = 0.51)
  - Time of Concentration: Lag Method (minimum 15 min)

SITE CHARACTERISTICS

The current site consists of approximately 3 acres and is currently a farmstead or homesite with a single-family home and associated out-buildings. The site has tree coverage and is generally flat. It appears the site sheet flows to the surrounding farmland to the west and south.
The existing site characteristics can be seen from the aerial exhibit (Exhibit 2).

EXISTING CONDITIONS HYDROLOGIC ANALYSIS

The site was analyzed for pre-development conditions using the hydrograph method for the 2, 10, and 100 year storm events. A rational 'c' coefficient of 0.51 was used for large (at least 1 acre) lots in Soil Type C conditions. The time of concentration was calculated using Lag Method with a minimum time of concentration of 15 minutes.
The site will produce approximately 11 cfs in the 100-year storm event. All the runoff eventually drains to the south and into the Wichita-Valley Center Floodway approximately 1 mile away.

DOWNSTREAM DRAINAGE CAPACITY

The site sheet flows to the east and south and into the existing agricultural field. The area drains to the Meridian Avenue ROW or to the south and through an existing swale/channel in the subdivision.

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,10-yr,100-yr Storm Events Modeled
  - Rational Method used for proposed flows
  - 'C' factor = 0.51 (Type B Soils, Single-Family, 1+ acre)
  - Time of Concentration; Lag Method, minimum Tc = 15min

- GRADING CONSTRAINTS
  - All lot grades matched and existing structures to remain

DETENTION FACILITIES

There is no detention proposed on this site at this time. The majority of the site is to remain the same as existing with the addition of an auxiliary structure near the back of the lot. No razing of the site is expected at this time.

DISCHARGE POINTS SUMMARY

The site sheet flows to the west, east, and south. There does not appear to be any apparent discharge 'point'. The site will continue to sheet flow to the Meridian ROW as well as to the surrounding agricultural farmland.

POTENTIAL UPSTREAM/DOWNSTREAM IMPACTS

Due to the site remaining, for the most part, as existing with no grade changes, there are not any potential impacts expected with this project.

SOURCE OF FLOODPLAIN INFORMATION

The site lies within a FEMA Zone X. The site is not located within a mapped FEMA SFHA. The location of the property, on FEMA FIRM Panel 505 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.

FEMA
There is no mapped floodplain located upon the proposed site. Therefore, 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
A portion of the site will continue to discharge, as it does existing, to the Meridian Avenue ROW. A permit may be needed for this discharge into the ROW ditch section.

