



**CITY OF LEAWOOD  
GOVERNING BODY  
MEETING AGENDA**

Monday, December 17, 2018  
Council Chamber  
4800 Town Center Drive  
Leawood, KS 66211  
7:30 P.M.

DECEMBER 2018							JANUARY 2019						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
						1			1	2	3	4	5
2	3	4	5	6	7	8	6	7	8	9	10	11	12
9	10	11	12	13	14	15	13	14	15	16	17	18	19
16	17	18	19	20	21	22	20	21	22	23	24	25	26
23	24	25	26	27	28	29	27	28	29	30	31		
30	31												

**AGENDA**

(This agenda is subject to changes, additions or deletions at the discretion of the City Council)

**Mayor Peggy Dunn**

**Councilmembers**

Ward One

Ward Two

Ward Three

Ward Four

Debra Filla

Jim Rawlings

Chuck Sipple

Julie Cain

Andrew Osman

Mary Larson

Lisa Harrison

James Azeltine

**1. PLEDGE OF ALLEGIANCE**

**2. APPROVAL OF AGENDA**

**3. CITIZEN COMMENTS**

Members of the public are welcome to use this time to make comments about City matters that do not appear on the agenda, or about items that will be considered as part of the consent agenda. It is not appropriate to use profanity or comment on pending litigation, municipal court matters or personnel issues. Comments about items that appear on the action agenda will be taken as each item is considered. CITIZENS ARE REQUESTED TO KEEP THEIR COMMENTS UNDER 5 MINUTES.

**4. PROCLAMATIONS**

**5. PRESENTATIONS/RECOGNITIONS**

**6. SPECIAL BUSINESS**

**7. CONSENT AGENDA**

Consent agenda items have been studied by the Governing Body and determined to be routine enough to be acted upon in a single motion. If a Councilmember requests a separate discussion on an item, it can be removed from the consent agenda for further consideration.

- A. Accept Appropriation Ordinance Nos. 2018-48 and 2018-49
- B. Accept minutes of the December 3, 2018 Governing Body meeting
- C. Accept minutes of the November 12, 2018 Parks & Recreation Advisory Board meeting
- D. Accept minutes of the October 23, 2018 Leawood Arts Council meeting
- E. Accept minutes of the September 5, 2018 Public Works Committee meeting
- F. Accept minutes of the August 29, 2018 Stormwater Management Committee meeting

- G. Resolution approving and authorizing the Mayor to execute a Letter of Engagement between the City and RubinBrown, LLP, for an amount not to exceed \$34,250.00, pertaining to 2018 audit services
- H. Resolution approving and authorizing the Mayor to execute an Extension to that certain Financial Services Agreement dated August 17, 2015, between the City and Commerce Bank to provide certain banking service needs to the City of Leawood for a term ending December 31, 2019
- I. Resolution approving a Revised Final Plan for Bi-State Centennial Park – Central States Beverage – Fence, located east of Kenneth Road and north of 143<sup>rd</sup> Street. (PC Case 117-18) *[from the November 27, 2018 Planning Commission meeting]*
- J. Resolution approving a Revised Final Plat for Tuscany Reserve Village, 6<sup>th</sup> Plat, located north of 137<sup>th</sup> Street and west of Chadwick Street. (PC Case 129-18) *[from the November 27, 2018 Planning Commission meeting]*
- K. Resolution approving a Revised Final Plan for Leawood Presbyterian Church – Red Door Renovation, located south of 83<sup>rd</sup> Street and east of Cherokee Lane. (PC Case 128-18)
- L. Resolution approving an Eligible Facilities Request for the replacement of existing antennas and associated equipment at Parkway Plaza Cell Tower for Sprint Spectrum L.P., located north of 135<sup>th</sup> Street and east of Nall Avenue. (Case 135-18)
- M. Resolution approving an Eligible Facilities Request for the replacement of existing antennas and associated equipment at Leawood South Country Club - Monopine for Sprint Spectrum Realty Company, LLC, located north of Sagamore Road and west of Pembroke Circle. (Case 136-18)
- N. Resolution approving an Eligible Facilities Request for the replacement of existing wireless antennas and associated equipment at Leawood South Country Club Maintenance Facility – Monopine for Sprint Spectrum L.P., located south of 123<sup>rd</sup> Street and east of Mission Road. (Case 138-18)
- O. Police Department Monthly Report
- P. Fire Department Monthly Report
- Q. Municipal Court Monthly Report

**8. MAYOR’S REPORT**

**9. COUNCILMEMBERS’ REPORT**

**10. CITY ADMINISTRATOR REPORT**

**11. STAFF REPORT**

***COMMITTEE RECOMMENDATIONS***

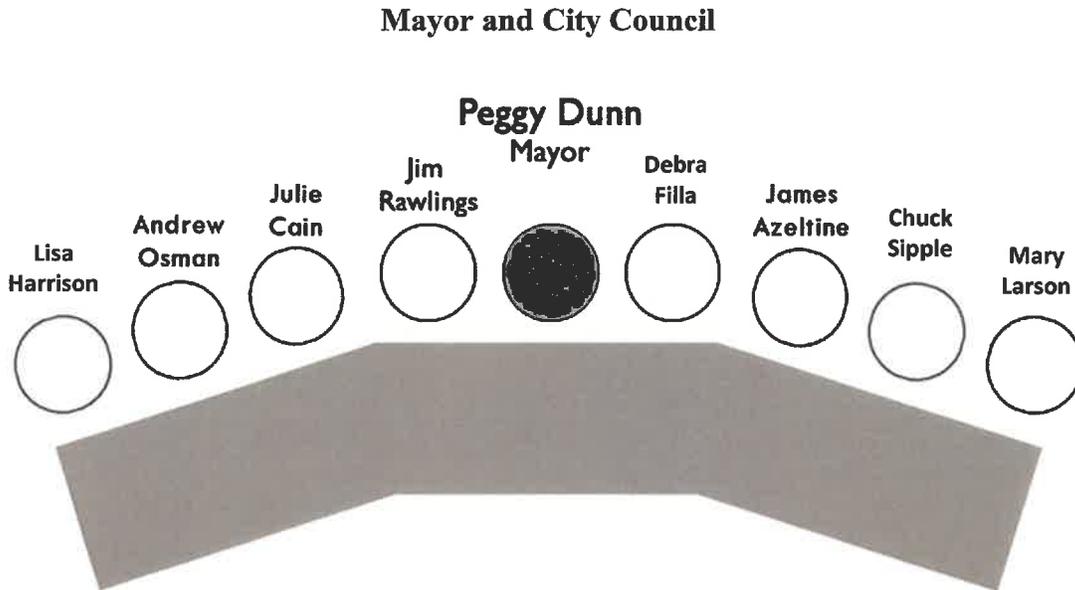
**12. PLANNING COMMISSION**

**13. OLD BUSINESS**

14. OTHER BUSINESS

15. NEW BUSINESS

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Leawood operates under a Council/Mayor form of government, with a separately elected mayor and 8 council persons. Council members are elected on a non-partisan basis from 4 wards. The Council develops policies and provides direction for the professional city administration. Regular meetings of the Leawood City Council are held the first and third Mondays of each month beginning at 7:30 PM. Copies of the agenda are available at the Office of the City Clerk on the Friday prior to the meeting.

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**Number of Votes Required:**

**Non-zoning Ordinances:** Majority of the members-elect of the City Council [5]

**Charter Ordinances:** 2/3 of members-elect of Governing Body [6]

**Zoning Ordinances and other Planning Commission Recommendations:**

- **Passage of Ordinances Subject to Protest Petition:** ¾ majority of members of Governing Body [7]
- **Approving Planning Commission Recommendation:** Majority of the members-elect of the City Council [5]
- **Remanding to Planning Commission:** Majority of the members-elect of the City Council [5]
- **Approving, Overriding, Amending or Revising Recommendation after Remand:** Majority of the members-elect of the City Council [5]
- **Overriding, Amending or Revising Recommendation:** 2/3 majority of membership of Governing Body [6]

**Note:** Mayor may cast deciding vote when vote is one less than required.

<b>2018 SCHEDULED WORK SESSIONS</b>			
<b>DATE</b>	<b>TIME</b>	<b>SUBJECT</b>	<b>LOCATION</b>
<b>December 17</b>		<b>NO WORK SESSION</b>	
<b>2019 SCHEDULED WORK SESSIONS</b>			
<b>January 22</b>		<b>NO WORK SESSION</b>	
<b>January 28</b>	<b>6:00 P.M.</b>	<b>Discuss GB Short, Near &amp; Long-term Goals</b>	<b>Main Conf. Room</b>
<b>February 4</b>	<b>6:00 P.M.</b>	<b>Review CID Application for Ranchmart North Shopping Center, located at 95<sup>th</sup> &amp; Mission Road</b>	<b>Main Conf. Room</b>
<b>April 15</b>	<b>6:00 P.M.</b>	<b>Presentation of CIP; Discuss 2020-2024 Budget Model Assumptions</b>	<b>Main Conf. Room</b>
<b>June 10</b>	<b>5:30 P.M.</b>	<b>Budget &amp; Finance Committee Work Session</b>	<b>Main Conf. Room</b>
<b>June 11</b>	<b>5:30 P.M.</b>	<b>Budget &amp; Finance Committee Work Session <i>[tentative]</i></b>	<b>Main Conf. Room</b>
<b>August 5</b>		<b>NO GOVERNING BODY MEETING; NO WORK SESSION</b>	

CITY OF LEAWOOD  
Check Date 12/05/2018  
Ordinance 2018-48

Final Check List

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98729	ADP LLC	MONTHLY CHARGES - TIMEKEEPING	2,928.00	2,928.00
98730	ALLIED OIL & TIRE COMPANY	OIL	170.10	
		OIL	517.76	687.86
98731	AMERICAN EQUIPMENT COMPANY	SEAL KITS (2)	281.66	
		EQUIPMENT SUPPLIES	498.64	
		EQUIPMENT SUPPLIES	36.90	817.20
98732	AMERICAN SAFETY & HEALTH INST	TRAINING	47.40	
		TRAINING	151.68	
		TRAINING	56.88	255.96
98733	AMERICAN SENTRY ELECTRONIC SY	SERVICE CITY HALL ALARM SYSTEM	118.75	
		DOOR ACCESS SYSTEM RENEWAL	3,600.00	3,718.75
98734	AT&T	VOIP PHONE SERVICE	1,141.26	1,141.26
98735	AT&T	VOIP PHONE SERVICE	1,080.42	1,080.42
98736	AT&T INTERNET	U-VERSE INTERNET & TV	186.35	186.35
98737	AT&T INTERNET	U-VERSE INTERNET & TV	186.35	186.35
98738	AT&T INTERNET	U-VERSE INTERNET & TV	181.23	181.23
98739	AT&T INTERNET	CABLE~	97.18	97.18
98740	BERNIE ELECTRIC WHOLESAL	ELECTRICAL SUPPLIES	302.94	
	INC	ELECTRICAL SUPPLIES	47.77	350.71
98741	BLUE VALLEY GOODYEAR	4 TIRES FOR PW UNIT 430	1,020.16	
		TIRES FOR PW-406	465.72	
		TIRES FOR PW-438	677.76	2,163.64

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<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98742	BROWN, MONICA	TRANSCRIBE PLAN COMM MTG 11-13-18	300.00	300.00
98743	C & C GROUP DIVISIONS	BUILDINGS & GROUNDS SERVICE CALL HVAC SERVICE - CITY HALL	180.00 959.01	1,139.01
98744	CAMELOT COURT LLC	CID DEVELOPMENT PAYMENT	277,894.56	277,894.56
98745	CENTRAL SALT	BULK DE-ICING SALT FOR WINTER BULK DE-ICING SALT FOR WINTER	1,477.16 1,363.66	2,840.82
98746	CHETS LOCK & KEY	DUPLICATE KEY	8.99	8.99
98747	CHIC ADEES TROPHY	NAME PLAQUES	800.00	800.00
98748	CHUDIK, MARK	UNIFORM ALTERATIONS	40.00	40.00
98749	CINTAS CORPORATION NO 2	FIRST AID SUPPLIES	309.79	309.79
98750	CINTAS CORPORATION NO 2	FIRST AID SUPPLIES	233.08	233.08
98751	COLEMAN EQUIPMENT INC	MAGNETIC BLOCK HEATER	60.06	60.06



<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98752	COMMERCE BANK			
	5.11 TACTICAL	UNIFORM PANTS/BOND	30.04	
	ACCU-TECH CORP	COMPUTER HARDWARE	222.00	
	ALL NATIONS FLAG CO INC	FLAG	164.00	
	AMAZON.COM	TRAINING MATERIAL	54.24	
	AMAZON.COM	PIN SPANNER	195.20	
	AMAZON.COM	DVD DUPLICATOR FOR RECORDS	295.00	
	AMAZON.COM	BOOTS-TEERINK	199.95	
	AMAZON.COM	FLASHLIGHTS	232.78	
	AMAZON.COM	COMPUTER HARDWARE	55.00	
	AMAZON.COM	COMPUTER HARDWARE	120.35	
	AMAZON.COM	PARKS MAINT JOB DESCRIPTION BINDERS	109.90	
	AMAZON.COM	CELL PHONE CASES	10.98	
	AMAZON.COM	COMPUTER HARDWARE	18.99	
	AMAZON.COM	PROPERTY/EVIDENCE BAGS	65.42	
	AMERICAN PUBLIC WORKS ASSOC	CHAP LUNCHEON	20.00	
	APPLE/ITUNES	MONTHLY SUBSCRIPTION FEE	7.63	
	APPLE/ITUNES	COMPUTER SOFTWARE	2.99	
	APPLE/ITUNES	COMPUTER SOFTWARE	0.99	
	ARAMARK CFK OPERA	LODGING/BOND	159.66	
	ASSN PED & BICYCLE PROF.	WEBINAR	50.00	
	AUBREY ANIMAL CLINIC	K9 SERVICES	150.00	
	BEST BUY STORES	TV MONITOR FOR DISPATCH	999.99	
	BLUE BEAM, INC.	3 BLUEBEAM REVU: EXTREME ANNUAL	2,244.00	
	BO LINGS	PC MEETING EXP	245.45	
	BRAVO CUCINA ITALIANA	GOVERNING BODY SESSION	261.00	
	BULL CREEK DISTILLERY	MANAGER MEAL	161.00	
	CALIBRE PRESS INC	TRAINING REG/HARGIS	209.00	
	CENTER FOR PUBLIC SAFETY EXCEL	ACCREDITATION REF BOOKS	274.95	
	CITY OF TOPEKA	PARKING FEE	11.50	
	COLORADO CHAPS	UNIFORM-RYMAN	186.00	
	COMMERCE BANK - GIFT CARDS	Milestone Anniversary & EOY Gift Cards	3,275.00	
	CONSOLIDATED COMMUNICATION	COMMUNICATION	453.24	
	CORNER BAKERY	BREAKFAST/SAB MEETING	167.00	
	COSENTINOS PRICE CHOPPER	SENIOR LUNCHEON	111.00	

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	COSENTINOS PRICE CHOPPER	SENIOR LUNCHEON	111.01	
	CUSTOM USB	200 USB FOR DEPT USE/GIVEAWAYS AT HOA	936.00	
	DJI AERIAL PHOTOGRAPHY	TRAINING REG MAHON	185.62	
	DRY CLEAN SUPER CENTER LLC	DRY CLEAN MAME COSTUMES	185.57	
	DRY CLEAN SUPER CENTER LLC	DRY CLEAN-MAME COSTUME	6.50	
	DUNKIN' DONUTS	DONUTS/MEETING	9.76	
	EZBUY GALORE	UNIFORM JACKETS/BROKAW,MAHON	133.12	
	FACEBOOK	ADVERTISING	28.60	
	FEDEX	PARKS MAINT JOB DESCRIPTION BINDERS	385.90	
	FIRE HOSE DIRECT	FIRE HYDRANT/HOSE ADAPTER	164.00	
	FIRST WATCH	BUS.LUNCH-HARRELL	42.00	
	FLUKER FARMS	INSECTS FOR NATURE CENTER REPTILES	42.61	
	FLUXLIGHT INC.	COMPUTER HARDWARE	495.75	
	GAIL'S SCOOP	ADS/BREAKFAST W/SANTA AND OPEN HOUSES	150.00	
	GALLERY COLLECTION, PRUDENT PU	BIRTHDAY CARDS	244.63	
	GALLERY COLLECTION, PRUDENT PU	HOLIDAY CARDS	258.18	
	GARMIN USA INC	CREDIT-RETURN DEVICE	-209.99	
	GFOA	OPEB TRNG-LONG	85.00	
	GFOA	OPEB TRNG-LODDE	85.00	
	GOTPRINT.COM	DOOR HANGERS	118.13	
	GOVX	SOFTSHELL JACKET	96.94	
	GOVX	REFUND-RETURN JACKET	-96.94	
	GRASS PAD INC	FIELD DAY AND TRAINING	88.00	
	GUITAR CENTER	COMPUTER HARDWARE	33.98	
	GUITAR CENTER	COMPUTER HARDWARE	134.94	
	HARMONY BUSINESS SUPPLIES	DNA SWABS	74.97	
	HEREFORD HOUSE - LEAWOOD	JOCO TRNG CHIEFS MTG	13.80	
	HOBBY LOBBY STORES INC	AWARD DINNER SUPPLIES	49.84	
	HOLIDAY INN	LODGING/SCHROEDER	197.92	
	HOLIDAY INN	LODGING/GOULD	197.92	
	HOME DEPOT, THE	BATTERY POWERED IMPACT GUN	438.98	
	IFEBP	ANNUAL MEMBERSHIP DUES	285.00	
	IFEBP	ANNUAL MEMBERSHIP DUES	610.00	
	IPMA-HR	ANNUAL MEMBERSHIP DUES	397.00	
	IPMA-HR	RECERTIFICATION	200.00	

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	ISA	ISA MBRSHIP DUES/ BRANICK	280.00	
	ISA	ISA CA EXAM/COLLINS	460.00	
	JALAPENO'S RESTAURANT	GOLF COMMITTEE MEAL	216.00	
	JELCO INC	TV MONITOR COVER	270.88	
	JELCO INC	COVER FOR SMART BOARD	257.80	
	JELCO INC	REFUND-RETURNED COVER/INCORRECT SIZE	-291.00	
	JO CO EQUIPMENT & PARTY RENTAL	RENTAL FOR RECEPTION	166.50	
	JOE'S KANSAS CITY BBQ	BUS.MEAL J.THOMASSON	91.00	
	JOE'S KANSAS CITY BBQ	FOOD/PARK BOARD MTG	204.55	
	JOE'S KANSAS CITY BBQ	MEETING EXPENSE	123.66	
	JOE'S KANSAS CITY BBQ	BUS.MEAL TRNG SESSION	266.01	
	JOE'S KANSAS CITY BBQ	INSTRUCTOR LUNCH	24.37	
	JOE'S KANSAS CITY BBQ	DEA TAKE BACK MTG	35.44	
	KANSAS BOARD OF EMS	EMT RECERT-OGILVIE	30.00	
	KANSAS BOARD OF EMS	RECERT/HOPKINS	30.00	
	KANSAS RURAL WATER ASSOC, KAN	BACK FLOW TRAINING AND CERTIFICATION	600.00	
	KC DONUT CO	MEETING REFRESHMENTS	25.15	
	KC STAR	ADVERTISING	274.94	
	KC STAR	ADVERTISING	105.69	
	KC STAR	ADVERTISING	265.94	
	KS TURFGRASS FOUNDATION	STAFF TRAINING/PESTICIDE APPLICATION	940.00	
	LEADING EDGE GIFTS	RETIREMENT GIFT/MANN-CUSTOM PRINT	52.00	
	LEADING EDGE GIFTS	CARICATURE FOR HOWARD RETIREMENT	239.37	
	MARRIOTT HOTEL	ACCOM/SAWYER	716.04	
	MCKEEVERS PRICE CHOPPER	MATERIALS AND SUPPLIES	23.15	
	MICRO CENTER AR	PROTECTIVE SCREEN AND CASE FOR WORK	64.98	
	MINSKYS PIZZA	PIZZA-MEETING	67.96	
	NARC GONE	DRUG NEUTRALIZER	172.35	
	PANERA BREAD	LUNCH/GAAP WEBINAR	39.75	
	PARK AIR EXPRESS	PARKING/REG.MEETNG	27.00	
	PICKLEMANS GOURMET CAFE	BZA MEETING EXP	124.95	
	PICKLEMANS GOURMET CAFE	PC MEETING EXP	152.32	
	PIZZA HUT	COURT EE BIRTHDAY LUNCHEON	23.97	
	PROPERTY & EVIDENCE, INTERNATIC	REG TRAINING-LARA	300.00	
	QUIK-TRIP	EE GOLF GIFT CARD PRIZES	75.00	

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
	RECREATION & PARK ASSOCIATION, I	CONFERENCE REG/7 EMPLOYEES	290.00	
	RECREATION & PARK ASSOCIATION, I	AGENCY MEMBERSHIP DUES	900.00	
	RITTER SAFETY & FACILITY SPPT	MEETING REFRESHMENTS	13.37	
	RITTER SAFETY&FACILITY SUPPORT	ELECTRICAL WORKER TRAINING	350.00	
	ROMAINE ELECTRIC	ELECTRICAL	44.16	
	SAMUEL FRENCH INC	DINNER SCRIPTS- MAN WHO CAME TO DINNER	145.15	
	SHRM	ANNUAL MEMBERSHIP DUES	189.00	
	SPRINT	SPRINT/CELL PHONE SERVICE	5,699.67	
	STAPLES BUSINESS ADVANTAGE	PAPER SHREDDER	122.59	
	STOP STICK LTD	REPLACEMENT HANDLES/BACON	74.00	
	STORAGEMART 0130	MONTHLY STORAGE RENTAL	356.99	
	STURGIS MATERIALS	"WALKING WOMAN"	2,207.50	
	SULLIVAN'S STEAKHOUSE	REFUND-SALES TAX	-129.54	
	SULLIVAN'S STEAKHOUSE	SULLIVAN'S STEAKHOUSE	1,880.38	
	SYLVESTER POWELL COMMUNITY CT	TRAINING REG~	300.00	
	TEHCRAVE	COMPUTER HARDWARE	131.89	
	TIDE DRY CLEANERS	CLEAN/TABLE CLOTHS	54.33	
	TIR CONSULTING LLC	1099 TRAINING	189.00	
	TOPCOAT	SEALER FOR EQUIP	109.47	
	TRUTECH TOOLS	CARBON MONOXIDE MONITORS	249.98	
	TYLER BUSINESS FORMS	TAX FORMS AND ENVELOPES	458.12	
	U.S. ELITE	BOOTS-SLENKER	195.94	
	UPS STORE, THE	SHIPPING/STATPACK DEM BAGS RETURN	21.43	
	US FLEET TRACKING	MONTHLY CHARGES	39.95	
	USHR OFFICE OF FINANCE	RETIREMENT FLAG-CAULEY	26.45	
	WALGREEN'S	ASSOC APPRECIATION GIFT CARD	105.95	
	WALGREEN'S	ASSOC APPRECIATION GIFT CARD	211.90	
	WALKER INDUSTRIAL	BLOCKS	346.62	
	WALMART	HAND SOAP	23.76	
	WALMART	MATERIALS AND SUPPLIES	72.02	
	WEBSTAUANT STORE INC, THE	ICE BUCKET REPLACEMENTS	157.91	
	WESTERN FIRE CHIEFS ASSN	TRAINING	1,100.00	
	YOURMEMBERSHIP.COM	JOB POSTING/PARKS MAINT WORKER	50.00	
	YOURMEMBERSHIP.COM	JOB POSTING/PARKS ATTENDANT	50.00	
				<b>39,437.75</b>

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98753	CONRAD FIRE EQUIPMENT INC	VEHICLE MAINT. CREDIT MEMO	94.66 -26.67	67.99
98754	CONTINENTAL CONSULTING ENGNRS	FLOOD PREVENTION - CITY PARK POND FLOOD PREVENTION - CITY PARK POND	18,148.80 4,487.50	22,636.30
98755	CREATIVE DISPLAYS OF KC	HOLIDAY LIGHTING DISPLAY	20,935.20	20,935.20
98756	CREATIVE PRODUCT SOURCING INC	DARE SUPPLIES	523.45	523.45
98757	DEPT OF RECORDS & TAX ADMIN, JO	RECORDING/FILING FEES	2,000.00	2,000.00
98758	DREXEL TECHNOLOGIES	CUTTER-PLOTTER SERVICE/SUPPLIES	111.70	111.70
98759	E M SALES	FLEET SUPPLIES	37.84	37.84
98760	ENGINEERS CLUB OF KANSAS CITY	MEMBERSHIP - LEY	40.00	40.00
98761	ERGOMETHODS	ESSENTIAL FUNCTIONS TESTING	3,052.50	3,052.50
98762	EVERLASTING SIGN ART	NAME DECALS	22.26	22.26
98763	EXCEL LINEN SUPPLY	LINEN CLEANING	112.15	112.15
98764	FACTORY MOTOR PARTS CO	VEHICLE SUPPLIES VEHICLE SUPPLIES VEHICLE SUPPLIES	26.44 302.88 302.88	632.20
98765	FELD FIRE	EQUIPMENT MAINT.	460.00	460.00
98766	FOLEY INDUSTRIES	EQUIPMENT SUPPLIES	144.64	144.64
98767	FORCE AMERICA LLC	VEHICLE SUPPLIES	455.51	455.51
98768	GALLS LLC	UNIFORMS	482.54	482.54
98769	GALLS LLC	UNIFORMS	59.56	59.56
98770	GEAR FOR SPORTS	PROSHOP MERCHANDISE	627.10	627.10
98771	GEMPLERS	SAFETY GLASSES	71.88	71.88

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98772	GOLFNOW LLC	OCTOBER COMMISSIONS	479.85	<b>479.85</b>
98773	GRAINGER INC	MATERIALS & SUPPLIES	219.39	
		MATERIALS & SUPPLIES	551.55	
		ELECTRIC UNIT HEATER	727.32	
		FLEET SUPPLIES	63.96	
		FLEET SUPPLIES	100.58	<b>1,662.80</b>
98774	GUNTER PEST MANAGEMENT INC	PEST CONTROL	55.00	
		PEST CONTROL	40.00	
		PEST CONTROL	125.00	
		PEST CONTROL	40.00	<b>260.00</b>
98775	HERITAGE TRACTOR INC	EQUIPMENT SUPPLIES	81.87	
		EQUIPMENT SUPPLIES	323.50	<b>405.37</b>
98776	HINCKLEY SPRINGS	BOTTLED WATER	58.45	<b>58.45</b>
98777	ICE MASTERS INC	ICE MACHINE RENTAL	172.00	
		ICE MACHINE RENTAL	67.00	
		ICE MACHINE RENTAL	157.00	
		EQUIPMENT MAINT.	114.00	<b>510.00</b>
98778	INTERSTATE ALL BATTERY CENTER	BATTERIES	108.75	<b>108.75</b>
98779	INTL ASSOC OF FIRE CHIEFS	MEMBERSHIP & DUES	259.00	<b>259.00</b>
98780	JO CO TREASURER	2018 WASTEWATER CAP & SPEC ASSESSMENT	6,553.99	<b>6,553.99</b>
98781	JO CO TREASURER	ACCR TAXES-143RD & OVERBROOK	1,117.92	<b>1,117.92</b>
98782	JOHNSON COUNTY MOTOR VEHICLE	VEHICLE PLATES - PARKS (2)	67.50	<b>67.50</b>
98783	JOHNSTONE SUPPLY	EQUIPMENT SUPPLIES	133.27	<b>133.27</b>
98784	KANSAS BAR ASSOCIATION	MEMBERSHIP RENEWAL - GURNEY	170.00	<b>170.00</b>
98785	KANSAS CITY FREIGHTLINER SALES	VEHICLE SUPPLIES	76.42	<b>76.42</b>
98786	KANSAS DEPT OF REVENUE	CEREAL MALT BEVERAGE LIC PERMITS	50.00	<b>50.00</b>

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98787	KBSIII PARK PLACE VILLAGE	PARK PLACE TDD PAYMENT	171,978.01	<b>171,978.01</b>
98788	KC BOBCAT INC	WATER KIT FOR SSL	1,844.00	<b>1,844.00</b>
98789	KELLY, MONICA	REFUND WARRANT FEES OVERPAYMENT	35.00	<b>35.00</b>
98790	KIERL-LATENSER, MARY	INSTRUCTOR FEES	360.00	<b>360.00</b>
98791	KIMBALL MIDWEST	EQUIPMENT SUPPLIES	220.11	<b>220.11</b>
98792	KINCAID TOURS	KC CHRISTMAS LIGHTS TOUR	1,265.40	<b>1,265.40</b>
98793	KLEMP ELECTRIC MACHINERY INC	HEATER MOTOR	100.53	<b>100.53</b>
98794	KS FEDERAL SURPLUS PROPERTY	FLEET TOOLS	60.00	<b>60.00</b>
98795	LARRYS GLASS SERVICE	VEHICLE GLASS REPAIR	498.12	<b>498.12</b>
98796	LAWSON PRODUCTS INC	MATERIALS & SUPPLIES	698.45	
		MATERIALS & SUPPLIES	992.85	<b>1,691.30</b>
98797	LAZER-PIPES SERVICES INC	TOW UNIT 606	125.00	<b>125.00</b>
98798	LEGAL RECORD	ORDINANCE PUBLICATION	113.49	
		ORDINANCE PUBLICATION	136.32	
		ORDINANCE PUBLICATION	204.15	
		ORDINANCE PUBLICATION	45.33	
		BID NOTICE	18.97	
		HEARING NOTICE	11.25	
		HEARING NOTICE	11.25	
		HEARING NOTICE	11.25	
		HEARING NOTICE	11.25	
		HEARING NOTICE	9.32	
		HEARING NOTICE	9.32	
		HEARING NOTICE	9.32	<b>591.22</b>
98799	LEVEL 3 COMMUNICATIONS LLC	INTERNET SERVICE	6,066.49	<b>6,066.49</b>

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98800	LEWIS, ROBIN A	PUBLIC DEFENDER 11-14-18	660.00	
		PUBLIC DEFENDER 11-7-18	660.00	
		PUBLIC DEFENDER 11-26-18	660.00	<b>1,980.00</b>
98801	LIGHT BULBS ETC	LIGHTING SUPPLIES	44.94	<b>44.94</b>
98802	LOWES	BATTERIES	568.36	<b>568.36</b>
98803	LOWES	HARDWARE SUPPLIES - RETURN	-44.91	
		HARDWARE SUPPLIES	16.18	
		HARDWARE SUPPLIES	22.06	
		HARDWARE SUPPLIES	58.74	
		WILD BIRD FOOD	13.49	
		WILD BIRD FOOD	42.69	
		HARDWARE SUPPLIES	65.44	
		HARDWARE SUPPLIES	9.27	
		WILD BIRD FOOD	56.92	
		HARDWARE SUPPLIES	2.47	
		HARDWARE SUPPLIES	59.85	
		HARDWARE SUPPLIES	257.03	
		HARDWARE SUPPLIES	150.38	
		WILD BIRD FOOD	63.84	
		HARDWARE SUPPLIES	71.35	
		HARDWARE SUPPLIES	29.28	<b>874.08</b>
98804	LOWES	HARDWARE SUPPLIES	107.47	<b>107.47</b>
98805	LOWES	HARDWARE SUPPLIES	67.83	<b>67.83</b>
98806	M & M GOLF CARS LLC	EXPENDABLE EQUIPMENT	69.22	
		EXPENDABLE EQUIPMENT	122.68	<b>191.90</b>
98807	MAIL IT	SHIPPING - SISTER CITY CARDS	110.16	
		SHIPPING	36.25	
		POSTAGE	8.58	
		SHIPPING	57.51	
		SHIPPING	168.67	<b>381.17</b>

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<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98808	MAISCH SMALL ENGINE REPAIR	EQUIPMENT SUPPLIES	386.48	<b>386.48</b>
98809	MCKEEVERS PRICE CHOPPER	SUPPLIES	10.74	<b>10.74</b>
98810	MICRO CENTER AR	COMPUTER SUPPLIES	258.95	
		PRINTER TONER	318.96	
		COMPUTER EQUIPMENT	680.96	
		COMPUTER SUPPLIES	403.95	
		COMPUTER SUPPLIES	19.99	
		COMPUTER SUPPLIES	219.99	<b>1,902.80</b>
98811	MO KAN COURIER SERVICE INC	COURIER SERVICE	30.24	<b>30.24</b>
98812	MOBILFONE WIRELESS	COMMUNICATION	155.71	<b>155.71</b>
98813	MOORE MEDICAL LLC	EXPENDABLE EQUIPMENT	771.86	<b>771.86</b>
98814	MOSER, BRIDGET	WEB GRAPHIC ARTISTRY	4,050.00	<b>4,050.00</b>
98815	NATIONAL PEN COMPANY LLC	FLASHLIGHT KEY CHAINS (500)	612.90	<b>612.90</b>
98816	NATIONAL SIGN COMPANY INC	SIGN MATERIALS	648.75	<b>648.75</b>
98817	NIGROS WESTERN STORE # 2	WORK CLOTHING	214.98	<b>214.98</b>

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98818	O REILLY AUTO PARTS	EQUIPMENT SUPPLIES	28.77	
		CORE RETURN	-80.00	
		ANTIFREEZE	11.98	
		GLOVES	24.99	
		SNOW BRUSHES (3)	59.97	
		VEHICLE SUPPLIES	146.64	
		VEHICLE SUPPLIES - RETURN	-133.12	
		OIL & FUEL FILTERS	29.25	
		OIL FILTER	4.11	
		FLEET SUPPLIES	21.98	
		EQUIPMENT SUPPLIES	35.94	
		COOLING SYSTEM ADDITIVE	9.46	
		EQUIPMENT SUPPLIES	30.46	
		ANTIFREEZE	71.88	
		VEHICLE SUPPLIES	47.66	
		OIL FILTER	4.11	
		BRAKE PADS	67.72	
		VEHICLE SUPPLIES	52.09	
		VEHICLE SUPPLIES	4.92	
		OIL FILTERS (2)	17.63	
		VEHICLE SUPPLIES	25.75	
		VEHICLE SUPPLIES	3.81	
		ANTIFREEZE	27.98	
		VEHICLE SUPPLIES	209.78	<b>723.76</b>
98819	POMP'S TIRE SERVICE INC	VEHICLE SUPPLIES	228.00	<b>228.00</b>
98820	PRAXAIR DISTRIBUTION INC 493	INDUSTRIAL ACETYLENE	361.65	<b>361.65</b>
98821	Q4 INDUSTRIES LLC	FACILITY SUPPLIES	2,382.21	
		FACILITY SUPPLIES	1,250.86	
		WATER SOFTENER SALT	183.96	
		FACILITY SUPPLIES	279.82	<b>4,096.85</b>
98822	REGIONAL JUSTICE INFORMATION	WEB SUBSCRIPTION FEES	2,250.01	<b>2,250.01</b>
98823	REGIONAL JUSTICE INFORMATION	WEB SUBSCRIPTION FEES	83.66	<b>83.66</b>

**Final Check List**

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98824	REGIONAL JUSTICE INFORMATION	MISCELLANEOUS SERVICES	43.00	43.00
98825	REINDERS INC	ICE MELT	601.81	
		TURF CHEMICALS	644.00	
		HERBICIDE	117.60	1,363.41
98826	SAMS CLUB DIRECT	FOLDING CHAIRS (4)	92.54	
		SUPPLIES	199.11	
		MEETING EXPENSE	779.84	
		SUPPLIES	231.58	
		SUPPLIES	207.40	
		SUPPLIES	176.80	
		MEETING EXPENSE	181.75	
		FOOD & BEVERAGES	39.66	1,908.68
98827	SAMS CLUB DIRECT	SUPPLIES	203.68	
		STATION SUPPLIES	502.83	
		AWARD DINNER SUPPLIES	125.20	
		FOOD AND SUPPLIES	71.48	
		FOOD AND SUPPLIES	84.54	
		FOOD AND SUPPLIES	101.88	
		STATION SUPPLIES	676.57	
		SALES TAX CREDIT	-56.43	
		MEMBERSHIP FEE~	15.00	
		STATION SUPPLIES	358.38	
		FOOD AND SUPPLIES	193.91	
		FOOD AND SUPPLIES	244.38	2,521.42
98828	SCHULLER, JESSICA	REIMBURSE AICP EXAM APPLICATION	70.00	
		REIMBURSE AICP EXAM REGISTRATION	425.00	495.00
98829	SCHUTTE LUMBER CO	ROUGH CYPRESS/IRONWOODS RESTROOM	1,315.20	1,315.20
98830	SITEONE LANDSCAPE SUPPLY LLC	BUILDING & GROUNDS	118.84	118.84
98831	SMITH, PATRICIA	LIVING HISTORY CLASSROOM TEACHER	240.00	240.00
98832	STANARD & ASSOCIATES INC	POLICE OFFICER TESTING MATERIALS	490.00	490.00

Final Check List

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98833	STAPLES BUSINESS ADVANTAGE	OFFICE SUPPLIES	140.95	
		OFFICE SUPPLIES	11.20	
		OFFICE SUPPLIES	18.51	
		OFFICE SUPPLIES	74.84	
		OFFICE SUPPLIES	1.81	
		OFFICE SUPPLIES	11.96	
		OFFICE SUPPLIES	3.63	
		OFFICE SUPPLIES	57.35	
		OFFICE SUPPLIES	80.07	
		OFFICE SUPPLIES	13.39	
		OFFICE SUPPLIES	68.28	
		OFFICE SUPPLIES	65.31	
		OFFICE SUPPLIES	36.13	<b>583.43</b>
98834	SUBURBAN LAWN & GARDEN INC	YARD WASTE TIP FEE	13.50	
		YARD WASTE TIP FEE	13.50	
		MULCH	65.30	
		MULCH	19.19	
		TOPSOIL	43.80	
		MULCH	61.07	<b>216.36</b>
98835	SUMMIT TRUCK GROUP	VEHICLE SUPPLIES	124.88	
		VEHICLE SUPPLIES	108.02	
		VEHICLE SUPPLIES	61.17	
		VEHICLE SUPPLIES	214.72	<b>508.79</b>
98836	THOMSON REUTERS - WEST	WEST INFORMATION CHARGES	646.89	<b>646.89</b>
98837	TIME WARNER CABLE	CABLE	31.16	
		CABLE	50.88	<b>82.04</b>

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98838	TOWN & COUNTRY BLDG SERVICES	CARPET CLEANING - JUSTICE CENTER	2,985.00	
		EXTRA CLEANING FLOORS AT JC	525.00	
		FLOOR WORK	475.00	
		CARPET CLEAN	1,070.00	
		CLEAN TILE ENTRY	220.00	
		CLEAN OAK ROOM FLOOR	700.00	
		FLOOR WORK	439.00	
		CARPET CLEAN	85.00	<b>6,499.00</b>
98839	TRANSIMPEX TRANSLATORS INC	INTERPRETATION SERVICE	399.50	
		INTERPRETATION SERVICE	252.00	<b>651.50</b>
98840	US TOY COMPANY INC	SPECIAL EVENT SUPPLIES	42.84	<b>42.84</b>
98841	VAN-WALL EQUIPMENT INC	EXPENDABLE EQUIPMENT	584.99	
		EQUIPMENT SUPPLIES	14.26	
		EXPENDABLE EQUIPMENT	512.97	<b>1,112.22</b>
98842	VAN-WALL EQUIPMENT INC	FUEL PUMP	37.90	<b>37.90</b>
98843	VERIZON WIRELESS	BROADBAND SERVICE	3,793.23	<b>3,793.23</b>
98844	VERIZON WIRELESS	COMMUNICATION	78.58	<b>78.58</b>
98845	WACHTER INC	REFUND PERMIT BD-18-01290	396.80	<b>396.80</b>
98846	WAKHAM, JOEL	SANTA FOR BREAKFAST WITH SANTA	400.00	<b>400.00</b>
98847	WALKER TOWEL & UNIFORM SERVICE	MAT CLEANING	79.47	
		MAT CLEANING	79.47	
		MAT CLEANING	128.03	
		MAT CLEANING	128.03	
		MAT CLEANING	128.03	<b>543.03</b>
98848	WALKER TOWEL & UNIFORM SERVICE	MAT CLEANING	96.04	
		MAT CLEANING	96.04	
		MAT CLEANING	96.04	<b>288.12</b>

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98849	WASTE MANAGEMENT OF KANSAS IN	TRASH DISPOSAL	252.06	
		TRASH DISPOSAL	156.27	
		TRASH DISPOSAL	235.68	<b>644.01</b>
98850	WATER DISTRICT 1 JO CO	WATER SERVICE	97.80	
		WATER SERVICE	192.69	
		WATER SERVICE	17.80	
		WATER SERVICE	14.20	
		WATER SERVICE	97.24	
		WATER SERVICE	270.50	
		WATER SERVICE	43.19	
		WATER SERVICE	18.63	
		WATER SERVICE	137.69	
		WATER SERVICE	1,576.80	
		WATER SERVICE	65.73	
		WATER SERVICE	25.10	
		WATER SERVICE	25.10	
		WATER SERVICE	64.90	
		WATER SERVICE	64.90	
		WATER SERVICE	25.10	
		WATER SERVICE	48.31	
		WATER SERVICE	94.37	
		WATER SERVICE	15.03	
		WATER SERVICE~	82.03	
		WATER SERVICE~	48.54	
		WATER SERVICE~	68.46	<b>3,094.11</b>
98851	WAYTEK INC	FLEET SUPPLIES	108.76	
		FLEET SUPPLIES	37.62	<b>146.38</b>
98852	WCA WASTE SYSTEMS INC	RECYCLING SERVICE	91.46	
		RECYCLING SERVICE	35.78	
		RECYCLING SERVICE	80.38	<b>207.62</b>
98853	WESTLAKE HARDWARE	SUPPLIES	25.97	<b>25.97</b>
8381218	KC POWER & LIGHT CO	POWER SERVICE	565.20	<b>565.20</b>

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<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
12021218	KC POWER & LIGHT CO	POWER SERVICE	791.17	791.17

127 checks in this report.

