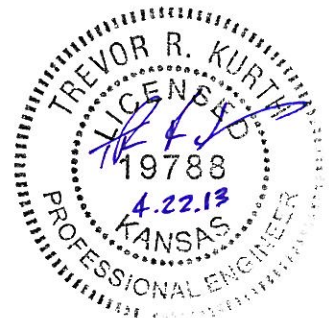


DRAINAGE PLAN
TRAVEL AIR CITY 2ND
ADDITION
TO
WICHITA, SEDGWICK COUNTY, KANSAS

PREPARED BY



15 APRIL 2013
REVISED 22 APRIL 2013





DRAINAGE PLAN TRAVEL AIR CITY 2ND ADDITON

FINAL REPORT

Prepared by Baughman Company, P.A.
15 April 2013
Revised 22 April 2013

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 along Webb Road just north of Central Avenue in Wichita. More specifically, the site is bounded on the south by Van Thaden Street and on the north by Chamberlin Street. The site is adjoined to the east by residential single family homes. The current site is vacant with grass cover and sheet drains primarily to the south. There is no apparent storm sewer serving the property, although there is curb and gutter in Webb Road and road side ditches along the east-west Van Thaden Street.

The site lies within a FEMA SFHA Zone X. The drainage patterns as defined above can be seen on the Aerial (Exhibit 2).

PROPOSED CONDITIONS

The property is being platted as one general commercial lot with access to Webb Road. The site being platted is 0.97 acres and therefore no water quality or detention features are proposed at this time due to the area being less than 1 acre. We anticipate the site continuing to sheet flow to the Webb Road ROW upon development. At that time, the site will have paved parking and may require a Deeter style curb inlet(s) in the parking lot to drain the onsite runoff to the Webb Road curb and gutter section without inundating the single driveway.

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

OFFSITE CONDITIONS

The site currently drains to the Webb Road ROW as well as south to the Van Thaden Street ROW via sheet flow. There is a curb inlet and corresponding 42" pipe approximately 300' south in Webb Road which conveys runoff to a drainage pond and ditch section. Overall, this site and surrounding properties drain to this area located south offsite. We are unaware at this time of any major drainage problems. The overall site location and hydrogeodatabase can be seen with the site location plotted as Exhibit 1.

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' = 0.70, Soil Type D, natural cover)
 - Time of Concentration: Lag Method (minimum 15 min)

SITE CHARACTERISTICS

The site is currently open space with grass cover and sparse tree cover near the back (east) portion of the property. The site sheet flows to the south and into a road side ditch along Von Thaden Street as well as the frontage flowing west and into the Webb Road ROW.

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 Rational Method for the entire storm series. A 'C' factor of 0.70 was used based on undeveloped urban areas with a percent impervious cover approximately 50% in Type D Soils. Due to the sites relatively small area and dimensions, a minimum time of concentration of 15 minutes was used. The majority of the site currently drains to the south and into the Van Thaden ROW ditch section.

DOWNSTREAM DRAINAGE CAPACITY

At this time, we are not aware of any downstream restrictions or issues immediately downstream of this site. There is a small ROW ditch section along Van Thaden Street which conveys this sites runoff to the east. It appears that the south line of this property is the low point of the surrounding ditch sections. There does not appear to be a cross road culvert here and we assume that the when the ditch is inundated Van Thaden overtops and flows into the Webb Road street section. There is a 15" CMP culvert under the adjacent drive to the east which appears to be adequate to pass the storm series.

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
 - Rational Method utilized for Developed Flows
 - C = 0.95 (Soil Type D – 90% impervious cover)
 - Time of Concentration; Lag Method, minimum Tc = 15min

DEVELOPED CONDITIONS HYDROLOGIC ANALYSIS

The site is being platted and zoned as general commercial. At the time of this report no site plan is proposed or is available. Based on similar developments in the area, we anticipate this 0.97 acre site to be developed into a strip center/retail with associated paving and parking. Based on this, a high 'C' factor was used to account for the predominant impervious areas.

This site is not expected to provide detention or downstream channel protection upon site development due to site being less than 1 acre. Also, water quality is not proposed at this time as the site is less than 1 acre.