EXHIBITS

EXHIBIT 1: Site Location Map

EXHIBIT 2: Aerial Photo Exhibit with Hand Topography

EXHIBIT 3: Plat – Half Scale

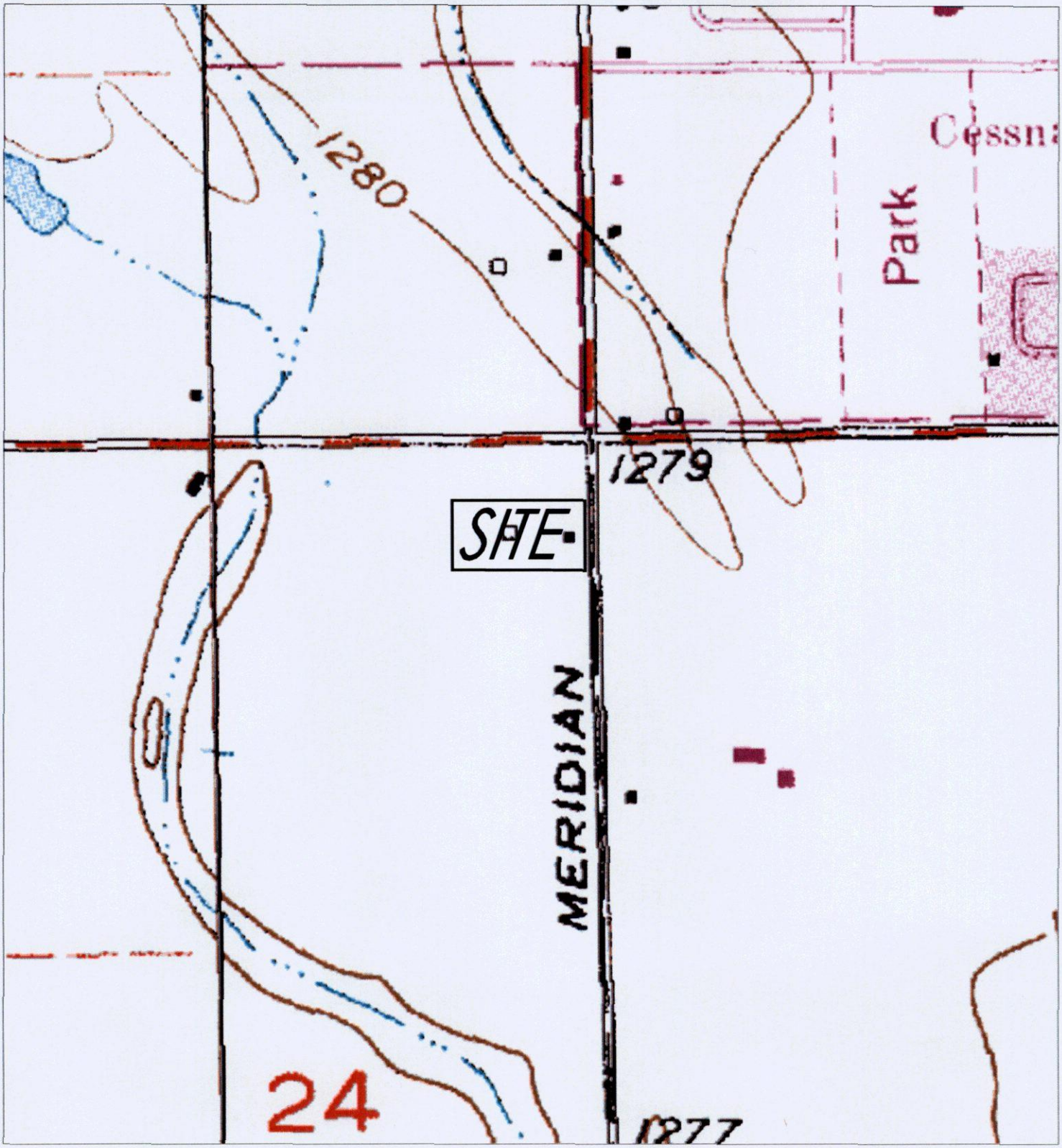
EXHIBIT 4: Drainage & Grading Plan – Half Scale

EXHIBIT 5: Floodplain Location (FIRM)

SITE LOCATION EXHIBIT

NEAL-CLINE ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS



0 250 500

CONTOUR INTERVALS = 10 FOOT

EXHIBIT 1
NEAL-CLINE ADDITION
27 MAY 2010

Baughman Company, P.A.
315 Elm St Wichita, KS 67211 P 316.267.7271 F 316.267.0149
Baughman ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