Grand Total All Checks: 636,675.17

**CITY OF LEAWOOD**  
**Check Date 12/12/2018**  
**Ordinance 2018-49**

**Final Check List**

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98855	AHERN RENTALS INC	GENERATOR RENTAL	421.50	421.50
98856	ALL CITY MANAGEMENT SERVICES	CROSSING GUARDS 2018-2019 SCHOOL YEAR	2,596.74	2,596.74
98857	AMERICAN EQUIPMENT COMPANY	HYDRAULIC CYLINDER - PW PLOW TRUCK	1,115.12	1,115.12
98858	AMERICAN SAFETY & HEALTH INST	TRAINING	66.36	66.36
98859	ARTISTS HELPING THE HOMELESS	Q4 ALCOHOL TAX FUND ALLOCATION	1,478.25	1,478.25
98860	ARTS COUNCIL OF JO CO	SHOOTING STARS SPONSORSHIP	1,000.00	1,000.00
98861	BLUE VALLEY GOODYEAR	VEHICLE TIRES	541.88	
		VEHICLE TIRES	541.88	1,083.76
98862	BROWN, MONICA	TRANSCRIBE PLAN COMM MTG 11-27-18	100.00	
		BZA MINUTES 11-28-18	75.00	175.00
98863	BRUNER CONTRACTING CO LLC	2018 DESIGN/BUILD: PW MAINT 2-BAY ADD	30,020.00	30,020.00
98864	CDW GOVERNMENT INC	SAMSUNG SSD DRIVES (10)	4,950.00	4,950.00
98865	CENTRAL SALT	BULK DE-ICING SALT FOR WINTER	1,397.60	
		BULK DE-ICING SALT FOR WINTER	1,398.66	
		BULK DE-ICING SALT FOR WINTER	2,777.71	
		BULK DE-ICING SALT FOR WINTER	1,414.05	
		BULK DE-ICING SALT FOR WINTER	2,885.37	
		BULK DE-ICING SALT FOR WINTER	2,949.02	12,822.41
98866	CHARLESWORTH CONSULTING LLC	RISK MGMT/INSURANCE CONSULTING	500.00	500.00
98867	CHETS LOCK & KEY	DUPLICATE KEY	8.99	
		KEY SERVICE	9.24	18.23

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<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98868	CINTAS CORPORATION NO 2	FIRST AID SUPPLIES	415.64	<b>415.64</b>
98869	CINTAS CORPORATION NO 2	FIRST AID SUPPLIES	164.53	<b>164.53</b>
98870	CITY OF OVERLAND PARK	TRAINING	2,000.00	<b>2,000.00</b>
98871	CONCRETE MATERIALS INC	CONCRETE	501.00	<b>501.00</b>
98872	CONTINENTAL CONSULTING ENGNRS	JUNE-18 SVCS, BATHOMETRIC SURV STAKE IRONWOODS BOUNDARY	4,482.50 735.30	<b>5,217.80</b>
98873	CORPORATE HEALTH KU MEDWEST	VACCINES / SCREENINGS HEP B / FLU VACCINES	664.00 100.00	<b>764.00</b>
98874	CRAFCO INC	CRACK SEALANT	10,605.00	<b>10,605.00</b>
98875	CROFT TRAILER SUPPLY INC	EQUIPMENT SUPPLIES	8.14	<b>8.14</b>
98876	DAYMARK SOLUTIONS	EQUIPMENT MAINTENANCE	135.00	<b>135.00</b>
98877	DISCOUNT TIRE	EQUIPMENT MAINTENANCE EQUIPMENT MAINTENANCE WASTE TIRE DISPOSAL	79.00 276.50 12.00	<b>367.50</b>
98878	DISH NETWORK	SATELLITE SERVICE	79.43	<b>79.43</b>
98879	DTN LLC	YEARLY WEATHER SERVICE 12/18-12/19	6,156.00	<b>6,156.00</b>
98880	E EDWARDS WORK WEAR INC	WORK CLOTHING	594.00	<b>594.00</b>
98881	EVERLASTING SIGN ART	NAME DECAL	20.45	<b>20.45</b>

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98882	FACTORY MOTOR PARTS CO	VEHICLE PARTS	160.03	
		VEHICLE SUPPLIES	21.71	
		VEHICLE PARTS	150.44	
		VEHICLE PARTS	143.03	
		RETURN VEHICLE PARTS	-160.03	
		VEHICLE PARTS	1,383.71	
		VEHICLE PARTS	143.03	
		VEHICLE PARTS	124.03	
		VEHICLE SUPPLIES	132.71	<b>2,098.66</b>
98883	FAGAN COMPANY, THE	BUILDING MAINTENANCE~	453.69	<b>453.69</b>
98884	FITZGERALD, COLIN	TRANSPORTATION	55.59	<b>55.59</b>
98885	FORCE AMERICA LLC	TEST BENCH FROM APWA BUILD	2,070.00	<b>2,070.00</b>
98886	GALLS LLC	UNIFORM SHIRT	70.18	
		PATROL EQUIPMENT	136.99	<b>207.17</b>
98887	GALLS LLC	UNIFORMS	59.56	<b>59.56</b>
98888	GARMIN USA INC	FITNESS WATCHES (22)	4,619.78	<b>4,619.78</b>
98889	GPSI LEASING II - ACCORD LLC	GPS SYSTEM GOLF CARS 2018	1,184.00	<b>1,184.00</b>
98890	GRAINGER INC	EQUIPMENT SUPPLIES	9.90	
		MATERIAL & SUPPLIES	31.58	
		BUILDING MAINTENANCE SUPPLIES	296.18	
		PORTABLE WEATHER RADIO	85.68	
		BATTERIES (2)	62.54	<b>485.88</b>
98891	H2O WINDOW CLEANING LLC	WINDOW CLEANING	137.00	<b>137.00</b>
98892	HASTY AWARDS	EMPLOYEE OF YEAR PLAQUE/PLATE	27.11	<b>27.11</b>
98893	HEN HOUSE BALLS FOOD STORES	TRAINING ROOM SUPPLIES	8.58	<b>8.58</b>
98894	HERITAGE-CRYSTAL CLEAN	USED OIL PICKUP	12.50	
		HAZARDOUS WASTE DISPOSAL	430.68	<b>443.18</b>

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98895	HINMAN, JOHN	EDUCATIONAL ASSISTANCE	125.00	125.00
98896	INGRAM / FIRE & RESCUE, JERRY	UNIFORMS UNIFORMS	706.16 5,543.20	6,249.36
98897	IPROMOTEU INC	EMPLOYEE APPRECIATION GIFTS~ EMPLOYEE APPRECIATION GIFTS~ EMPLOYEE APPRECIATION GIFTS~	976.15 470.51 951.73	2,398.39
98898	JANSSEN GLASS & DOOR LLC	BUILDING & GROUNDS~	900.00	900.00
98899	JO CO GOVERNMENT	EMC-DATA CENTER RACK SPACE Q3	625.00	625.00
98900	JO CO MED ACT	MATERIAL & SUPPLIES	364.98	364.98
98901	JO CO WASTEWATER	WASTEWATER SERVICE~ WASTEWATER SERVICE~ WASTEWATER SERVICE~ WASTEWATER SERVICE WASTEWATER SERVICE WASTEWATER SERVICE	41.25 55.18 56.59 183.41 15.05 118.54	470.02
98902	JOHN A MARSHALL CO	DESK CHAIR~	790.86	790.86
98903	JOHNSTONE SUPPLY	BUILDING & GROUNDS BUILDING & GROUNDS	8.24 19.24	27.48
98904	K&W UNDERGROUND INC	FURNISH/INSTALL FIBER FS#3 TO IRONHORSE	68,697.83	68,697.83
98905	KANSAS BAR ASSOCIATION	MEMBERSHIP RENEWAL - BENNETT MEMBERSHIP RENEWAL - KNIGHT MEMBERSHIP RENEWAL - HALL	210.00 170.00 130.00	510.00
98906	KEY EQUIPMENT & SUPPLY CO	MATERIALS & SUPPLIES 600' HIGH PRESSURE SEWER HOSE FOR VACTC MATERIALS & SUPPLIES	562.62 1,761.23 834.65	3,158.50
98907	KINCAID TOURS	WARM SPRINGS RANCH TOUR BRANSON CHRISTMAS TOUR	712.80 817.20	1,530.00

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98908	KLAMM, SCOTT	ENTERTAINMENT - OXFORD SCHOOL	300.00	300.00
98909	KLEMP ELECTRIC MACHINERY INC	BUILDING EQUIPMENT	587.73	587.73
98910	LASER CYCLE INC	PRINTER TONER	84.99	
		PRINTER TONER	94.99	179.98
98911	LAWSON PRODUCTS INC	MATERIALS & SUPPLIES	115.60	115.60
98912	LEAWOOD CHAMBER OF COMMERCE	ANNUAL MEETING ADMISSION (8)	320.00	320.00
98913	LEAWOOD LIONS CLUB	BREAKFAST WITH SANTA 2018	1,324.00	1,324.00
98914	LOWES	HARDWARE SUPPLIES	375.37	
		HARDWARE SUPPLIES	29.71	
		HARDWARE SUPPLIES	20.57	
		HARDWARE SUPPLIES	20.10	
		HARDWARE SUPPLIES	6.13	
		HARDWARE SUPPLIES	26.21	
		HARDWARE SUPPLIES	8.24	
		HARDWARE SUPPLIES	48.46	
		HARDWARE SUPPLIES	64.96	
		HARDWARE SUPPLIES	42.46	
		BUILDING MAINTENANCE SUPPLIES	11.65	
		HARDWARE SUPPLIES	27.85	
		HARDWARE SUPPLIES	20.62	
		HARDWARE SUPPLIES	123.32	
		HARDWARE SUPPLIES	72.97	
		HARDWARE SUPPLIES	26.77	
		HARDWARE SUPPLIES	42.94	968.33
98915	MCKEEVERS PRICE CHOPPER	SPECIAL EVENT SUPPLIES	38.73	
		SPECIAL EVENT SUPPLIES	182.99	
		SUPPLIES	8.76	230.48
98916	METRO POLYGRAPH LLC	PRE-EMPLOYMENT TESTING	225.00	225.00

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98917	MICRO CENTER AR	COMPUTER SUPPLIES	93.95	
		COMPUTER SUPPLIES	80.97	
		COMPUTER EQUIPMENT	659.99	<b>834.91</b>
98918	MINUTEMAN PRESS OF OP	MATERIAL& SUPPLIES	98.00	<b>98.00</b>
98919	MISSION TRAIL ELEMENTARY	SUSTAINABILITY BOARD AWARD	500.00	<b>500.00</b>
98920	NAVA, HUGO	REIMBURSE DRIVER LICENSE	13.75	
		REIMBURSE CDL	52.28	<b>66.03</b>
98921	NIGROS WESTERN STORE # 2	WORK CLOTHING	412.44	
		WORK CLOTHING	641.82	<b>1,054.26</b>
98922	O DONNELL & SONS CONSTRUCTION	2018 THIN LIFT OVERLAY PROGRAM	133,315.95	<b>133,315.95</b>
98923	O REILLY AUTO PARTS	FUEL HOSE	20.47	
		VEHICLE SUPPLIES	13.88	
		FLEET SUPPLIES	1.99	
		AIR VALVE	15.17	
		VEHICLE SUPPLIES	4.06	
		VEHICLE SUPPLIES	45.12	
		VEHICLE SUPPLIES	6.63	
		EQUIPMENT MAINT.	7.98	
		MISC. SERVICES	42.06	
		EQUIPMENT SUPPLIES	64.99	<b>222.35</b>
98924	OFFICE OF STATE FIRE MARSHAL	SAFETY INSPECTION	60.00	<b>60.00</b>
98925	OLD DOMINION BRUSH CO	IMPELLAR, MEDIUM DUTY HOSE	1,804.23	<b>1,804.23</b>
98926	OVERLAND PK CHAMBER OF COMME	CONVENER RECEPTION SPONSOR	100.00	<b>100.00</b>
98927	PB HOIDALE CO INC	VEHICLE SERVICE	200.00	<b>200.00</b>
98928	PETTY CASH - CITY OF LEAWOOD	REIMBURSEMENTS	93.45	<b>93.45</b>
98929	PHILLIPS 66-CONOCO-76	TRAINING TRAVEL	59.46	<b>59.46</b>
98930	POMP'S TIRE SERVICE INC	ROAD SERVICE & TIRES FOR PW453	1,220.60	<b>1,220.60</b>

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98931	PRAXAIR DISTRIBUTION INC 493	INDUSTRIAL ACETYLENE	379.40	379.40
98932	Q4 INDUSTRIES LLC	FACILITY SUPPLIES	749.48	
		CLEANING SUPPLIES FOR JC	2,935.30	
		COPY PAPER	138.74	
		COPY PAPER	474.58	4,298.10
98933	RANCH MART ACE HARDWARE	PICTURE HANGING HARDWARE	16.32	
		MATERIAL & SUPPLIES	5.99	22.31
98934	RANCHVIEW FLORAL & INTERIORS	RETIREMENT SUPPLIES	30.00	30.00
98935	REEVES WIEDEMAN COMPANY	PLUMBING SUPPLIES	135.00	
		PLUMBING SUPPLIES	139.00	
		PLUMBING SUPPLIES - RETURN	-135.00	139.00
98936	REINDERS INC	LANDSCAPING SUPPLIES	132.89	
		GOOSE REPELLANT - RETURN	-121.85	
		GOOSE REPELLANT	625.39	
		TURF CHEMICALS	644.00	
		TURF CHEMICALS	513.61	1,794.04
98937	ROB SIGHT FORD	VEHICLE SUPPLIES	26.97	26.97
98938	ROSATIS OF OVERLAND PARK INC	2018 EE Appreciation Lunch	3,376.50	3,376.50
98939	RUSCO REFRIGERATION INC	REFRIGERATOR PARTS/SERVICE	915.66	915.66
98940	SAMS CLUB DIRECT	MATERIAL & SUPPLIES	614.82	614.82
98941	SHERWIN WILLIAMS CO	TRAIL MAINTENANCE SUPPLIES	31.29	31.29
98942	SHRED-IT USA LLC	SHREDDING SERVICES	291.26	291.26
98943	SIRCHIE FINGER PRINT LAB INC	FINGERPRINT SUPPLIES	58.65	58.65
98944	STANION WHOLESALE ELECTRIC CO	FLOOD LIGHTS FOR SCULPTURE	753.69	753.69

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98945	STAPLES BUSINESS ADVANTAGE	MATERIAL & SUPPLIES	288.03	
		CREDIT MEMO	-50.37	
		OFFICE SUPPLIES	62.26	
		OFFICE SUPPLIES	44.53	
		OFFICE SUPPLIES	29.83	
		OFFICE SUPPLIES	47.92	
		OFFICE SUPPLIES	4.74	
		OFFICE SUPPLIES	26.99	<b>453.93</b>
98946	STATE LINE ANIMAL HOSPITAL	BOARDING FEES - NOV	3,000.00	<b>3,000.00</b>
98947	SUMMIT TRUCK GROUP	VEHICLE SUPPLIES	275.32	<b>275.32</b>
98948	TABEN GROUP LC	DECEMBER 2018 SEC 125 ADMIN FEES	195.50	<b>195.50</b>
98949	TIDE DRY CLEANERS	UNIFORM CLEANING	14.86	<b>14.86</b>
98950	TOWN & COUNTRY BLDG SERVICES	JC CLEANING SERVICES-DEC	4,950.00	
		DECEMBER CLEAN - CITY HALL LL	950.00	
		DECEMBER CLEAN - PW MAINT	695.00	
		DECEMBER CLEAN - CITY HALL 1ST/2ND	1,280.00	<b>7,875.00</b>
98951	TRACKER DOOR SYSTEMS	BUILDING MAINTENANCE	397.50	<b>397.50</b>
98952	TRANSUNION RISK & ALTERNATIVE	PROFESSIONAL INVESTIGATION SERVICES	25.00	<b>25.00</b>
98953	VANCE BROS INC	ASPHALT	70.00	
		ASPHALT	70.00	<b>140.00</b>
98954	VAN-WALL EQUIPMENT INC	EQUIPMENT SUPPLIES	198.83	
		EQUIPMENT SERVICE	111.11	<b>309.94</b>
98955	VERIZON WIRELESS	COMMUNICATION	78.58	<b>78.58</b>
98956	WALKER TOWEL & UNIFORM SERVICE	MAT CLEANING	147.89	
		MAT CLEANING	147.89	<b>295.78</b>

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
98957	WASTE MANAGEMENT OF KANSAS IN	TRASH DISPOSAL	460.30	
		TRASH DISPOSAL	186.51	
		TRASH DISPOSAL~	156.29	
		TRASH DISPOSAL~	110.03	
		TRASH DISPOSAL~	80.30	
		TRASH DISPOSAL	264.25	
		TRASH DISPOSAL	302.79	<b>1,560.47</b>
98958	WATER DISTRICT 1 JO CO	WATER SERVICE	1,013.44	<b>1,013.44</b>
98959	WEX BANK	MOTORCYCLE FUEL	42.20	<b>42.20</b>
98960	WORLD FUEL SERVICES INC	UNLEADED FUEL	21,846.10	<b>21,846.10</b>
2601218	KC POWER & LIGHT CO	POWER SERVICE	34.10	<b>34.10</b>
3141218	KC POWER & LIGHT CO	POWER SERVICE	37.46	<b>37.46</b>
3381218	KC POWER & LIGHT CO	POWER SERVICE	381.69	<b>381.69</b>
5091218	KC POWER & LIGHT CO	POWER SERVICE	210.64	<b>210.64</b>
6041218	KC POWER & LIGHT CO	POWER SERVICE	63.17	<b>63.17</b>
6241218	KC POWER & LIGHT CO	POWER SERVICE	14.13	<b>14.13</b>
6401218	KC POWER & LIGHT CO	POWER SERVICE	117.58	<b>117.58</b>
6541218	KC POWER & LIGHT CO	POWER SERVICE	38.92	<b>38.92</b>
74101218	KC POWER & LIGHT CO	POWER SERVICE	236.73	<b>236.73</b>
76171218	KC POWER & LIGHT CO	POWER SERVICE	302.84	<b>302.84</b>
72031218	KC POWER & LIGHT CO	POWER SERVICE	32.16	<b>32.16</b>
80421218	KC POWER & LIGHT CO	POWER SERVICE	21.13	<b>21.13</b>
88831218	KC POWER & LIGHT CO	POWER SERVICE	61.30	<b>61.30</b>
89121218	KC POWER & LIGHT CO	POWER SERVICE	37.68	<b>37.68</b>

<u>Check #</u>	<u>Vendor</u>	<u>Description</u>	<u>Amount Paid</u>	<u>Check Total</u>
i4341218	KC POWER & LIGHT CO	POWER SERVICE	205.22	<b>205.22</b>
i5431218	KC POWER & LIGHT CO	POWER SERVICE	35.48	<b>35.48</b>
'5521218	KC POWER & LIGHT CO	POWER SERVICE	20.68	<b>20.68</b>
i3131218	KC POWER & LIGHT CO	POWER SERVICE	206.43	<b>206.43</b>
o6511218	KC POWER & LIGHT CO	POWER SERVICE	49.15	<b>49.15</b>

125 checks in this report.

**Grand Total All Checks:** 377,215.64

Regular Meeting

THE LEAWOOD CITY COUNCIL

December 3, 2018

Minutes

DVD No. 430

The City Council of the City of Leawood, Kansas, met in regular session in the Council Chambers, 4800 Town Center Drive, 7:30 P.M. on Monday, December 3, 2018. Mayor Peggy Dunn presided.

**Councilmembers Present:** Lisa Harrison, Chuck Sipple, Andrew Osman, Debra Filla, Julie Cain, James Azeltine, Jim Rawlings and Mary Larson

**Councilmembers Absent:** None

<b>Staff Present:</b> Scott Lambers, City Administrator	Patty Bennett, City Attorney
Brian Anderson, Parks Superintendent	Chief Dave Williams, Fire Department
David Ley, Public Works Director	Ross Kurz, Info. Services Director
Mark Tepesch, Info. Services Specialist III	Chief Troy Rettig, Police Department
Nic Sanders, Human Resources Director	Dawn Long, Finance Director
Richard Coleman, Comm. Dev. Director	Mark Klein, Planning Official
Fire Captain Michael Knisely	Chris Cosgrove, Master III Firefighter
Jeff Anderson, Master III Firefighter	Cindy Jacobus, Assistant City Clerk
Debra Harper, City Clerk	

**Others Present:** Kevin Jeffries, President, Chief Executive Officer and Director of Economic Development, Leawood Chamber of Commerce

- 1. PLEDGE OF ALLEGIANCE
- 2. APPROVAL OF AGENDA

**A motion to approve the agenda was made by Councilmember Harrison; seconded by Councilmember Sipple. The motion was approved with a unanimous vote of 8-0.**

- 3. **CITIZEN COMMENTS** – None  
Members of the public are welcome to use this time to make comments about City matters that do not appear on the agenda, or about items that will be considered as part of the consent agenda. It is not appropriate to use profanity or comment on pending litigation, municipal court matters or personnel issues. Comments about items that appear on the action agenda will be taken as each item is considered. CITIZENS ARE REQUESTED TO KEEP THEIR COMMENTS UNDER 5 MINUTES.

- 4. **PROCLAMATIONS** – None

**5. PRESENTATIONS/RECOGNITIONS      Presentation of donation from the Cocherl Family Foundation to First Responders**

Mr. Patrick Cocherl stated he and his wife Kathy had lived in Leawood for 40 years. He thanked Mayor Dunn, Council, City Staff and fellow citizens in attendance. The Cocherls have had the pleasure of using the services of the “Best Little City in Kansas” and perhaps the country. They have built three buildings at 142<sup>nd</sup> Street and Kenneth/State Line Road and are proud to pay taxes in Leawood. He recalled past experiences when the Police removed a penny from a child’s throat, returned his dog about 14 times prior to the City’s leash law, and on occasion seeing blue and red Police lights behind him. He had tickets issued within minutes of each other when he was traveling east on 143<sup>rd</sup> Street, the “money street”, between Nall and Mission. The first ticket was quickly followed by a second issued three minutes later in a school zone. On February 3, 2017, Mr. Cocherl had a heart attack and Leawood’s prompt 9-1-1 call first responders were crucial to his survival; his heart stopped more than a dozen times that night. Captain Michael Knisely, whose last day on the job is today, held Mr. Cocherl’s hand during the episode and asked him to focus just on him; Captain Knisely was not going to let go. Since that time, the Cocherls have hosted the Arrowhead Concert Series to benefit first responders and share with the less fortunate. At this time the Cocherl Foundation would like to make a donation to honor the Leawood Fire Department First Responders in the amount of \$50,000 to give away what God has given, for the Fire Department to use as they deem fit. It is hard job to give life to save life, and you do not always win. About 80% of the time, the mission of first responders is not accomplished.

Attendees offered an extended round of applause.

Fire Chief Williams thanked the Cocherls and the Cocherl Foundation, stating Leawood is a tremendous community, and the Governing Body and City Administrator provide support. First responders do not do the job for recognition, but because of who they are. The department has three goals every day, for every call; professional, immediate and compassionate response. Chief Williams introduced Captain Knisely, and Master III Firefighters Chris Cosgrove and Jeff Anderson, who had done an outstanding job that night. He presented a Certification of Appreciation to the Cocherl Family Foundation and a limited edition Hallmark Keepsake ornament of the 1949 Fire Truck.

Mayor Dunn thanked the Cocherls for sharing their story, and the Cocherl Foundation for their extraordinary generosity. She stated the donation would be restricted for use by first responders with oversight by Chief Williams.

**6. SPECIAL BUSINESS**

- A. **Ordinance No. 2915**, authorizing and providing for the acquisition of lands or interests therein by condemnation for the 143<sup>rd</sup> Street Improvement Project between Windsor Lane and Kenneth Road [Project # 80129] **[ROLL CALL VOTE] –CONTINUED FROM THE NOVEMBER 19, 2018 GOVERNING BODY MEETING**

Mr. Ley stated the Governing Body had approved a resolution in September for six needed easements. A few weeks ago, the number remaining dropped from two to three. The proposed ordinance is for the two remaining easements.

Councilmember Harrison questioned the six liens against the property at 14204 Canterbury. Ms. Bennett confirmed the number of liens stating the source of information is title reports, and that lienholders would be notified of the condemnation and could participate if they express interest. Any liens or mortgages would be listed in the petition filed with the District Court.

**A motion to pass Agenda Item 6.A. was made by Councilmember Filla; seconded by Councilmember Larson. The motion was approved with a unanimous roll call vote of 8-0.**

B. **Public Hearing** Consider Budget Amendments to 2018 Fiscal Budget

Mayor Dunn opened the public hearing. No one was seen or heard to speak.

**A motion to close the public hearing was made by Councilmember Filla; seconded by Councilmember Larson. The motion was approved with a unanimous vote of 8-0.**

C. **Resolution No. 5093**, adopting amendments to the 2018 Fiscal Budget for the City of Leawood, Kansas

Mr. Lambers confirmed to Councilmember Azeltine the \$7 Million transfer to the Economic Development Fund is a rollover of an accumulation of sales tax money from five or six years. The transfer would move money from the General Fund to the Economic Development Fund, for anticipated, non-specified at this time, future use.

Councilmember Filla asked why the Transient Guest Tax Fund had increased by a considerable amount and for an explanation of the 1/8<sup>th</sup> Cent Sales Tax Fund rollover. Mr. Lambers stated the reason for the increase in the Guest Tax Fund was due to more hotel guests and financial obligations on Park Place having been met. Ms. Long stated the 1/8<sup>th</sup> Cent Sales Tax rollover is needed because when the original 2018 Budget was established, it was assumed 2017 projects would be complete. However, funds to complete two projects need to be rolled to 2018.

**A motion to approve Agenda Item 6.C. was made by Councilmember Azeltine; seconded by Councilmember Harrison. The motion was approved with a unanimous vote of 8-0.**

Mayor Dunn stated the proposed amendments were somewhat similar to those of the past. She expressed amazement that when financial assumptions are made 18 months in advance and budgets documents prepared in March and April a year prior, the final budget document is very close.

Ms. Harper passed an amended certificate required by the County for Governing Body signature.

D. **Ordinance No. 2916C**, granting to Southwestern Bell Telephone Company, d/b/a AT&T Kansas, a contract franchise for the provision of Telecommunications Services in the City of Leawood, Kansas and prescribing the terms of said contract franchise and repealing Ordinance No. 2806C [ROLL CALL VOTE]

Councilmember Sipple stated he had received a number of constituent complaints about the lack of upkeep of AT&T equipment boxes in back yards and along thoroughfares, and inquired if something could be done to ensure maintenance and that the boxes remain upright.

Mr. Chris Carroll, 5400 Foxridge Drive, Mission, AT&T Regional Director-External Affairs, stated their telephone hotline, 913-676-1801, or he should be contacted for complaints. The hotline number can be shared with constituents. As a condition of permitting, it is required the cabinets and their landscaping be maintained, and AT&T needs and wants to promptly address issues.

Ms. Bennett confirmed the proposed contract franchise term had increased from the prior term of two years and automatic renewals for two successive terms of one year each. The term increase to six years and automatic renewals for two successive terms of two years each, was based on having no problems with extended terms. If problems are encountered, the City does have the opportunity to back out.

Mr. Carroll personally thanked City Administrator Mr. Lambers, Assistant City Attorney Andrew Hall and City Attorney Patty Bennett for their patience in the process, which took longer than anyone wanted. The prior contract franchise had expired and he apologized for the delay. Mayor Dunn thanked Mr. Carroll for acknowledging the situation and responsiveness to contacts she has made with complaints received.

Councilmember Filla asked for the status of overall fiber installation in the City. Mr. Carroll stated there had been a few problematic steps in the process. Regrettably, AT&T has sometimes not been as responsive in the construction process. City Staff has gotten his attention and steps have been taken to resolve disruptions. He is aware the company has funding for fiber installation and forward progress is being made, but perhaps not as fast as constituents would like.

**A motion to pass Agenda Item 6.D. was made by Councilmember Filla; seconded by Councilmember Azeltine. The motion was approved with a unanimous roll call vote of 8-0.**

- E. **Ordinance No. 2917C**, granting to Teleport Communications America, LLC, a contract franchise for the provision of telecommunications services in the City of Leawood, Kansas and prescribing the terms of said contract franchise [ROLL CALL VOTE]

Mr. Lambers confirmed to Councilmember Sipple the future level of expected fees was projected to decline from current level of franchise revenue, because of competition and service offerings.

Mr. Carroll confirmed he also represented Teleport Communications America, LLC, a wholly-owned subsidiary of AT&T. He stated the company is not piggy-backing on AT&T. The company uses the AT&T central office, but has their own high fiber network serving mostly businesses. Services are open to residential as well. In regard to revenue decline, the industry is seeing a customer trend of “cord-cutting.” Wire lines are being abandoned to use wireless, Facebook messaging, Magic Jack, Skype and other non-traditional services. Franchise fees are based on wire line services. From 2000 to 2014, AT&T Kansas lost nearly 80% of land lines. Video entertainment customers are cord-cutting as well to use other “over-the-top” services such as Hulu, Netflix and video-streaming. In 2016, AT&T had 3,519 U-Verse subscribers and today there are only 3,093, a loss of 14%.

**A motion to pass Agenda Item 6.E. was made by Councilmember Filla; seconded by Councilmember Larson. The motion was approved with a unanimous roll call vote of 8-0.**

## 7. CONSENT AGENDA

Consent agenda items have been studied by the Governing Body and determined to be routine enough to be acted upon in a single motion. If a Councilmember requests a separate discussion on an item, it can be removed from the consent agenda for further consideration.

- A. Accept Appropriation Ordinance Nos. 2018-46 and 2018-47
- B. Accept minutes of the November 12, 2018 Special Call Governing Body Meeting
- C. Accept minutes of the November 19, 2018 Governing Body meeting
- D. Accept minutes of the September 11, 2018 Historic Commission meeting
- E. Accept minutes of the August 28, 2018 Leawood Arts Council meeting
- F. Approve Appointment of Presiding Officers for 2019
- G. Approve Mayoral Appointment of Truss Tyson to Sustainability Advisory Board for a 2-year term, expiring in 2021
- H. Approve Change Order No. 1, in the amount of \$43,400.00, to Bruner Contracting, pertaining to the Public Works Maintenance Facility Expansion Project, located at 14303 Overbrook Road [Project # 76050]
- I. **Resolution No. 5095**, approving a proposal from Travelers Insurance Company for the 2019 Property/Liability Insurance and additional coverages and authorizing the Mayor to execute an addendum to the Insurance Broker Agreement Between Arthur J. Gallagher Risk Management Services, Inc. and the City of Leawood, Kansas
- J. **Resolution No. 5096**, approving the recommended distribution of alcohol taxes by the Johnson County Drug and Alcoholism Council [DAC] for allocations of the 2019 alcohol tax fund for an amount not to exceed \$350,000.00
- K. **Resolution No. 5097**, approving and authorizing the Mayor to execute a Letter of Understanding in the amount of \$15,000.00, between the City and Johnson County Human Services pertaining to the 2019 Johnson County Human Service Fund
- L. **Resolution No. 5098**, approving and authorizing the Mayor to execute a Letter of Understanding in the amount of \$10,000.00, between the City and Johnson County Human Services pertaining to the 2019 Johnson County Utility Assistance Program
- M. Declaration of Surplus Property; [12] PD Units; [2] PW Units; [1] Fire Unit; and [2] Comm. Develop. Units

Councilmember Harrison requested Consent Agenda Item 7.E. be pulled.

Councilmember Osman requested Consent Agenda Item 7.G. be pulled.

Mayor Dunn requested Consent Agenda Item 7.J. be pulled.

**A motion to approve the remainder of the Consent Agenda was made by Councilmember Azeltine; seconded by Councilmember Sipple. The motion was approved with a unanimous vote of 8-0.**

- 7.E. Accept minutes of the August 28, 2018 Leawood Arts Council meeting

Councilmember Harrison noted in the minutes that the “Walking Female” sculpture piece was to be installed in November and she inquired if this was in 2018 or 2019. Mr. Ley stated the City has contracted with Kissick Construction to have the piece installed by mid-January, weather permitting. The piece has one large footing. If the footing concrete can be poured, it could be blanketed to cure.

Mayor Dunn stated everyone is excited about the sculpture.

**A motion to approve Consent Agenda Item 7.E. was made by Councilmember Harrison; seconded by Councilmember Cain. The motion was approved with a unanimous vote of 8-0.**

7.G. Approve Mayoral Appointment of Truss Tyson to Sustainability Advisory Board for a 2-year term, expiring in 2021

Councilmember Osman stated he had the opportunity to speak with Mr. Tyson, who has a very detailed resume. Mr. Tyson is very excited to start quickly and glad to be part of the Sustainability Advisory Board.

Mayor Dunn thanked Councilmember Osman for the great nomination.