DISCHARGE POINTS SUMMARY

The site will sheet flow to the west and into the Webb Road roadway. The developed site should not be conveyed to the east through the residential area and shall discharge directly into Webb Road. We anticipate Deeter style curb inlets to be used in the parking lot to discharge runoff directly into the Webb Road curb and gutter section as to not inundate the single Webb Road driveway for this property. Typically commercial developments are allowed to discharge ½ to ¾ of an acre directly out of a driveway. Since this area is larger than those cutoffs, portions should be leaked out at other locations using the aforementioned curb cut inlets.

WATER QUALITY

No water quality is being offered by this site at this time due its area being less than the 1 acre requirement. If this site would to disturb more than 1 acre at the time of development, storm water quality will be needed and provided at that time.

DOWNSTREAM CHANNEL PROTECTION

No downstream channel protection will be provided on site since the site is less than 1 acre.

POTENTIAL UPSTREAM/DOWNSTREAM IMPACTS

No upstream or downstream impacts are expected with this development since the site is less than 1 acre in area and will continue to discharge into the same drainage systems. A small increase in runoff is expected due to the additional impervious area, but it appears that the downstream channels and culverts are satisfactory to handle the additional flow.

FLOODPLAIN SUBMITTAL

SOURCE OF FLOODPLAIN INFORMATION

The site lies within a FEMA Zone X - Shaded. The location of the property, on FEMA FIRM Panel 378E of 700 for Sedgwick County, Kansas, effective February 2, 2007, is attached as Exhibit 6.

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 A or AE floodplain located upon the proposed site. Therefore, no FEMA permitting is expected at this time.

KANSAS DEPT OF TRANSPORTATION

There is no KDOT ROW located along the property.

SEDGWICK COUNTY PERMITTING

There does not appear to be any Sedgwick County permitting needed at this time.