AERIAL EXHIBIT

NEAL-CLINE ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

0 50 100

CONTOUR INTERVALS = 1 FOOT

EXHIBIT 3

NEAL-CLINE ADDITION

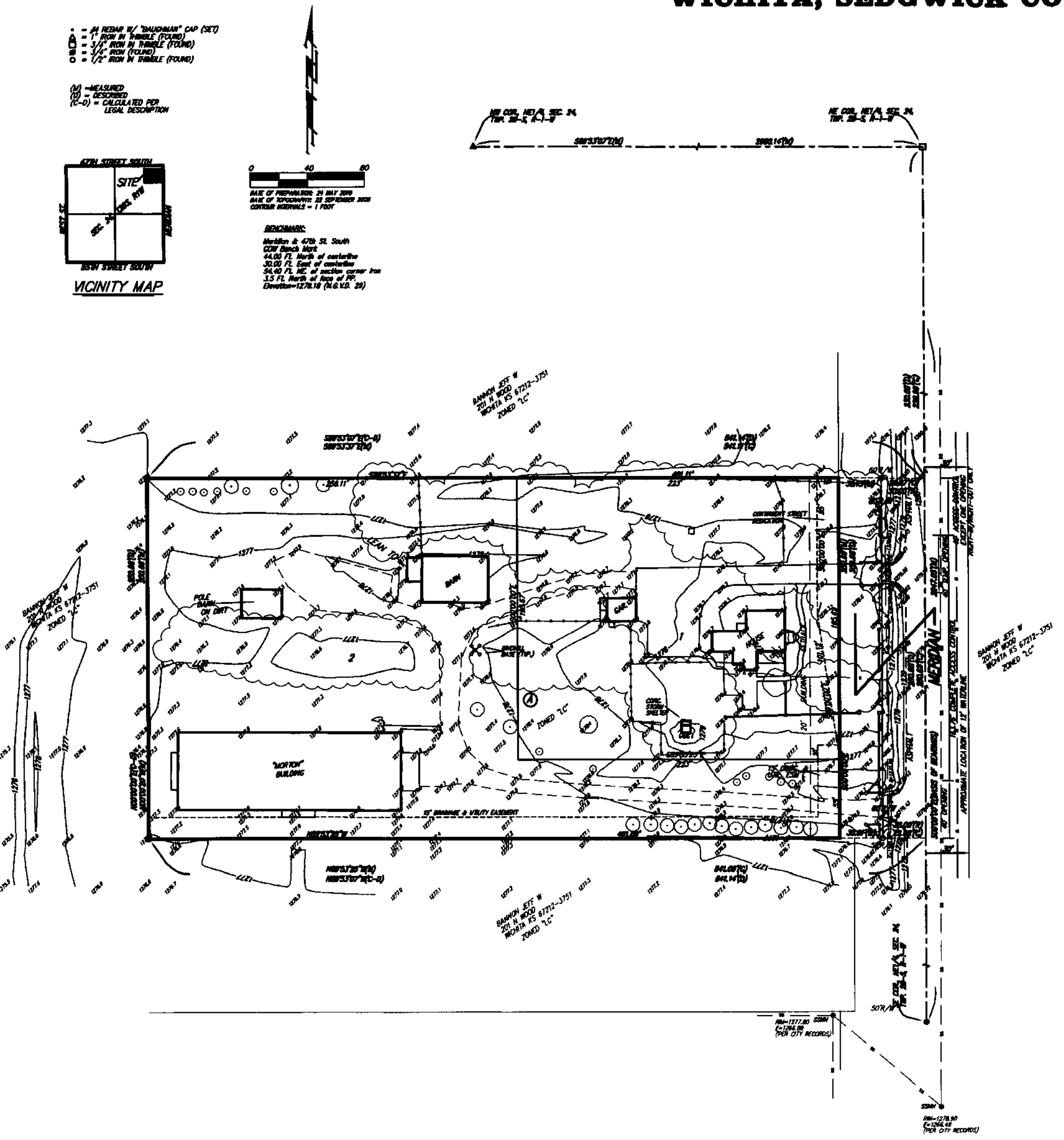
27 MAY 2010

Baughman Company, P.A.
315 Elle St Wichita, KS 67211 P 316-262-7271 F 316-262-0149
Baughman

ONE-STEP FINAL PLAT

NEAL-CLINE ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS



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, RIGHTS-OF-WAY, 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.