**A motion to approve Consent Agenda Item 7.G. was made by Councilmember Osman; seconded by Councilmember Sipple. The motion was approved with a unanimous vote of 8-0.**

7.J. **Resolution No. 5096**, approving the recommended distribution of alcohol taxes by the Johnson County Drug and Alcoholism Council [DAC] for allocations of the 2019 alcohol tax fund for an amount not to exceed \$350,000.00

Mayor Dunn wished to recognize Ms. Marya Schott, United Community Services Director of Resource Allocation, and Ms. Cathy Lawless, Leawood's DAC Representative for the past six years. She stated Ms. Lawless is term-limited and her term would end this month; Ms. Stephanie Kelly would take over on January 1, 2019. Mayor Dunn stated the City is grateful for the prudent use of funds and is glad there are ever-increasing dollars for the organization to work with.

Ms. Schott thanked the City for its contribution to the fund. The total 2019 fund is about \$2 Million and she considers DAC a great steward of the money, which is used for prevention, treatment and recovery programs helping many community members. Ms. Lawless stated she was grateful to have served.

Mayor Dunn concurred and thanked Ms. Schott and Ms. Lawless for their great work.

Mr. Lambers pointed out that Page 14 of the report lists contributions by agencies and Leawood makes the second largest. For its size, restaurant impact on the alcohol tax fund is striking. This was a factor for Leawood's selection of the "Best Small City in the Country."

**A motion to approve Consent Agenda Item 7.J. was made by Councilmember Filla; seconded by Councilmember Larson. The motion was approved with a unanimous vote of 8-0.**

## **8. MAYOR'S REPORT**

- A. On Friday, November 30, George H. W. Bush passed away at age 94. He was the 41<sup>st</sup> President of the United States and had served 40 years in public service. I request a moment of silence to honor him and his family.
- B. Thanks to Director of Public Works David Ley and his snow crews for providing excellent service in our most recent snow event.
- C. Thanks to Councilmember Lisa Harrison for representing the City of Leawood at the Blue Valley Educational Foundation Appreciation Reception where the City was recognized by a hand-painted sunflower plate.

- D. The Leawood employee 2019 United Way Campaign is winding up, pending receipt of a few outstanding paper forms. Due to great generosity from our Staff and Council, \$13,333.00 has been pledged. My thanks to Human Resources Director Nic Sanders and to all for participating.
- E. Happy Hanukkah to one and all!
- F. Happy Birthday to Councilmember Mary Larson!

9. **COUNCILMEMBERS' REPORT** – None

10. **CITY ADMINISTRATOR REPORT** – None

11. **STAFF REPORT** – None

### ***COMMITTEE RECOMMENDATIONS***

#### **12. PLANNING COMMISSION**

***[from the October 23, 2018 Planning Commission meeting]***

- A. **Ordinance No. 2918**, approving a Rezoning, Preliminary Plan, Preliminary Plat and Special Use Permit [SUP] for Ranch Mart North Shopping Center – Redevelopment, located north of 95<sup>th</sup> Street and east of Mission Road [PC Case # 115-18] [ROLL CALL VOTE]

Mr. Curt Petersen, Polsinelli Law Firm, 6201 College Boulevard, Overland Park, stated there have been struggles for nearly a decade to create a financial backing for rebirth of the entire shopping center. Not all projects are equal. The iconic and special center is 50 years old and it is hoped the center will continue for another 50 years. Tonight's discussion would be focus on planning items; a private-public partnership similar to Camelot Court would be in the future. He pointed out members of the project team in attendance including Trip Ross of Cadence Commercial Real Estate, Chris Hafner of Davidson Architecture+Engineering, and Bob Regnier of Regnier Family Partnership.

Mr. Chris Hafner, Davidson Architecture+Engineering, 4301 Indian Creek Parkway, Overland Park, presented various site plans, elevations and materials to be used. All existing uses would be kept and new uses added. The square footage of the existing center would remain the same, but the building in the northeast corner would be turned into a two-story structure with office on second floor. A large pedestrian plaza would be created in the location of the former Seasonal Concepts, on the east side of Price Chopper. The new building meets the 125 ft. setback from residential and the ability to have fire trucks move throughout the center has been addressed. The parking field would be cleaned up with distances from 95<sup>th</sup> Street and Mission Road, becoming consolidated and creating depth. Landscaped islands would be created in the parking lot to meet current Leawood Development Ordinance [LDO] requirements on the east edge and variances have been requested for the south and west sides. The plan proposes 934 parking spaces. O'Neill's and Foos would have 90 degree rather than slanted parking spaces. McDonalds would remain on the corner, but the parking field would be treated to improve. The parking lot would have 18 foot full shut-off LED lights. The goal was to achieve pedestrian connectivity especially from the south, through sidewalks on 95<sup>th</sup> Street and Mission Road and crosswalks to move throughout the site. A plaza would be created at the Hallmark Store, as well as the large plaza mentioned earlier. The project keeps the existing tenant building line and has clean lines and interesting building materials. Wood roof shakes would be removed, and the roof overhang would be replaced with something modern.

Mayor Dunn asked to know how the proposed drive-through pharmacy at the Price Chopper would work. Mr. Hafner stated the current under-utilized large delivery and grocery pickup canopy at the main entrance would remain, but be straightened out and the pharmacy would be relocated to that corner of the Price Chopper. The proposed plan includes the stacking for five vehicles to meet requirements.

Councilmember Filla expressed thanks for undergrounding of the utilities on the west side, the sidewalks to connect McDonalds to and around the corner, and the parking changes made to clean up the site. Mr. Hafner stated the team is working closely with Kansas City Power & Light on locations of their equipment. All overhead power for the site will be underground.

Councilmember Osman shared his childhood experiences visiting this and the Corinth shopping centers. He had feared being struck by a vehicle at this site. Children in the area now, even those just one block away and at Curé of Ars School, feel unsafe. He complimented the succinct areas of activity and ease of access in the proposed plan. He stated his opinion that although the design of Corinth was good, all their restaurants are stacked in one location creating very busy and dead ends of that center. He commended the proposed plan for its four dispersed focal points, which breaks up parking. He stated that finally for the neighborhood, a day of reconnecting has come and residents are excited. The tenants should anticipate a dip in sales and challenges in the next 18 to 24 months, but have hope that sales will be increased after the project.

Councilmember Harrison pointed out that McDonalds is zoned Agriculture and she has to believe this impacts sales and real estate taxes. She stated that although groceries might be ordered on-line, there are patrons that likely need help loading their purchases. She asked if a few more parking spaces could be considered for use or in a new way to accommodate. Mr. Hafner stated there will not be grocery pickup. Some parking stalls were left for on-line order pickup and are ADA [American Disabilities Act]. He could not speak to Price Chopper operation plans in this regard, but he would take her comments back to the project team and Price Chopper.

Councilmember Harrison stated the City had heard from some neighbors that do not like the modern materials, and she inquired if a traditional façade, less Crate & Barrel or Apple, had been considered. Mr. Hafner stated the team had looked at something closer to Ranch Mart South in Overland Park in early iterations. However, with the dramatic paradigm change in potential tenant mix and central plaza public space, a bold step was needed. The proposed materials would not necessarily be modern, but be quality materials having modern lines. The team meets every Thursday and continues to refine elevations and it is hoped to bring a Final Plan forward soon.

Councilmember Cain stated she is now a fan of drive-through and on-line grocery orders, and the plaza created would be energizing, providing the opportunity for programming. She pointed out the roof leaks and asked if an overall re-roof would be done, if Price Chopper and other tenants would be doing interior work, and if the traffic flow around McDonald's had been addressed as requested in Stipulation 31. Mr. Hafner stated Price Chopper has a fairly new roof which would remain. The roofs of Duck Donuts and The Foot Shop are in good shape, but part of the building would be torn out to create the plaza. The roof on the west side will be replaced. With some potential relocations of tenants in the east side, he has heard comment there may be some interior renovations by tenants. He cannot speak for tenants along the west, but would assume a likely fresh start for them as well. Mr. Hafner stated traffic flow around McDonald's would happen at Final Plan. He has been communicating with their corporate office about truck delivery and layout. The land is leased and operationally, the proposed plan has taken away a curb cut, which is felt to be a big accommodation by McDonald's. McDonald's Corporate has stated they cannot do a one-way traffic flow at this site,

which has slightly different approaches than those used at 119<sup>th</sup> Street and Roe. No changes would be expected as part of the Final Plan.

Councilmember Filla asked for an update on sewer lines. Mr. Hafner stated he had worked closely with Johnson County Wastewater. The sewer main runs from Ranch Mart South in Overland Park to Cure' of Ars under Ranch Mart North. The sanitary main will be relocated along the center's frontage and then proceed towards Ranch Mart South on the east. There will be some inconvenience, but this will be best in the long-term.

Councilmember Sipple stated he was concerned about pedestrian and bicycle safety. He asked if there could be a marked bicycle route entering from the sidewalk and running west to east placed on the north of the shopping center, so bicycles do not have to navigate the south side of the center. Mr. Hafner stated this had been reviewed, but it is hoped the proposed number of pedestrian paths could serve either pedestrians or cyclists. The plan provides pedestrian connectivity on the northwest side of the site, crosswalk at the south end of the bank parking lot, pedestrian access from west of the new pharmacy and to the front door of the Price Chopper from signalized intersection, and one connection would lead to the Care Now Building. Bicycle racks located at strategic locations throughout the site. There is a lot amount of vegetation on the north side that should be maintained as a buffer. The south side will have defined traffic pathways and a road speed table located in front the Price Chopper and another will likely be located at the T-intersection/plaza area.

Councilmember Sipple requested consideration for Final Plan be given to placing an island for children to use who come down from the north to the drive going into the drive just north of McDonalds. The island would provide the opportunity for children to not have to clear both incoming and outgoing traffic. Mr. Hafner stated this was not previously considered and agreed. He stated he would review truck movements.

Councilmember Sipple stated he was satisfied with the dialogue thus far on the trash surrounds for the east side, but one of these is an island. He would look forward to specifics in the Final Plan.

Councilmember Sipple asked to see an elevation view of the elevated planter to be along Mission Road and for clarification as to whether the planter would be located near the road or towards the parking lot. Mr. Hafner stated he envisions a screening wall rather than a planter that would be placed nearest the parking lot. The screening wall would have some breaks for landscaping. A retaining wall would offer less opportunity for breaks. He pointed out a screening wall should not be assumed to be a vehicular barrier to protect or provide pedestrian safety. The original design had to be reconsidered to meet LDO screening. That design consisted of a 2 ft. curb buffer, then sidewalk, then green space. The south end of the west parking lot would be 11.5 ft. from sidewalk to curb and on the north end about 8 ft.

Councilmember Rawlings complimented Mr. Hafner and staff for the unique plan, which would look better than the pillars and stacked stone of Ranch Mart South and Corinth. This would set Ranch Mart North in Leawood far apart. He agreed with Councilmember Osman that the project would bring a lot of traffic to the center. It has been years and the City is glad to see the plan.

Mayor Dunn stated Mr. Petersen would now present Planning Commission stipulations, noting that some of the stipulations would be at Final Plan.

Mr. Petersen presented a table of stipulations, stating the applicant accepts Stipulations 1 through 33 as revised by the Planning Commission, with the following exceptions:

Revise Stipulation 9 – Trash Enclosures

The LDO requires screened, architectural design, attached enclosures. Planning Commission discussion focused on one trash enclosure proposed for the new restaurant in the southeast corner, in the former Seasonal Concept space. There is no suitable location for this enclosure to be attached to the building. The applicant proposes to add to the Staff’s suggested language on location found on Pages 12 and 13 of the Staff report. The stipulation would be revised to add “At Final Plan the applicant shall work with staff to either relocate the trash enclosure to an area where it is closer to the businesses that it serves and can be integrated into the surrounding architecture, or integrates the trash enclosure into the drive-thru of the bank.”

Mr. Coleman stated City Staff have two concerns. One is that trash being carried from one area to another often leaks. Restaurants typically have a large amount of waste which would need to be transported to the bank building. The bank building location was considered a last resort. Since the restaurant would be located in a new building, the City believes the applicant can design a place for the trash. New free-standing buildings built in the City are required to have attached or interior trash enclosures.

Mr. Coleman confirmed to Mayor Dunn his recommendation would be for continue work in this regard.

Mr. Petersen confirmed to Councilmember Filla that bulky trash is likely being separated at this time.

Mr. Petersen stated that if there was a better idea, the great design team had not come up with it. Mayor Dunn stated to continue work and this would be presented to the Planning Commission first. She stated the requirement is per the LDO, not City Staff’s whim.

Councilmember Osman stated he vehemently dislikes trash enclosures to be attached to buildings, especially for uses such as restaurants and grocery stores. Insects and pests are drawn to the trash and can intrude into the building. Also, the turning radius of a trash enclosure can be problematic for a 10-ton trash truck that wants the easiest access for quick service. If trash enclosures are ill-placed, the result can be wheel divots, curb jumping and trash picked up by wind, all of which are not good.

Mr. Lambers stated that trash enclosures should be attached for new buildings per LDO. By hauling restaurant trash to the bank, the bank could say the trash is not theirs and type of trash is worse than theirs. The trash enclosure needs to be part of the new building to avoid future problems. Since the application is at the preliminary stage, this can be further discussed at a later time. Mr. Petersen stated the building design is unique.

Stipulation 17

Mr. Petersen stated this stipulation was not on his list, but wanted to provide comment. For the street trees required along Mission Road per LDO in Stipulation 17, the design team is struggling with planting trees in a “beehive” area of underground of utilities. City Staff is convinced there will not be a problem. If a future problem arises, the applicant will come back and discuss.

Delete Stipulation 18 – Mission Road Screening and Sidewalk Placement

The ownership and design teams strongly feels the richest look for screening would be to not have a continuous masonry wall, but intermittent berming, wall and landscaping instead. After six weeks of review against what the City originally wanted, the applicant proposes there be 11 to 8.5 ft. of green space, then sidewalk, then a wall and wall/landscaping. If the wall is moved west away from Mission Road, it would become a retaining wall because of grade change. There should not be implication that a 3 ft. retaining wall would serve to protect children. A retaining wall may conflict with utilities and there will no longer be head-in parking facing Mission Road that would require screening.

Mr. Coleman stated the City wishes to receive details as Mr. Petersen described. Mayor Dunn stated this is difficult to visualize. She would prefer to not delete the stipulation at this time. The applicant should continue to work with Staff before going before the Planning Commission. The Planning Commission should make a recommendation working with City Staff. Mr. Petersen agreed, stating this was a good outcome.

#### Revise Stipulation 20 – McDonald’s Perimeter Screening

On the south side of McDonald’s, moving east on 95<sup>th</sup> Street towards the access drive, space becomes limited for screening required by the LDO and requests revision “except for the area along 95<sup>th</sup> Street frontage indicated on Drawing Sheet A1.2.” McDonald’s parking cannot be reduced to accommodate.

Councilmember Filla asked what is currently on the west side of McDonald’s. Mr. Petersen stated there is landscaping that is not planned to be reused. With the suggestion of intermittent landscaping, a revision in this area this might work.

Mr. Coleman stated the City wants to see the details at Final Plan. Mayor Dunn stated the “except for” language proposed by Mr. Petersen be revised to state to be reviewed by the Planning Commission at Final Plan. Mr. Petersen agreed.

#### No Action Former Stipulation 23 –Deletion of Two Parking Stalls

Mr. Petersen stated there was no action, but wanted to point out this stipulation in regard to the two parking stalls on the westernmost parking lot near Mission Road. City Staff had suggested and the Planning Commission deleted this stipulation at the request of the applicant. Five feet of green space has been added to allow for reverse vehicle movement, and having these two parking stalls is important.

Mayor Dunn confirmed with Mr. Coleman and Mr. Klein that Staff had no disagreement.

#### Delete Stipulation 31 – McDonald’s Vehicular Circulation

All have acknowledged the area is a roller derby free-for-all. In dialogue between McDonald’s and the applicant, McDonald’s has said “no” to anything further beyond the consolidation of the two entries on the south side. Mr. Petersen stated he was positive there is nothing more to do here. He asked for acknowledgment they have no further action.

Mayor Dunn pointed out Stipulation 31 uses the words “shall reconsider” and the point has been made to the Governing Body. She stated her belief the Planning Commission would still want to hear about the applicant’s dialogue with McDonald’s. Mr. Coleman stated Public Works would be interested as well.

### New Stipulation

Mr. Petersen proposed a new stipulation for a Kansas City Area Transit Authority [KCATA] Bus Stop on 95<sup>th</sup> Street. The ownership and design teams feel this is a great idea. The language of the proposed new stipulation would be “The applicant agrees to provide land, if necessary, a new KCATA Bus Stop along 95<sup>th</sup> Street, as set forth on Ex. 1 – KCATA Site Exhibit dated 11/20/2018.” Mr. Petersen noted the stop would be in front of the cemetery, and the City or KCATA, not the applicant, would be responsible for the design, construction and maintenance of the bus stop.

Mr. Coleman stated KCATA would build and maintain. The right-of-way would need to be worked out and there may be easements needed for construction and maintenance from the property owner.

Mr. Hafner confirmed to Councilmember Sipple there is currently a “sign only” KCATA stop at the location, but no place to stand. Councilmember Sipple stated this would be a great for shoppers and workers.

Councilmember Azeltine inquired if a separate application would be needed from KCATA. Mr. Coleman stated this would be included in the Final Plan and KCATA would need to come forward with a Final Plan for design of the stop.

Mayor Dunn pointed out the new stipulation would be numbered Stipulation 32, and stipulations following renumbered accordingly.

Mayor Dunn pointed out the property owner might consider new branding for marketing the center as Ranch Mart North, since the proposed plan design is different from Ranch Mart South. Councilmember Filla suggested the name “Leawood Ranch Mart.” Mr. Petersen said signage would eventually be brought forth.

Mayor Dunn pointed out this was an ordinance, needing a super-majority of votes for the modifications recommended and agreed to.

**A motion to pass Agenda Item 12.A. Preliminary Plan as presented with stipulations and modifications agreed to was made by Councilmember Filla; seconded by Councilmember Sipple. The motion was approved with a unanimous roll call vote of 8-0.**

Mayor Dunn thanked the presenters and stated the City looked forward to the Final Plan.

### *[from the November 13, 2018 Planning Commission meeting]*

- B. **Ordinance No. 2919**, approving the Planning Commission’s recommendation to deny a request for a Rezoning, Preliminary Plan, Preliminary Plat, and Special Use Permit [SUP] for 135<sup>th</sup> Street and Kenneth Road – Mixed Use and Medium Density Residential, located south of 135<sup>th</sup> and west of Kenneth Road [PC Case # 71-18] [ROLL CALL VOTE]

Mayor Dunn noted that color copies of an email [with six attachments: “Overall Aerial Site Plan - Update”, “Enlarged Aerial Site Plan”, “Initial Staff Recommendations”, “Stipulations Applicant Proposes be Deleted”, “Stipulations Applicant Proposes to Modify” and “Post-Planning Commission Developer Proposed Stipulations”] from Mr. John Petersen sent Friday, November 30, at 4:28 P.M. to the Governing Body, Mr. Lambers, Ms. Bennett and Mr. Coleman, had been provided for convenience.

Mr. Coleman stated City Staff had been working with the applicant as late as 5:30 P.M. this evening, so additional modifications would be presented.

### **APPLICANT PRESENTATION**

Mr. John Petersen, Polsinelli PC, stated that developers Richard and Rick Lashbrook, Vic Regnier and other property owners, as well as landscape, architect and traffic team members were present.

Mr. Petersen stated the team had been directed to work with City to find a compromise on 56 acres that speaks to mixed use, horizontal and maybe some vertical. The plan has significant changes, based on Governing Body and Planning Commission comments, and some changes made thereafter in dialogue with City Staff. He displayed an aerial layout of the site.

Mr. Petersen stated a “headliner” was where to break 135<sup>th</sup> Street, which has synchronized intersections, to service the development. Mr. Petersen stated he was pleased to report after a traffic impact study, the applicant and City are in total agreement that High Drive will work for the project and overall street network. The roundabout at High Drive and 137<sup>th</sup> Street has been removed and the mixed use buildings on the west of High Drive have been reconfigured. An amenity area for the villas has been expanded and made a focal point on 137<sup>th</sup> Street. On the east side, reconfigured buildings create streetscape on High Drive similar to that on the east side, and provide continued pedestrian connectivity and more green space to get off sidewalks and bicycle paths to congregate. There is now a band of over one acre of green space created from High Drive to the eastern part of the project. At the connection of 137<sup>th</sup> Street in the left corner of the site, we are required to construct 137<sup>th</sup> Street from Kenneth Road to the west property line of the development. Staff had wanted the proposed cul-de-sacs there to remain awaiting further development and connection to Chadwick Drive. The development team reached out to Ms. Kelly Sherman to attempt an agreement that works for all-the developer, the City and Ms. Sherman in regard to 137<sup>th</sup> Street connection. This is another example of connectivity. Some discussion has occurred with Mr. Lambers and further discussion on assessments would be needed.

Mr. Petersen referenced the enlarged section of the aerial map. The Final Plan would have a lot of detail about the green area along 137<sup>th</sup> Street. This area is a good opportunity for people on the east side of High Drive and from office and retail to utilize, but since this is pushed far enough to the west it will be near multi-family and retail visitors on the west side of High Drive. The area is concentrated useable green space.

Mr. Petersen displayed the 137<sup>th</sup> Street Connection to Chadwick map. He stated Ms. Sherman has 10 acres the street must cross, with the City also having some property further west and some money in escrow, but not enough to do the job. He presented a “Memorandum of Intent” dated November 30, 2018 between 26 Bar Farm LLC and Leawood 135 LLC, and stated if Ms. Sherman would donate the right-of-way to the City over her 10 acres, we would build the road, then the developer would build over the City portion and make up the difference for connectivity.

Mr. Petersen presented a Connectivity Diagram, pointing out sidewalks, 28,000 sq. ft. of trails, completion of bicycle paths on both sides of 137<sup>th</sup> Street and the additional through lane added on 135<sup>th</sup> Street to ensure reverse frontage system works.

As shown in view looking south, we have pulled linear buildings down along High Drive. At the end of the street you can see villa green space at 137<sup>th</sup> Street and High Drive. This provides a good urban feel and pedestrian access as you walk through mixed use. The view looking east down 137<sup>th</sup> Street runs down to the senior living facility has a bit of height.

Mr. Petersen stated that initial Staff Stipulations were Nos. 1 through 42, and applicant agrees to 34 of the 42. Mayor Dunn pointed out the Staff Report, printed and distributed in advance of the meeting before the applicant and City that concluded at 5:30 P.M. today stated there are 43 stipulations. Mr. Klein stated the applicant had been advised about Stipulation 20 in regard to head-in parking. Mr. Petersen was provided a copy of Stipulation 20.

Mr. Petersen distributed an update of “Stipulations Applicant Proposes be Revised” printed in black and white [earlier version was color]. The applicant proposes to delete Stipulations 2, 3, 7 and 39, and revise Stipulations 1a, 4, 9, 18. He reviewed documentation, as follows:

### ***DELETIONS***

#### ***Delete Stipulation 2***

This stipulation basically states the property owner/developer and City should enter into a Developer Agreement. Mr. Petersen stated he was unclear what this was about, but was not necessarily in conflict. The plan includes a project phasing plan and the applicant is not asking for a CID [Community Improvement District].

#### ***Delete Stipulation 3***

There has been hard work by applicant and City Staff to find compromise, but it is clear that Staff wants to turn down the plan because the plan does not adhere to the 135<sup>th</sup> Street Community Plan. Mr. Petersen stated he had previously made the case that the City’s own consultant said mixed use does not have to all be vertical. The applicant wants to build what is feasible and spawn further development on the corridor, and this stipulation pulls in items from the 135<sup>th</sup> Community plan so applicant’s plan cannot be built.

#### ***Delete Stipulation 7***

This stipulation states that cul-de-sacs cannot be built, so similar to Stipulation 3, the plan cannot be built.

#### ***Delete Stipulation 39***

The plan provides for storm water control by detention per City Code. The City wants the applicant to build a water amenity, taking up a lot of space on the site.

Mr. Petersen stated the applicant, City Staff and City Attorney, were not agreement on these four stipulations.

### ***REVISIONS [LATEST VERSION SUPPLIED BY APPLICANT]***

#### ***Revise/Delete Stipulation 1a***

The applicant is asking for 55% discount on residential mixed use F.A.R. [floor area ratio], and their entire plan is based on this. City Staff supports a 25% baseline discount.

Revise/Delete Stipulation 4

Applicant agrees to 4d in regard to roofing materials, but not to 4a, 4b and 4c which would mean the plan could not be built because the applicant would be bootstrapped in the position that we should have a grid transect system.

Revise/Clarify Stipulation 9

Mr. Petersen asked the record reflect we have agreement that as part of zoning, applicant must build 137<sup>th</sup> Street within the proposed development. The applicant is now proposing to go beyond.

Revise Stipulation 18

Mr. Petersen stated there are four deviations requested. Regarding setbacks that separate buildings, in work done today the City Staff is supportive as long as fire code requirements are met. The second deviation requested is for a 30 ft. building setback instead of a 40 ft. building setback along High Drive and 137<sup>th</sup> Street. The deviation of 10 ft. is allowed by City Code as long as the green space eliminated is made up on a 1 to 1 basis, which has been done. The applicant is asking for 55% discount on residential mixed use and two deviations for 15% bonuses. One of these is for increased additional open space to benefit community and for underground parking. Staff agrees with 15% bonus for underground parking. Site-wise, the plan is over the required open space, and a concentrated one-acre space that can be used by seniors, bicyclists, hikers and office workers has been created.

Mr. Petersen stated it is challenging to pull off mixed use in Leawood today due to counter-dealing forces. If the development was built to the 135<sup>th</sup> Community Plan, it would not meet Leawood Development Ordinance [LDO] density requirements. An attempt has been made to find balance, work within context, bring some urban dense elements and create some buzz on the south side of 137<sup>th</sup> Street for the 56 acres. Mr. Lambers would need to continue work with Ms. Sherman in regard to 137<sup>th</sup> Street.

Mr. Petersen stated applicant would agree to original stipulations, and proposed applicant revisions and deletions to stipulations. After review of Stipulation 20, Mr. Petersen stated he would accept.

**STAFF REVIEW/APPLICANT COMMENTS/DISCUSSION**

***PROPOSED DELETIONS***

Delete Stipulation 2

Mr. Coleman stated that because of three different kind of areas and different ownerships at the site, a Development Agreement would address project phasing. The Preliminary Plan expires in two years. In discussion with the applicant, the duplex/villas would be constructed first. The City would like to something tied to a timeframe along with joint deed restrictions and maintenance. Mayor Dunn commented the rationale was logical.

Mr. Petersen presented a Phasing Plan. He stated villas in Phase 1 are anticipated to go in first. Phase 2 would be the west and Phase 3 the east. Once the first villa is started, to obtain an Occupancy Permit every street would be built, infrastructure in place, and power lines buried. Phases 2 and 3 would follow. He stated nothing in this day and age will be built speculative; phasing will be market sequence. He pointed out that once a large expenditure has been made on infrastructure, developers will be motivated.

Mayor Dunn noted Mr. Petersen was not supplying conjecture on timeline, just phasing.

Mr. Petersen stated he did not know what would be put into the Development Agreement. There could be no commercial commitment to build all in two years; the Final Plan is for five years. Villas and roads would be built, and work would be done with the City, the Leawood Chamber of Commerce and Economic Development Council to market the area.

Mr. Klein stated it is typical for commercial developments to develop joint deed restrictions, which the City reviews at Final Plan to ensure common areas are maintained. Stipulation 41 covers the funding for this.

Mr. Petersen stated he could not see how this would help. The plan and stipulations state what can and cannot be done, and each component will come back at Final Plan and will have further stipulations.

Ms. Bennett confirmed to Councilmember Cain there had not been a Development Agreement for Park Place, but the City can have a stipulation for phasing and she thought this stipulation had been used before in the City. Councilmember Cain pointed out there is a developer and financing for the villas, but only a developer and no financing for Phases 2 and 3. Mayor Dunn stated multiple ownership is the concern. Mr. Petersen stated the Lashbrooks would own the villas and west of High Drive, and Regnier entity east of High Drive. There will be agreements between parties and there could be the occasion for a party to want to own their building. He stated that Staff can opine on Stipulation 41 at Final Plan.

#### Delete Stipulation 3

Mr. Coleman stated the applicant refers to Stipulation 3 as important aspects of the 135<sup>th</sup> Community Plan. This plan lacks what the Ranch Mart designers are creating. Ranch Mart had one existing building with a flat façade and their plan utilizes a teardown to create space and walkable area for a new building/restaurant and amenities. The plan presented by Mr. Petersen starts from scratch and does not create the spatial place that Ranch Mart is trying to create. The place in this applicant's plan created between the buildings is parking lots.

Mr. Petersen stated this has been argued before. The plan is not a grocery store anchored development, so comparison is "apple to eggs." Mission Road and 95<sup>th</sup> Street are more residential than the proposed plans site bounded on all sides by four major roads.

#### Delete Stipulations 7 and 39; Stipulation 39 renumbers to Stipulation 40

Mr. Coleman stated Stipulation 7 goes back to the overall plan for connectivity. The trails going around the cul-de-sacs should actually connect to the cul-de-sacs for walkability. Stipulation 39/40 is the opportunity to create wet basins, rather than dry basins, for better aesthetics and amenities. Dry basins often collect trash. Villa Milano has three ponds instead of just having dry basins.

Mr. Petersen stated aesthetically pleasing swales and dry basins would be shown at Final Plan and would be green and a landscape feature when not used in a utilitarian fashion.

Councilmember Filla asked Mr. Ley to comment. Mr. Ley stated BMPs have become challenge to make into an amenity, but this can typically be achieved through design. Stormwater code requirements prohibit direct discharge into a dry basin, so a change needs to be made. The detention ponds shown in the plan will need to be reworked. Stormwater can be discharged into a retention pond only. A wet basin without enough water can be a problem and there are three basins. The footprint of retention can be reduced by digging deeper and having a wall on one side. For example, Tuscan Reserve has a retention facility and the water sits 8 ft. to 10 ft. down below the waterway.

Mr. Petersen stated there needs to be enough water so it does not stagnate. Detention is usually dry and used to move water through. An amenity to retain water would be broader at the top level and configuration does not work for the applicant who will not build a lake. Mr. Ley agreed to review to see if there would be enough water. Mr. Petersen stated this will be brought back at Final Plan for stormwater as approved by Public Works and the Council. Mayor Dunn stated she prefers retention, would not delete Stipulation 40 and a detailed plan should be brought forth at Final Plan.

Mr. Lambers asked if the City currently has dry basins of the proposed magnitude. Mr. Ley stated to his knowledge the largest dry basin located at St. Michaels the Archangel at 143<sup>rd</sup> Street and Nall. The City receives complaints from residents on the north side of this basin because of weeds and maintenance. Mr. Lambers stated that most developments retain water and provide amenities. He stated there is an example of an unappealing and not nearly as visible as proposed dry basin in Lee's Summit, Missouri. He strongly recommended the Governing Body to support Staff's position.

Mr. Petersen stated he could show well-designed detention. A pond of just stormwater cannot be built. This late-in-the-game change would mean the elimination of five or six villas. With due respect, the plan does not have a stormwater problem, the room or the finances.

Councilmember Filla noted disconnect on where the water is coming from and asked about the amount of water. Mr. Klein stated water on the site runs southeast. The main area of focus for proposed detention is south along 137<sup>th</sup> Street on east side of the site, and the City is asking for retention which might have trails and a gazebo of benefit to the community. The site also three other areas; two in the southwest corner and one in the northeast corner. Councilmember Sipple stated the creek on the east side of Kenneth Road would pick up the water. Mr. Coleman stated the detention would always contain water, similar to the private ponds in north Leawood. The 55-acres of ground drains from west to east. Councilmember Filla stated the ponds in north Leawood are never empty and the City does receive numerous complaints about the ponds.

Mr. Petersen stated if the water was not put there by God, then pumped water from Johnson County would be required. He stated we are trying to retain existing vegetation. The City wants the applicant to dig a big hole and fill.

Mr. Ley stated the retention pond at Cedar Point, for water in the area of Cedar Point and Village of Seville. The retention pond with 10 ft. deep and although these are small subdivisions, the pond has water year round. There is quite a bit of irrigation in the area; residents tend to irrigate every other day. The developments have stipulation that if the pond becomes low, for example in August, they may have to open spigot and add water, but they have not had to do so in five years.

Mr. Petersen stated there is no room to build a lake. Mr. Ley stated deepen the floor.

Mayor Dunn stated this was not going to be revised tonight, and language should say at time of Final Plan applicant show detention and/or retention. The applicant should continue to work with Public Works and the Planning Commission.

## **REVISIONS**

### **Review/Delete Stipulation 1a**

Mr. Klein stated this is a critical component. Applicant has requested 55% discount for residential. LDO mixed use residential provides a 25% discount that reduces F.A.R. Staff may recommend and Governing Body approve a 55% discount without a three-fourths majority affirmative vote, but that is only for a F.A.R. of 0.45 or greater. The F.A.R. in the applicant's plan is 0.43 with 25% base. Staff is not supportive of 55% discount over the 25% base for a number of reasons. Mr. Klein referenced the applicant's request for two 15% F.A.R. deviations in their Stipulation 18, one for 15% bonus requested for underground parking which Staff agrees and one 15% bonus requested for providing some areas in the northeast such as trails and for providing the plaza area from High Drive to Building H.

Mr. Klein displayed a comparison chart for 25% and 55% residential discount. The top section of the chart "F.A.R. WITHOUT RESIDENTIAL DISCOUNT" is the same for both percentages because this section is not related to discount. The "Proposed Building Area" is 211,482 sq. ft. The lower section of chart relates to discounts. A 25% discount results in 338,400 sq. ft. needing a bonus of 139,682 sq. ft. to achieve. A 55% discount results in 252,240 sq. ft. needing a bonus of 53,522 sq. ft. to achieve. Mr. Klein stated in the higher percentage the amount of square footage need is reduced and the F.A.R. is not as high.

Mr. Petersen stated this requires a major in math. Staff has been opposed to the plan from the get-go, saying it was not dense enough, does not have five-six-seven story buildings, transects or grid street system. That cannot be built. The City requires 30% mixed use and the plan is at 46%. At 30% open space, Staff is trying to hold us down to standard Ranch Mart shopping center F.A.R. because they did not like our plan. We have a good mix and setbacks well within City purview. All Planning Commission members agreed to 55% given to what is being attempted to be done. Mr. Petersen requested the 55% credit discount and the two 15% bonuses be allowed. He stated the plan still provides 16% more open space than City Code requires.

Councilmember Filla pointed out that a large amount of time had been expended on stipulations. She pointed to a plan drawing and asked if the plan could contain a bicycle lane on a residential street[s] indicated. She asked that benches and playground equipment to the one-acre green space, add pocket parks and save as many trees as possible. Mr. Petersen said these could be looked at Final Plan.

Councilmember Filla inquired if the green space in the east near Kenneth Road might be utilized for something for children. Mr. Klein stated that area is where Staff had asked the applicant to make an asset for the development, but applicant wanted detention. In response, Staff requested the detention be turned into a retention pond. The area is losing trees. Mr. Petersen stated agreement to detention/retention review.

Mayor Dunn discontinued review of revisions, asking for Governing Body questions.

Councilmember Azeltine expressed amazement and found fascinating Mr. Petersen's comment about being unable to comply with the LDO if built in strict accordance with the City's Comprehensive Plan or 135<sup>th</sup> Community Plan. Councilmember Azeltine stated the Comprehensive and 135<sup>th</sup> Street Community plans provide vision and guidelines; these plans were accepted, not approved, by the Governing Body. The LDO is law.

Councilmember Azeltine stated there were no stipulations made after initial plan review. The Staff Report is interspersed with comments that referenced the Comprehensive and 135<sup>th</sup> Community Plans, which should not be given the same weight as the LDO. Citizen emails received have been helpful to him and out of 26 received, 24 expressed great thanks for moving 137<sup>th</sup> Street so it was not against their subdivision, one was in opposition and one from a Home Owners Association in regard to stipulations. Positive citizen support is usually not the case. He stated at the Governing Body's last review he suggested that a lot of the applicant's green space was located along the edges, and layout does not seem to have changed. Page 12 of the Staff Report talks about F.A.R. additional open green space must provide public benefit and Page 18 lists the nodes and grid streets that do not meet the LDO. LDO compliant roofing material is going to be worked out. F.A.R. is the only issue. The City wants something special. He requested the applicant take another look and be creative.

Mr. Petersen stated F.A.R. is not an issue, as the plan is below density. The development is mixed use and the villas are critical and will start the movement. Then the focus will be on 18 acres of mixed use. The LDO requires minimal percentages for office, residential and retail in mixed use. This is all density and cost, and there must be a place to park it all. A two or three acre green space cannot be made. He asked to be able to come back at Final Plan with detail.

Councilmember Azeltine stated he would not want to drive into the development and say "where is the green space." Mr. Petersen stated there will extensive places to sit, landscaping, a 2.7-acre green space near the senior living facility and 28,000 sq. ft. used for an active trail system.

Councilmember Azeltine quoted from Ms. Sherman's letter sent to him and Councilmember Cain, and called the letter very eloquent. The letter stated that approving the application would be a good step in the right direction.

Councilmember Filla inquired if there was diversity offered in residential price points. Mr. Petersen stated what he considers diversity is attached villas priced at \$600,000 per side, multi-family units on the west side of High Drive similar to Mission Farm rent and the senior living component.