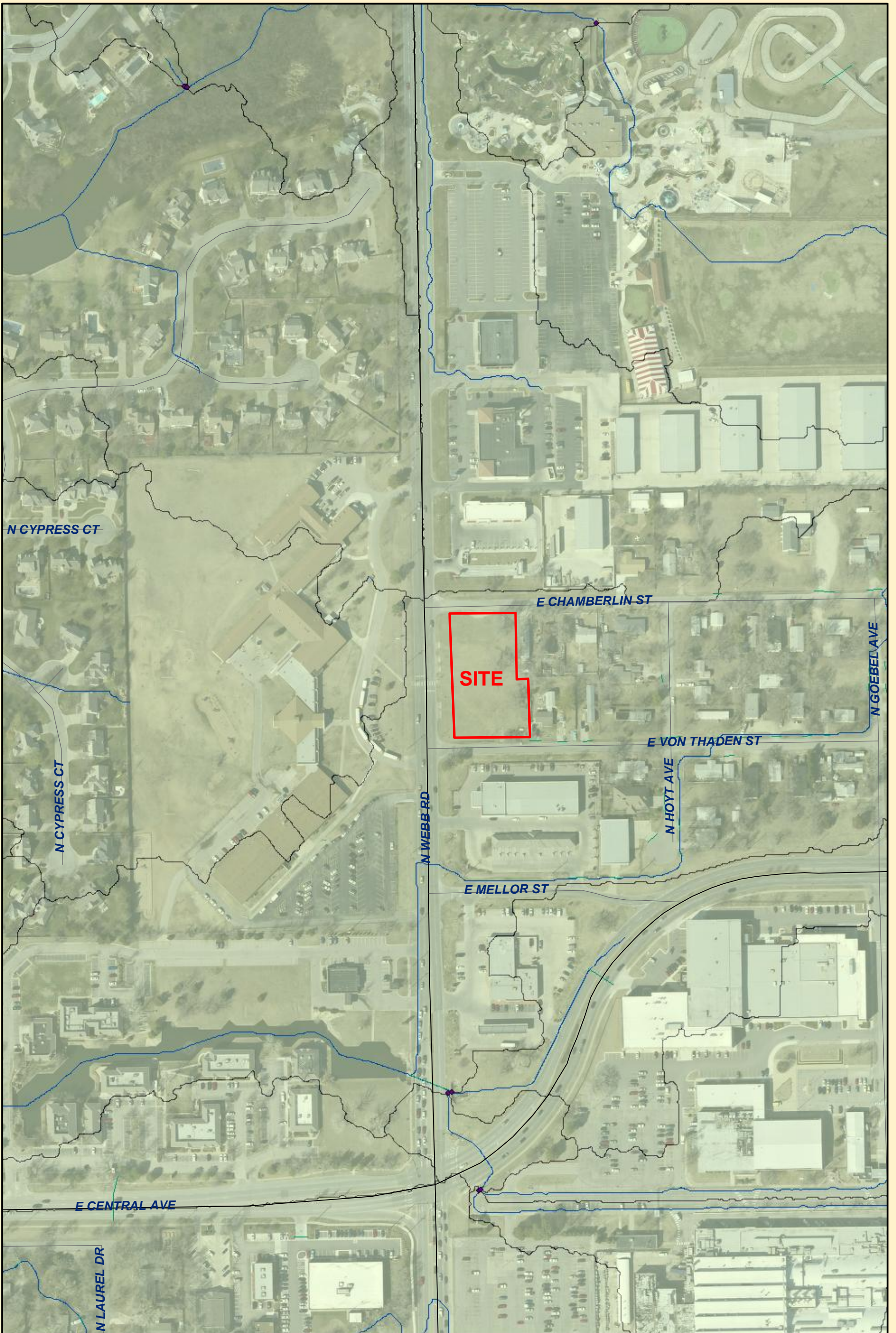
EXHIBIT 1: Site Location Map

EXHIBIT 2: Aerial Photo Exhibit with Lidar Topography

EXHIBIT 3: Plat – Half Scale

EXHIBIT 4: Drainage Plan – Half Scale

EXHIBIT 5: Floodplain Location (FIRM)

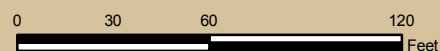


Location Exhibit





Aerial Exhibit



TRAVEL AIR CITY 2ND ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

State of Kansas) SS We, Baughman Company, P.A., Surveyors in aforesaid county and state do hereby certify that we have surveyed and platted "TRAVEL AIR CITY 2ND ADDITION", Wichita, Sedgwick County, Kansas and that the accompanying plat is a true and correct exhibit of the property surveyed, described as a replat of Lots 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, and 31, Block 4, Travel Air City, Sedgwick County, Kansas.

This plat of "TRAVEL AIR CITY 2ND 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 _____, 2013. Wichita-Sedgwick County Metropolitan Area Planning Commission

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

Baughman Company, P.A.

_____, Chair

_____, Secretary

_____, Surveyor

Michael G. Conrey

John L. Schlegel

Know all men by these presents that we, the undersigned, have caused the land in the surveyors certificate to be platted into a Lot, a Block, and Streets, to be known as "TRAVEL AIR CITY 2ND ADDITION", Wichita, Sedgwick County, Kansas. The utility easement are hereby granted as indicated for the construction and maintenance of all public utilities. The drainage and utility easements are hereby granted as indicated for drainage purposes and for the construction and maintenance of all public utilities. The streets are hereby dedicated to and for the use of the public. Access controls shall be as depicted on the face of the plat and are hereby granted to the City of Wichita, Kansas. The permitted opening location shall be as determined by the City Engineer of the City of Wichita, Kansas.

This plat approved and all dedications shown hereon accepted by the City Council of the City of Wichita, Kansas, this _____ day of _____, 2013.

_____, Mayor

_____, City Clerk

Triple J of Wichita, LLC

_____, Member

Ron Cornejo

Reviewed in accordance with K.S.A. 58-2005 on this _____ day of _____, 2013.

State of Kansas) SS The foregoing instrument acknowledged before me, this _____ day of _____, 2013, by Ron Cornejo, Member of Triple J of Wichita, LLC, on behalf of the corporation.

_____, Notary Public

My App't. Exp. _____

Entered on transfer record this _____ day of _____, 2013.

_____, County Clerk

Kelly B. Arnold

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 _____, 2013 at _____ o'clock _____ M; and is duly recorded.