State of Kansas)
Sedgwick County) SS We, Baughman Company, P.A., Surveyors in aforesaid county and state do hereby certify that we have surveyed and platted "NEAL-CLINE ADDITION", Wichita, Sedgwick County, Kansas and that the accompanying plat is a true and correct exhibit of the property surveyed, described as follows: Commencing at the NE corner of the NE1/4 of Sec. 24, Twp. 28-S, R-1-W of the 6th P.M., Sedgwick County, Kansas; thence south along the east line of said NE1/4, 230.00 feet for a point of beginning; thence continuing south along the east line of said NE1/4, 250.68 feet; thence west parallel with the north line of said NE1/4, 541.14 feet; thence north parallel with the east line of said NE1/4, 250.68 feet; thence east parallel with the north line of said NE1/4, 541.14 feet to the point of beginning, all being subject to road rights-of-way of record.

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

Baughman Company, P.A.

____________________, Surveyor
Michael G. Conrey

Know all men by these presents that we, the undersigned, have caused the land in the surveyors certificate to be platted into Lots, a Block, and a Street to be known as "NEAL-CLINE ADDITION", Wichita, Sedgwick County, Kansas. The street is hereby dedicated to and for the use of the public. The contingent street dedication shall become effective in the event that the City of Wichita determines a need for the right-of-way for any street related purposes. This contingent street dedication shall be a covenant running with the land and shall be binding on all heirs and subsequent owners of all parts of said Lot 1 covered by said contingent street dedication. Access controls shall be as depicted on the face of the plat and are hereby granted to the appropriate governing body. he permitted opening locations shall be as determined by the City Engineer of the City of Wichita, Kansas. The 40 foot access opening shall expire at such time as Lot 1, Block A is re-developed for commercial use, and at the time of said commercial re-development, the right-in/right-out access opening shall become effective. The drainage and utility easements are hereby granted as indicated for drainage purposes and for the construction and maintenance of public utilities.

_______________ Teresa L. Neal-Cline

_______________ Craig A. Cline

State of Kansas)
Sedgwick County) SS The foregoing instrument acknowledged before me, this_____day of__________, 2010, by Teresa L. Neal-Cline and Craig A. Cline, husband and wife.

_______________, Notary Public

My App't. Exp.________

We the undersigned holders of a mortgage on the above described property, do hereby consent to this plat of "NEAL-CLINE ADDITION", Wichita, Sedgwick County, Kansas.

Credit Union of America

____
(Title)

State of Kansas)
Sedgwick County) SS The foregoing instrument acknowledged before me, this_____day of__________, 2010, by__________
__________ of Credit Union of America, on behalf of the credit union.
(Title)

_______________, Notary Public

My App't. Exp.________

This plat of "NEAL-CLINE 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____________, ______.
Wichita-Sedgwick County Metropolitan Area Planning Commission

_______________, Chair
G. Nelson Van Fleet

_______________, 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__________, 2010.

_______________, Mayor
Carl Brewer

_______________, City Clerk
Karen Sublett

Reviewed in accordance with K.S.A. 58-2005 on this______day of__________, 2010.

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

Entered on transfer record this______day of__________, 2010.

_______________, County Clerk
Kelly B. Arnold

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__________, 2010 at_____o'clock___M. and is duly recorded.

_______________, Register of Deeds
Bill Meek

_______________, Deputy
Tonya Buckingham

NEAL-CLINE ADDITION

24 MAY 2010

Baughman Company, P.A.
ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

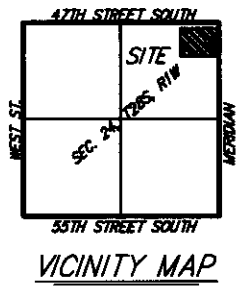
DRAINAGE GRADING PLAN

NEAL-CLINE ADDITION

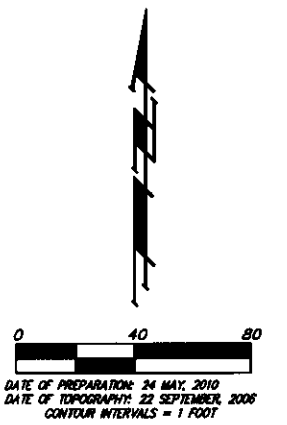
WICHITA, SEDGWICK COUNTY, KANSAS

• = #4 REBAR W/ "BAUGHMAN" CAP (SET)
△ = 1" IRON IN THIMBLE (FOUND)
□ = 3/4" IRON IN THIMBLE (FOUND)
⊗ = 3/4" IRON (FOUND)
○ = 1/2" IRON IN THIMBLE (FOUND)