**A motion to extend the meeting for an additional 30 minutes was made by Councilmember Rawlings; seconded by Councilmember Sipple. The motion was approved with a unanimous vote of 8-0.**

Councilmember Harrison commended the Planning Commission for their meetings, where thoughtful questions were asked. She pointed out Planning Commission Chair Marc Elkins was in attendance and the numerous volunteer hours of the Commission members. She stated frustration that the detention/retention pond had not been before the Planning Commission. She loved the idea of cul-de-sacs and connectivity of neighborhood as long as 6 ft. tall fences did not surround the villas. "Sense of place" was stated 30 times in the Staff Report; this phrase seems to be the top citation in an internet search, but rarely is defined. If the City desires ponds every three miles, this needs to be stated. If walkability is desired, then this should be stated as "sense of place." "Sense of place" is sometimes developed afterwards. She stated belief the mixed use plan was dense enough, and expressed hope work can continue on stipulations at another meeting, another day.

Councilmember Sipple stated he had three issues with the plan being use of empty triangle pieces of land in the southwest for pocket parks as another amenity; lack of good tie-in of 137<sup>th</sup> Street and Kenneth to Target and bank on the other side of State Line Road; and possibility of eliminating some of the green space in the middle of the site to add some to the northeast corner by relocating the senior facility slightly south, and re-arranging buildings [depicted in purple and blue] in the east for some green space for commercial on 137<sup>th</sup> Street. Mr. Petersen stated there was not much flexibility in the plan, but would review use of the empty triangle pieces of land. He stated buildings could not be pulled further east due to drainage issues. Mr. Ley stated the original layout of 137<sup>th</sup> Street did not go past Kenneth Road.

Councilmember Cain complimented the Planning Commission for their many hours and due diligence. She thanked the applicant for their effort and progress made in regard to movement of High Drive and deletion of roundabouts. She stated she would watch with interest the one hundred \$600,000 attached villas which is above-average and may not currently exist in the City, based on her 17 years of real estate experience. She stated she understands the concepts of grid network, transects and activity nodes which are at issue; this is the City's first application for 135<sup>th</sup> Street Corridor. She noted in minutes that one Planning Commissioner did not see difference in retail/residential proposed by the plan as compared to elsewhere in the City. The City wants something more unique and interesting. The City cannot have 600 acres of Park Place. The plan should follow the LDO and where the plan does not should be clear. Other City plans are open to interpretation.

Mr. Petersen stated the plan adheres to every component of the LDO, and the LDO allows the applicant to seek four deviations which the Governing Body can approve. Mr. Klein stated the applicant is requesting 55% discount on F.A.R. and the applicant has always said the plan meets the LDO on roofing and RP-3 zoning. These would be examples of LDO compliance.

Mayor Dunn stated to approve the plan would require only a majority, not a super-majority vote, since this was a remand to the Planning Commission. She stated the Governing Body would be approving the deviations requested.

Councilmember Rawlings inquired if the Governing Body would be approving deviations. Ms. Bennett confirmed "yes" if the Governing Body accepts Mr. Petersen's documentation.

Mayor Dunn pointed out the Planning Commission had expressed hope for more than one acre amenity, which would not have come forth in the plan without the Comprehensive Plan or 135<sup>th</sup> Street Plan. Mr. Petersen confirmed to Mayor Dunn the one acre area south of 137<sup>th</sup> Street is part of Phase 1.

Councilmember Larson thanked the Planning Commission and Staff, who do a good job protecting the City's interest. She likes the plan and wants work to continue, with give and take on a compromise. Her approval would not be a vote against Staff.

Mayor Dunn expressed the belief she had heard the Governing Body would like to see more green spaces, maybe ponds and more bicycle trails, as these are valued. Leawood is special because of deliberation and attention to detail. She thanked residents for their input.

**A motion to pass Agenda Item 12.B. including Stipulations 1 through 43, less those agreed for deletion presented by applicant, and with modifications presented in the current applicant discussion materials was made by Councilmember Azeltine; seconded by Councilmember Sipple.**

Councilmember Filla asked for clarification for the record if the approval would be for discussion of deleted and revised stipulations. Mayor Dunn stated Stipulations 2, 3 and 7 at Final Plan. Ms. Bennett stated as per applicant, deleting three stipulations, revising Stipulation 40, and including Stipulation 20 in regard to head-in parking. She would work with Mr. Petersen.

Councilmember Cain questioned how to ensure discussion would happen when there is such a wide disagreement between Staff and the applicant. She stated she was uncomfortable supporting the plan at this time; the plan could be improved. Mr. Petersen stated the City and applicant disagree on grids and transects. Staff is professional and we know we have a plan to continue to work on for detention/retention, continued connectivity and green space as it approaches Kenneth Road.

Mayor Dunn pointed out the Planning Commission had wished to see additional work on the plan as well.

**The motion was approved with a roll call vote of 7-1; Nay from Councilmember Cain for reasons stated.**

**13. OLD BUSINESS – None**

**14. OTHER BUSINESS – None**

**15. NEW BUSINESS – None**

#### **ADJOURN**

There being no further business, the meeting was adjourned at 11:30 P.M.

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Debra Harper, CMC, City Clerk

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Cindy Jacobus, Assistant City Clerk



**ADVISORY BOARD**  
**Meeting Minutes – November 12<sup>th</sup>, 2018 - 5:30 p.m.**  
**Leawood City Hall- Maple Room**

Board members in attendance: Chair Karen Ward-Reimer, Kim Galbraith, Steve McGurren, Gary Swanson, Amy Vlasic, and Bob Wright

Board members absent: Lorrie Hamilton

Council liaisons present: Julie Cain and Chuck Sipple

Staff members present: Brian Anderson, April Bishop, Chris Claxton, Kim Curran, and Camille Sumrall

Chair Karen Ward- Reimer called the meeting to order at 5:30pm.

Chair Karen Ward- Reimer made a motion to approve the October 9<sup>th</sup>, 2018 meeting minutes.

Kim moved the motion and seconded the motion. Steve seconded the motion. The minutes were approved unanimously.

**I. Old Business**

**A. Pickle ball**

Chris informed the group that she has not yet spoken with her pickle ball constituency contacts: Arthur Berger and Pam Morris. She has researched nets that are more substantial for the pickle ball players after the last Parks and Recreation Advisory Board meeting discussion on pickle ball. She has found sturdier nets for approximately \$250 a net; however, storage may be an issue, as the nets are about 22 feet wide. She reminded the group that another issue with the nets would be how to let the public use them without them getting stolen or damaged.

Steve asked if there is a City employee at City Park during pickle ball season.

Chris responded she does not want to commit a staff member because it would be difficult to find that person when they are working within or outside of the park.

Amy asked if users could check the nets out at the aquatic center by using their driver's license as a deposit.

Chris responded that they have not fully vetted out the location near the tennis courts that would be appropriate to access the nets. Checking out the nets may entail the use of a door code, but finding a storage space near the tennis courts with a door to fit all eight nets may be hard to find. Storage space is lacking in City Park.

Amy asked if the players would be able to break down the nets themselves, in order to help store them.

Chris responded that these nets are more heavy duty and would require tools to take apart.

Bob asked if we could put a small inexpensive tracker on the nets. If the nets are 24 feet long, they will be hard to steal.

Brian added that the nets would need to be folded in half to get through the tennis court doors. A 22-foot net apparatus will be hard to maneuver around.

Kim G stated that Blue Valley Hilltop Recreation Center has very similar nets and they roll their nets on and off their indoor courts every day. It might be beneficial to go check those out and see how they maneuver them into a closet.

Chris stated that building pickle ball courts might be an option, if this is something the Council wants to consider. Pickle ball courts cost approximately \$20,000.00-\$40,000.00 a court, depending on many variables. Chris stated she is in favor of the pickle ball playing, but we need to prioritize funds and find out what priority pickle ball has on the list of numerous parks projects.

Chair Karen Ward- Reimer asked if pickle ball will be a featured section in the upcoming program guide.

Chris responded a ¼ page of information may be included just to let people know the courts and nets are available. We will have the nets and the logistics figured out by then.

## **B. Update on Ironwoods Park Project**

Brian informed the group that the project is delayed. The contractor for the project, O'Donnell, is not optimistic about being able to pave asphalt this year. It must be 50 degrees and rising to pave, which is not likely to happen for the rest of 2018. They are however, able to keep working on the concrete improvement projects in the park. There is work currently being done on the sidewalk from the Lodge to the Nature Center and concrete work near cabin number one.

## **II. New Business**

### **A. Outcome of Public Meeting About Relocating Former City Hall**

Chris informed the group that the consensus of the Council following the public meeting is that the former City Hall would remain at the 96<sup>th</sup> and Lee property. There was a good turnout at the meeting, especially considering the snowfall earlier in the day. Chris stated that the previous RFP for the property that was issued in February 8, 2018, had 11 submittals, but will need to be revised and reissued as soon as possible.

Council Liaison Sipple stated he thought it was implied by a council member of Ward One, that the City should possibly keep both the former Fire Station and the former City Hall. There are several building configuration options for the RFP but the main goal is to maximize park and green space.

Chris stated that the RFP should be reissued before the Holidays. She has reached out to several people that submitted for the first RFP, to let them know that a new RFP will be reissued soon.

Gary stated that unfortunately, he could not make the meeting but his opinion is that the former City Hall should be on the property next to the current City Hall because that is the center of the City. In addition to the former City Hall being more centralized, it would give more green space for the 96<sup>th</sup> and Lee Park.

Council Liaison Sipple stated that several people at the meeting had the same opinion as Gary, but City Council voted to keep the building. The next step is determining where to move the building on the site. It must be moved before construction of the new Fire Station can begin.

Steve asked if City Council decided what to do with the former Fire Station.

Council Liaison Sipple stated that he thought most of the members of City Council thought the current Fire Station should go, leaving more room for green space. Many people at the meeting stated they wanted to keep the former Fire Station, so keeping it is still an option at this point. City Council has looked at making the former Fire Station an open shelter; however, that would cost at a minimum of \$400,000.00.

Chris stated she has not received the top priority list from each City Council Member in what they would each like to see in the park but expects to get the information soon.

Council Liaison Cain suggested sending an email to the City Administrator and all City Council members reminding them about the priority list for the park.

Chris stated that an option in the park planning process would be to have a charrette with the parks neighboring residents, staff and Council Members.

Council Liaison Cain asked when the charrette would come in the planning process.

Chris stated it would come early, before the plan goes to the Planning Commission. The charrette would need to be included in the RFP.

Council Liaison Sipple offered to help set up the new RFP with Staff, Park's Advisory Board Members, and City Council Members.

## **B. CAPRA Accreditation**

Chris stated she would like to table the discussion because she does not feel the department is ready for the self-assessment. CAPRA accreditation forces your agency to look at itself and see where inefficiencies lie. It is a very long and detail oriented process.

Council Liaison Sipple asked when the deadline to apply is.

Chris responded that there is no specific date but rather it is a series of deadlines based on when you want the final visit by the CAPRA team. You have two years from the application to the final visit; otherwise, you must start over with the application.

Council Liaison Sipple asked what the benefit of receiving the accreditation is, will it make you more eligible for state or federal funding.

Chris stated not directly, but indirectly yes. CAPRA accreditation makes you have useful data and plans available when state or federal funding comes available, making it easier and faster to apply for funding. More importantly, it makes you a better agency and helps you plan for the future.

Steve asked over what period of time would the pre work occur and what percentage of the staff's time it would take.

Chris responded that it would take about three years. It would most likely occur over weekly 2 hour meetings with Staff. Chris stated she thought the Staff would be ready to

take on the challenge and they will move forward on a preliminary self- assessment in the near future.

### III. Staff Reports

Brian reported the following:

- Pre-bid meeting on City Park pond had a good turnout of contractors. Everyone who would like to bid on this project needed to be at the mandatory meeting today. City Park pond was damaged during a flood last year. The repair project includes stacking limestone around the perimeter on top of a concrete base, and improving the spillway with pavers that are more durable as well.
- Bike Committee met today and are discussing South Loop routes; great feedback from the Bike Committee from first hand biking experiences.
- Meeting with regional Park Directors to unify trail standards and regulations especially pertaining to electronic vehicles and e-bikes on trails. We are interested in unifying and modernizing trail regulations to include ADA power assisted vehicles.

Chris reported the following

- Kansas Recreation Park Association tour went very well, one of the best highlights from her service as President. The largest populated city visited was 3,500 people and it was very interesting to see how smaller cities function.

Kim reported the following:

- A/V projects at both Community Center and Lodge at Ironwoods are completed.
- Soccer season has ended. Waste Water Management project taking over fields 11/12 caused parking issues for soccer. We are looking at moving games to later times in the day.
- Next month will start accepting application for Aquatic Center positions.
- Holiday Lighting is at 6:00 PM on Monday, November 19.
- Breakfast with Santa on December 8, at the Lodge at Ironwoods.

April reported the following:

- "Dancers" was dedicated on Monday, November 5, before City Council meeting. The artist, Ewerdt Hilgemann and his wife were here from Amsterdam for the dedication.
- Holiday Traditions on the Prairie is a free event at the Oxford Schoolhouse on the same day as Breakfast with Santa, please stop by and bring the family.
- "Walking Woman" will hopefully be installed before the end of the year.

### IV. Next scheduled Meeting Date

The next meeting will be held on Tuesday, December 11<sup>th</sup> at 5:30 p.m. at Vista 154 at the Ironhorse Golf Course.

Bob made a motion to adjourn the meeting. Steve seconded the motion. The motion was approved unanimously.

The meeting adjourned at 7:00 pm.

Respectfully submitted,



Chris Claxton, Parks and Recreation Director

**MINUTES**  
Leawood Arts Council  
October 23, 2018  
Leawood City Hall

7.D.

Present: Mary Tearney, Anne Blessing, Stephanie Hamil, David Hazen, Kim Hinkle, Carl McCaffree, and Michael Shirley. April Bishop, staff liaison as well as Julie Cain City Council liaisons.

Mary called the meeting to order at 5:30 pm.

Julia moved that the Minutes of the August 28<sup>th</sup> meeting be approved. Carl seconded the motion. All approved.

**96<sup>TH</sup> & LEE MEETING**

Mary reminded LAC members that there will be a Special Meeting held on November 12<sup>th</sup> in Council Chambers at 7:00 pm. The Public Meeting will be for residents to comment on possible relocation of former City Hall Building, from 9615 Lee Boulevard, to be located adjacent to current City Hall at 4800 Town Center Drive.

Julie said that this is a multi-layer problem. First, the new fire station will be built in the former location of the police station on the south third of the 3 acre property. The old fire station must remain in use until the new station is ready to occupy. The Old City Hall will need to move because it is in the way of the fire station construction. City Council is considering moving the former City Hall west of the current City Hall.

The meeting will address if the residents would like to move the build, or leave it on site. Also not finalized is the issue of the original fire station. All HOA presidents have been notified along with the resident near the 96<sup>th</sup> & Lee property.

**APPI**

**Banner Selection Panel**

Anne reported that the panel selected Zach Newton, an artist that works for Hallmark has designed a series of 5 banners. The Panel met October 17<sup>th</sup> with the artist to discuss any final revisions. They will go to City Council on November 19<sup>th</sup> for final approval. The banners will be hung in early spring with an artist reception celebration. The panel will need to select a plan for which poles the new banners will be hung. Mary stated that they Mayor selected the original sites.

**Michael Stutz – Walking Female**

Michael is working on the piece and plans on installing in November or December.

**Point Defiance, Art on Loan by Beth Nybeck**

City Council executed the purchase of *Point Defiance* on October 1<sup>st</sup>. Nybeck has been paid.

**Rita Blitt Sculpture**

APPI will meet in November to discuss the donation of the sculpture created by Rita Blitt. APPI felt that a decision couldn't be made until the installation site was determined. This piece titled *Inspiration*, significant in both size and importance, was created in 1987.

**Dancers**

We are still waiting on dedication date based on the next time that Ewerdt will be in the US but hope to have it done this fall.

## **EVENTS COMMITTEE**

April requested that a committee be formed to plan events for the 2019 calendar and to create a plan for a visual arts replacement for Arti Gras and Natural Reflections.

Mike, Julia and Dave agreed to serve.

## **CULTURAL ARTS REPORT**

### **September & October Events**

- **Sundays in the Park Concert Series** –was fun and successful.
- ***Bark! the Musical*** - September 7 – 9 was challenging with the rain all week but it was a successful and fun show. Dogs attended with their owners to watch the show.
- **Into the Night Fall Festival** – October 12<sup>th</sup> was fun for the entire family throughout Ironwoods Park. Even though it rained all week and it was a cold night, crowds were large and everyone had a great time.

### **Up-coming Events**

- ***Mame*** – Nov. 1, 2, 3 - 7:30 pm inside the Lodge  
Nov. 4 - 2:00 - pm  
Benefitting CASA
- **Holiday Lighting** - November 19 – 6:00 pm in front of City Hall

Next Meeting - A special meeting will be called if necessary.

The meeting adjourned at 6:30.

Submitted by: April Bishop, Cultural Arts Coordinator

**MINUTES of the  
PUBLIC WORKS COMMITTEE**  
Meeting held: Wednesday, September 5, 2018  
Leawood City Hall- Main Conference Room, 7:30 AM

**COMMITTEE MEMBERS PRESENT:**

Andrew Osman, CHAIR and Councilmember Ward 1  
Julie Cain, Vice Chair, Councilmember Ward 4  
Drew Alingh  
Ken Conrad  
Abbas Haideri  
Todd Alan Harris  
Marsha Monica  
Jim Rawlings, Councilmember Ward 2  
Christopher White

**ABSENT:**

Chuck Sipple, Councilmember Ward 3

**STAFF PRESENT:**

David Ley, P.E., Director of Public Works  
Julie Stasi, Public Works Admin. Services Manager, Sr.

**Vice Chair Cain called the meeting to order at 7:35 AM.** Chair Osman was unable to begin the meeting and had asked Vice Chair Cain to call the meeting to order due to his late arrival.

**FIRST ITEM OF BUSINESS (OLD BUSINESS): Review/approve the previous meeting Minutes.**

**ACTION: Marsha Monica- Motioned to approve the Minutes of the Public Works Meeting of May 2, 2018.**

**Christopher White-Seconded the motion to approve the Minutes. All members present were in favor.  
Motion passed. Minutes Approved.**

**SECOND ITEM OF BUSINESS (NEW BUSINESS): Design Consultant Selection for the 2019 Residential Reconstruction Project and the 2019 Lee Boulevard, 95<sup>th</sup> to 103<sup>rd</sup> Design.**

Committee Members received packets prior to the meeting in order to review the request for proposal (RFP) packages along with a score sheet for each proposal. Five companies were sent RFP's and all five responded. The companies were: (in alphabetical order) Affinis Corporation, BHC Rhodes, Continental Consulting, Olsson Associates, and Walter P. Moore.

David Ley advised that we were looking for a recommendation on the top two consultants in order to enter into an Engineering Design Contract for the 2019 Residential Street Reconstruction Project and for the 2019 Lee Boulevard Project. Staff looks at who has worked in the City in the past and who has worked at local municipalities and done a good job. Staff narrows it down initially and then from that we ask that the Committee members read through the packets and complete rankings based on what you feel is the best from what each firm has to offer. We have worked with all of these firms except Walter P. Moore. Walter P. Moore has done a lot of work for Overland Park, Kansas. We feel any of these five (5) firms would do a great job.

Score cards were collected and tallied.

Top scores went to Continental Consulting-first place, BHC Rhodes-second place.

**ACTION: Marsha Monica Motioned that the Committee recommend to Council the Committee's number one choice of Continental Consulting for the 2019 Residential Reconstruction Project and the second place company, BHC Rhodes for the 2019 Lee Boulevard Design Project. This Motion was also based upon staff's recommendation that the two projects be offered to the top two selected companies.**

**Todd Harris-Seconded the motion. Member Conrad abstained from the vote due to a conflict of interest. All other remaining members present were in favor. Motion passed.**

Vice Chair Cain explained to Chair Osman when he arrived that the group discussed the merit/ranking system and how difficult it is sometimes on paper vs experience vs knowing the dollar amount/budget. Reviewing how the selection process works and perhaps refined or tweaked for future selections.

**VICE CHAIR Cain adjourned the meeting at 8:34 A.M.**

**Consultant Selection  
SCORE CARD  
Wednesday, September 5, 2018**

**Project: 2019 Residential Reconstruction Design**

*Companies listed in alphabetical order.*

<b>Public Works Committee Members NAMES NOT SHOWN</b>	<b>Affinis Corp</b>	<b>BHC Rhodes</b>	<b>Continental Consulting</b>	<b>Olsson Associates</b>	<b>Walter P Moore</b>
	72	85	93	77	71
	did not vote	did not vote	did not vote	did not vote	did not vote
	Not Present	Not Present	Not Present	Not Present	Not Present
	84	84	96	96	86
	95	96	100	77	78
	Abstain	Abstain	Abstain	Abstain	Abstain
	84	79	87	78	73
	100	97	95	96	100
	89	89	87	84	92
	87	85	62	81	83
<b>TOTAL:</b>	<b>611</b>	<b>615</b>	<b>620</b>	<b>589</b>	<b>583</b>

<b>Order of Score</b>	
620	Continental Consulting
615	BHC Rhodes
611	Affinis Corp
589	Olsson Associates
583	Water P Moore

*Place "Total Points" from score card on this page.*

*Firm with the highest score is selected.*

**Leawood Public Works Committee**

Minute summary submitted by: Julie Stasi, Admin. Services Manager, Sr.  
Leawood Public Works Department

**MINUTES of the  
STORMWATER MANAGEMENT COMMITTEE**

7.F.

**Meeting of: Wednesday, August 29, 2018  
Leawood City Hall, Main Conference Room**

**COMMITTEE MEMBERS PRESENT:**

James Azeltine, CHAIR and Councilmember Ward 4  
Debra Filla, Vice Chair and Councilmember Ward 1  
Lisa Harrison, Councilmember Ward 3  
John Kahl  
David Lindley  
Curt Talcott

**COMMITTEE MEMBERS ABSENT:**

Skip Johnson  
Mary Larson, Councilmember Ward 2  
Carole Lechevin  
Bill Ramsey

**STAFF PRESENT:**

David Ley, P.E., Director of Public Works  
Julie Stasi, Admin. Services Manager, Sr.

**GUESTS: (by order of sign in sheet)**

Pam Nolan, 9849 Sagamore, Leawood, KS 66206  
Teresa Brown, 9849 Sagamore, Leawood, KS 66206  
Marjorie Anne Dozier, 9851 Sagamore, Leawood, KS 66206  
Dan Kahn, Kahn Engineering, 609 SW Gentry Lane, Lee's Summit, MO 64081  
Scott Jeffcote, 9843 Sagamore Road, Leawood, KS 66206

**CALL TO ORDER:** Chair Azeltine called the meeting to order at 7:36 A.M.

**FIRST ITEM OF BUSINESS: Previous Meeting Minutes**

**ACTION:** Debra Filla made a Motion to approve the Minutes of May 30, 2018, as corrected.

Lisa Harrison seconded the Motion to approve. All members in attendance were in favor.  
Motion passed; Minutes approved.

Chair Azeltine asked about the creek maps the group had previously worked on and the status of the map.

David Ley advised we are working on updating the maps to include the lakes. We are working on them in indicating private lakes, public lakes and the lakes part of the detention systems. ETA is probably the end of September.

**SECOND ITEM OF BUSINESS: New Business; Stormwater concerns 9849 Sagamore.**

Guests in attendance introduced themselves.

David Ley-Staff has been working with resident Pam Noland and looking at the issues they have been having at 9849 Sagamore with the amount of water hitting the rear of their house. Map was displayed that shows approximately 5 acres upstream of this location that collect onto Pembroke Lane and then towards the storm sewer system. There are three curb inlets on Pembroke Lane that collect the water. The biggest concerns that occur regularly is the water that is flowing from the homes between 9824 and 9836 Overbrook. A history of the area and the development back in the 1950's and how the requirements at that time were not that of today. There is not a storm drain system to direct the flow around the properties. Most of the 3 acre watershed flows overland from Overbrook to Sagamore where there is 40 feet of vertical elevation difference. Staff has looked at several solutions and also Kahn Engineering.

Staff reviewed possible solutions. One solution would be to install a swale to direct the water. A swale could be fairly steep however along Pembroke Lane along the rear of the properties on Sagamore it could be constructed down to 103<sup>rd</sup> Street. Funding is an issue and other projects have presented more major concerns, so this project while it has merit, would most likely not have priority. With the projects we currently have (81 & Overbrook area and I-435 area near Lee) this

area might not be workable until about 2020 or 2021 or 4 to 5 years out from now.

David Ley-Advised if the subdivision were built today, typically we look at trying to collect water at about a 2 acre maximum. So once the area is 2 acres, we require an inlet be installed. The best location for that would be on the rear property of 9849 Sagamore. We would need to install berms and swales on 9843 Sagamore and 9835 Pembroke Lane to direct the water down towards the area inlet. And then run the pipe system in the rear of the yards from 9849 to 103<sup>rd</sup> Street, tying into an existing storm sewer system that is on 103<sup>rd</sup> Street. The pipe on 103<sup>rd</sup> is metal pipe so this pipe will be replaced when 103<sup>rd</sup> Street is mill & overlaid next time and that is probably 2022. At that time, the City could look at increasing the pipe size to collect this additional water. The water currently flows out to Sagamore and most of it comes down near 103<sup>rd</sup> & Sagamore. With this fix we could probably pick, up about an additional acre of water. This option would also include trying to grade smaller swales on top of where the pipe is to direct additional flow to the inlet.

John Kahl-What problems are we trying to address? Do the houses flood?

Resident Pam Nolan-described information she knew:

9835 Pembroke; mostly nuisance flooding and soil erosion.

9831 Pembroke; has redone all their drains around the house and installed sump pumps. Leaking areas, mostly in the basement, but no serious damage there.

9843 Sagamore; had lots of damage to their finished basement during the Coaches Storm (July 2017).

9849 Sagamore [Noland]; when the water over flows the berms and the retaining wall, there are two window wells on the back of the basement. The water takes the window out of the metal frame, opens up and just pours in. It is unfinished, there is not a lot of property damage because we are outside with little sump pumps in a pit we installed in our garden bed and we run sump pumps all night long if necessary depending upon the water.

9851 Sagamore; has a patio on the south east corner that has washed the dirt out from under it and therefore they get water on that part of their basement and along the east side. Weeping, not flushing through a window.

9855 Sagamore; it breaks through their fence line, over their patio wall and berm. Water sweeps across their patio and on the south side is where they have a finished part of their basement and it weeps in there. Again, not gushing in. Water breaks through the fence and sweeps across.

Not to what David's point was that we would qualify for SMAC. There is only one house that had water come into the windows. Number of times, about three or four times since 2009.

Pam Nolan-continues and also shares photos to the group.

9843 Sagamore, their retaining wall failed and was rebuilt in 2009 (before Scott lived there).

9849 Sagamore; we have a retaining wall on the back of our pool, it failed. We rebuilt it. We are worried about some of these retaining walls.

9851 Sagamore; their retaining wall is bowing. If that fails that is right into the back of their house. during and other residents described how water is currently flowing to the homes down the hill and causing flooding issues of the yards, retaining wall, patio areas. Residents are constantly running hoses, sump pumps and have installed their own French drains and berms to help but need more help in their area to handle the water.

Curt Talcott-Advised the resident at 9849 Sagamore that one temporary fix they might try until more can be done would be to install a different basement window; one that is made to withstand flood-water pressure.

Chair Azeltine asked about the number of homes.

David Ley-roughly ten (10) in the area.

Regarding new/tear-downs or improved homes. If they are adding over 400 square feet of added impervious, they are required to do a stormwater report and then in a situation like this, where there is no flooding, we would require them to contain that just to the existing flow. So they could put a rock basin underground and then direct the flow into that. That is not an option in this scenario.

Lisa Harrison-asked if there were any tear-down properties in the neighborhood, and there were not.

One resident advised one of the changes in the area was the loss of a huge Oak tree that had been in the back. This appears to have been an issue with the water for a long time.

Pam Nolan-Had photos of water to share. Although advised they were not amazing as other neighborhoods with little kids floating in rafts. Most of the water is ankle deep and sheet flowing over the driveways and to the houses, retaining walls, basement windows. There are no inlets for the water to go to. Nothing that many people would blink at but it was about one to two inches of water in a two plus hour time frame. It was intense. We have a dry creek there with pipes underneath and filled with rock and the water is about to jump out of its banks. There is an attempt by private individuals to get the water down, but it is just too much water. We always keep our hoses and our sump pumps and our extension cords ready with any type of storm. Just a few inches of rain, and it becomes ankle deep in the yards and driveways.

David Ley-There is about a 40' drop from the upstream area at 9824 Overbrook to 9849 Sagamore. These are one foot elevations. Currently the water is just flowing down to Sagamore and being collected at 103<sup>rd</sup> Street, so this would just collect the water a little bit upstream and direct it down to 103<sup>rd</sup>. We could bump up the pipe size along 103<sup>rd</sup> Street. We could do this in conjunction with the Mill & Overlay on 103<sup>rd</sup> Street; that is probably 2024. This is not even in the five year storm projection now.

James Azeltine-Asked about SMAC Funding. How does this work with the new rules coming into place?

David Ley-The County is still working on the funding mechanism for that. But if this were to qualify it would be 50% funded. Typically on those they want to see pictures that show the flooding of the structures inside the homes. It will not be 75% anymore; that is changing starting in 2019. My estimate for one option is \$310,000. There is another option to try to catch the water and direct it west to the creek, but that would be more and potential problems pushed down at the outlet on the creek.

Pam Nolan-asked if they could look at what Kahn Engineering had come up with. Back in 2015, they realized this was way too much water. They had Public Works out in 2017 and no clear solution as to what could be done. In early 2018, residents found Kahn Engineering and they have been wonderful to work with. Instead of looking at every property owner doing something, they

looked more towards a global problem and wanted a bigger solution. Kahn Engineering came up with a proposal which was shown to the Committee. The proposal included swales on the east side down to 103<sup>rd</sup>, also a catch basin that is 24" catches water from Pembroke and it comes to a spot on Sagamore catching a little more water. Kahn was going to try to create another swale to catch more water and in a two sided catch basin and then pipe it over to the existing 24" basin. Although Public Works has since reviewed this and has a concern with the swale becoming a bit of a problem. And David Ley had expresses concerns about berming and the swale due to the slope. David Ley-That's right. There is a ten foot drop between 9831 and 9835 so there is a pretty good drop behind the houses and driveways.

James Azeltine-If we were successful in getting SMAC funding and we were going to go ahead with this, we would need easements. Once this would be completed, wouldn't it become part of our City Maintenance responsibilities?

David Ley-The pipe system would. The berms and the swales and the landscaping are all the responsibility of the property owners.

Kurt Talcott-And the City usually does not go in and install berms.

David Ley-In the past (Hallbrook as an example) there were actually engineering swales on their construction plans.

Pam Nolan-Noted that all the driveways along 98<sup>th</sup> were elevated with a curb when the road was improved.

Dave Ley-The way it was originally constructed they had a curb along Pembroke. The curb was I believe about a 3 inch curb. And the driveways just sloped straight back to the house after that. So once that gathered up over top, it would just run right down the driveways and across. Our standard for a declined driveway is we drop the driveways flat at the curb and then the high point of the driveway has to be at the top of curb elevation to create a berm out of the driveway to keep the water away. That is our typical build. The new curbs are 4 1/2 inches (our standard). We built it to what our Construction Standards are. Originally when they were constructed, the standards were not what they are now.

Curt Talcott-So those driveways are not beyond standard, they were just brought up to more current standards of today.

John Kahl-has some concerns. Do we have any funds set aside? If we were to do this project, where would the funding come from? Where does this stand on schedule with other project?

David Ley-Advised if this was approved for funding, we are looking at 4 to 5 years out, as there are other locations already in the queue.

**ACTION:** John Kahl-Made a motion that the area of concern at 9849 Sagamore be recommended to the City Council as a project and to move this forward onto the City's list of Stormwater Projects. Council needs to further investigate addressing the drainage and flooding problems in the area of 9849 Sagamore. Subject to any future prioritization with other projects. This area has a potential for funding through the 1/8 cent sales tax or SMAC Funds.

Curt Talcott seconded the motion. All members present were in favor. Motion passed.

**ACTION:** Debra Filla-Made a motion to recommend to Council that Council direct staff to create criteria for stormwater projects and how they are prioritized. Whether they be eligible for SMAC, 1/8 cent sales tax or a Capital Improvement Program. Included in ratings of the prioritization would be the funding mechanism; such as a cost sharing by the citizens, number of homes in the path or

severity of the impact. All those kinds of factors and how much money is available. John Kahl-seconded the motion. Advising that the old SMAC program had a rating system that we could possibly model this off of and that it would lend assistance to the development of Leawood's rating system. All members present were in favor. Motion passed.

David Ley and Chair Azeltine-Also thought it would be a benefit for this Committee to meet in January of each year to review the Pay-as-You Go Projects and projected funding to know where the stormwater projects fall in the funding/time frame schedules.

**Chair Azeltine adjourned the meeting at 8:49 AM.**

Minutes respectfully submitted by Julie Stasi, Leawood Public Works Department.

# Memo

**To:** Mayor Peggy Dunn and Councilmembers  
Scott Lambers, City Administrator

**From:** Dawn Long, Finance Director

**Date:** December 17, 2018

**Re:** Approval of the 2018 Audit Engagement

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**Recommendation:**

I would like to recommend that the Governing Body approve a one-year engagement letter with Rubin Brown for the 2018 audit.

**Background:**

I have discussed the key components of the 2018 engagement such as timing, staffing and approach. Mr. Moyer provided to us an engagement letter for consideration (see attached). This will be the third year with Rubin Brown under a three year contract.

**Fiscal Impact:**

In 2018, the total cost of the audit will be \$34,250. This expenditure is budgeted in the 2018 annual budget account 11110.11240.611000, Finance Professional Services.

**DRAFT**

**RESOLUTION NO. \_\_\_\_\_**

**RESOLUTION APPROVING AND AUTHORIZING THE MAYOR TO EXECUTE A LETTER OF ENGAGEMENT BETWEEN THE CITY AND RUBINBROWN, LLP, FOR AN AMOUNT NOT TO EXCEED \$34,250.00, PERTAINING TO 2018 AUDIT SERVICES**

WHEREAS, the City is in need of audit services;

WHEREAS, RubinBrown, LLP, provides such services; and

WHEREAS, the parties desire to execute a Letter of Engagement to provide such services.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF LEAWOOD, KANSAS:

**SECTION ONE:** That the Governing Body hereby authorizes the Mayor to execute a Letter of Engagement for an amount not to exceed \$34,250.00, between the City and RubinBrown, LLP, attached hereto as Exhibit "A", and incorporated herein by reference as if fully set out.

**SECTION TWO:** This resolution shall become effective upon passage.

PASSED by the Governing Body this 17<sup>th</sup> day of December, 2018.

APPROVED by the Mayor this 17<sup>th</sup> day of December, 2018.

[SEAL]

\_\_\_\_\_  
Peggy J. Dunn, Mayor

ATTEST:

\_\_\_\_\_  
Debra Harper, CMC, City Clerk

APPROVED AS TO FORM:

\_\_\_\_\_  
Patricia A. Bennett, City Attorney



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& Business Consultants*

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November 20, 2018

The Honorable Mayor and Members of the City Council  
C/O Ms. Dawn Long, Finance Director  
City of Leawood, Kansas  
4800 Town Center Drive  
Leawood, Kansas 66211

We appreciate the opportunity to be of service to City of Leawood, Kansas. This letter ("Letter") sets forth the services that RubinBrown LLP ("RubinBrown") will provide for you. In order to better understand each party's obligations, the terms "we," "us," and "our" refer to RubinBrown and the terms "you," "your" and "management" refer to City of Leawood, Kansas. Your engagement of RubinBrown will be governed by the terms of this Letter and the attached RubinBrown LLP Engagement Terms. Your engagement of RubinBrown will be governed by the Agreement authorized by the Governing Body of the City of Leawood on September 19, 2016 ("Agreement"), terms of this Letter and the attached RubinBrown LLP Engagement Terms. Should a conflict arise in application or interpretation of the terms of the engagement, notwithstanding any provision to the contrary, the terms of the Agreement shall govern.

### **Scope of Services**

We are pleased to confirm our understanding of the services we are to provide City of Leawood, Kansas for the year ended December 31, 2018. We will audit the financial statements of the governmental activities, each major fund, and the aggregate remaining fund information, including the related notes to the financial statements which collectively comprise the basic financial statements of City of Leawood, Kansas as of and for the year ended December 31, 2018. Accounting standards generally accepted in the United States of America (GAAP) provide for certain required supplementary information (RSI), such as management's discussion and analysis (MD&A), to supplement City of Leawood, Kansas' basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. As part of our engagement, we will apply certain limited procedures to City of Leawood, Kansas' RSI in accordance with auditing standards generally accepted in the United States of America. These limited procedures will consist of inquiries of management regarding the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We will not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

The following RSI is required by generally accepted accounting principles and will be subjected to certain limited procedures, but will not be audited:

- Budgetary comparison information
- Supplementary pension information
- Supplementary OPEB information
- Supplementary infrastructure information under modified reporting

We have also been engaged to report on supplementary information other than RSI that accompanies City of Leawood, Kansas' financial statements. We will subject the following supplementary information to the auditing procedures applied in our audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America and will provide an opinion on it in relation to the financial statements as a whole:

- Combining statements

The following other information accompanying the financial statements will not be subjected to the auditing procedures applied in our audit of the financial statements, and our auditor's report will not provide an opinion or any assurance on that other information.

- Introductory section
- Statistical section

### **Audit Objective**

The objective of our audit is the expression of opinions as to whether your basic financial statements are fairly presented, in all material respects, in conformity with generally accepted accounting principles and to report on the fairness of the supplementary information referred to above when considered in relation to the financial statements as a whole.