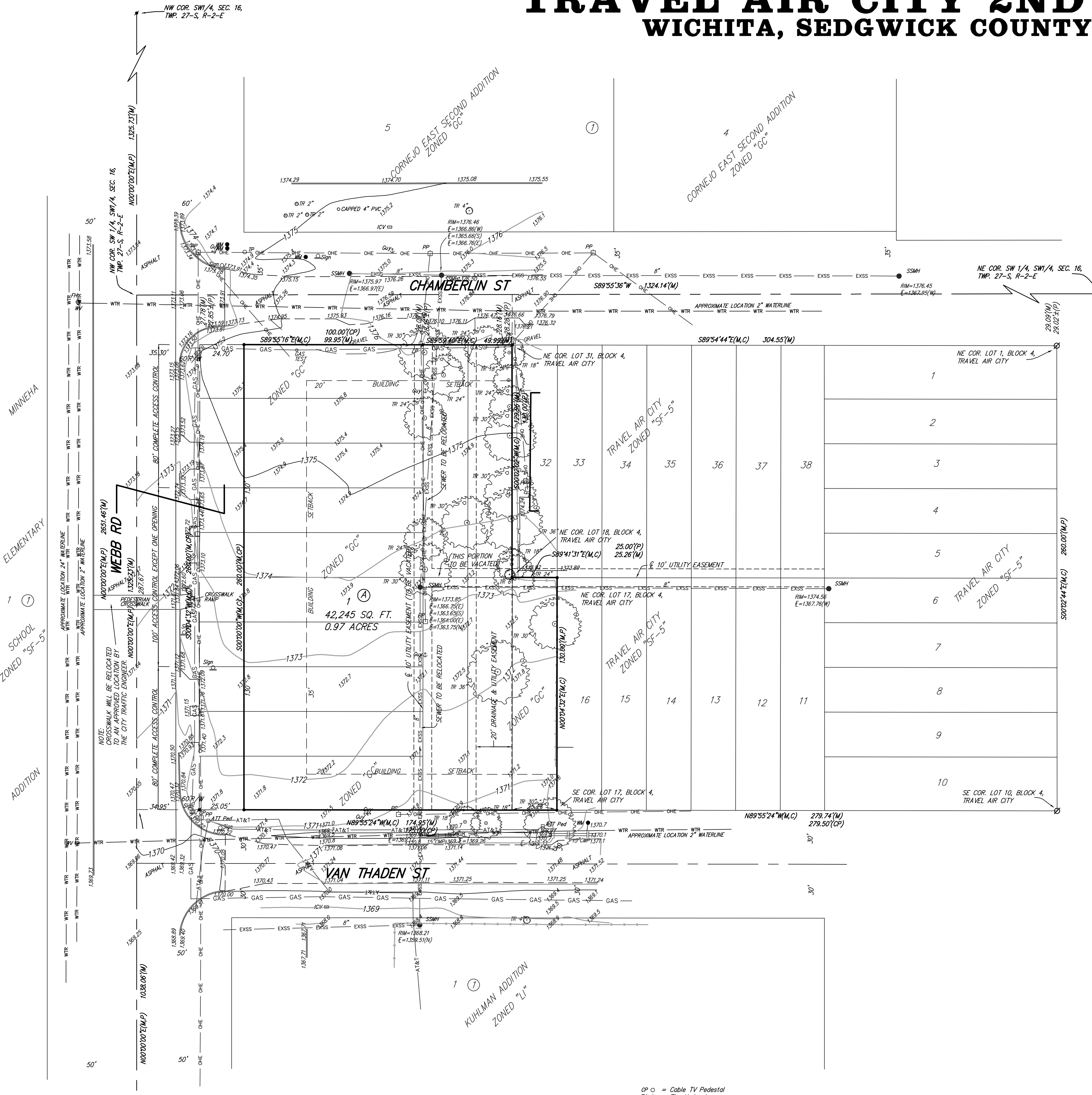
_____, Register of Deeds

_____, Deputy

Tonya Buckingham

TRAVEL AIR CITY 2ND ADDITION

Baughman Company, P.A.
315 Ellis St. Wichita, KS 67211 P 316-2627271 F 316-2620149
ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE
E:\PROJECTS\TRAVELAIRCITY2ND\TRAVELAIRCITY2ND.PDWG-RKR