(M) =MEASURED
(D) = DESCRIBED
(C-D) = CALCULATED PER LEGAL DESCRIPTION

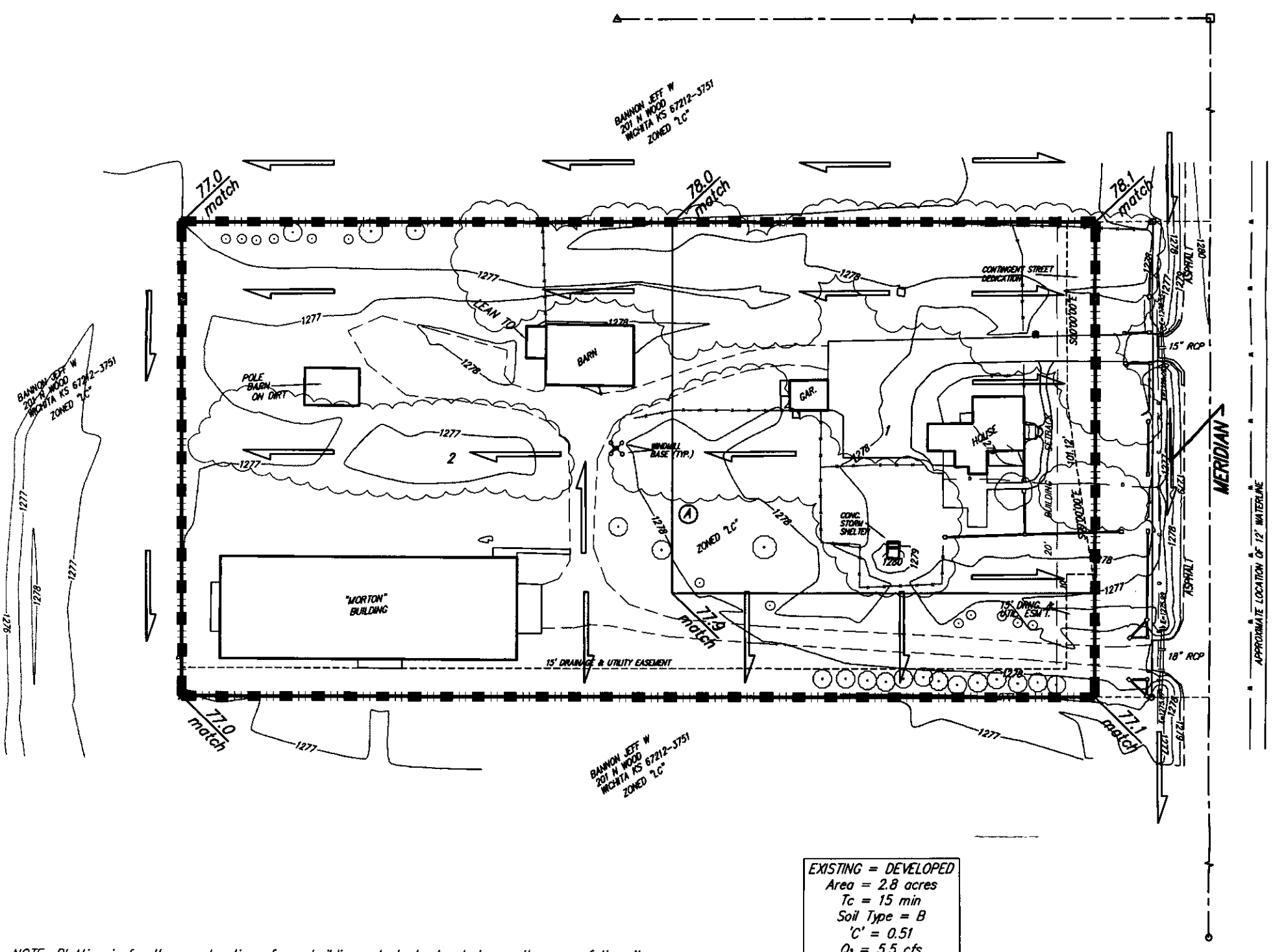


VICINITY MAP



DATE OF PREPARATION: 24 MAY, 2010
DATE OF TOPOGRAPHY: 22 SEPTEMBER, 2006
CONTOUR INTERVALS = 1 FOOT

BENCHMARK:
Meridian & 47th St. South
COW Bench Mark
44.00 Ft. North of centerline
30.00 Ft. East of centerline
54.40 Ft. NE. of section corner iron
3.5 Ft. North of face of PP.
Elevation=1279.18 (N.G.V.D. 29)



EXISTING = DEVELOPED
Area = 2.8 acres
Tc = 15 min
Soil Type = B
'C' = 0.51
Q_3 = 5.5 cfs
Q_5 = 6.5 cfs
Q_{100} = 11 cfs