Our audit will be conducted in accordance with auditing standards generally accepted in the United States of America and will include tests of the accounting records and other procedures we consider necessary to enable us to express such opinions. We will issue a written report upon completion of our audit of your financial statements. Our report will be addressed to those responsible for governance of City of Leawood, Kansas. We cannot provide assurance that unmodified opinions will be expressed. Circumstances may arise in which it is necessary for us to modify our opinions, add an emphasis-of-matter or other-matter paragraph(s), or withdraw from the engagement.

### **Audit Procedures — General**

An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements; therefore, our audit will involve judgment about the number of transactions to be examined and the areas to be tested. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements. We will plan and perform the audit to obtain reasonable rather than absolute assurance about whether the financial statements are free of material misstatement, whether from (1) errors, (2) fraudulent financial reporting, (3) misappropriation of assets, or (4) violations of laws or governmental regulations that are attributable to the entity or to acts by management or employees acting on behalf of the entity. Because of the inherent limitations of an audit, combined with the inherent limitations of internal control, and because we will not perform a detailed examination of all transactions, there is a risk that material misstatements exist and not be detected by us, even though the audit is properly planned and performed in accordance with U.S. generally accepted auditing standards. In addition, an audit is not designed to detect immaterial misstatements, or violations of laws or governmental regulations that do not have a direct and material effect on the financial statements. However, we will inform the appropriate level of management of any material errors, fraudulent financial reporting, or misappropriation of assets that comes to our attention. We will also inform the appropriate level of management of any violations of laws or government regulations that come to our attention. Our responsibility as auditors is limited to the period covered by our audit and does not extend to any later periods for which we are not engaged as auditors.

Our procedures will include tests of documentary evidence supporting the transactions recorded in the accounts, and may include tests of the physical existence of inventories (if applicable), and direct confirmation of receivables and certain other assets and liabilities by correspondence with selected individuals, funding sources, creditors, and financial institutions. We will request written representations from your attorneys as part of the engagement, and they may bill you for responding to this inquiry. At the conclusion of our audit, we will require certain written representations from you about the financial statements and related matters.

Chester Moyer will serve as the partner responsible for the overall supervision of the audit engagement and for authorizing the Firm's signature on the audit report letter.

### **Audit Procedures - Internal Control**

Our audit will include obtaining an understanding of the entity and its environment, including internal control, sufficient to assess the risks of material misstatement of the financial statements and to design the nature, timing, and extent of further audit procedures. An audit is not designed to provide assurance on internal control or to identify deficiencies in internal control. However, during the audit, we will communicate to management and those charged with governance internal control related matters that are required to be communicated under AICPA professional standards.

### **Audit Procedures — Compliance**

As part of obtaining reasonable assurance about whether the financial statements are free of material misstatement, we will perform tests of City of Leawood, Kansas' compliance with the provisions of applicable laws, regulations, contracts, and agreements. However, the objective of our audit will not be to provide an opinion on overall compliance and we will not express such an opinion.

### **Management Responsibilities**

Management is responsible for the basic financial statements and all accompanying information as well as all representations contained therein. You are responsible for making all management decisions and performing all management functions relating to the financial statements and related notes and for accepting full responsibility for such decisions. If you have requested our assistance with the preparation of the financial statements and related notes, you will be required to acknowledge in a written representation letter our assistance with such preparation and that you have reviewed and approved the financial statements and related notes prior to their issuance and have accepted responsibility for them. Further, you are required to designate an individual with suitable skill, knowledge, or experience to oversee our assistance with the preparation of your financial statements and related notes (if applicable) and any other nonattest services we provide; and for evaluating the adequacy and results of those services and accepting responsibility for them. These nonaudit services do not constitute an audit under Government Auditing Standards, and such services will not be conducted in accordance with Government Auditing Standards.

Management is responsible for establishing and maintaining effective internal controls, including monitoring ongoing activities; for the selection and application of accounting principles; and for the fair presentation in the financial statements of the respective financial position of the governmental activities, the business-type activities, the aggregate discretely presented component units, each major fund, and the aggregate remaining fund information of the City of Leawood, Kansas and the respective changes in financial position and where applicable, cash flows, in conformity with U.S. generally accepted accounting principles.

Management is also responsible for making all financial records and related information available to us and for the accuracy and completeness of that information. You are also responsible for providing us with (1) access to all information of which you are aware that is relevant to the preparation and fair presentation of the financial statements, (2) additional information that we may request for the purpose of the audit, and (3) unrestricted access to persons within the government from whom we determine it necessary to obtain audit evidence.

Your responsibilities include adjusting the financial statements to correct material misstatements and confirming to us in a written representation letter that the effects of any uncorrected misstatements aggregated by us during the current engagement and pertaining to the latest period presented are immaterial, both individually and in the aggregate, to the financial statements taken as a whole.

You are responsible for the design and implementation of programs and controls to prevent and detect fraud, and for informing us about all known or suspected fraud or illegal acts affecting the government involving (1) management, (2) employees who have significant roles in internal control, and (3) others where the fraud or illegal acts could have a material effect on the financial statements. Your responsibilities include informing us of your knowledge of any allegations of fraud or suspected fraud affecting the government received in communications from employees, former employees, regulators, or others. In addition, you are responsible for identifying and ensuring that the entity complies with applicable laws and regulations.

You are responsible for the preparation of the supplementary information in conformity with accounting principles generally accepted in the United States of America. You agree to include our report on the supplementary information in any document that contains and indicates that we have reported on the supplementary information. You also agree to include the audited financial statements with any presentation of the supplementary information that includes our report thereon or make the audited financial statements readily available to users of the supplementary information no later than the date the supplementary information is issued with our report thereon. Your responsibilities include acknowledging to us in a written representation letter that (1) you are responsible for presentation of the supplementary information in accordance with GAAP; (2) that you believe the supplementary information, including its form and content, is fairly presented in accordance with GAAP; (3) that the methods of measurement or presentation have not changed from those used in the prior period (or, if they have changed, the reasons for such changes); and (4) you have disclosed to us any significant assumptions or interpretations underlying the measurement or presentation of the supplementary information.

With regard to the electronic dissemination of audited financial statements, including financial statements published electronically on your website, you understand that electronic sites are a means to distribute information and, therefore, we are not required to read the information contained in these sites or to consider the consistency of other information in the electronic site with the original document.

We understand that your employees will prepare all cash or other confirmations we request and will locate any documents selected by us for testing.

#### **Engagement Administration, Timing and Fees**

Our fee for the Attest Services will be \$34,250. The fees are based upon anticipated cooperation from your personnel and the assumption that unexpected circumstances will not be encountered during the engagement. If significant additional fees are necessary, we will discuss them with you and agree to a new fee estimate before additional fees are incurred. We will keep you informed of our progress and work closely with you to structure our work to ensure that it is completed in a cost-effective manner.

**Engagement Terms**

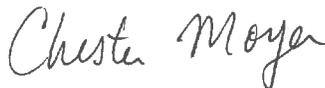
Attached is an additional statement of terms regarding our engagement titled, RubinBrown LLP Engagement Terms (hereinafter "RubinBrown Engagement Terms"). The RubinBrown Engagement Terms are hereby incorporated by reference and the contents of this Letter should be construed in accordance with the terms set forth therein, unless expressly stated otherwise in this Letter. When construing or interpreting the contents of this Letter or the terms of our engagement, the RubinBrown Engagement Terms will govern. To the extent any apparent or actual contradiction may exist, the RubinBrown Engagement Terms will be deemed controlling and will supersede any such statement contained herein, unless expressly stated otherwise in the provision or portion of this Letter at issue. When construing or interpreting the contents of this Letter or the terms of our engagement or the terms of the Agreement, the terms of the Agreement will be deemed controlling and will supercede the terms of the RubinBrown Engagement Terms and the terms of this Letter.

**Conclusion**

We appreciate the opportunity to be of service to you. If you have any questions, please let us know. If you agree with the terms of our engagement as described in this Letter and the RubinBrown Engagement Terms, please sign the enclosed copy and return it to us. By signing the enclosed copy of this Letter, you acknowledge that you have read, understood and agreed to the terms as set forth in this Letter and in the RubinBrown Engagement Terms.

Sincerely,

RubinBrown LLP



Chester P. Moyer, CPA  
Partner  
Direct Dial Number: 816-859-7945  
Email: chester.moyer@rubinbrown.com

Attachment(s):  
Exhibit A - RubinBrown LLP Engagement Terms

By signing below, the signatory further represents and warrants that she/he is authorized to approve the terms of this engagement on behalf of City of Leawood, Kansas.

Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

The Honorable Mayor and Members of the City Council  
C/O Ms. Dawn Long, Finance Director

## EXHIBIT A - RubinBrown LLP ENGAGEMENT TERMS

These Engagement Terms (the "Terms") and the engagement letter (the "Letter") incorporating the Terms (the Terms and Letter are hereinafter collectively referred to as the Agreement), entered into by and between RubinBrown LLP ("RubinBrown") and Client, set forth the terms and conditions of RubinBrown's engagement with Client (the "Engagement"). These Terms shall also apply to any additional work that Client requests RubinBrown to perform unless a separate engagement letter is entered into by and between RubinBrown and Client for such additional work.

1. **Agreed Upon Scope of Work.** RubinBrown shall be obligated only for the services, work product and deliverables specified in the Letter, and only for changes in such scope that are set forth in writing and duly executed by the parties hereto. Unless expressly provided for in the Letter, RubinBrown's services do not include giving testimony, appearing or participating in discovery proceedings, administrative hearings, court, or other legal or regulatory inquiries or proceedings and, in the event RubinBrown later agrees to perform such services, RubinBrown will charge and Client shall pay RubinBrown's customary fee for such services.

2. **Period Covered.** This engagement letter covers the period beginning on the date the described services begin and ending on the date all such services have been completed. Except where a separate engagement letter is used, the terms of the Letter and these Terms will apply to any such additional work we are asked to perform.

3. **Billing Terms.** Invoices will be rendered monthly and presented to you for services performed in the prior month and are due and payable within 30 days of the date of the billing statement. We reserve the right to suspend or terminate further services until payment is received on all invoices that are not paid in full within 30 days of the date of the billing statement. In the event that we suspend or terminate this engagement as a result of non-payment, you agree that we will not be responsible for your failure to meet government or other filing deadlines, or for penalties or interest that may be assessed against you resulting from your failure to meet said deadlines.

4. **Cooperation and Participation.** While RubinBrown may from time to time suggest various options that may be available to Client and further give its professional evaluation of each of these options, Client must make the ultimate decision as to which, if any, of these options to implement. Client shall be solely responsible for applying independent business judgment with respect to RubinBrown's services, work product and/or deliverables (including decisions regarding implementation or other further course(s) of action) and shall be solely and exclusively responsible for such decisions. RubinBrown shall be entitled to rely on all decisions and approvals of Client (and its counsel). Except as specifically provided in the Letter, RubinBrown shall be entitled to rely on the accuracy and completeness of all information provided by Client, and RubinBrown has no duty to verify the accuracy or completeness of information provided by Client.

5. **Access to Resources and Information.** Unless specified herein as the responsibility of RubinBrown to provide, Client shall obtain for RubinBrown, on a timely basis, any internal and third-party permissions, licenses or approvals that are required for RubinBrown to perform the services contemplated hereunder (including the use of any necessary software or data). Client shall also provide RubinBrown with such information, signoffs and assistance as may be necessary for RubinBrown to perform the Engagement or as RubinBrown may reasonably request.

6. **Record Retention.** Pursuant to RubinBrown's record retention policy, at the conclusion of this Engagement, RubinBrown may retain copies of the records supplied to RubinBrown by Client and RubinBrown will return all such original records to the Client. The records and files retained by RubinBrown are RubinBrown's property and are not a substitute for the Client's own records. Client shall be responsible for retaining and maintaining records of its operations and records required to backup and support the Client's financial reports and tax returns. RubinBrown will destroy Client files and all pertinent work papers after a retention period of seven years, after which time these items will no longer be available. In addition, catastrophic events or physical deterioration may result in RubinBrown's records being unavailable.

## EXHIBIT A - RubinBrown LLP ENGAGEMENT TERMS

7. **Confidentiality.** RubinBrown shall maintain the confidentiality of Client information, which is of a confidential nature, using the same degree of care it uses in maintaining its own confidential information. Nothing herein shall preclude RubinBrown from disclosing confidential Client information in response to a validly issued and enforceable subpoena or as otherwise required by law, or from disclosing confidential Client information to RubinBrown's attorneys, advisors, insurers, or agents who agree to maintain the confidentiality of such information, with or without notice to Client.

In the course of providing professional services to Client in connection with this engagement, RubinBrown may require the assistance of third party professional service providers with specialized capabilities or expertise. RubinBrown enters into confidentiality agreements with such third party professional service providers to ensure that confidential information of its clients is fully protected from loss or misuse. In the event RubinBrown is unable to secure an appropriate confidentiality agreement, Client will be asked to provide its consent prior to the sharing of its confidential information with the third-party professional service provider.

Except as otherwise specifically provided herein, Client shall at no time disclose any of RubinBrown's services, fees, work product, deliverables and other confidential material, including but not limited to internally developed financial models, or RubinBrown's role in the Engagement, to any third party (except to a government agency, to the extent such filing is an agreed objective of the Agreement, or as otherwise legally compelled) without RubinBrown's prior written consent in each case. Client's use of RubinBrown's services, work product or deliverables hereunder (except for copies of filed tax returns) shall in any event be restricted to the stated purpose, if any, in the Letter and otherwise to Client's internal business use only. Client and RubinBrown each retains the right in any event to use the ideas, concepts, techniques, industry data and know-how used or developed in the course of the Engagement. Except as instructed otherwise in writing, each party may assume that the other approves of properly addressed fax, email (including email exchanged via Internet media) and voicemail communication of both sensitive and non-sensitive documents and other communications concerning the Engagement, as well as other means of communication used or accepted by the other. Notwithstanding anything to the contrary, RubinBrown acknowledges that Client is a municipal corporation and that Client is authorized by RubinBrown to release any records as set forth in the Kansas Open Records Act.

Notwithstanding anything herein to the contrary, (i) no term of the Agreement is intended to be, and shall not be construed to be, a condition of confidentiality as such term is used in Sections 6011, 6111 and 6112 of the Internal Revenue Code of 1986, as amended ("IRC"), the regulations thereunder and/or Section 10.35 of Treasury Department Circular 230 ("Circular 230"), (ii) Client is hereby authorized to disclose to any and all persons, without any limitation of any kind, any aspect of any entity, plan, arrangement or transaction RubinBrown introduces, addresses or recommends, or with respect to which RubinBrown provides advice, consultation or services pursuant to the Agreement, it being Client's duty to ascertain whether any additional authorization from any other person or entity is necessary or desirable, and (iii) there is no limitation imposed herein on any person or entity on disclosure of the tax treatment, tax structure or tax strategy of any transaction that is the subject of written advice (as defined in Circular 230) provided by RubinBrown pursuant to the Agreement.

RubinBrown is required to comply with certain peer review requirements in order to maintain its professional licensing. In complying with these peer review requirements certain confidential information may be disclosed to the reviewer. These peer reviews are only conducted by other qualified professionals who are subject to maintaining the confidentiality of information disclosed in the course of the review. Client acknowledges that these confidential disclosures by RubinBrown are not a violation of RubinBrown's obligation to maintain the confidentiality of information.

## EXHIBIT A - RubinBrown LLP ENGAGEMENT TERMS

8. **Subpoenas for Client's Records and Information.** At any time during or after our Engagement, should RubinBrown receive a subpoena from a Third Party seeking production of Client's records or confidential information, or testimony relating to RubinBrown's Engagement, RubinBrown will, to the extent permitted by law, notify Client using the last contact information for Client known to RubinBrown. Upon such notification, should Client wish to take action to protect its records and /or its information from production in compliance with the subpoena, it shall be Client's obligation to do so in compliance with applicable law, at Client's expense, using counsel of Client's choice. Irrespective of Client's decision regarding what action, if any, it intends to take to protect its records and information, RubinBrown shall have the right to engage its own counsel to assist and advise RubinBrown in coordinating with Client and/or Client's counsel in this regard, and/or in responding to the subpoena. Subject to obtaining budget authority, Client shall reimburse RubinBrown, upon receipt of an appropriate invoice, for all of RubinBrown's internal and external costs and expenses in responding to any subpoena for Client's records, and/or providing testimony pursuant to such subpoena, including RubinBrown's reasonable and customary fees for such services, as well as its internal costs (employee time and expenses), external costs (copy services or other vendors), and reasonable attorneys' fees.

9. **Taxpayer Confidentiality Privileges: Use of Counsel.** The parties acknowledge that certain documents and other communications involving and/or disclosed to or by RubinBrown may be subject to one or more claims of privilege by or on behalf of Client (e.g., the attorney-client privilege, the IRC SEC 7525 tax advisory privilege, etc.). Although Client is solely responsible for managing the recognition, establishment and maintenance (e.g., possible waiver) of these possible protections (and for involving legal counsel as it deems necessary), RubinBrown shall cooperate with Client's reasonable written instructions regarding such privileges.

10. **Management Dishonesty.** While RubinBrown will advise Client if RubinBrown discovers errors or irregularities, Client understands and agrees that Client cannot rely on RubinBrown to detect employee or management dishonesty, including, without limitation, embezzlement, unless specifically set forth in the Letter.

11. **External Factors; Standards of Performance.** Client acknowledges that the Engagement will involve analysis, judgment and other performance from time to time in a context where the participation of Client or others is necessary, where answers are often uncertain or unverifiable in advance and where facts and available information change with time. Accordingly, evaluation of RubinBrown's performance of its obligations shall be based solely on its substantial conformance with any standards or specifications expressly set forth in the Agreement and all applicable professional standards, any such nonconformance (and applicability) to be clearly and convincingly shown. If there are any changes in the relevant laws, regulations, industry, market conditions or other circumstances, including in the Client's own business practices, RubinBrown has no responsibility to advise Client of any such changes and Client acknowledges the need for it to re-evaluate RubinBrown's preceding services, work product and deliverables. RubinBrown reserves the right, in whole or in part, to decline to perform certain tasks or withdraw from the Engagement entirely if information comes to RubinBrown's attention indicating that performing such tasks could cause RubinBrown to be in violation of any applicable law, regulations or standards, to be in a conflict of interest or to suffer reputational damage.

12. **Baker Tilly International.** RubinBrown is an independent member of Baker Tilly International. Baker Tilly International Limited is an English Company. Baker Tilly International provides no professional services to clients. Each of the member firm is a separate and independent legal entity and each describes itself as such. RubinBrown is not Baker Tilly International's agent and does not have authority to bind Baker Tilly International or act on Baker Tilly International's behalf. None of Baker Tilly International, RubinBrown or any of the other independent member firms of Baker Tilly International has any liability for each other's acts or omissions. In addition, neither Baker Tilly International nor any other member has a right to exercise management control over any other member firm

## EXHIBIT A - RubinBrown LLP ENGAGEMENT TERMS

13. **Independent Contractor Status.** Each party is an independent contractor with respect to the other and shall not be construed as having an employment, partnership, trustee or fiduciary relationship.

14. **Assignments and Successors.** Neither party may assign any of its rights or benefits under the Agreement without the prior written consent of the other party. Subject to the preceding sentence, the Agreement will apply to, be binding in all respects upon, and inure to the benefit of the permitted successors, assigns, heirs, estates, and legal representatives of the parties. Notwithstanding the foregoing, RubinBrown may authorize and allow its affiliates and contractors to assist in performing the Engagement and to share in RubinBrown's rights hereunder, provided any such party shall commit (as applicable) to be bound by the restrictions set forth in the Agreement.

15. **No Third Party Rights.** Unless specifically set forth in the Letter, nothing expressed or referred to in the Agreement will be construed to give any person, other than the parties to the Agreement, any legal or equitable right, remedy, claim, benefit, priority or interest under or with respect to the Agreement or any provision of the Agreement. Except as specifically provided in the Letter, the Agreement and any services, work product or other deliverables hereunder are for the sole and exclusive benefit of the Client and its permitted successors and assigns, and neither Client nor RubinBrown intends for RubinBrown's services to be used by or to provide any benefit or guidance to any other persons. The work product or services provided hereunder shall not be disclosed or disseminated to third parties or used for any purpose, other than as specifically set forth in the Letter, without RubinBrown's prior written consent.

16. **Governing Law.** The Agreement, including its formation, the parties' respective rights and duties and all disputes that might arise from or in connection with the Agreement or its subject matter, shall be governed by and construed in accordance with the laws of the State of Kansas, without giving effect to conflicts of laws rules.

17. **Construction.** To the extent any apparent or actual contradiction may exist when construing or interpreting the contents of the Letter and the Terms, the Terms shall control and supersede any statement contained in the Letter, unless expressly stated otherwise in the provision or portion of the Letter or Terms at issue.

18. **Waivers.** Neither the failure nor any delay by any party in exercising any right, power or privilege under the Agreement will operate as a waiver of such right, power or privilege, and no single or partial exercise of any such right, power or privilege will preclude any other or further exercise of such right, power or privilege or the exercise of any other right, power or privilege.

19. **Severability.** If any arbitrator or court of competent jurisdiction holds any provision of the Agreement invalid or unenforceable, the other provisions of the Agreement will remain in full force and effect. Any provision of the Agreement held invalid or unenforceable only in part or degree will remain in full force and effect to the extent not held invalid or unenforceable.

20. **Headings.** The headings of paragraphs contained in the Agreement are provided for convenience only. They form no part of the Agreement and shall not affect its construction or interpretation.

# Memo

**To:** Mayor Peggy Dunn and Councilmembers  
Scott Lambers, City Administrator

**From:** Dawn Long, Finance Director

**Date:** December 17, 2018

**Re:** Approval of Commerce Bank contract extension

**Recommendation:**

I would like to recommend that the Governing Body approve the attached letter extending the City's current contract for banking services with Commerce Bank.

**Background:**

The current contract with Commerce Bank provided for banking services for the years 2016 through 2018. The attached letter would extend the City's contract for one year to include 2019.

**Fiscal Impact:**

Commerce Bank is able to offer all of the services that the City requires at a competitive cost. The fee structure will remain at the current level until December 31, 2019.

Please contact me if you have any questions.

**DRAFT**

**RESOLUTION NO. \_\_\_\_\_**

**RESOLUTION APPROVING AND AUTHORIZING THE MAYOR TO EXECUTE AN EXTENSION TO THAT CERTAIN FINANCIAL SERVICES AGREEMENT DATED AUGUST 17, 2015, BETWEEN THE CITY AND COMMERCE BANK TO PROVIDE CERTAIN BANKING SERVICE NEEDS TO THE CITY OF LEAWOOD FOR A TERM ENDING 12/31/2019**

WHEREAS, the City is in need of banking services;

WHEREAS, Commerce Bank provides such services;

WHEREAS, the parties entered a Financial Services Agreement on August 17, 2015; and

WHEREAS, the parties desire to execute an Extension to said agreement.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF LEAWOOD, KANSAS:

**SECTION ONE:** That the Governing Body hereby authorizes the Mayor to execute an Extension to that certain Financial Services Agreement dated August 17, 2015, attached hereto as Exhibit "A," and incorporated herein by reference as if fully set out.

**SECTION TWO:** This resolution shall become effective upon passage.

PASSED by the Governing Body this 17<sup>th</sup> day of December, 2018.

APPROVED by the Mayor this 17<sup>th</sup> day of December, 2018.

[SEAL]

\_\_\_\_\_  
Peggy J. Dunn, Mayor

ATTEST:

\_\_\_\_\_  
Debra Harper, CMC, City Clerk

APPROVED AS TO FORM:

\_\_\_\_\_  
Patricia A. Bennett, City Attorney



November 29, 2018

Ms. Dawn Long  
Finance Director  
City of Leawood, Kansas  
4800 Town Center Drive  
Leawood, Kansas 66211

Dawn,

This letter confirms a contract extension of an optional 1 year extension of banking services between Commerce Bank and the City of Leawood. Commerce Bank agrees to honor the pricing reflected in our RFP response until December 31, 2019.

Below is information and details regarding the current services in place with each department:

**Treasury Services:**

- The pricing for The City of Leawood's treasury services will remain in effect until the end of the contract period, December 31, 2019.
- The treasury services agreements currently in effect with the City of Leawood do not require updates other than signatures by both parties on this letter.

**Retail and Benefits Banking Services:** Commerce Bank will continue to provide retail banking services to City employees.

City of Leawood, Kansas

Commerce Bank

By: \_\_\_\_\_  
Signature Date

By: \_\_\_\_\_  
Signature Date

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title of Bank Officer

# City of Leawood Governing Body Staff Report

MEETING DATE: December 17, 2018  
REPORT WRITTEN: November 28, 2018

---

**BI-STATE CENTENNIAL PARK – CENTRAL STATES BEVERAGE – FENCE – REQUEST FOR APPROVAL OF A REVISED FINAL PLAN – Located east of Kenneth Road and north of 143rd Street – Case 117-18**

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**PLANNING COMMISSION RECOMMENDATION:**

The Planning Commission recommends approval unanimously (6-0) of Case 117-18, Bi-State Centennial Park, Central States Beverage fence, request for approval of a Revised Final Plan, with the following stipulations:

1. The project is limited to the relocation of a 6' tall chain link fence along the southern and southwestern property line of the Bi-State Business Park, Second Plat.
2. The fence shall not include electric or barbed wire.
3. A building permit shall be required prior to installation of the fence.
4. Development rights under this approval shall vest in accordance with K.S.A. 12-764.
5. The conditions and stipulations of the Preliminary Plan and Final Plan approval (Governing Body Ordinance 2764) shall remain in full force and effect, except to the extent expressly modified herein.
6. In addition to the stipulations listed in the report, the developer/property owner agrees to abide by all ordinances of the City of Leawood including the Leawood Development Ordinance, unless a deviation has been granted, and to execute a statement acknowledging in writing that they agree to stipulations one through six.

**PLANNING COMMISSION CHANGES TO STIPULATIONS:**

- None.

**APPLICANT:**

- The applicant is Eric Hughes with Strickland Construction.
- The property is owned by High Life Sales Company.
- The engineer is Judd Claussen with Phelps Engineering.
- The landscape architect is W. Lee Rhoad with Earthworks Architecture.

**REQUEST:**

- The applicant is requesting approval of a Revised Final Plan for the relocation of a fence along 143<sup>rd</sup> Street.

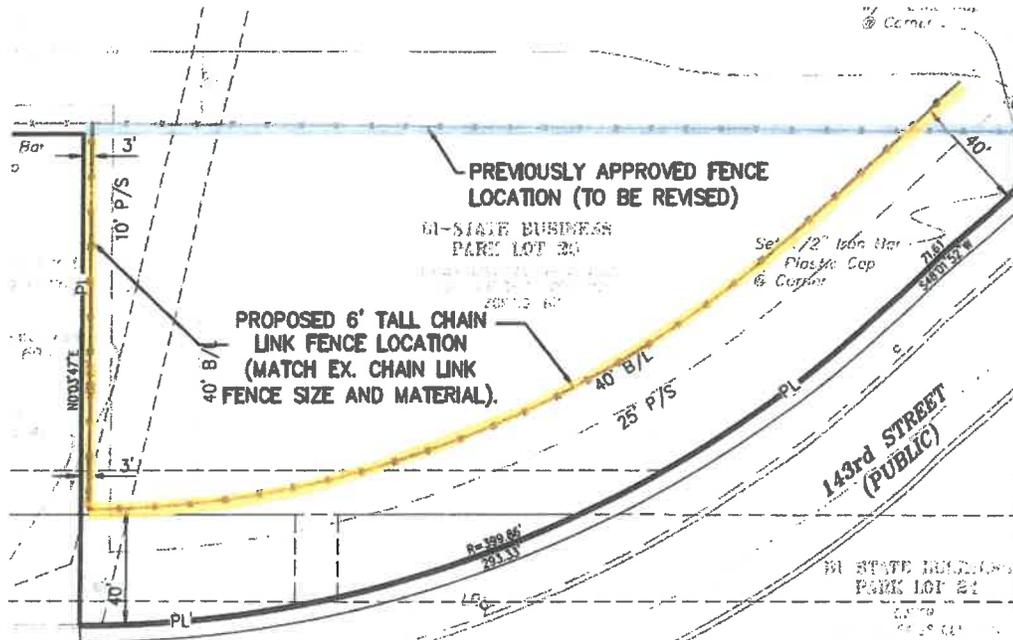
**ZONING:**

- The property is currently zoned BP (Planned Business Park).

**COMPREHENSIVE PLAN:**

- The Comprehensive Plan designates this property as Business Park.





**PARKING:**

- No changes to parking are proposed with this application.

**ELEVATIONS:**

- The proposed fence will be constructed of chain link and will match the existing chain link fence on the property.

**LANDSCAPING:**

- No additional landscaping is proposed with this application.

**LIGHTING:**

- No changes to lighting are proposed with this application.

**SIGNAGE:**

- No new signage is proposed with this application.

**RESOLUTION NO. \_\_\_\_\_**

**RESOLUTION APPROVING A REVISED FINAL PLAN FOR BI-STATE CENTENNIAL PARK – CENTRAL STATES BEVERAGE – FENCE, LOCATED EAST OF KENNETH ROAD AND NORTH OF 143<sup>RD</sup> STREET. (PC CASE 117-18)**

WHEREAS, the applicant submitted a request for a Revised Final Plan for a fence;

WHEREAS, such request for approval was presented to the Planning Commission on November 27, 2018; and

WHEREAS, the Planning Commission reviewed the application and recommended approval with certain stipulations.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF LEAWOOD, KANSAS:

**SECTION ONE:** The Governing Body hereby approves the applicant’s request and the Planning Commission’s recommendation of approval for said Revised Final Plan subject to the following stipulations:

1. The project is limited to the relocation of a 6’ tall chain link fence along the southern and southwestern property line of the Bi-State Business Park, Second Plat.
2. The fence shall not include electric or barbed wire.
3. A building permit shall be required prior to installation of the fence.
4. Development rights under this approval shall vest in accordance with K.S.A. 12-764.
5. The conditions and stipulations of the Preliminary Plan and Final Plan approval (Governing Body Ordinance 2764) shall remain in full force and effect, except to the extent expressly modified herein.
6. In addition to the stipulations listed in the report, the developer/property owner agrees to abide by all ordinances of the City of Leawood including the Leawood Development Ordinance, unless a deviation has been granted, and to execute a statement acknowledging in writing that they agree to stipulations one through six.

**SECTION TWO:** This resolution shall become effective upon passage.

PASSED by the Governing Body this 17<sup>th</sup> day of December, 2018.

APPROVED by the Mayor this 17<sup>th</sup> day of December, 2018.

[SEAL]

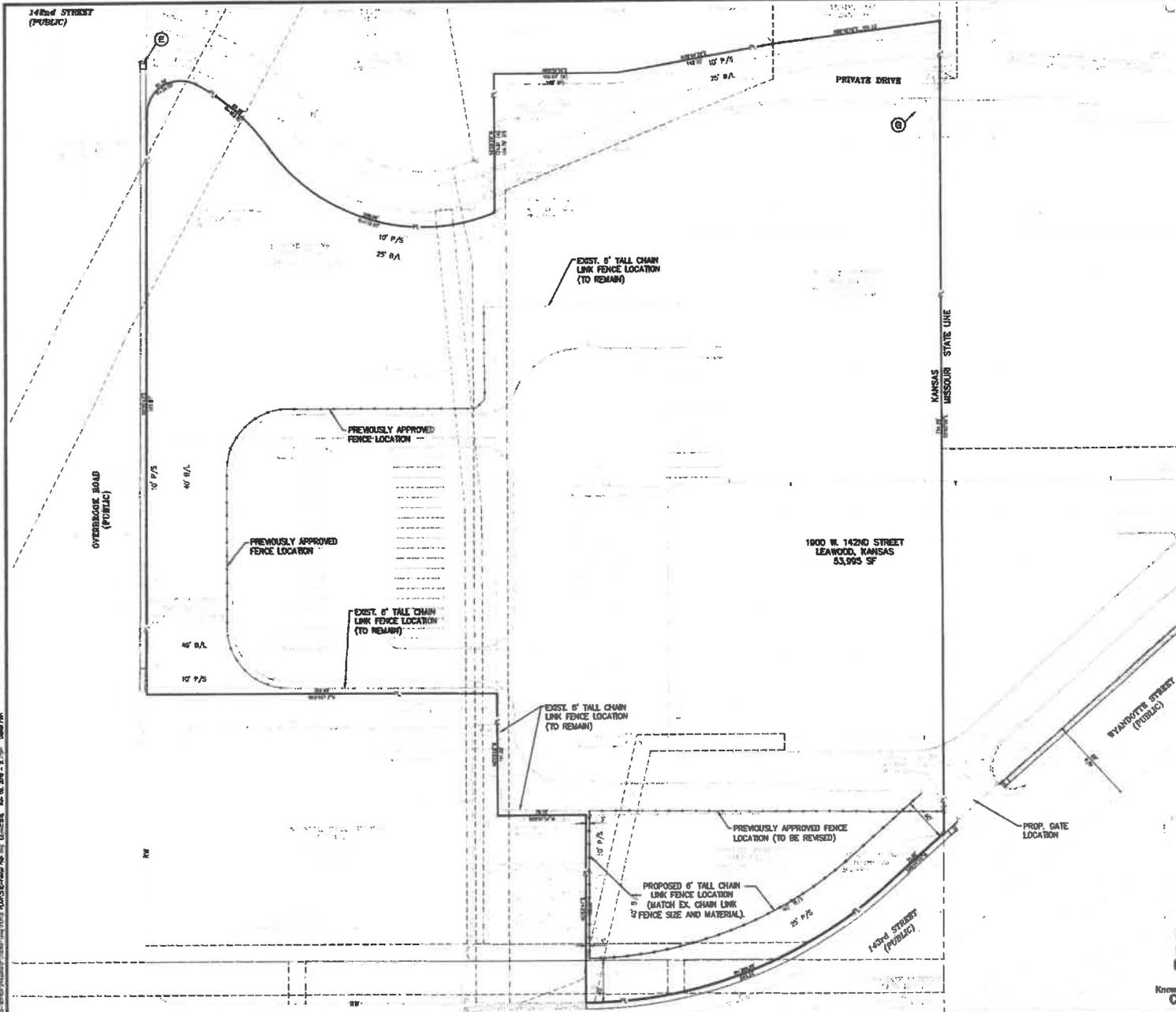
\_\_\_\_\_  
Peggy J. Dunn, Mayor

**ATTEST:**

\_\_\_\_\_  
**Debra Harper, CMC, City Clerk**

**APPROVED AS TO FORM:**

\_\_\_\_\_  
**Andrew K. Hall, Assistant City Attorney**



**LEGAL DESCRIPTION:**  
 Lot 24, Block 202, Leawood Park, a plat subdivision in the City of Leawood, Johnson County, Kansas.

**PLAT INFO:**  
 THIS PROPERTY LIES WITHIN ZONE S, AS REFERRED TO AS ZONING DISTRICTS, AS SHOWN ON THE ZONING MAP AND ZONING ORDINANCE, AS ENFORCED BY THE PLANNING AND ZONING DEPARTMENT OF THE CITY OF LEAWOOD, KANSAS. THE ZONING MAP NO. 2008-01, APPROVED BY THE CITY OF LEAWOOD, KANSAS, MAP NO. 2008-01, DATED AUGUST 3, 2008.

**OWNER:**  
 High Life Sales Company, d/b/a  
 Central States Beverage Company  
 14220 Wyandotte  
 Kansas City, MO 64145  
 (816) 941-3300

**DEVELOPER & GENERAL CONTRACTOR:**  
 Strickland Construction  
 720 S. Rogers Road, Suite B  
 Olathe, KS 66062  
 Contact: Eric Harphes  
 (eric@stricklandconstruction.com)  
 (913) 784-7000



**VICINITY MAP:**  
 KS. SEC. 35-13-25  
 MO. SEC. 30-47-33

**LEGEND**

- PROPERTY LINE
- - - LOT LINE
- - - - - DRIVEWAY
- ▭ PROPOSED CONCRETE PAVEMENT
- ▭ PROPOSED PAVING ACTION
- ▭ EXISTING 6\"/>



Know what's below.  
 Call before you dig.

**UTILITY NOTES:**  
 VISUAL INDICATIONS OF UTILITIES ARE AS SHOWN. UNDERGROUND LOCATIONS SHOWN AS SURVEYED BY THEIR LOCATOR. ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD AT THE TIME OF CONSTRUCTION. FOR ACTUAL FIELD LOCATIONS OF UNDERGROUND UTILITIES.