- WTR = WATER LINE
- AT&T = SOUTHWESTERN BELL
- GAS = GAS
- CoTV = CoTV
- OHE = OVERHEAD ELECTRIC LINE
- EXSS = SANITARY SEWER
- CP O = Cable TV Pedestal
- PH O = Fire Hydrant
- Guy A = Guy Anchor
- ICV O = Irrigation Control Valve - Valve Box
- LP O = Light Pole
- PP O = Power Pole
- SP O = Signal Pole
- Sign = Sign
- SMH = Sanitary Sewer Manhole
- ATT Ped = ATT Pedestal
- TR O = Tree
- TP O = Telephone Pole
- WM = Water Meter
- WV = Water Valve
- = #4 REBAR W/ "BAUGHMAN" CAP (FOUND)
- = #4 REBAR W/ "BAUGHMAN" CAP (SET)
- = 3/4" IRON (FOUND)
- △ = #3 REBAR W/ "BAUGHMAN" CAP OVER STONE (FOUND)
- = CROSS (FOUND)
- (M) = MEASURED
- (D) = DESCRIBED
- (P) = PLATTED
- (C) = CALCULATED
- (CP) = CALCULATED PER PLATTED INFO.

NOTE: A drainage plan has been developed for this subdivision and is on file with the City of Wichita, Kansas. Drainage intent shall remain as depicted 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 plan shall be allowed.

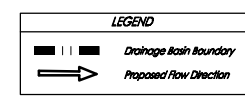
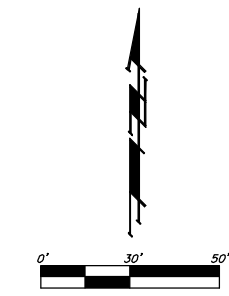
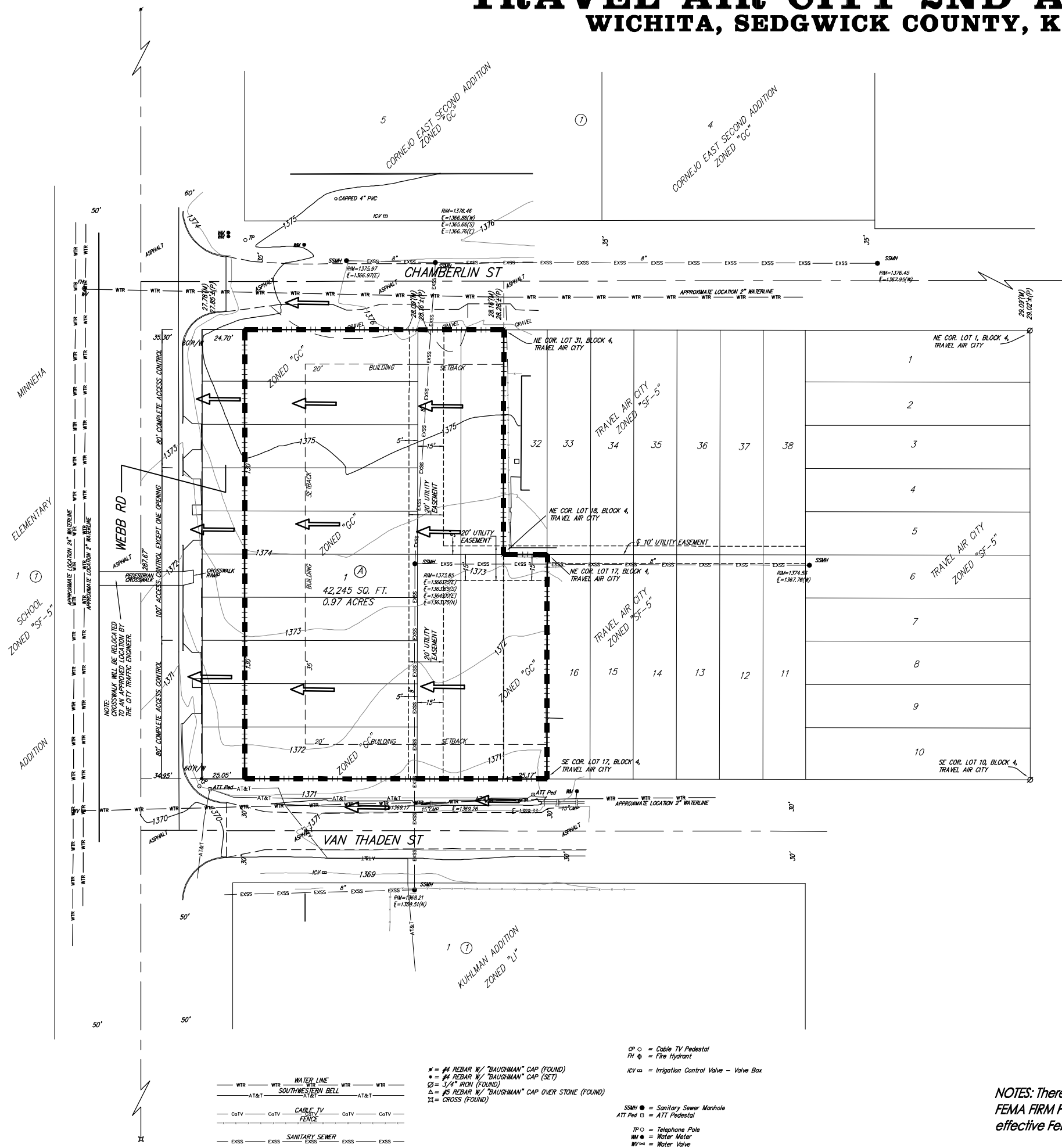
SW COR. SW 1/4, SEC. 16, TWP. 27-S, R-2-E