NOTE: Platting is for the construction of one building only to be located near the rear of the site. No other zoning/rezoning to be done at this time. Conditions to remain as existing across the site except for the additional structure.

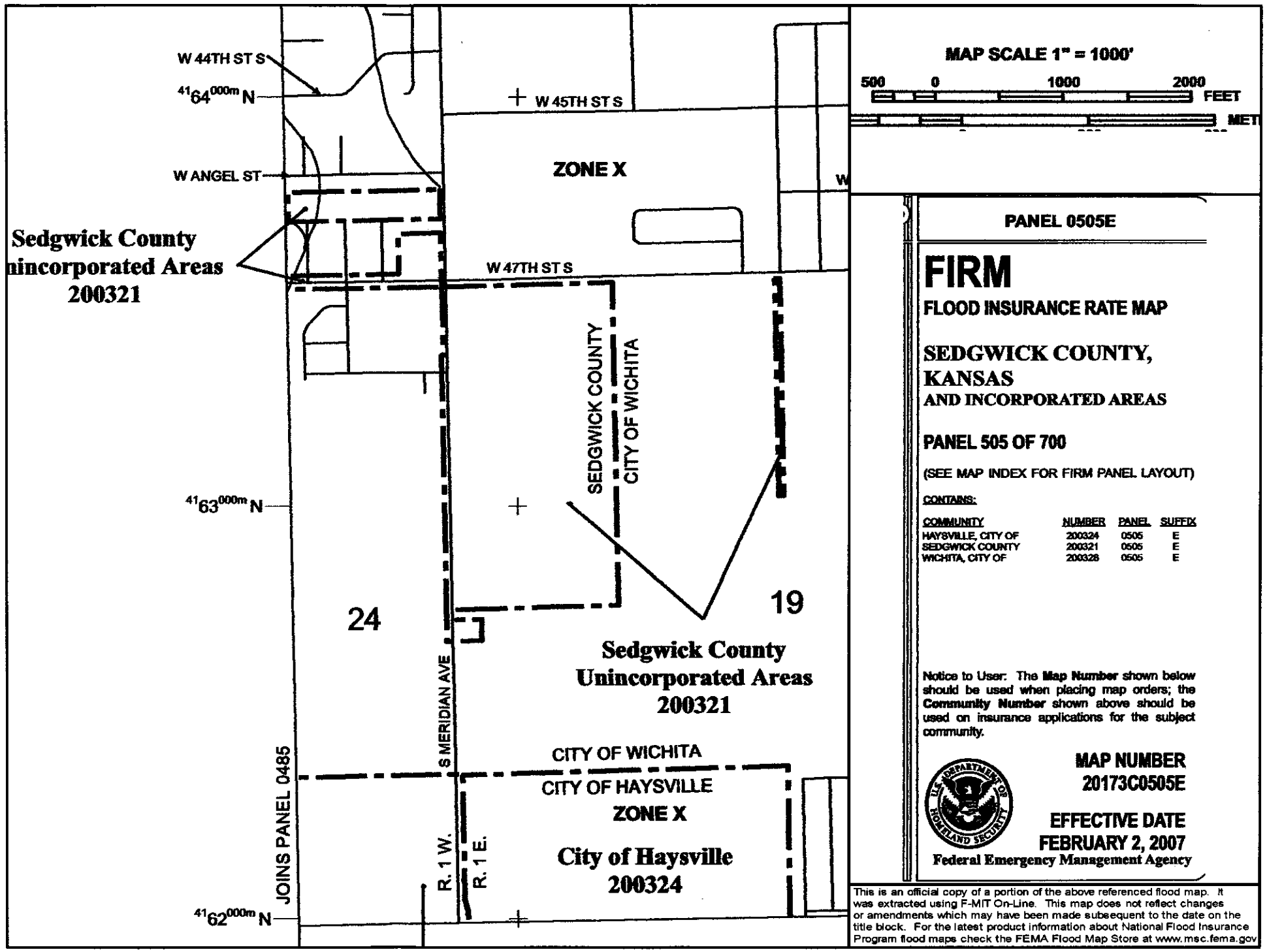
NOTE: If the site is razed or redeveloped, the drainage should be directed towards Meridian Avenue and away from adjoining properties per the City of Wichita Public Works Department request. No detention is provided at this time due to minimal/negligible addition of impervious area with the construction of an outbuilding/garage.