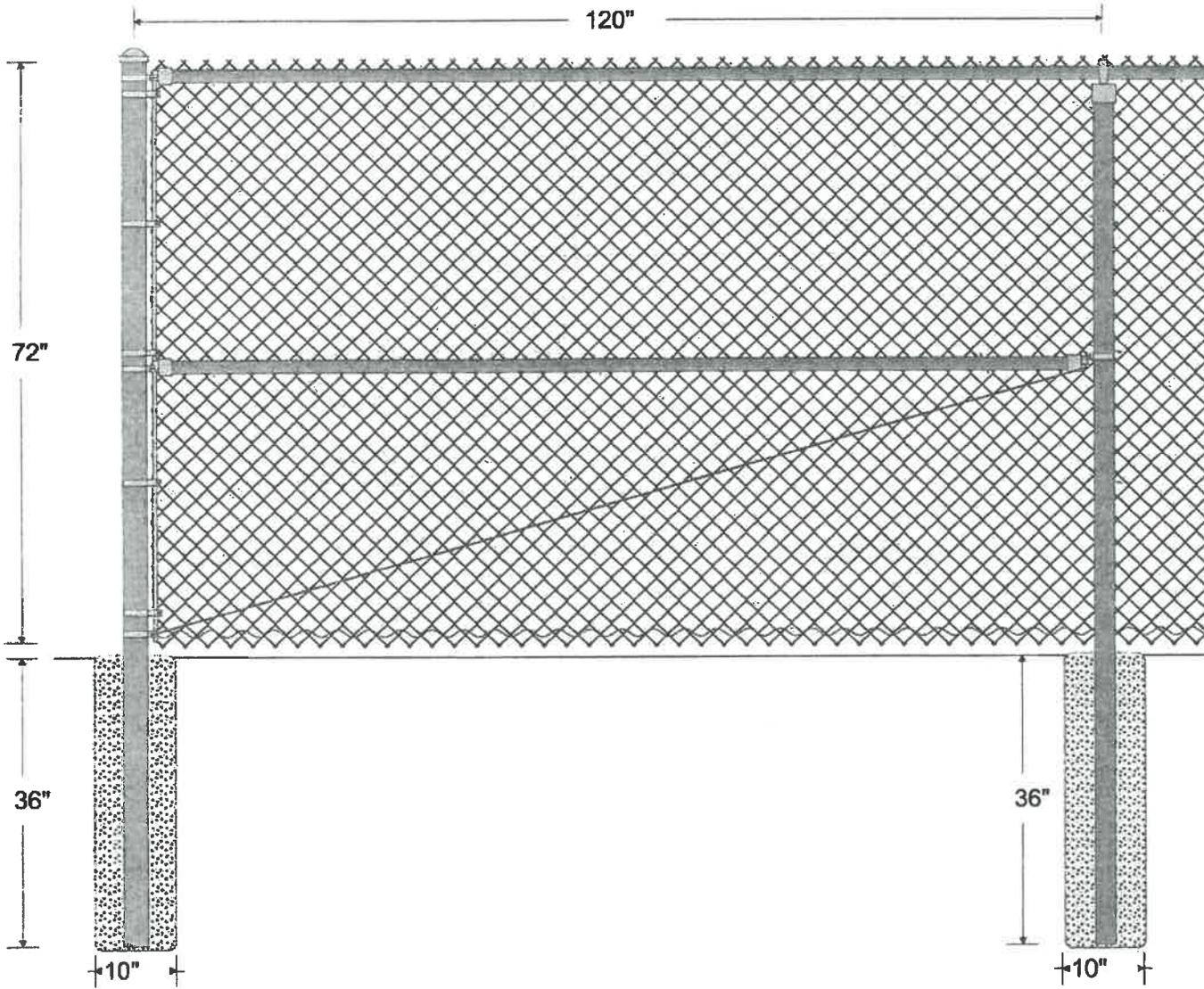
PREPARED BY: STRICKLAND CONSTRUCTION COMPANY  
 720 S. ROGERS ROAD, SUITE B, OLATHE, KS 66062  
 CONTACT: ERIC HARPHES  
 (913) 784-7000  
 www.stricklandconstruction.com

**SITE - FENCE PLAN**  
**CENTRAL STATES BEVERAGE**  
 ADDRESS: 1900 W. 142ND STREET  
 CITY OF LEAWOOD, KANSAS

NO.	DATE	DESCRIPTION
1	11-03-16	ISSUED FOR STATE COMMENTS
2	11-03-16	REVISED
3	11-03-16	REVISED
4	11-03-16	REVISED
5	11-03-16	REVISED
6	11-03-16	REVISED
7	11-03-16	REVISED
8	11-03-16	REVISED
9	11-03-16	REVISED
10	11-03-16	REVISED

**SHEET**  
**C1**





72" tall Chainlink Fabric with Barb / Knuckle Selvage and 2" Mesh Size.

**Specifications:**

108" tall, 3" diameter Terminal Post with 10" post footing diameter and 36" post footing depth.

108" tall, 2 1/2" diameter Line Post with 10" post footing diameter and 36" post footing depth.

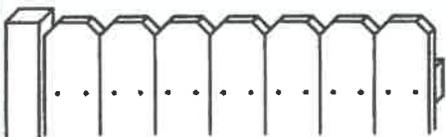
Top of Fence has 1 5/8" diameter Top Rail.

Bottom of Fence has Coil Spring Tension Wire.

Fence is braced with 1 5/8" diameter Middle Brace & Truss.

Line Post Spacing: 120"

Tie Wire Spacing is every 24" on Rails & Bracing.



72" Chainlink Line of Fence

GUIER FENCE CO., INC.  
 2501 NW JEFFERSON STREET  
 BLUE SPRINGS, MO 64015  
 816-229-2047

Central States Beverage  
 1900 W. 142nd St.  
 Leawood, KS 66224

Drawn: 11/8/2018  
 File:

# MEMO

**To:** Mayor Peggy Dunn and City Council

**From:** Mark A. Klein, Planning Official

**cc:** Scott Lambers, City Administrator  
Richard Coleman, Director of Community Development

**Date of Meeting:** December 17, 2018

**Date of Memo:** December 6, 2018

**Re:** Planning Commission Minutes

Due to this item being on the Planning Commission Consent Agenda, there is no Planning Commission minutes available for this case.

# City of Leawood Governing Body Staff Report

**MEETING DATE:** December 17, 2018  
**REPORT WRITTEN:** November 28, 2018

---

**TUSCANY RESERVE VILLAGE, 6<sup>th</sup> PLAT - REQUEST FOR APPROVAL OF A REVISED FINAL PLAT  
- Located north of 137<sup>th</sup> Street and west of Chadwick Street - Case 129-18**

---

**PLANNING COMMISSION RECOMMENDATION:**

The Planning Commission recommends approval unanimously (6-0) of Case 129-18, Tuscan Reserve Village, Sixth Plat – request for approval of a Revised Final Plat, with the following stipulations:

1. This application is limited to the platting of interior property lines around an individual townhome, Units 1, 2 and 3 of Tuscan Reserve Village.
2. The applicant shall be responsible for a park impact fee in the amount of \$300.00 per dwelling unit prior to the recording of the final plat, estimated at current date to be \$900.00 (\$300.00 x 3 units). This amount is subject to change by Ordinance.
3. The applicant shall be responsible for a 135<sup>th</sup> Street Impact fee in the amount of 389.40/per unit for residential is due prior to issuance of a building permit, estimated at current date to be \$1,168.20 (\$389.40 x 3). This amount is subject to change by Ordinance.
4. The project shall meet all required setbacks of the Leawood Development Ordinance with the exception of the following deviations:
  - a) Minimum side yard setback of 20' between buildings.
  - b) Interior property line setback of 0' for the footprint of the townhome, and common walls between the units of the townhome.
5. The conditions and stipulations of the Preliminary Plan approval (Governing Body Ordinance #2638) and Final Plan of approval (Resolution #4150) shall remain in full force and effect, except to the extent expressly modified herein.
6. Development rights under this approval shall vest in accordance with K.S.A. 12-764.
7. In addition to the stipulations listed in this report, the developer/property owner agrees to abide by all ordinances of the Leawood Development Ordinance, unless a deviation has been granted, and to execute a statement acknowledging in writing that they agree to stipulations one through seven.

**PLANNING COMMISSION CHANGES TO STIPULATIONS**

- None

**APPLICANT:**

- The applicant/ property owner is Tom French with Tom French Construction Inc.
- The engineer is John Ray with Phelps Engineering Inc.
- The architect is Monty Stout with Elswood Smith Carlson Architects

**REQUEST:**

- The applicant is requesting approval of a Revised Final Plat for Units 1, 2, and 3 of the Tuscan Reserve Village, Sixth Plat to divide a single townhome into three separate units with a peripheral tract.

**ZONING:**

- The property is currently zoned RP-3 (Planned Cluster Attached Residential District).

**COMPREHENSIVE PLAN:**

- The Comprehensive Plan designates this property as Medium Density Residential.

**LOCATION:**



**SURROUNDING ZONING:**

- North To the north of the property is the Lord of Life Church zoned SD-O (Planned Office) with a special use permit for a church.
- East To the east of the property is Chadwick Street and undeveloped land zoned SD-O (Planned Office)
- South To the south of the property is Tuscany Reserve, a single family residential development zoned RP-4 (Planned Cluster District –Previous LDO) and RP-1 Planned Single Family Residential)
- West To the west of the property is a continuation of the Tuscany Reserve Village development zoned RP-2 (Planned Cluster Detached Residential)

**BACKGROUND:**

- A Final Plan and Final Plat for the Tuscany Reserve Village, was approved by the Governing Body with Case 124-13 on November 18, 2013 (Resolution No. 4150) for 2 townhomes, for a development total of 14 dwelling units on 4.08 acres for a density of 3.43 dwelling units per acre.
- Tuscany Reserve Village was approved with the following setbacks.
  - Front yard setback = 30'
  - Side yard setback = 20' between buildings (Deviation approved with Governing Body Ordinances 2638 and Governing Body Resolution 4150)
  - Side Lot Corner Lot Setback = 30'
  - Rear yard setback = 30'

With the exception of the side yard setback that shall maintain minimum distance of 20' between structures, the setbacks are measured from the lot lines of Tract C.

- The applicant is platting around each of the units, as they are constructed to divide the townhome into three units. This application is for the fourth townhome to be constructed within the development.
- The townhome will a minimum of 20' from the adjacent private drive.

**FINAL PLAT:**

- The sixth plat is for a townhouse located in the central portion of the Tuscany Reserve Village development.
- The plat creates a rectangular interior lot/condominium lot around each unit. Units 1, 2 and 3 within Tract C of the Tuscany Reserve Village development. The lot area of unit 1 is 4,859.87 sq. ft. The lot area of unit 2 is 4,468.71 sq. ft. The lot area of unit 3 is 5,297.17 sq. ft.
- The plat also shows the foundation/footprint of the townhouse being constructed.
- Proposed open space for the Tuscany Reserve Village development is 50%.

**IMPACT FEES:**

- The applicant shall be responsible for a park impact fee in the amount of \$300.00 per dwelling unit prior to the recording of the final plat, estimated at current date to be \$900.00 (\$300.00 x 3 units). This amount is subject to change by Ordinance.
- The applicant shall be responsible for a 135<sup>th</sup> Street Impact fee in the amount of 389.40/per unit for residential is due prior to issuance of a building permit, estimated at current date to be \$1,168.20 (\$389.40 x 3). This amount is subject to change by Ordinance.

**REQUESTED DEVIATIONS:**

- The proposed Final Plat will plat around each of the units within the townhome as they are constructed, with plat lines dividing the townhouse into three units with interior platted lines. Per Section 16-3-9, Deviations, of the Leawood Development Ordinance, interior property line setbacks may be reduced to zero when the City approves adequate open space for the project and between buildings. The Revised Final Plan and Final Plat for the Tuscany Reserve Village provided increased open space of 50% (compared to 30% open space required within the Leawood Development Ordinance) within the development.

**STAFF COMMENTS:**

- Staff is supportive of the deviation to allow for 0' interior property line setbacks to allow the triplex unit to be divided into three units. **(Stipulation 4)**

**RESOLUTION NO. \_\_\_\_\_**

**RESOLUTION APPROVING A REVISED FINAL PLAT FOR TUSCANY RESERVE VILLAGE, 6<sup>TH</sup> PLAT, LOCATED NORTH OF 137<sup>TH</sup> STREET AND WEST OF CHADWICK STREET. (PC CASE 129-18)**

WHEREAS, the applicant submitted a request for a Revised Final Plat;

WHEREAS, such request for approval was presented to the Planning Commission on November 27, 2018; and

WHEREAS, the Planning Commission reviewed the application and recommended approval with certain stipulations.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF LEAWOOD, KANSAS:

**SECTION ONE:** The Governing Body hereby approves the applicant's request and the Planning Commission's recommendation of approval for said Revised Final Plat subject to the following stipulations:

1. This application is limited to the platting of interior property lines around an individual townhome, Units 1, 2 and 3 of Tuscan Reserve Village.
2. The applicant shall be responsible for a park impact fee in the amount of \$300.00 per dwelling unit prior to the recording of the final plat, estimated at current date to be \$900.00 (\$300.00 x 3 units). This amount is subject to change by Ordinance.
3. The applicant shall be responsible for a 135<sup>th</sup> Street Impact fee in the amount of 389.40/per unit for residential is due prior to issuance of a building permit, estimated at current date to be \$1,168.20 (\$389.40 x 3). This amount is subject to change by Ordinance.
4. The project shall meet all required setbacks of the Leawood Development Ordinance with the exception of the following deviations:
  - a) Minimum side yard setback of 20' between buildings.
  - b) Interior property line setback of 0' for the footprint of the townhome, and common walls between the units of the townhome.
5. The conditions and stipulations of the Preliminary Plan approval (Governing Body Ordinance #2638) and Final Plan of approval (Resolution #4150) shall remain in full force and effect, except to the extent expressly modified herein.
6. Development rights under this approval shall vest in accordance with K.S.A. 12-764.
7. In addition to the stipulations listed in this report, the developer/property owner agrees to abide by all ordinances of the Leawood Development Ordinance, unless a deviation has been granted, and to execute a statement acknowledging in writing that they agree to stipulations one through seven.

**SECTION TWO:** This resolution shall become effective upon passage.

PASSED by the Governing Body this 17<sup>th</sup> day of December, 2018.

APPROVED by the Mayor this 17<sup>th</sup> day of December, 2018.

[SEAL]

\_\_\_\_\_  
Peggy J. Dunn, Mayor

ATTEST:

\_\_\_\_\_  
Debra Harper, CMC, City Clerk

APPROVED AS TO FORM:

\_\_\_\_\_  
Andrew K. Hall, Assistant City Attorney





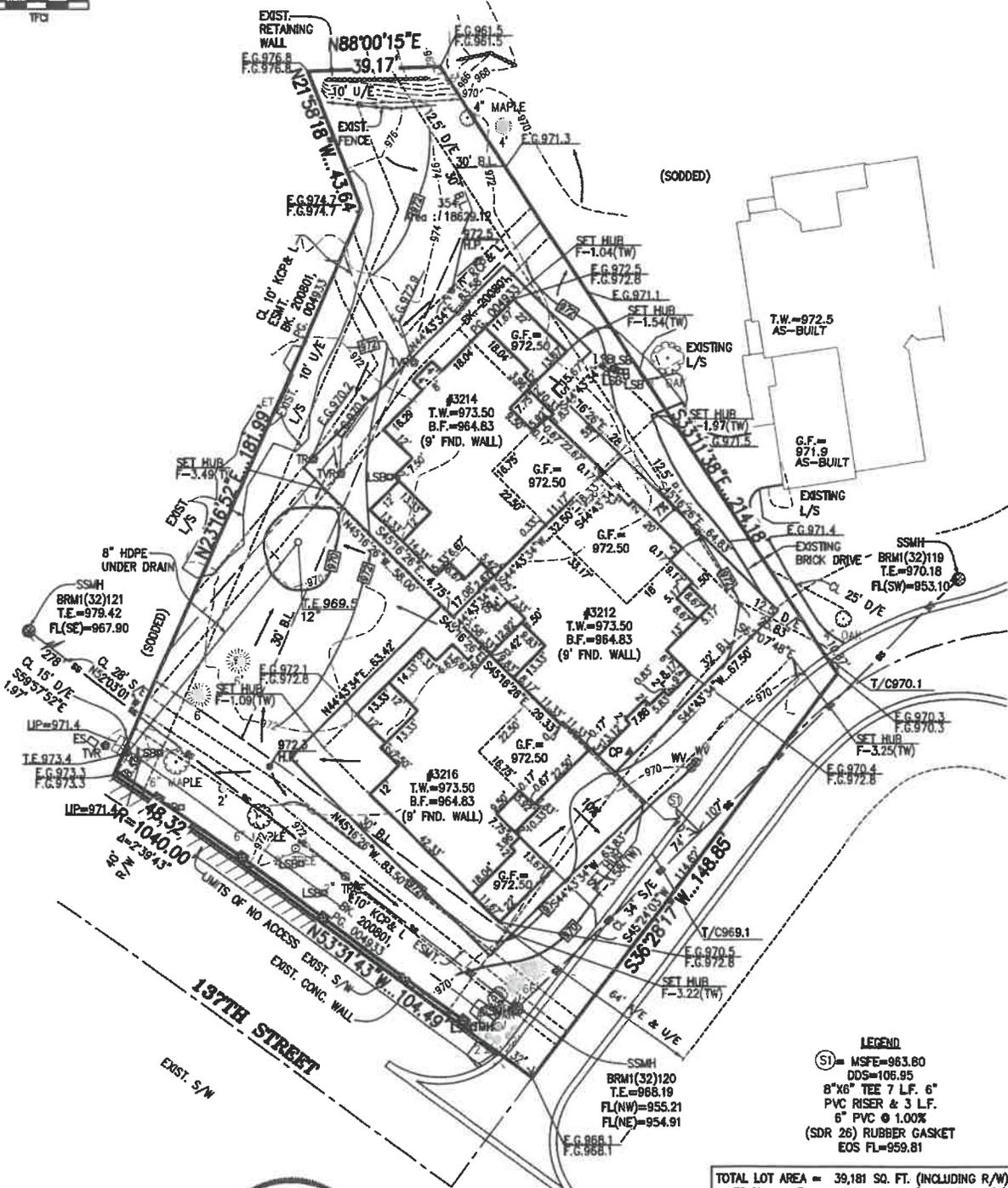
# PLOT PLAN

## TRACT C

### TUSCANY RESERVE VILLAGE, THIRD PLAT

#### 3212/3214/3216 W. 137TH STREET

SCALE: 1"=30'  
0 30  
1/4"



DATE STAKED: 7-6-18  
SURVEY CREW: ES  
HOUSE TIES CHK'D: YES

LEGAL DESCRIPTION:  
TRACT C, TUSCANY RESERVE  
VILLAGE, THIRD PLAT, A  
SUBDIVISION OF LAND IN  
THE CITY OF LEAWOOD,  
JOHNSON COUNTY, KANSAS.



**NOTES**  
1. 11-8-18 OVERLAID PLAT LINES AND BUILDING ONTO PLOT PLAN TO SHOW PLANS MATCH

TOTAL LOT AREA = 39,181 SQ. FT. (INCLUDING R/W)  
IMPERVIOUS AREA = 19,927 SQ. FT. (INCLUDING R/W)  
PERCENT IMPERVIOUS = 50.9%

**FEMA FLOOD NOTE:**  
THIS PROPERTY LIES WITHIN THE LIMITS OF FLOOD ZONE X DEFINED AS AREAS DETERMINED TO BE OUTSIDE 500 YEAR FLOOD, AS SHOWN ON THE FLOOD INSURANCE RATE MAP PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY FOR THE CITY OF LEAWOOD, JOHNSON COUNTY, KANSAS. COMMUNITY NO. 200167, MAP NO. 20091C00856, AND DATED AUGUST 3, 2009.

- LEGEND**
- (S) = MSPE=963.80
  - DDS=106.95
  - 8"x6" TEE 7 L.F. 6"
  - PVC RISER & 3 L.F. 6"
  - 6" PVC @ 1.00%
  - (SDR 26) RUBBER GASKET
  - EOS FL=959.81



PLANNING  
ENGINEERING  
IMPLEMENTATION

PHELPS ENGINEERING, INC  
1270 N. Winchester  
Olathe, Kansas 66061  
(913) 393-1155  
Fax (913) 393-1166

PROJECT NO. 180484  
DATE: 11/6/18  
BY: BJG

Note: Builder shall obtain a building permit prior to any construction to ensure that this site plan meets City approval.

This plot plan was prepared for foundation construction only. All dimensions to be verified by builder and all grades as shown shall be verified by builder to insure proper drainage and adequate fill to permit. No other information was furnished on this drawing. Not responsible for unplotted easements.

CERTIFICATE OF AUTHORIZATION  
KANSAS  
LAND SURVEYING - LS-82  
ENGINEERING - E-361  
CERTIFICATE OF AUTHORIZATION  
MISSOURI  
LAND SURVEYING - 0007001128  
ENGINEERING - 2007005558

# **MEMO**

**To:** Mayor Peggy Dunn and City Council

**From:** Mark A. Klein, Planning Official

**cc:** Scott Lambers, City Administrator  
Richard Coleman, Director of Community Development

**Date of Meeting:** December 17, 2018

**Date of Memo:** December 6, 2018

**Re:** Planning Commission Minutes

Due to this item being on the Planning Commission Consent Agenda, there is no Planning Commission minutes available for this case.

# City of Leawood Governing Body Staff Report

MEETING DATE: December 17, 2018  
REPORT WRITTEN: November 28, 2018

**LEAWOOD PRESBYTERIAN CHURCH – RED DOOR RENOVATION – REQUEST FOR APPROVAL OF A REVISED FINAL PLAN - Located south of 83<sup>rd</sup> Street and east of Cherokee Lane - Case 128-18**

**PLANNING COMMISSION RECOMMENDATION:**

The Planning Commission recommends approval unanimously (6-0) of Case 128-18, Leawood Presbyterian Church – Red Door Renovation – request for approval of a Revised Final Plan, with the following stipulations:

1. This application is limited to the construction of a patio area (approximately 1,250 sq. ft.) with an entry ramp, along with a new entry door and a glass panel overhead door on the south elevation of the Red Door building.
2. All power lines, utility lines, etc. (both existing and proposed, including utilities and power lines adjacent to and within abutting right-of-way) are required to be placed underground. This must be done prior to final occupancy of any building within the project.
3. No changes to exterior lighting are approved with this application.
4. All utility boxes, not otherwise approved with the final development plan, with a height of less than 55 inches, a footprint of 15 sq.ft. in area or less, or a pad footprint of 15 sq.ft. in area or less, shall be installed only with the prior approval of the Director of Community Development as being in compliance with the Leawood Development Ordinance.
5. All utility boxes, not otherwise approved with the final development plan, with a height of 55 inches or greater, a footprint greater than 15 sq.ft. in area, or a pad footprint greater than 15 sq.ft. in area, shall be installed only with the prior recommendation of the Planning Commission as being in compliance with the Leawood Development Ordinance based on review of a site plan containing such final development plan information as may be required by the City, and approved by the Governing Body.
6. Per the Leawood Development Ordinance, at the time of planting, plant material screening the ground mounted utilities shall be a minimum of 6" taller than the utility it is to screen, with lower shrubs in the foreground to eliminate any gaps in screening.
7. Exterior ground-mounted or building-mounted equipment including, but not limited to, mechanical equipment, utilities, meter banks and air conditioning units, shall be painted to blend with the building and screened from public view with landscaping or with an architectural treatment compatible with the building structure.
8. The applicant shall fill the space in between the proposed ADA ramp and the parking spaces with 60% living material.
9. All landscaped areas shall be irrigated.
10. Development rights under this approval shall vest in accordance with K.S.A. 12-764.
11. An erosion control plan for both temporary and permanent measures to be taken during and after construction shall be required at the time of application for building permit.
12. No construction shall be allowed between the hours of 9:00 p.m. to 7:00 a.m. and not on Sundays.
13. In addition to the stipulations listed in the report, the developer /applicant agrees to abide by all ordinances of the City of Leawood including the Leawood Development Ordinance, unless a deviation has been granted, and to execute a statement acknowledging in writing that they agree to stipulations one through thirteen.

**PLANNING COMMISSION VANGES TO THE STIPULATIONS:**

- None

**APPLICANT:**

- The applicant/architect is Michael Blackledge with Piper-Wind Architects, Inc.
- The property is owned by United Presbyterian Church
- The contact is Peter Knutson with United Presbyterian Church

**REQUEST:**

- The applicant is requesting approval of a Revised Final Plan for Leawood Presbyterian, which shall include a new patio, to be accessed by steps and an ADA ramp, and installation of an overhead door at the southwest corner of the Red Door Building (a stand-alone building to the southwest of the main church building). No additional building area is being added to the building.

**ZONING:**

- The property is currently zoned R-1 (Planned Single Family Low Density Residential).

**COMPREHENSIVE PLAN:**

- The Comprehensive Plan designates this property as Institutional

**LOCATION:**



**SURROUNDING ZONING:**

- The property is surrounded on all sides by single family homes zoned RP-1 (Planned Single Family)

**SITE PLAN COMMENTS:**

- The applicant is proposing two improvements with this application:
  1. A new concrete patio at the southwest corner of the existing Red Door building to be accessed by an ADA ramp and a set of steps. The patio will be approximately 13' x 36' and will be 2' above grade at its highest point

2. The addition of a garage door and entry door along the south elevation of the Red Door building at the southwest corner of the building that will provide access to the proposed patio from the interior of the building.

**Patio/ADA Ramp**

- The proposed patio area is approximately 1,250 sq. ft. in size running east to west, along the south façade of the Red Door building, southwest of the main church building. The ADA ramp is located along the south side of the patio for a length of 30 feet. The patio and ramp will have a 3 foot tall railing system made of galvanized steel and stainless steel cables.
- The patio, three steps and ramp are proposed to be constructed of concrete.

**Garage Door**

- The garage door will be located along the south side of the Red Door building and will provide access to the proposed patio in this application. The garage door will be approximately 10 feet tall and 16 feet wide.
- The garage door is proposed to be constructed of natural anodized aluminum and will have 25 glass panels.

**BULK REGULATIONS:**

<i>Criteria</i>	<i>Required</i>	<i>Provided</i>	<i>Compliance</i>
Front Setback	35 ft.	40 ft.	Complies
Side Setback	15 ft.	20 ft.	Complies
Rear Setback	30 ft.	95 ft.	Complies
Lot Frontage	100 feet	390 ft.	Complies
Open Space	30% of lot area	47.7%	Complies
Height Limit	35 ft.	21 ft.	Complies

**ELEVATIONS:**

- The applicant is proposing a newly constructed concrete patio area that will be approximately 1,250 sq. ft. and will be surrounded by a stainless steel cable railing system along the south side of the Red Door building.
- A ramp will be located along the south side of the proposed patio at a 12:1 slope.
- An existing double entry door will be replaced by a new aluminum framed single glass door with glass side panel.
- A garage door is proposed on the south side of the Red Door building and will be constructed of aluminum and will have a clear anodized finish. It will replace an area that currently has three columns of narrow windows.
- The existing electrical meters are located to the west of the existing storage shed. The applicant is proposing to move the meters to the east of an existing attached utility room.
- Downspouts are proposed to move from their existing location to the west of the proposed patio.

**SIGNAGE:**

- No additional signage is proposed with this application.

**LANDSCAPING:**

- The applicant is to relocate four existing shrubs and one tree from their current location to clear room for the newly proposed patio.
- The four shrubs will be relocated to the east and west sides of the proposed patio.
- The tree will be relocated to the northern side of the Red Door building.

**LIGHTING:**

- No additional lighting is proposed with this application.

**STAFF COMMENTS:**

- The additional greenspace in between the proposed ramp and the parking is proposed to be filled with groundcover. Per the Leawood Development Ordinance 16-4-7.3 (A6) – Landscaping Requirements – Other Districts: Landscaped open space shall consist of a minimum of 60% living materials, the remaining areas may consist of non-living materials such as bark, wood chips, decorative rock or stone or other similar materials. **Stipulation 8**

**RESOLUTION NO. \_\_\_\_\_**

**RESOLUTION APPROVING A REVISED FINAL PLAN FOR LEAWOOD PRESBYTERIAN CHURCH – RED DOOR RENOVATION, LOCATED SOUTH OF 83<sup>RD</sup> STREET AND EAST OF CHEROKEE LANE. (PC CASE 128-18)**

WHEREAS, the applicant submitted a request for a Revised Final Plan for a patio area, entry ramp, new entry door and a garage door;

WHEREAS, such request for approval was presented to the Planning Commission on November 27, 2018; and

WHEREAS, the Planning Commission reviewed the application and recommended approval with certain stipulations.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF LEAWOOD, KANSAS:

**SECTION ONE:** The Governing Body hereby approves the applicant's request and the Planning Commission's recommendation of approval for said Revised Final Plan subject to the following stipulations:

1. This application is limited to the construction of a patio area (approximately 1,250 sq. ft.) with an entry ramp, along with a new entry door and a glass panel overhead door on the south elevation of the Red Door building.
2. All power lines, utility lines, etc. (both existing and proposed, including utilities and power lines adjacent to and within abutting right-of-way) are required to be placed underground. This must be done prior to final occupancy of any building within the project.
3. No changes to exterior lighting are approved with this application.
4. All utility boxes, not otherwise approved with the final development plan, with a height of less than 55 inches, a footprint of 15 sq.ft. in area or less, or a pad footprint of 15 sq.ft. in area or less, shall be installed only with the prior approval of the Director of Community Development as being in compliance with the Leawood Development Ordinance.
5. All utility boxes, not otherwise approved with the final development plan, with a height of 55 inches or greater, a footprint greater than 15 sq.ft. in area, or a pad footprint greater than 15 sq.ft. in area, shall be installed only with the prior recommendation of the Planning Commission as being in compliance with the Leawood Development Ordinance based on review of a site plan containing such final development plan information as may be required by the City, and approved by the Governing Body.
6. Per the Leawood Development Ordinance, at the time of planting, plant material screening the ground mounted utilities shall be a minimum of 6" taller than the utility it is to screen, with lower shrubs in the foreground to eliminate any gaps in screening.
7. Exterior ground-mounted or building-mounted equipment including, but not limited to, mechanical equipment, utilities, meter banks and air conditioning units, shall be painted to blend with the building and screened from public view with landscaping or with an architectural treatment compatible with the building structure.

8. The applicant shall fill the space in between the proposed ADA ramp and the parking spaces with 60% living material.
9. All landscaped areas shall be irrigated.
10. Development rights under this approval shall vest in accordance with K.S.A. 12-764.
11. An erosion control plan for both temporary and permanent measures to be taken during and after construction shall be required at the time of application for building permit.
12. No construction shall be allowed between the hours of 9:00 p.m. to 7:00 a.m. and not on Sundays.
13. In addition to the stipulations listed in the report, the developer /applicant agrees to abide by all ordinances of the City of Leawood including the Leawood Development Ordinance, unless a deviation has been granted and to execute a statement acknowledging in writing that they agree to stipulations one through thirteen

SECTION TWO: This resolution shall become effective upon passage.

PASSED by the Governing Body this 17<sup>th</sup> day of December, 2018.

APPROVED by the Mayor this 17<sup>th</sup> day of December, 2018.

[SEAL]

---

Peggy J. Dunn, Mayor

ATTEST:

---

Debra Harper, CMC, City Clerk

APPROVED AS TO FORM:

---

Andrew K. Hall, Assistant City Attorney



# LEAWOOD PRESBYTERIAN RED DOOR RENOVATION

2715 WEST 83rd STREET, LEAWOOD, KANSAS 66206

FINAL DEVELOPMENT PLAN SUBMITTAL  
OCTOBER 22, 2018

## SHEET INDEX

A-001 GENERAL INFO & AERIAL PHOTO  
AS-101 SITE PLANS & SITE INFO  
AS-102 LANDSCAPE PLAN  
A-101 BASEMENT FLOOR PLANS  
A-102 FIRST FLOOR PLANS  
A-201 EXTERIOR ELEVATIONS  
A-202 RAILING ELEVATIONS

STRUCTURAL ENGINEER:  
**BOB D. CAMPBELL & CO., Inc.**  
4338 BELLEVUE  
KANSAS CITY, MISSOURI 64111  
TEL: (816) 521-4144 / FAX: (816) 531-4572

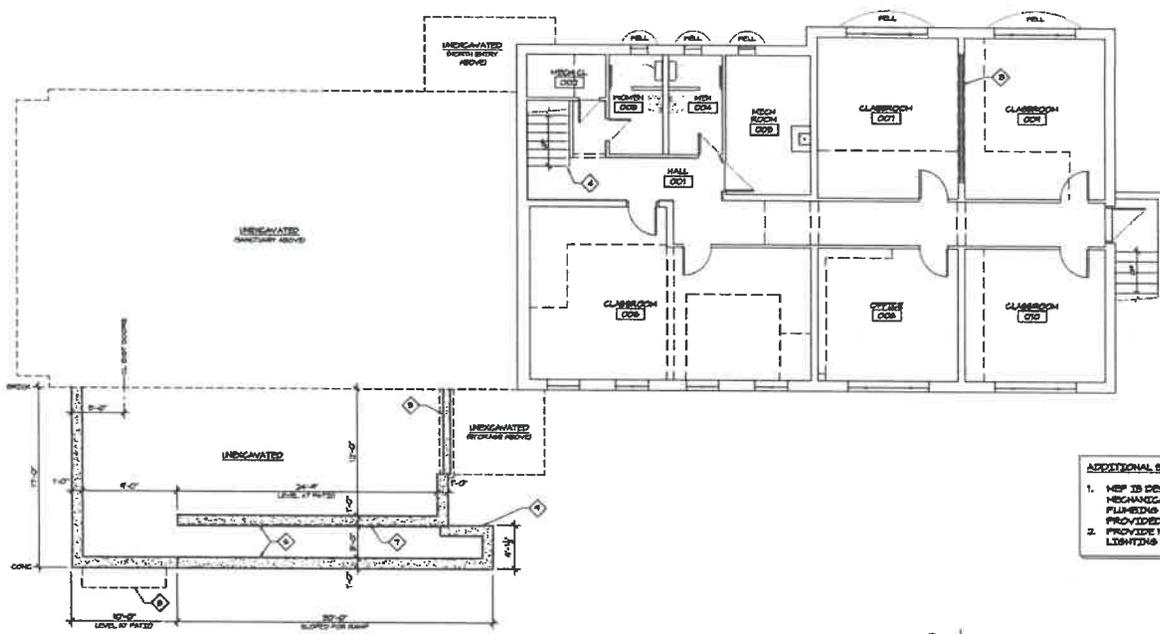
ARCHITECT:  
**PIPER-WIND ARCHITECTS, Inc.**  
2121 CENTRAL STREET, SUITE 143  
KANSAS CITY, MISSOURI 64109  
TEL: (816) 474-3050 / FAX: (816) 474-3251

PWA PROJECT NO 4117  
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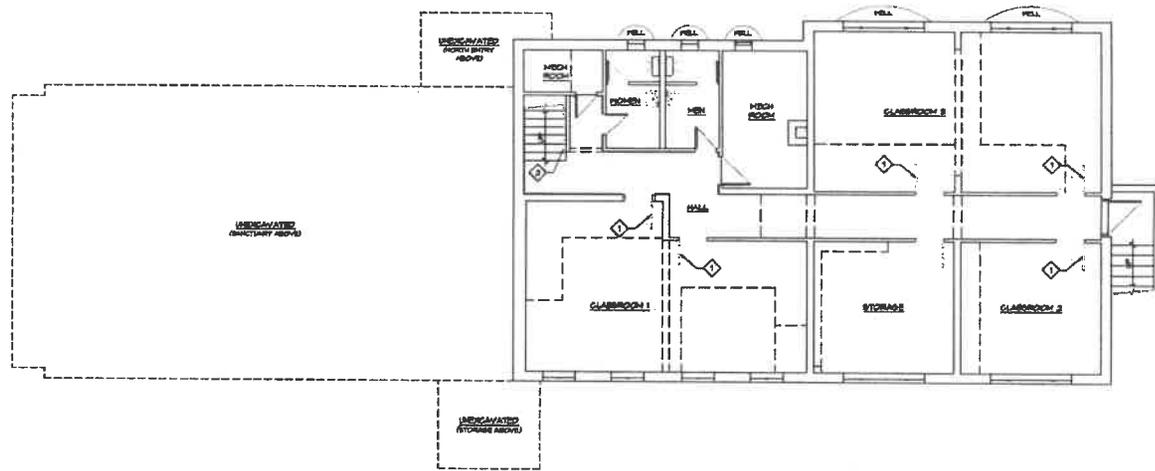




**ADDITIONAL SCOPE NOTES**

1. MEP TO DESIGN-BUILD. ANY NECESSARY MECHANICAL, ELECTRICAL, OR PLUMBING DRAWINGS WILL BE PROVIDED BY THE CONTRACTOR.
2. PROVIDE NEW SURFACE MOUNTED LED LIGHTING THROUGHOUT BASEMENT.