5 APRIL 2013

DRAINAGE PLAN

TRAVEL AIR CITY 2ND ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS



EXISTING	
DA	= 0.97 acres
Tc	= 15 min
C	= 0.70
Q ₂	= 2.6 cfs
Q ₅	= 3.1 cfs
Q ₁₀	= 3.5 cfs
Q ₁₀₀	= 5.0 cfs

PROPOSED	
DA	= 0.97 acres
Tc	= 15 min
C	= 0.95
Q ₂	= 3.5 cfs
Q ₅	= 4.2 cfs
Q ₁₀	= 4.8 cfs
Q ₁₀₀	= 6.8 cfs

NOTES: At this time, the site less than 1 acre in area. Due to this, there is no water quality, channel protection, or detention provided at this time based on current City of Wichita Stormwater Management requirements.

- WTR = WATER LINE
- AT&T = SOUTHWESTERN BELL
- CaTV = CABLE TV
- EXSS = SANITARY SEWER
- OP ○ = Cable TV Pedestal
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- = #4 REBAR W/ "BAUGHMAN" CAP (SET)
- = 3/4" IRON (FOUND)
- △ = #6 REBAR W/ "BAUGHMAN" CAP OVER STONE (FOUND)
- ⊠ = CROSS (FOUND)

NOTES: There is no FEMA SFHA located on this property as of this date per FEMA FIRM Panel 378 of 700, for Wichita, Sedgwick County, Kansas; effective February 2, 2007.

DRAINAGE PLAN

TRAVEL AIR CITY

2ND ADDITION

REV 22 APRIL 2013
15 APRIL 2013

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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N CYPRESS DR
N CYPRESS CT

N CYPRESS CT

20173C0378E

N WEBB RD

E CHAMBERLIN ST

E VON THADEN ST

N HOYT AVE

E MELLOR ST

E CENTRAL AVE

SITE



FEMA Exhibit

0 100 200 400 Feet



SUPPORTING CALCULATIONS

APPENDIX A: USGS Soils Survey


USGS Soils Survey

Hydrologic Soil Group—Sedgwick County, Kansas



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

 Streams and Canals


Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

MAP INFORMATION

Map Scale: 1:652 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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 8, Sep 20, 2012

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 (KS173)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3911	Rosehill silty clay, 1 to 3 percent slopes	D	2.0	100.0%
Totals for Area of Interest			2.0	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: Higher