NOTE: No FEMA Floodplain or Floodway boundaries encroach on this property as of May 20, 2010 per FEMA FIRM Panel 485 of 700 for Sedgwick County, Kansas; effective February 2, 2007.

DRAINAGE & GRADING PLAN
NEAL-CLINE ADDITION
27 MAY 2010

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

E:\Projects\Neal-Cline Addition 04-09-P178\Water Resources\NEAL-cline-drain grade.dwg


W 44TH ST S
4164000m N
W ANGEL ST
Sedgwick County
nincorporated Areas
200321
W 45TH ST S
ZONE X
W 47TH ST S
SEDGWICK COUNTY
CITY OF WICHITA
4163000m N
24
19
S MERIDIAN AVE
Sedgwick County
Unincorporated Areas
200321
CITY OF WICHITA
CITY OF HAYSVILLE
ZONE X
City of Haysville
200324
R. 1 W.
R. 1 E.
JOINS PANEL 0485
4162000m N
MAP SCALE 1" = 1000'
500 0 1000 2000
FEET
PANEL 0505E
FIRM
FLOOD INSURANCE RATE MAP
SEDGWICK COUNTY,
KANSAS
AND INCORPORATED AREAS
PANEL 505 OF 700
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
HAYSVILLE, CITY OF 200324 0505 E
SEDGWICK COUNTY 200321 0505 E
WICHITA, CITY OF 200328 0505 E
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
20173C0505E
EFFECTIVE DATE
FEBRUARY 2, 2007
Federal Emergency Management Agency
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

APPENDIX A: **USGS Soils Survey**

USGS Soils Survey

Hydrologic Soil Group—Sedgwick County, Kansas
(Neal Cline Addition)

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:1,120 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 14N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sedgwick County, Kansas
Survey Area Data: Version 6, Dec 22, 2009

Date(s) aerial images were photographed: 6/20/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Sedgwick County, Kansas				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5832	Punkin-Taver complex, 0 to 1 percent slopes	D	0.0	0.7%
5943	Saltcreek and Naron fine sandy loams, 0 to 1 percent slopes	C	5.7	99.3%
Totals for Area of Interest			5.7	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: *None Specified*

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

DRAINAGE & GRADING PLAN **Scale 1:40**