**2 BASEMENT NEW FLOOR PLAN**



**1 BASEMENT DEMO FLOOR PLAN**

- GENERAL NOTES**
1. DIMENSIONS ARE TO FINISH FACE OF SURFACE UNLESS NOTED OTHERWISE.
- KEYED PLAN NOTES**
- ◊ DEMO EXISTING DOOR
  - ◊ DEMO EXISTING HANDRAIL
  - ◊ CENTER NEW WALL IN EXISTING OPENING
  - ◊ NEW HANDRAIL
  - ◊ NEW FOUNDATION WALL AND FOOTING AT WEST SIDE OF STORAGE SHED
  - ◊ TURN DOWN FOOTING FOR PATIO AND RAMP, TYPICAL
  - ◊ CONTINUOUS KEYWAY (CONCRETE) TO RECEIVE NORTH EDGE OF RAMP SLAB
  - ◊ CONCRETE STEPS (SHOWN)
  - ◊ NORTH EDGE OF RAMP AT BOTTOM TO ALIGN WITH EDGE OF 1 1/2" REINFORCED KEYWAY IN PATIO THROUGH FOOTING

ARCHITECT:  
**PIPER-HENCO ARCHITECTS, INC.**  
 721 CENTRAL STREET, SUITE 100  
 OMAHA, NE 68102-4418  
 TEL: 402-426-2828 / FAX: 402-426-4121  
 www.piper-henco.com

STRUCTURAL ENGINEER:  
**BOB D. CAMPBELL & CO.**  
 428 BELL ST.  
 OMAHA, NE 68102-4411  
 TEL: 402-421-2447 / FAX: 402-421-8172  
 www.rbc-engineer.com

**LEAWOOD PRESBYTERIAN**  
**RED DOOR RENOVATION**  
 2715 WEST 83RD STREET, LEAWOOD, KANSAS 66206

FINAL DEVELOPMENT PLAN

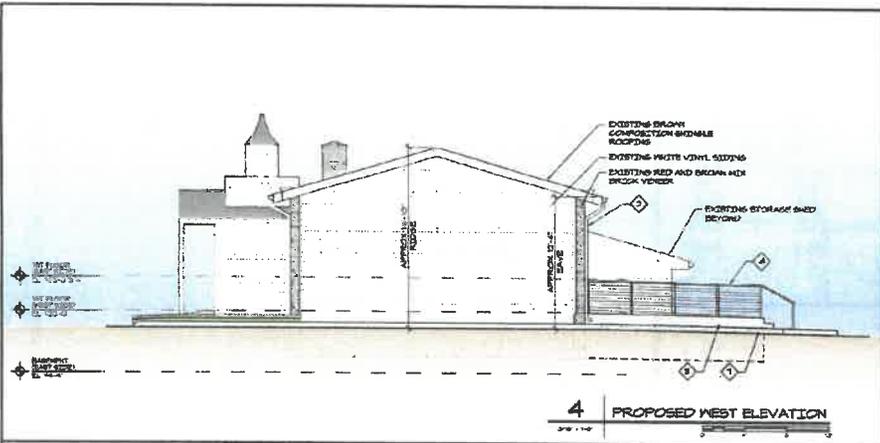
DATE	11/17/2017
BY	MM
CHECKED	MM
DATE	11/20/2017
BY	MM
CHECKED	MM

SHEET TITLE & NUMBER  
**BASEMENT FLOOR PLANS**

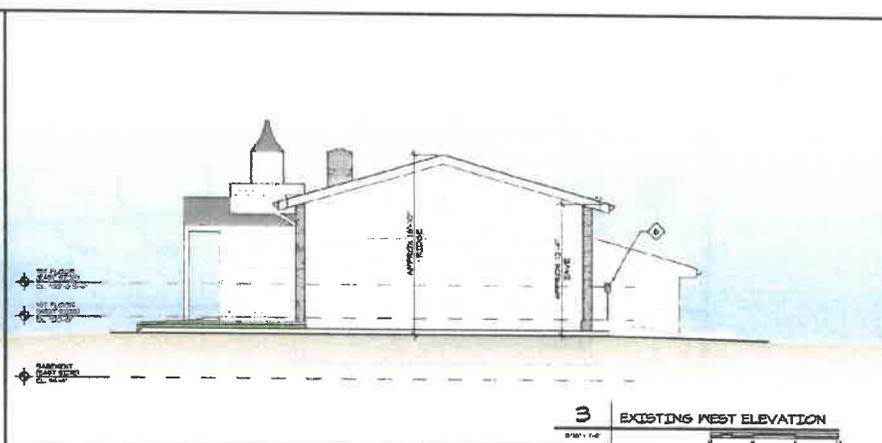
COPYRIGHT © 2017  
 PIPER-HENCO ARCHITECTS, INC.

10/17/2017 10:47 AM C:\Users\mm\Documents\Projects\Red Door\Drawings\Development\Basement\101.dwg

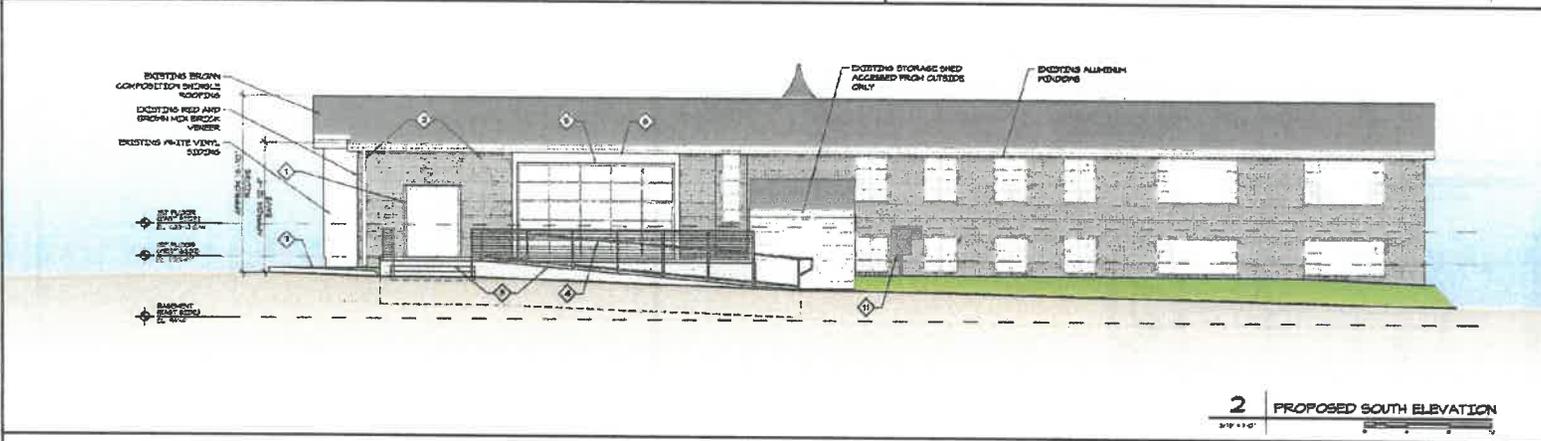




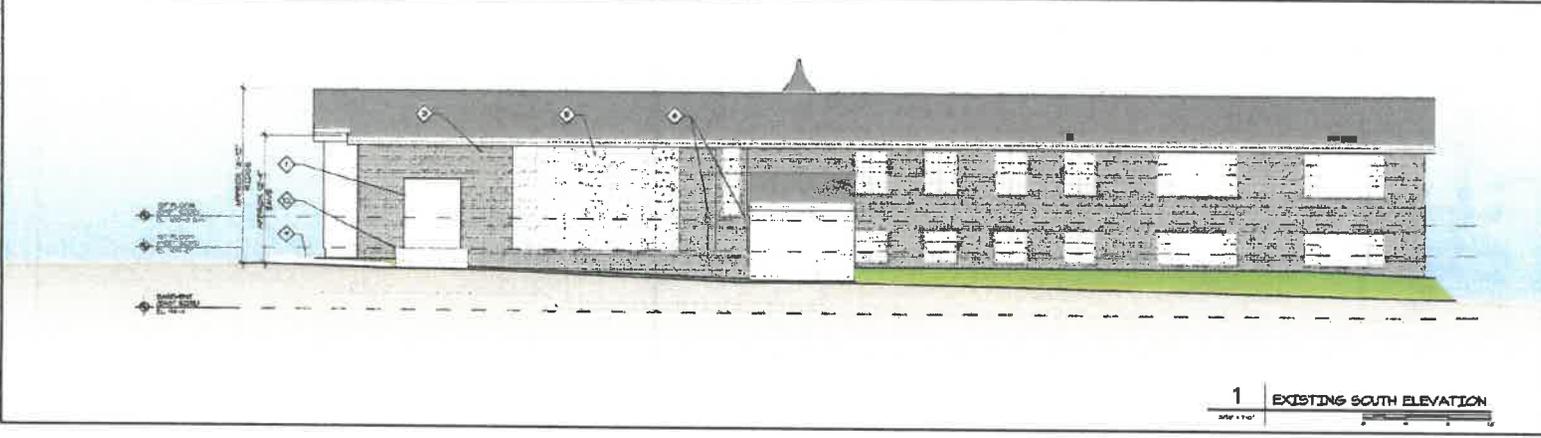
4 PROPOSED WEST ELEVATION



3 EXISTING WEST ELEVATION

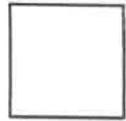


2 PROPOSED SOUTH ELEVATION



1 EXISTING SOUTH ELEVATION

- GENERAL NOTES**
- TOUGH UP ALL GALVANIZED STEEL SURFACES AFTER FIELD PAINTING OR IF CONTAINING OR DAMAGED DURING INSTALLATION
- EXISTING NOTES**
- REMOVE EXISTING HOLLOW METAL DOORS AND INSTALL NEW ALUMINUM AND GLASS STORED FRONT STYLE DOORS, CLEAR ANODIZED ALUMINUM FINISH
  - RELOCATE EXISTING DEBRIS POUT TO WEST SIDE OF NEW PATIO
  - NEW CONCRETE PATIO, STEPS, AND RAMP
  - NEW RAILINGS AROUND PATIO AND AT STEPS AND RAMP
  - REMOVE OPENING IN WALL FOR NEW ALUMINUM GLASS PANEL OVERHEAD DOOR, CLEAR ANODIZED ALUMINUM FINISH
  - EXISTING ELECTRICAL METERS TO BE RELOCATED TO EAST SIDE OF SHED
  - NEW CONCRETE CURBS PER PLAN
  - COMPOSITE TRIM BOARDS AROUND NEW OVERHEAD DOOR, PAINT FINISH TO MATCH EXISTING SIDING AND TRIM
  - REMOVE CURB
  - REMOVE CONCRETE STOOP AND REDEVELOP LOCATION
  - NEW ELECTRICAL PANEL AND METER LOCATION



PROJECT:  
 FIRE WIND ARCHITECTS, Inc.  
 241 CENTER STREET, SUITE 111  
 LEAWOOD, MISSOURI 64068  
 TEL: 816.274.2000 FAX: 816.274.2001  
 www.firewind.com

STRUCTURAL ENGINEER:  
 BOB D. CAMPBELL & CO.  
 1100 BELLEVILLE  
 LEAWOOD, MISSOURI 64068  
 TEL: 816.273.4444 FAX: 816.273.8827  
 www.bdc-engineer.com

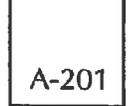
**LEAWOOD PRESBYTERIAN**  
 RED DOOR RENOVATION  
 2715 WEST 83rd STREET, LEAWOOD, KANSAS 64206

FINAL DEVELOPMENT PLAN

NO.	DATE	DESCRIPTION

1/8" = 1'-0" & 1/4" = 1'-0"  
 EXTERIOR ELEVATIONS

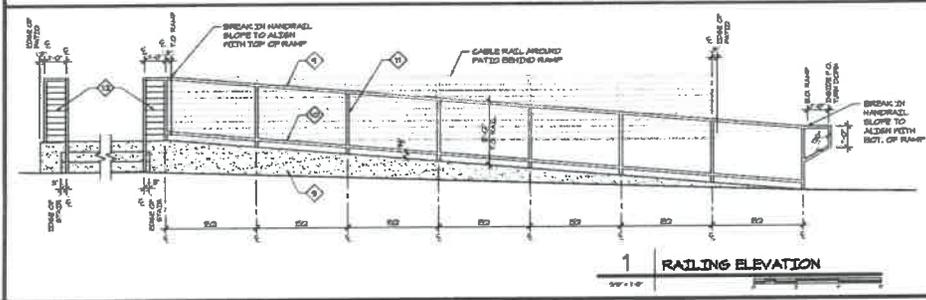
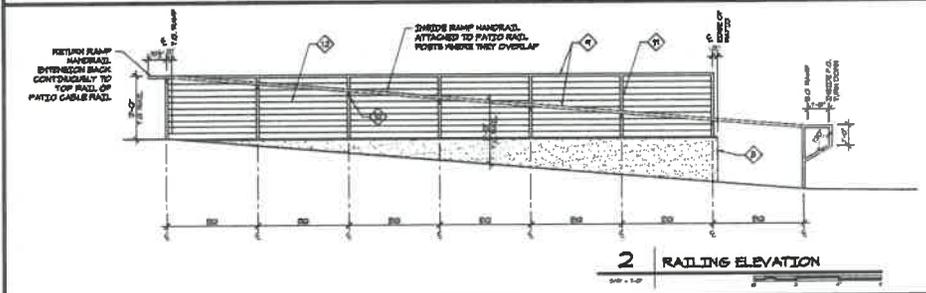
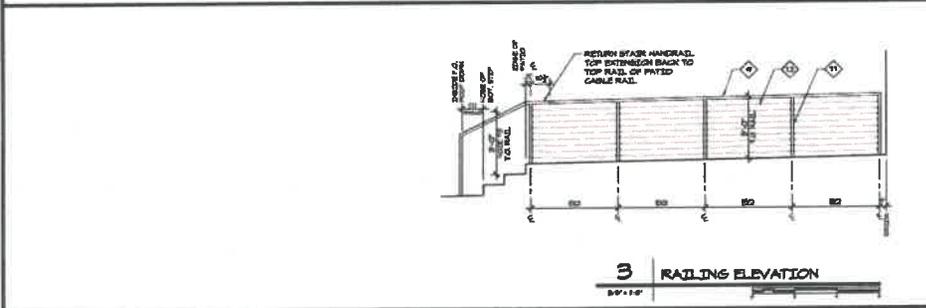
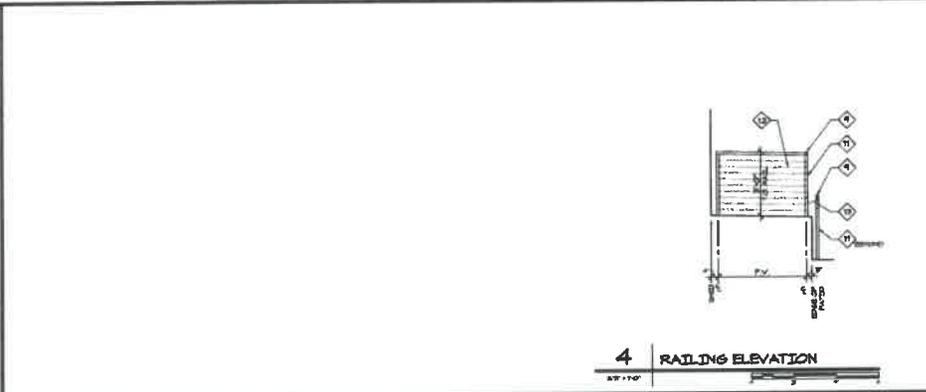
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A-201

2017/07/27 11:28 AM C:\Users\jcampbell\OneDrive\Documents\leawood\leawood.dwg

08/11/2015 2:24 PM C:\Users\james\Documents\Projects\LEAWOOD PRESBYTERIAN\Red Door\Red Door.dwg



- SPECIAL NOTES**
- TOUCH UP ALL GALVANIZED STEEL SURFACES AFTER FIELD WELDING OR IF CORROSION IS DAMAGED DURING INSTALLATION
- REFER NOTES**
- ◇ NOT USED
  - ◇ NOT USED
  - ◇ 4#4 CONCRETE PATIO, STEPS, AND RAMP
  - ◇ NOT USED
  - ◇ 1 1/2" GALV. TUBE STEEL TOP RAIL AT ALL RAILINGS, TYPICAL
  - ◇ 1 1/2" GALV. TUBE STEEL BOTTOM RAIL AT RAMP, TYPICAL
  - ◇ 1 1/2" GALV. TUBE STEEL POST AT ALL RAILINGS, TYPICAL
  - ◇ STAINLESS STEEL CABLE RAIL, TYPICAL
  - ◇ FELD GALV. SOLID STEEL ROD HANDRAIL BRACKET TO POST



ARCHITECT:  
**PIPER-WIND ARCHITECTS, INC.**  
 133 CENTRAL STREET, SUITE 117  
 LEAWOOD, KANSAS 66208  
 TEL: 913-241-3900 / FAX: 913-241-3917  
 WWW.PWARCHITECTS.COM

STRUCTURAL ENGINEER:  
**BOB D. CAMPBELL & CO.**  
 4188 90th ST  
 LEAWOOD, KANSAS 66208  
 TEL: 913-241-4544 / FAX: 913-241-4571  
 WWW.BDC-ENG.COM

**LEAWOOD PRESBYTERIAN**  
**RED DOOR RENOVATION**  
 2715 WEST 83rd STREET, LEAWOOD, KANSAS 66208

FINAL  
 DEVELOPMENT  
 PLAN

DATE	08/11/2015
TIME	2:24 PM
USER	james
HOST	LEAWOOD
DESCRIPTION	RAILING ELEVATIONS

SHEET TITLE & NUMBER  
**RAILING ELEVATIONS**

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**A-202**

**City of Leawood  
Planning Commission Meeting  
November 27, 2018  
Dinner Session – 5:30 p.m. – No Discussion of Items  
Leawood City Hall – Main Conference Room  
Meeting - 6:00 p.m.  
Leawood City Hall Council Chambers  
4800 Town Center Drive  
Leawood, KS 66211  
913.339.6700 x 160**

**CALL TO ORDER/ROLL CALL:** Hunter, Hoyt, Pateidl, Elkins, Coleman, Block, and Stevens. Absent: Belzer and Strauss.

**APPROVAL OF THE AGENDA**

Chairman Elkins: It appears that there are no changes or amendments to the agenda. If there are no other changes, I'll entertain a motion.

**A motion to approve the agenda was made by Stevens; seconded by Pateidl. Motion carried with a unanimous vote of 6-0. For: Hunter, Hoyt, Pateidl, Coleman, Block, and Stevens.**

**APPROVAL OF MINUTES:** Approval of the minutes from the October 23, 2018 Planning Commission meeting.

Comm. Coleman: On Page 8, about ¾ of the way down, it should be Duck Donuts instead of Dunkin Donuts.

**A motion to approve the amended minutes from the October 23, 2018 Planning Commission meeting was made by Coleman; seconded by Hoyt. Motion carried with a unanimous vote of 6-0. For: Hunter, Hoyt, Pateidl, Coleman, Block, and Stevens.**

**CONSENT AGENDA:**

**CASE 117-18 – BI-STATE CENTENNIAL PARK – CENTRAL STATES BEVERAGE – FENCE – Request for approval of a Revised Final Plan, located east of Kenneth Road and north of 143<sup>rd</sup> Street.**

**CASE 129-18 – TUSCANY RESERVE VILLAGE, 6<sup>TH</sup> PLAT – Request for approval of a Revised Final Plat, located north of 137<sup>th</sup> Street and west of Chadwick Street.**

Chairman Elkins: Does any commissioner wish to pull either item to discuss? If not, is there a motion?

**A motion to approve the Consent Agenda was made by Hoyt; seconded by Pateidl. Motion carried with a unanimous vote of 6-0. For: Hunter, Hoyt, Pateidl, Coleman, Block, and Stevens.**

**NEW BUSINESS:**

 **CASE 128-18 – LEAWOOD PRESBYTERIAN – RED DOOR RENOVATION – Request for approval of Revised Final Plan, located south of 83<sup>rd</sup> Street and east of Cherokee Lane.**

**Staff Presentation:**

City Planner Ricky Sanchez made the following presentation:

Mr. Sanchez: This is Case 128-18 – Leawood Presbyterian – Red Door Renovation – Request for approval of a Revised Final Plan. The property is located south of 83<sup>rd</sup> Street and east of Cherokee Lane. The applicant would like to construct a new patio area to be accessed by an Americans with Disabilities Act (ADA) ramp and a set of stairs as well as an overhead door. These projects will be located along the southwest corner of the Red Door building, which is located southwest of the main church on the site. The patio steps and ADA ramp are to be constructed with concrete and stainless-steel cable railing system surrounding the patio area. The new entry door and overhead door are both constructed of aluminum with glass and clear anodized aluminum finish. The applicant will relocate four shrubs and one tree from their current locations and will place them along the perimeter of the Red Door building. The project meets all regulations per the Leawood Development Ordinance (LDO), and staff recommends approval of Case 128-18 with the stipulations outlined in the Staff Report. I would be happy to answer any questions.

Chairman Elkins: Mr. Sanchez, I understand that the Staff Report has been modified, and the report that staff wishes for us to act upon was placed on the dais before tonight's meeting.

Mr. Sanchez: That is correct.

Chairman Elkins: Could you give us a brief overview of the changes that you recommended?

Mr. Sanchez: Throughout the report, the reference was southeast when it should have been southwest of the Red Door building. Also, under Site Plan Comments, one of the sentences got moved to a new bullet, so it showed three points when it was actually two points. Under the Site Plan comments, it goes into what the garage door is proposed to be constructed of. Under Staff Comments, the applicant changed the space between the ramp and parking spaces from mulch. The Staff Report was updated to show that along with Stipulation No. 8 instead of No. 6 that was shown.

Chairman Elkins: Do any of the commissioners have questions for Mr. Sanchez at this point? Seeing none, I would invite the applicant to step forward.

### **Applicant Presentation**

John Wind, Piper Wind Architects, 2121 Central, Suite 143, Kansas City, MO, appeared before the Planning Commission and made the following comments:

Mr. Wind: I'm pleased to have the opportunities to present the improvements to the Leawood Presbyterian Church. I'll start with a photograph of the front of the building (*displays on the monitor*). It is my understanding that this was the first church in Leawood. That building has not been used as a church for some time. It is now being used for youth organizations to gather. The church decided they would like to make some relatively simple improvements to the interior. As part of those improvements, they wanted to bring the building up to ADA standards. On the back side of the building, where most of the parking is located, they are introducing a ramp. The existing door will be replaced with a storefront-type door with glass and aluminum frame. The windows will be replaced with an overhead door. The landscaped area will be replaced with a patio and a new ADA ramp to provide access from the parking up to the landing and into the building. We maintain a couple steps from the building. Are there any questions so far?

Chairman Elkins: No, sir.

Mr. Wind: The idea is that, on nice days, they can lift up the door and expand the use of that interior space on the patio. It's a relatively simple project. I'd be happy to answer any questions.

Chairman Elkins: Thank you. Does anyone have questions? Mr. Wind, staff has recommended a total of thirteen stipulations. Does your client have any objections to any of those?

Mr. Wind: No objections.

Chairman Elkins: Thank you. That takes us to a discussion by the commission of the proposed plan for the Leawood Presbyterian Church. Are there comments or questions? I would entertain a motion.

**A motion to recommend approval of CASE 128-18 – LEAWOOD PRESBYTERIAN – RED DOOR RENOVATION – Request for approval of Revised Final Plan, located south of 83<sup>rd</sup> Street and east of Cherokee Lane – with thirteen staff stipulations - was made by Coleman; seconded by Pateidl. Motion carried with a unanimous vote of 6-0. For: Hunter, Hoyt, Pateidl, Coleman, Block, and Stevens.**

**CASE 130-18 – STATE LINE NORTH OFFICE BUILDING – Request for approval of a Preliminary Plan, Final Plan, Preliminary Plat, and Final Plat, located south of 127<sup>th</sup> Street and west of State Line Road. PUBLIC HEARING**

### **Staff Presentation:**

City Planner Jessica Schuller made the following presentation:

# City of Leawood Governing Body Staff Report

MEETING DATE: December 17, 2018

REPORT WRITTEN: December 6, 2018

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**PARKWAY PLAZA CELL TOWER – SPRINT SPECTRUM L.P. EQUIPMENT UPGRADE – REQUEST FOR APPROVAL OF AN ELIGIBLE FACILITIES REQUEST FOR REPLACEMENT OF EXISTING ANTENNAS AND ASSOCIATED EQUIPMENT – Located north of 135<sup>th</sup> Street and east of Nall Avenue – Case 135-18**

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**STAFF RECOMMENDATION:**

Staff reviewed the application for Case 135-18, Parkway Plaza Cell Tower – Sprint Spectrum L.P. Equipment Upgrade, and has determined that it meets the requirements for 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012 to replace antenna and associated equipment. Staff recommends the Governing Body approve Case 135-18, Parkway Plaza – Cell Tower – Sprint Equipment Upgrade.

**APPLICANT:**

- The applicant is Crown Castle on behalf of Sprint Spectrum L.P. (Sprint PCS).
- The property is owned by Stein Towers, LC.
- The tower is owned by Global Signal.

**REQUEST:**

- The applicant is requesting approval of an Eligible Facilities Request to remove and replace antennas for Sprint.
- The application is limited to the replacement of three (3) antennas and three (3) remote radio head units (RRUs) with three (3) Ericsson Air 6468 antennas along with other ancillary equipment. The proposed antennas are allowing the RRU's (Remote Radio Units) to be removed and integrated into the antennas. Any future modifications shall require the submittal of a new application.
- The equipment shall comply with and be maintained in accordance with all related federal guidelines and the requirements of the Leawood Development Ordinance pertaining to the required concealment elements.
- The application is eligible and meets the criteria for 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012.

**ZONING:**

- The property is currently zoned AG (Agricultural).

**COMPREHENSIVE PLAN:**

- The Comprehensive Plan designates this property as MXD (Mixed Use).

**SURROUNDING ZONING:**

- North To the north is Parkway Plaza, zoned MXD (Mixed Use Development District), consisting of commercial, office, and residential uses. Beyond is 133<sup>rd</sup> Street is a single-family residential subdivision zoned R-1 (Single-Family Residential District) within the City of Overland Park and the single family residential subdivision of Bridgewood, zoned RP-1

- South (Planned Single Family Residential District) within Leawood. Directly to the south is the Parkway Plaza development, zoned MXD (Mixed Use Development District), containing a mix of undeveloped land and commercial uses, beyond which is 135<sup>th</sup> Street and Cornerstone of Leawood, a commercial subdivision zoned SD-CR (Planned General Retail).
- East Directly to the east is Parkway Plaza, a development zoned MXD (Mixed Use Development District) containing a mix of commercial uses and multi-family residential.
- West To the west is a multi-family development zoned RP-5 (Planned Apartment House District) within the City of Overland Park.

**LOCATION:**



**SITE PLAN COMMENTS:**

- The current height of the existing tower is 170' with a 5' lightning arrester at the top. The height of the tower was approved by the Governing Body on February 1, 2016 (Case 02-16, Resolution No. 4553).
- The existing tower has four (4) wireless communication companies, including Verizon (115' and 125'), AT&T (135' and 145'), T-Mobile (155'), and Sprint (165').
- The facility is enclosed by an existing 8' wall constructed of masonry and stucco. The equipment compound is surrounded by a combination of pines and evergreens to provide screening. The tower owner shall be required to maintain the landscaping.
- No changes are proposed to the site.

**ELEVATIONS:**

- The applicant is proposing to mount three (3) Air 6468 antennas at the 163' centerline, in place of three existing antennas and three RRU units. The antennas will be 38.89" in height, 20.47" wide and 7.36" deep. The proposed antennas are allowing the RRUs to be eliminated.
- Cabling to the antennas shall be internalized within the tower structure, which shall comply with the Leawood Development Ordinance.
- The existing and proposed antenna are platform mounted to the monopole. New antenna will be painted to match the existing structure.
- No other changes to the equipment or tower are proposed.

**SECTION 6409(A) ELIGIBILITY REQUIREMENTS:**

Staff has reviewed the application and determined that it complies with Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012 the requirements of the Leawood Development Ordinance. The applicant is proposing to replace antennas, to be located in the same position as the antennas being removed, on an existing monopole and the modifications proposed do not constitute a substantial change under the act.

- The application meets the requirements of equipment co-location on a support structure as it is not increasing the height of the tower, does not involve any more equipment cabinets, and does not entail any excavation of the current site.
- The applicant's appurtenances shall continue to be mounted uniformly to create a symmetrical appearance, which complies with concealment efforts outlined in the Leawood Development Ordinance. The existing antennas are meeting necessary requirements for the tower to be considered a legal structure, such as:
  - Mounting the antennas in order to minimize the visual impact to the greatest extent practicable, and shall not extend more than 7' from the face of the tower;
  - antennas are painted to match the color of the tower;
  - cabling to the antennas is internalized within the tower; and,
  - the property is landscaped.

**RESOLUTION NO. \_\_\_\_\_**

**RESOLUTION APPROVING AN ELIGIBLE FACILITIES REQUEST FOR THE REPLACEMENT OF EXISTING ANTENNAS AND ASSOCIATED EQUIPMENT AT PARKWAY PLAZA CELL TOWER FOR SPRINT SPECTRUM L.P., LOCATED NORTH OF 135<sup>TH</sup> STREET AND EAST OF NALL AVENUE. (CASE 135-18)**

WHEREAS, Sprint Spectrum L.P. desires to replace antennas and associated equipment on an existing wireless facility;

WHEREAS, the replacement of this equipment will not constitute a “substantial change” as that term is defined in Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012 or as defined in the Leawood Development Ordinance; and

WHEREAS, Sprint Spectrum L.P. has submitted the required application with the required information.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF LEAWOOD, KANSAS:

**SECTION ONE:** That the Governing Body hereby approves Sprint Spectrum L.P. eligible facilities request as more fully described in Exhibit “A,” attached hereto and incorporated by reference as if fully set out.

**SECTION TWO:** This resolution shall become effective upon passage.

PASSED by the Governing Body this 17<sup>th</sup> day of December, 2018.

APPROVED by the Mayor this 17<sup>th</sup> day of December, 2018.

\_\_\_\_\_  
Peggy J. Dunn, Mayor

[SEAL]

ATTEST:

\_\_\_\_\_  
Debra Harper, CMC, City Clerk

APPROVED AS TO FORM:

\_\_\_\_\_  
Andrew K. Hall, Assistant City Attorney



# EXHIBIT "A"

**SPRINT SITE NUMBER:** KC03XC190  
**SPRINT SITE NAME:** IRA STEIN PROPERTY  
**SITE TYPE:** MONOPOLE  
**TOWER HEIGHT:** 170'-0"

**BUSINESS UNIT #:** 877796  
**SITE ADDRESS:** 5290 W. 135TH STREET  
 LEAWOOD, KS 66209  
**COUNTY:** JOHNSON  
**JURISDICTION:** KS - CITY OF LEAWOOD

## SPRINT MIMO UPGRADE



**SPRINT SITE NUMBER:** KC03XC190  
**BU #:** 877796  
**IRA STEIN PROPERTY**  
 5290 W. 135TH STREET  
 LEAWOOD, KS 66209

EXISTING 170'-0" MONOPOLE

### ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	CHKD
A	08/13/18	MJK	FIELD SURVEY	LAOB
B	08/24/18	AKC	CONSTRUCTION	FAV
C	09/13/18	AKC	CONSTRUCTION	DK



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

**SHEET NUMBER:** T-1  
**REVISION:** 1

SITE INFORMATION	
SITE NAME:	IRA STEIN PROPERTY
SITE ADDRESS:	5290 W. 135TH STREET LEAWOOD, KS 66209
COUNTY:	JOHNSON
MAP/PARCEL #:	045-078-22-0-30-01-063-01-0
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	38° 53' 08.60" / 38.885738°
LONGITUDE:	-92° 35' 47.40" / -94.595556°
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	976.0 FT
CURRENT ZONING:	NOT REQUIRED
JURISDICTION:	KS - CITY OF LEAWOOD
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	11B
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	GLOBAL SIGNAL ACQUISITIONS IV LLC PO BOX 27465 ATLANTA, GA 30384-7465
TOWER OWNER:	GLOBAL SIGNAL ACQUISITIONS II LLC 2000 CORPORATE DRIVE CANNONBURG, PA 15317
CARRIER/APPLICANT:	SPRINT 6391 SPRINT PARKWAY OVERLAND PARK, KS 66251-2650
CROWN CASTLE USA INC. APPLICATION ID:	434934
ELECTRIC PROVIDER:	KANSAS CITY POWER & LIGHT (800) 344-7233
TELCO PROVIDER:	AT&T (866) 420-6900

DRAWING INDEX	
SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	OVERALL SITE PLAN & FINAL ELEVATION
C-2	ANTENNA PLANS & ELEVATION DETAILS
ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.	

**PROJECT DESCRIPTION**

THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

**TOWER SCOPE OF WORK**

- REMOVE (1) COMBSCOPE - TTTT6AP-1XR ANTENNA
- REMOVE (2) COMBSCOPE - TTTT6AP-1XR ANTENNAS
- REMOVE (2) NOKIA - F2H1-RH RH
- INSTALL (3) ERICSSON - AIR 6469 D41 ANTENNAS
- INSTALL (1) AMPHENOL - 942-98888-1FXXX 1.5/8" HYBRID CABLE

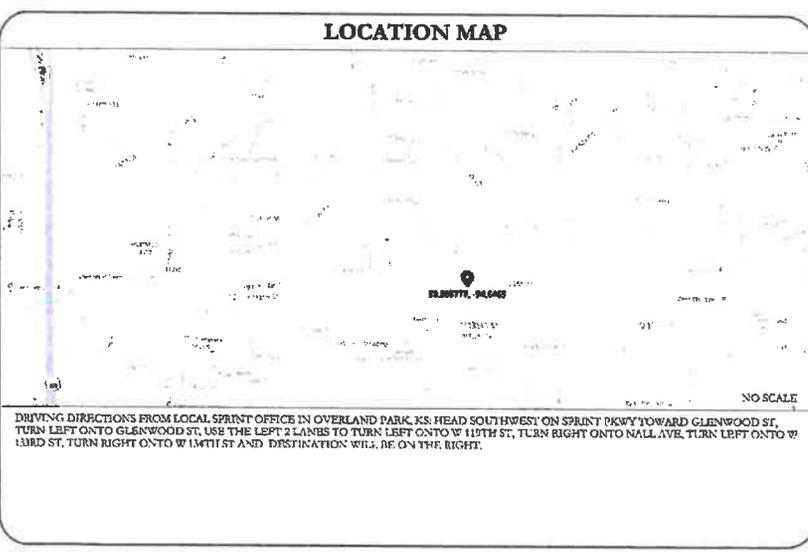
**GROUND SCOPE OF WORK**

- NONE

DESIGN PACKAGE BASED ON RP DATA SHEET  
 REVISION: 3.0  
 ISSUED: 04/09/18

DESIGN PACKAGE BASED ON THE APPLICATION  
 ID: 434934  
 REVISION: 0

NOTE:  
 PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER



**APPLICABLE CODES/REFERENCE DOCUMENTS**

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

CODE TYPE	CODE
BUILDING	2012 IBC
MECHANICAL	2012 IMC
ELECTRICAL	2011 NEC

**REFERENCE DOCUMENTS:**

STRUCTURAL ANALYSIS: VERTICAL STRUCTURES, INC. DATED AUGUST 14, 2018

MOUNT ANALYSIS: TOWER ENGINEERING PROFESSIONALS DATED AUGUST 13, 2018

NOTE: SEE PLANS FOR LATEST SPRINT CONSTRUCTION STANDARDS

CALL KANSAS ONE CALL (800) DIG-SAFE CALL 3 WORKING DAYS BEFORE YOU DIG!

**PROJECT TEAM**

**A&E FIRM:** CROWN CASTLE USA INC.  
 2000 CORPORATE DRIVE  
 CANNONBURG, PA 15317  
 CROWN.AE.APPROVAL@CROWNCASTLE.COM

**CROWN CASTLE USA INC. DISTRICT CONTACTS:**

GARY SULLIVAN - PROJECT MANAGER  
 (314) 541-9752

JOHN SCHMITZ - CONSTRUCTION MANAGER  
 (913) 681-6330

KEITH MAHN - A&E SPECIALIST  
 KEITH.MAHN@CROWNCASTLE.COM  
 (314) 572-2836

SOIL WORK GENERAL NOTES

- 1. ALL UNDERGROUND WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...
2. ALL UNDERGROUND WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...
3. ALL UNDERGROUND WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...
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5. ALL UNDERGROUND WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...

STRUCTURAL STEEL NOTES

- 1. ALL STEEL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...
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CONCRETE AND REINFORCING STEEL NOTES

- 1. ALL CONCRETE WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...
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4. ALL CONCRETE WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...

MASONRY NOTES

- 1. ALL MASONRY WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...
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GENERAL NOTES

- 1. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...
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3. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...
4. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...

ABBREVIATIONS AND SYMBOLS

Table with columns for Abbreviation and Symbol. Includes symbols for steel reinforcement, masonry, and electrical components.

ELECTRICAL INSTALLATION NOTES

- 1. ALL ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...
2. ALL ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...
3. ALL ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...
4. ALL ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...

GREENFIELD GROUNDING NOTES

- 1. ALL LIGHTNING PROTECTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...
2. ALL LIGHTNING PROTECTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...
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4. ALL LIGHTNING PROTECTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF OVERLAND PARK SPECIFICATIONS...

Table titled 'NLS INSTALLATION COLOR CODE'. Columns include Description, Product/Type, and Wire Color. Lists various electrical components and their corresponding colors.