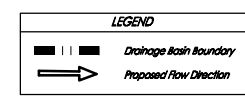
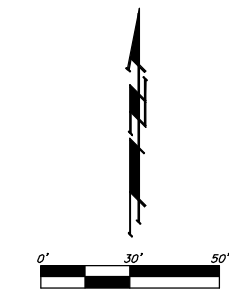
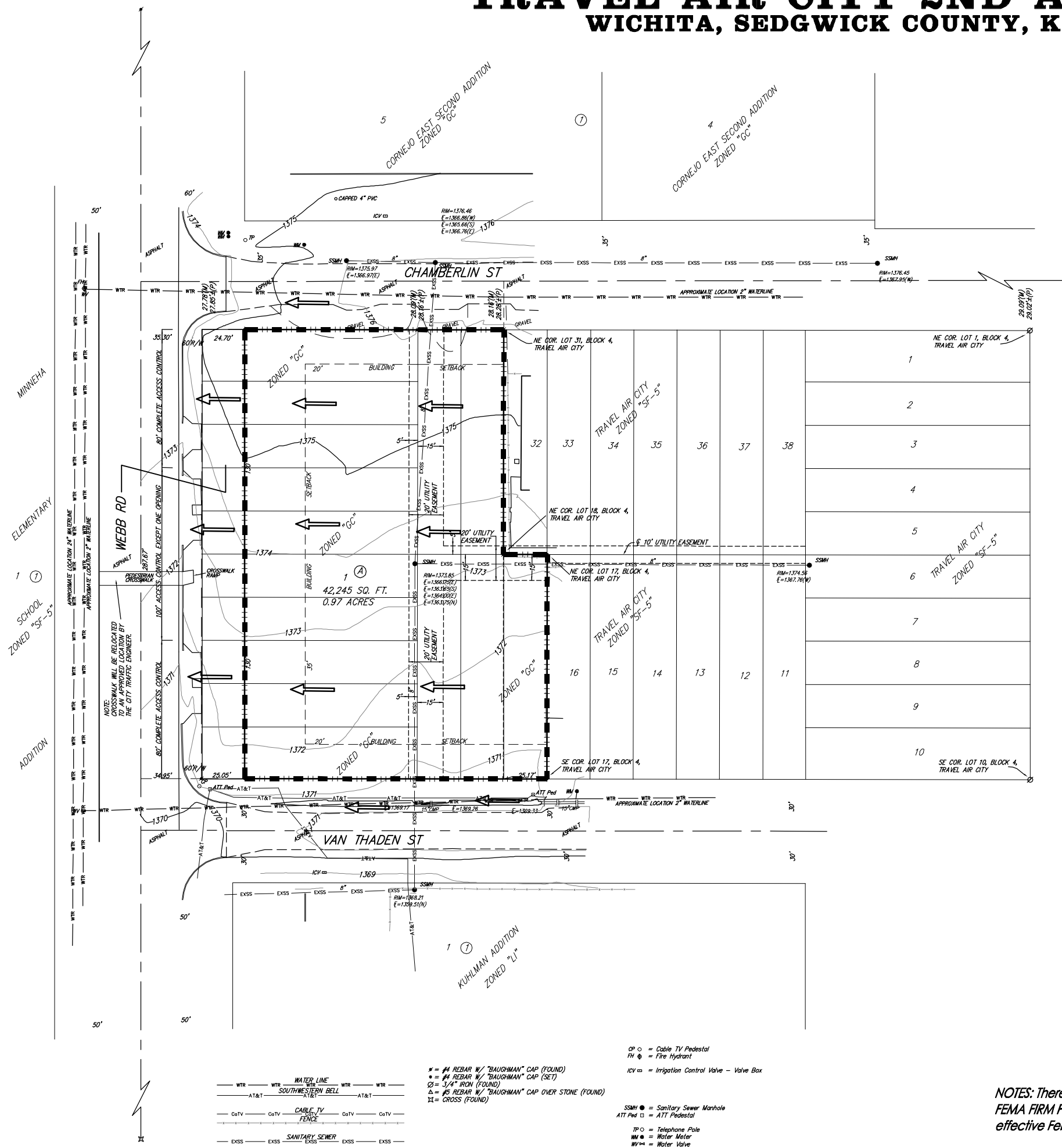
The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Drainage Plan
1:30 Scale

DRAINAGE PLAN

TRAVEL AIR CITY 2ND ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS



EXISTING	
DA	= 0.97 acres
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DRAINAGE PLAN

TRAVEL AIR CITY

2ND ADDITION

REV 22 APRIL 2013
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Baughman ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

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

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