Sprint logo and address: 1351 SPRINT COURTWAY, OVERLAND PARK, KS 66205-3505

CROWN CASTLE logo and address: 4 CITY PLACE DRIVE, SUITE 400, ST. LOUIS, MO 63141

ERICSSON logo and address: 1330 WOODFIELD RD, SUITE 300, O'LAHAY, MO 63117

SPRINT SITE NUMBER: KC03XC190

BU #: 877796

TRA SITE INVENTORY

5290 W. 135TH STREET, LEAWOOD, KS 66209

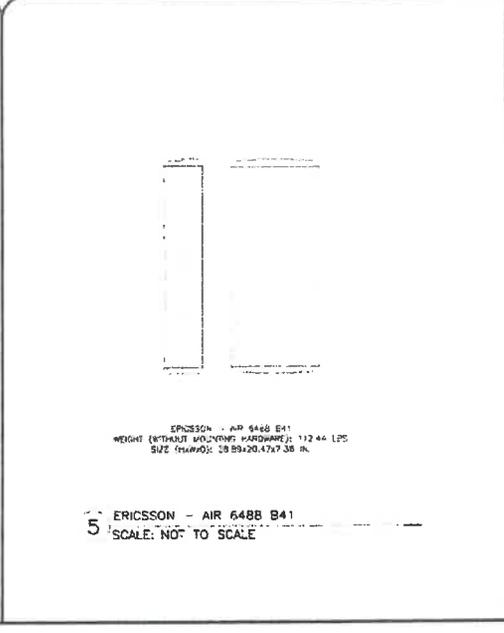
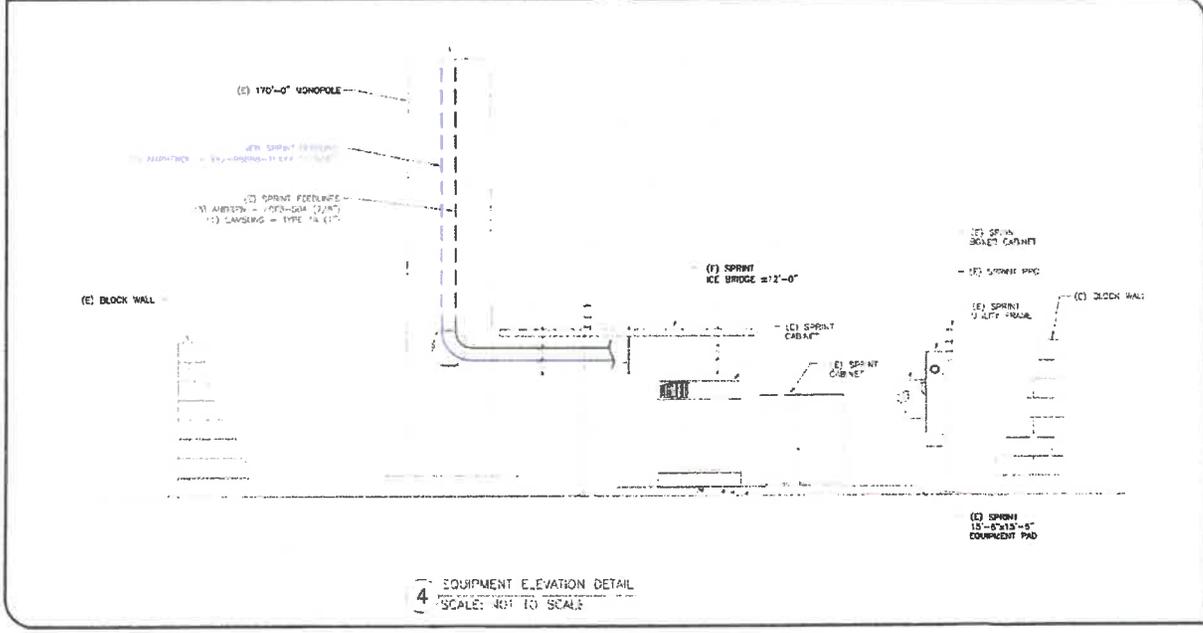
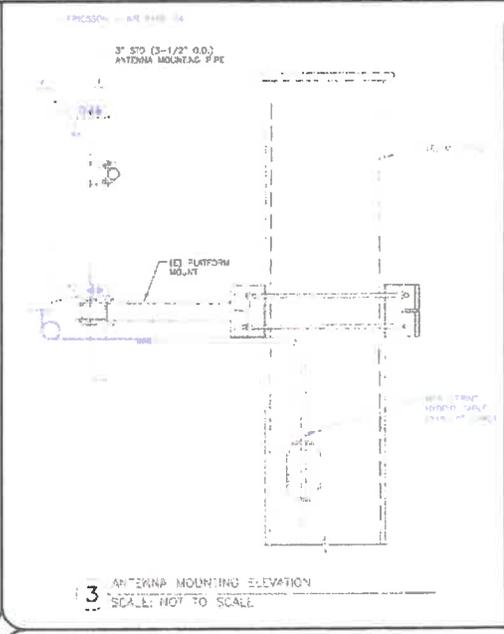
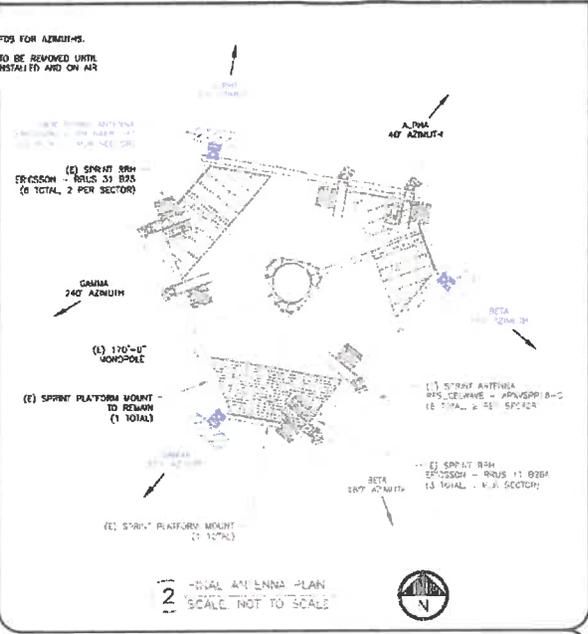
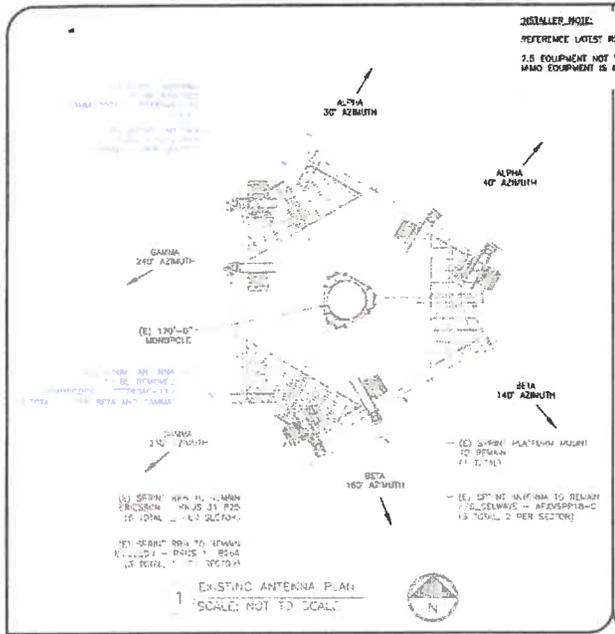
EXISTING 170'-0" MONOPOLE

Table titled 'ISSUED FOR'. Columns include Date, Type, Description, and Date. Lists project milestones and dates.

Professional Engineer seal for Daniel P. Gruman, License No. 25110, State of Kansas. Includes expiration date 9/30/2018.

SENET NUMBER: T-2 and REVISION: 1. Includes a note about the revision.





**Sprint**  
6391 SPRINT PARKWAY  
OVERLAND PARK, KS 62251-2650

**CROWN CASTLE**  
1 CITY PLAZA DRIVE, SUITE 450  
ST. LOUIS, MO 63141

**ERICSSON**  
1300 WOODFIELD RD, SUITE 500  
SCHAUMBURG, IL 60175

SPRINT SITE NUMBER:  
**K003XC190**

BU #: 877796  
**IRA STEIN PROPERTY**

5290 W. 135TH STREET  
**LEAWOOD, KS 66209**

EXISTING 170'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DCS/Q
A	05/15/18	MLC	PRELIMINARY	JAC
B	05/26/18	ADP	CONSTRUCTION	DG
1	05/26/18	ADP	CONSTRUCTION	DG

**DANIEL P. GRUMAN**  
LICENSED  
25110  
7/24/2015  
KANSAS  
PROFESSIONAL ENGINEER

Carroll Clark, LBA Inc. CE# 09-1005

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: **C-2** REVISION: **1**

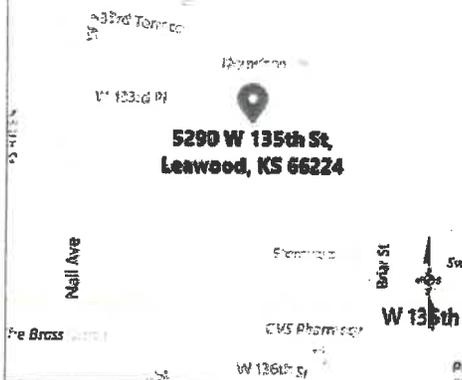


SITE INFORMATION

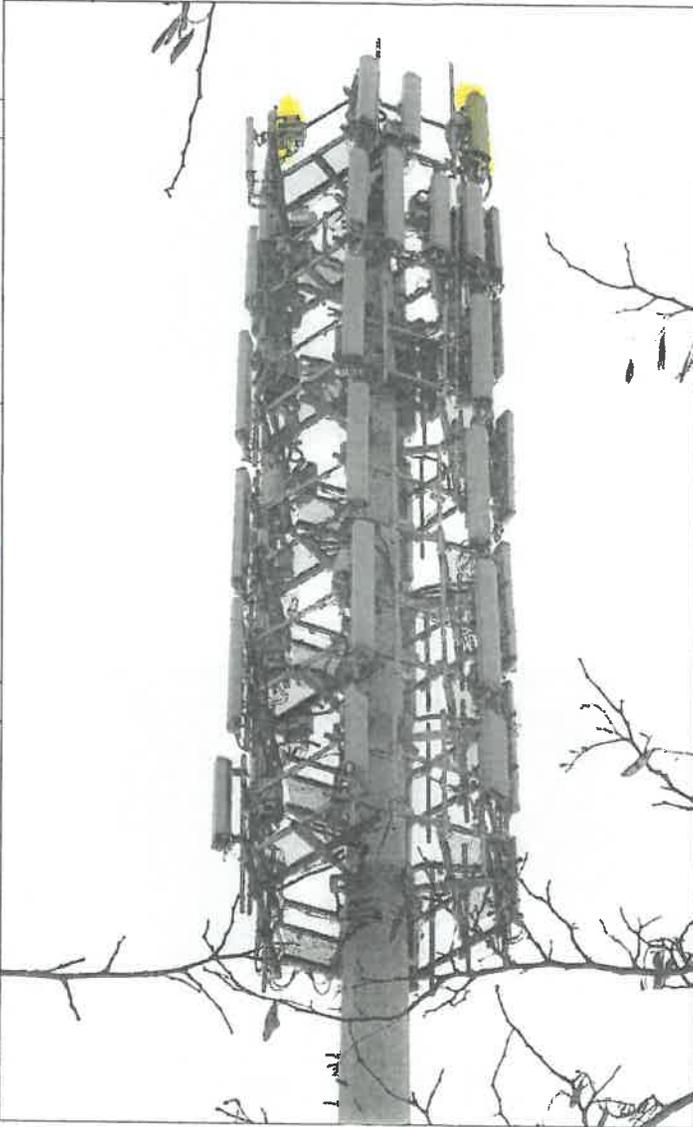
BUSINESS UNIT: -877796  
SITE NAME: -IRA STEIN PROPERTY  
ADDRESS: -5290 W. 135th Street  
QTY, STATE & ZIP: -LEAWOOD, KS 66209  
COUNTY: -JOHNSON  
LAT: -38° 53' 8.80"  
LONG: -(-94° 38' 47.40")  
DATE: -10/12/2018



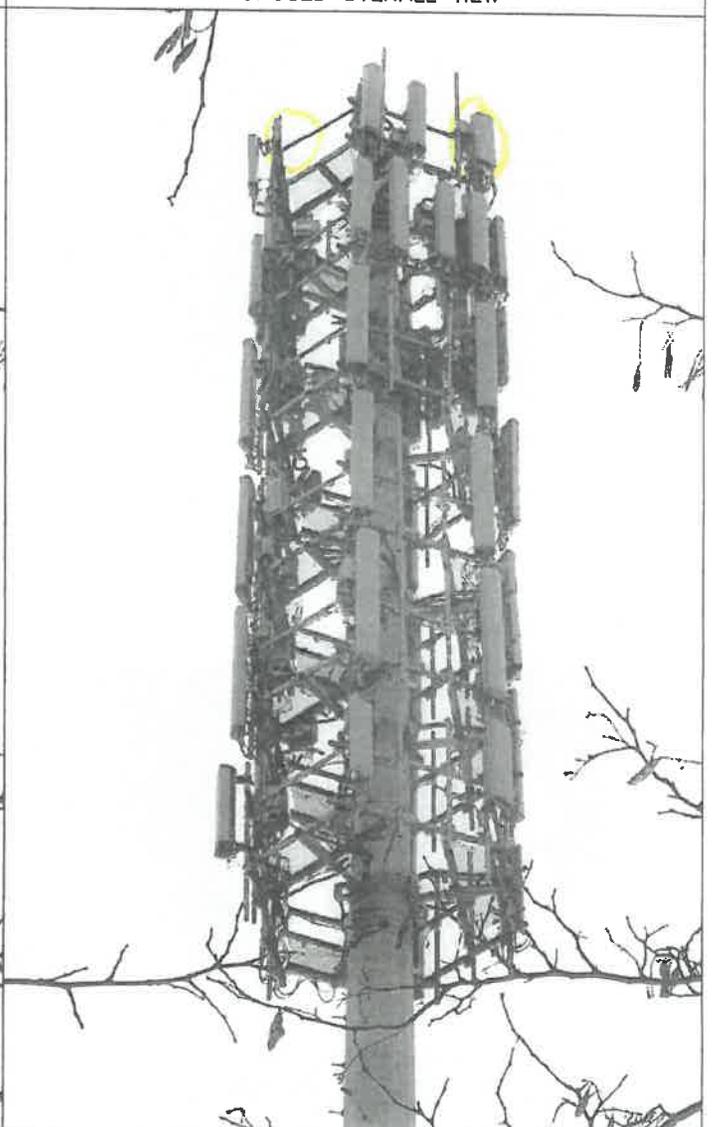
VICINITY MAP



EXISTING OVERALL VIEW



PROPOSED OVERALL VIEW

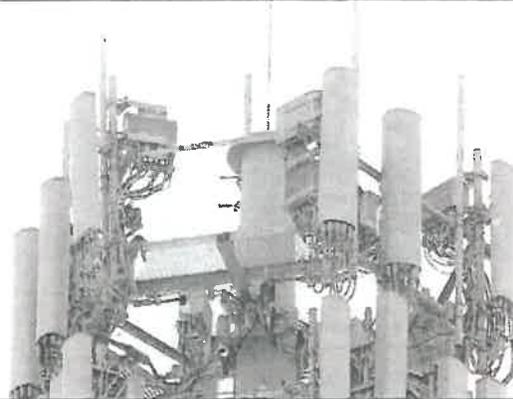




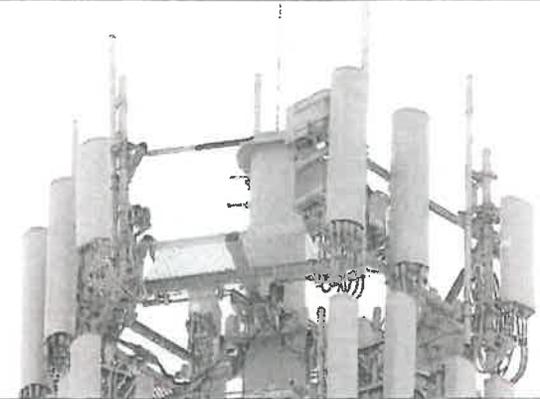
SITE INFORMATION

BUSINESS UNIT: -877796  
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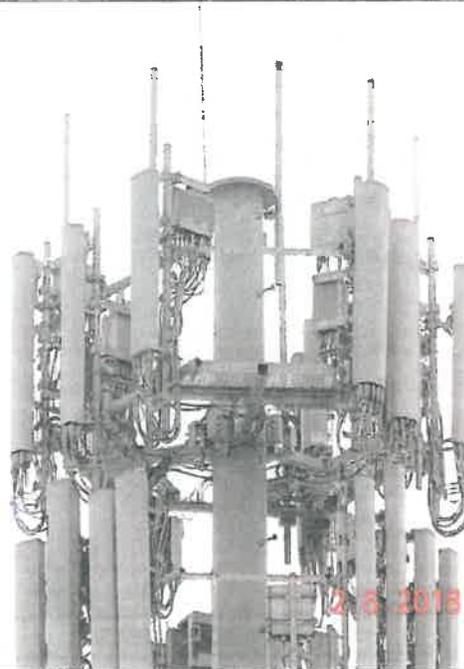
EXISTING CLOSE-UP VIEW



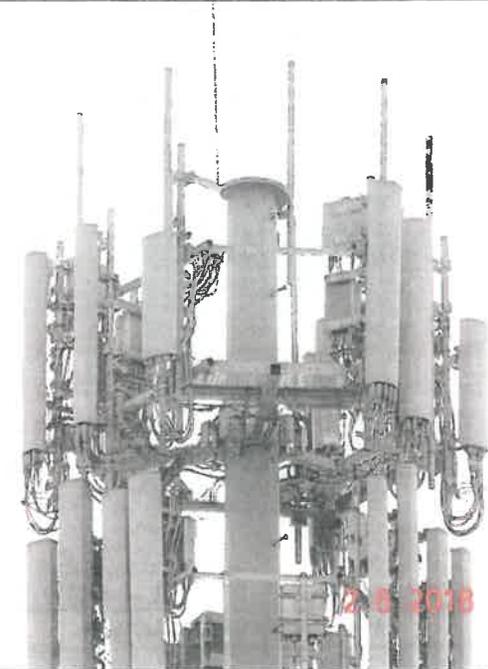
PROPOSED CLOSE-UP VIEW



EXISTING MID-VIEW



PROPOSED MID-VIEW





# AIR 6468 B41

AIR 6468, an Advanced Antenna System(AAS) with 64 transmitters and 64 receivers, improves LTE TDD spectral efficiency.

Enhanced bitrate per user achieved through interference suppression by applying beamforming capabilities in the downlink and the uplink.

Capacity increased by scheduling users in the cell on different layers supporting both Single User MIMO(SU-MIMO) and

Multi User MIMO(MU-MIMO).

Application coverage is improved through beamforming in both the vertical and horizontal dimensions.

To support cost efficient site deployments, the AIR 6468 includes Layer 1 beamforming enabling enhanced Common Public Radio Interface(eCPRI) to be used between the AIR 6468 and Baseband 5216 or Baseband 6630



The increasing capacity demands in operator's networks create needs for new spectrum efficient solutions. An Advanced Antenna System(AAS) such as AIR 6468 together with the Massive MIMO and Multi-User MIMO software features enables **greater spectral efficiency**.

The AIR 6468 has in total 64 Transmitters(T) and 64 Receivers(R) connected to an array of dual polarized antenna elements.

**Capacity gains** of up to 3 to 5 times compared with 8T8R configurations can be expected in favorable traffic scenarios.

Beamforming algorithms allow for better control of the transmitted energy in traffic channels for downlink(DL). Usage of large numbers of antenna branches improves the radio environment for single users, improves SINR, and allow for **higher DL speeds per user** with Single User MIMO(SU-MIMO).

When users are sufficiently separated in the cell, beamforming capabilities enable the same time- frequency resources to be reused among the different users **thereby increasing capacity** in high load scenarios with Multi User MIMO(MU-MIMO).

In the uplink(UL), up to 64 receiver branches coupled with baseband functionality for receiver diversity, interference rejection(Interference Rejection Combining, IRC) provides significant **uplink performance improvements** over conventional two, four and eight receiver branch capabilities. Correspondingly, this also adds user specific receiver-side beamforming functionality.

Normally the users' angular distribution in the cell is a key parameter in determining an AAS performance capability. Hence performances gains are very much scenario and traffic load dependent.

The AIR 6468 will support **different cell or broadcast beam shapes**, to meet different user distribution scenarios. The flexibility to steer the transmitted energy for control signaling in both azimuth and elevation will enable **improved efficiency** in various deployments scenarios including Macro, Hotspot and High-rise.

The **front haul transport is made more efficient** by implementing Layer 1 beamforming in the AIR 6468. Using the enhanced Common Public Radio Interface(eCPRI) between the Baseband and the AAS enables affordable 10 Gbps Small Form-factor Pluggable optical fiber transceivers(SFPs) to interconnect. This allows for a more **cost-efficient deployment** offering the flexibility needed in real-life site environments.

The design of AIR 6468 enables fast roll out with minimal site impact, improved application coverage and capacity boost for both existing and new bands compared to using more traditional radio and antenna systems.



AIR 6468 B41

## TECHNICAL SPECIFICATIONS AIR 6468 B41

<b>PRODUCT NUMBER:</b>	KRD 901 075/11		
<b>ADVANCED ANTENNA SYSTEM</b>			
Operating frequency band:	3GPP Band 41, 2498 – 2690 MHz (full band)		
Instantaneous bandwidth:	60 MHz		
Architecture:	64T64R connected to an array of dual polarized antenna elements.		
Carrier capacity per sector:	Up to 3x20 MHz LTE (TDD)		
Modulation:	Downlink	Up to 256 QAM.	
	Uplink	Up to 64 QAM.	
Multi-antenna beamforming functionality*:	Downlink SU-MIMO		
	Downlink MU-MIMO	Up to 16 layers per carrier.	
	Uplink SU-MIMO		
	Uplink MU-MIMO	Up to 16 layers per carrier.	
	Cell shaping	Pre-defined cell or broadcast beam shapes; Macro, Hotspot and High-rise.	
	Digital downtilt	Continuously adjustable for macro scenario, fixed for Hotspot and High-rise scenario.	
<b>Spatial characteristics broadcast beam</b>			
<b>Scenario**:</b>	<b>Macro</b>	<b>Hotspot</b>	<b>High-rise</b>
EIRP max***:	2x 64.5 dBm	2x 59.5 dBm	2x 64 dBm
Beam Parallelity:	≤ - 10 dB	≤ - 10 dB	≤ - 10 dB
<b>Horizontal Pattern</b>			
Azimuth Beamwidth:	65° ± 5°	65° ± 5°	20° ± 2°
Front-to-Back Ratio, Total Power ±30°:	≥ 25 dB	≥ 25 dB	≥ 25 dB
Beam Pointing Direction:	0° ± 5°	0° ± 5°	0° ± 2°
<b>Vertical Pattern</b>			
Elevation Beamwidth:	10° ± 1°	30° ± 3°	30° ± 3°
First Upper Side Lobe Suppression:	≥ 16 dB	≥ 12 dB	≥ 12 dB
Beam Pointing Error:	≤ 1°	≤ 3°	≤ 3°
Digital Downtilt:	Continuously - 8° to + 8°	Fixed 3°	Fixed 3°
<b>Spatial characteristics traffic beams</b>			
EIRP max**:	2x 71.5 dBm		
<b>Mechanical specifications</b>			
Weight:	60.4 kg excluding installation kit.		
Size (H x W x D):	972.5 mm x 520 mm x 182.5 mm excluding smaller protrusions.		
<b>Operational specifications</b>			
Wind Load Maximum:	580 N @ 42 m/s wind speed.		
Wind Load (Frontal/ Lateral/ Rear):	580 N / 204 N / 580 N @ 42 m/s wind speed excluding installation kit.		
Survival Wind Speed****:	67 m/s		
Operating Temperature Range:	- 40° to + 55° C		
IP Classification:	IP65		
<b>Main Interfaces</b>			
Baseband:	Two eCPRI interfaces using 10G SFP+ ports with link capacity 10.3 Gb/s. One 10.3 Gb/s eCPRI interface is sufficient for up to 60 MHz carrier bandwidth and 16 layers.		
Power Supply:	- 48 V DC nominal on a 2-wire connection. Recommended fuse rating is 40 A.		
Mounting:	Optional mechanical tilt and swivel installation kit for wall and pole mounting.		
Handling:	Eyelet for lifting and hoisting.		

\* Actual software support aligned with the user equipment(UE) echo system. Please refer to the Ericsson radio access network(RAN) software roadmap and feature descriptions.

\*\* Additional scenarios, cells or broadcast beam shapes possible with future software releases.

\*\*\* Two simultaneous orthogonal beams.

# TECHNICAL SPECIFICATIONS AIR 6468 B41

## Connection interfaces

Grounding Point:	2x M6 bolt to support an M6 dual cable lug.
- 48 V DC Power Supply:	2-wire TVS connector
Data 1 Optical eCPRI:	LC (on SFP) with support for FullAXS.
Data 2 Optical eCPRI:	LC (on SFP) with support for FullAXS.
Optional Synchronization Timing (AUX):	LC (on SFP) with support for FullAXS.
External Alarm/APC Light Interface:	Mini-DIN connector, 14 pin
Optical Indicators:	LEDs
TX Monitor:	SMA connector

## BASEBAND CONFIGURATION

Number of baseband units depending on configuration.

## ACCESSORIES

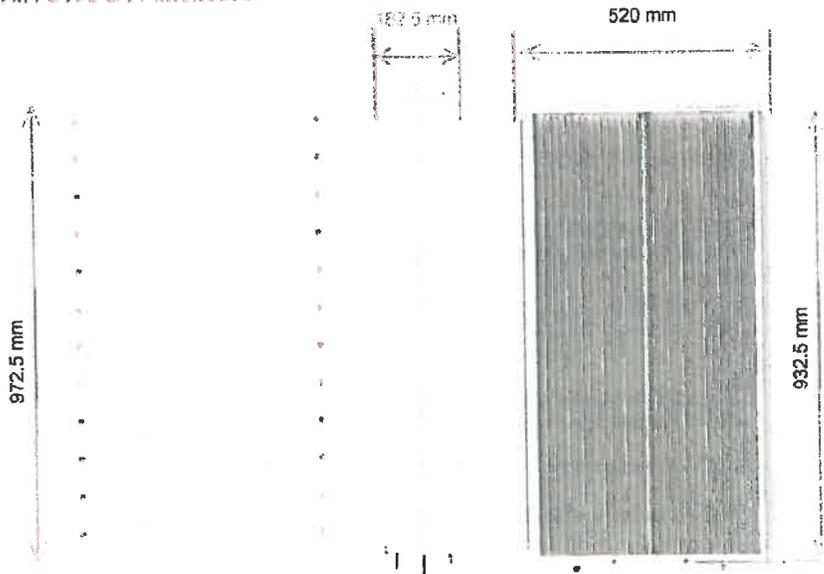
Installation accessories are available from the Ericsson Radio Site System portfolio.

\*\*\*\* As a result of more stringent legal regulations and judgments regarding product liability, we are obliged to point out certain risks that may arise when products are used under extraordinary operating conditions. The mechanical design is based on environmental conditions which are equal to or exceeding class 4.1 as specified in ETS 300 019-1-4 and thereby respects the static mechanical load imposed on an AIR unit by wind at maximum velocity. Wind loads in this datasheet are calculated with reference to wind pressure. For more accurate and site specific results, terrain information needs to be considered and calculate according to EN 1991-1-4 or GB 50009. Pole clamps and mounting accessories as specified by Ericsson in the Customer Product Information documentation must be used. Extraordinary operating conditions, such as heavy icing or exceptional dynamic stress (e.g. strain caused by oscillating support structures), may result in the breakage of an AIR unit or its installation kit and even cause the unit to fall to the ground. These facts must be considered during the site planning process.

TX monitor  
Optical indicators  
External alarm / APC light interface  
Optional synchronization timing  
Data 1 optical eCPRI  
Data 2 optical eCPRI  
- 48 V DC power supply  
Grounding point



AIR 6468 B41 interfaces



AIR 6468 B41 size and vertical bracket spacing



**Sprint**  
 6220 Sprint Parkway,  
 Overland Park, KS 66251  
 Office: (913) 315-1270

**Ivan Blanco**  
 RF Engineer IV  
 Kansas City Market  
 RF Engineering

Nov. 1, 2018

City of Leawood  
 4800 Town Center Drive  
 Leawood, KS 66211

**RE: Sprint Site KC03XC190  
 5290 W 135th St, Leawood, KS 66209  
 2.5 GHz mMIMO Upgrade Project**

Dear Sir or Madam,

This responds to your request regarding the proposed Sprint wireless telecommunications project referenced above.

Sprint operates up to 5 wireless networks at each site. 800MHz and 1900MHz CDMA (Code Division Multiple Access), 800MHz and 1900MHz FDD LTE(Frequency Division Duplex Long Term Evolution), and 2500 TDD LTE (Time Division Duplex Long Term Evolution) Network.

Band	Technology	Tower Frequencies	Handset Frequencies	Modulation	ERP (dBm)	Antenna Azimuths
800	CDMA	862.900 MHz	812.900 MHz	QPSK-16QAM	55.85	40, 160, 240
800	5MHz FDD LTE	863.8 -868.8 MHz	818.8-823.8 MHz	QPSK, 16QAM, 64QAM	55.15	40, 160, 240
1900	CDMA	1931.25-1938.75 MHz	1851.25-1858.75 MHz	QPSK-16QAM, 64QAM	58.15	40, 160, 240
1900	5Mhz FDD LTE	1940-1945 / 1990-1995 MHz	1860-1865 / 1910-1915 MHz	QPSK, 16QAM, 64QAM	61.2	40, 160, 240
2500	20Mhz TDD LTE	2496 – 2690 MHz	2496 – 2690 MHz	QPSK, 256 QAM, 16QAM, 64QAM	62.4	10, 130, 220

Sprint designs, constructs and operates its wireless telecommunications facilities to comply with the Federal Communications Commission rules and regulations. Sprint will undertake best efforts to prevent harmful radiofrequency interference from its wireless telecommunications facilities to other authorized wireless telecommunications operators in the surrounding area, including those related to public safety.

If you have any questions, please call me directly.

Sincerely,

Ivan Blanco  
 RF Engineer IV

Date: August 14, 2018



Randy Wofford  
Crown Castle  
1500 Corporate Drive  
Canonsburg, PA 15317

Vertical Structures, Inc.  
309 Spangler Drive, Suite E  
Richmond, KY 40475  
(859) 624-8360

**Subject: Structural Analysis Report**

<b>Carrier Designation:</b>	<b>Sprint PCS Change-Out</b>	
	<b>Carrier Site Number:</b>	KC03XC190
	<b>Carrier Site Name:</b>	N/A
<b>Crown Castle Designation:</b>	<b>Crown Castle BU Number:</b>	877796
	<b>Crown Castle Site Name:</b>	Ira Stein Property
	<b>Crown Castle JDE Job Number:</b>	497200
	<b>Crown Castle Work Order Number:</b>	1613599
	<b>Crown Castle Order Number:</b>	434934 Rev. 0
<b>Engineering Firm Designation:</b>	<b>Vertical Structures, Inc. Project Number:</b>	2018-003-084
<b>Site Data:</b>	<b>5290 West 135th Street, Leawood, KS, Johnson County</b>	
	<b>Latitude 38° 53' 8.8", Longitude -94° 38' 47.4"</b>	
	<b>169.663 Foot - Monopole Tower</b>	

Dear Randy Wofford,

Vertical Structures, Inc. is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1235178.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

<b>LC7: Existing + Reserved + Proposed Equipment</b>	<b>Sufficient Capacity</b>
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.	

This analysis has been performed in accordance with the 2012 International Building Code based upon an ultimate 3-second gust wind speed of 115 mph converted to a nominal 3-second gust wind speed of 89 mph per section 1609.3.1 as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a topographic category 1 and crest height of 0 feet, and Risk Category II were used in this analysis.

We at Vertical Structures, Inc. appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Chris Sandlin, P.E.  
Project Engineer



Date: August 14, 2018



Randy Wofford  
Crown Castle  
1500 Corporate Drive  
Canonsburg, PA 15317

Vertical Structures, Inc.  
309 Spangler Drive, Suite E  
Richmond, KY 40475  
(859) 624-8360

**Subject: Structural Analysis Report**

**Carrier Designation:** *Sprint PCS Change-Out*  
**Carrier Site Number:** KC03XC190  
**Carrier Site Name:** N/A

**Crown Castle Designation:**  
**Crown Castle BU Number:** 877796  
**Crown Castle Site Name:** Ira Stein Property  
**Crown Castle JDE Job Number:** 497200  
**Crown Castle Work Order Number:** 1613599  
**Crown Castle Order Number:** 434934 Rev. 0

**Engineering Firm Designation:** **Vertical Structures, Inc. Project Number:** 2018-003-084

**Site Data:** **5290 West 135th Street, Leawood, KS, Johnson County**  
**Latitude 38° 53' 8.8", Longitude -94° 38' 47.4"**  
**169.663 Foot - Monopole Tower**

Dear Randy Wofford,

Vertical Structures, Inc. is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1235178.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**  
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2012 International Building Code based upon an ultimate 3-second gust wind speed of 115 mph converted to a nominal 3-second gust wind speed of 89 mph per section 1609.3.1 as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a topographic category 1 and crest height of 0 feet, and Risk Category II were used in this analysis.

We at Vertical Structures, Inc. appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Chris Sandlin, P.E.  
Project Engineer

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**1) INTRODUCTION**

This tower is a 169.663 ft Monopole tower designed by EEI in 1996. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-F. The tower foundation was reworked in 2011 to accommodate additional loading.

**2) ANALYSIS CRITERIA**

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 89 mph with no ice, 40 mph with 1 inch ice thickness and 60 mph under service loads, exposure category C with topographic category 1 and crest height of 0 feet.

**Table 1 - Proposed Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
163.0	164.0	3	ericsson	AIR 6468 B41 w/ Mount Pipe	1	1 5/8	

**Table 2 - Existing and Reserved Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note	
163.0	165.0	18	celwave	ACU-A20-N Diplexer	3	7/8	1	
		3	ericsson	RRUS 11 B26A BTS				
		6	ericsson	RRUS 31 B25 BTS				
	164.0	6	celwave	APXVSP18-C w/ Mount Pipe	1	1	3	
		1	commscope	TTTT65AP-1XR w/ Mount Pipe				
		2	commscope	TTTT90AP-1XR w/ Mount Pipe				
		3	nokia	FZHJ-RRH BTS				
	163.0	163.0	1		Platform Mount [LP 716-1]			1
	155.0	159.0	18	andrew	ATM200-A20 TMA	12	7/8	1
			3	nokia	FHFB BTS			
3			nokia	FRLB BTS				
158.0		3	nokia	FRIG BTS				
157.0		3	andrew	SBNHH-1D65C w/ Mount Pipe				
		9	andrew	TMBXX-6517-A2M w/ Mount Pipe				
156.0		2	raycap	RNSNDC-7771-PF-48				
155.0		1		Platform Mount [LP 716-1]				
145.0	145.0	1	nokia	FXFC BTS	1	3/8	1	
		3	alcatel lucent	B66A RRH4x45-4R BTS				
		1	raycap	DC6-48-60-0-8F				
		3	alcatel lucent	B25 RRH4x30-4R BTS				
		3	alcatel lucent	RRH2x60-850				
		6	commscope	JAH4-65C-R4 w/ Mount Pipe				
		3	nokia	AHLBA BTS				
		1	raycap	DC6-48-60-18-8C				

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
135.0	135.0	1		Platform Mount [LP 716-1]	1 3 6	3/8 3/4 1 5/8	1
		3	alcatel lucent	RRH4x25-WCS			
		6	andrew	SBNHH-1D65C w/ Mount Pipe			
		6	commscope	E15Z01P13 TMA			
		1	raycap	DC6-48-60-18-8F			
125.0	125.0	1		Platform Mount [LP 716-1]	1 6	1 1/4 1 5/8	1
		3	commscope	CBC78-DF-2X Diplexer			
		6	commscope	LNx-6515DS-A1M w/ Mount Pipe			
		3	ericsson	RRUS11 B2/RRUS A2 BTS			
		1	raycap	RRFDC-3315-PF-48			
115.0	116.0	3	commscope	TMA-S-DB1921-DD-A TMA	1 6	1 1/4 1 5/8	1
		3	ericsson	Air 32 w/ Mount Pipe			
		3	kathrein	800 10510V01 w/ Mount Pipe			
		1	raycap	RRFDC-3315-PF-48			
	115.0	1		Platform Mount [LP 716-1]			
95.0	100.0	1	commscope	DB589-Y	1	7/8	2
	95.0	1		Side Arm Mount [SO 302-1]			
		1	sensus	Flexnet M400B2 TMA			

- Notes:  
 1) Existing Equipment  
 2) Reserved Equipment  
 3) Equipment to be Removed

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
Unknown						

### 3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	Sprint PCS Change-Out Revision #0	434934	CCIsites
Tower Drawing	EEl Drawing No. GS49934	1549693	CCIsites
Foundation Drawing	EEl Drawing No. F2027-170.1	1473910	CCIsites
Geotechnical Report	Terracon Job No. 02965234	1449026	CCIsites
Rework Drawings	B+T Engineering Project No. 78093.002	3039672	CCIsites
Post Modification Inspection	B+T Group Project No. 78093.004	3381470	CCIsites

#### 3.1) Analysis Method

tnxTower (version 8.0.2.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. Crown Castle's CCIplate 3.1.0 analysis tool was used to evaluate the anchor bolts, base plate, and any flange splices.

#### 3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Vertical Structures, Inc. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
L1	169.663 - 117.681	Pole	TP29.6996x18x0.25	1	-17510.70	1528600.00	88.1	Pass
L2	117.681 - 74.1134	Pole	TP38.8186x28.2513x0.375	2	-30509.00	3170670.00	98.2	Pass
L3	74.1134 - 34.616	Pole	TP46.7708x36.885x0.4375	3	-43756.10	4405280.00	99.3	Pass
L4	34.616 - 0	Pole	TP53.5x44.4989x0.4688	4	-60976.00	5350900.00	102.4	Acceptable (See Note 2)
							Summary	
						Pole (L4)	102.4	Acceptable (See Note 2)
						Rating =	102.4	Acceptable (See Note 2)

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	90.0	Pass
1	Base Plate	0	97.6	Pass
1	Base Foundation	0	13.2	Pass
1	Base Foundation Soil Interaction	0	92.9	Pass

<b>Structure Rating (max from all components) =</b>	<b>102.4%</b>
---	---------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity.
- 2) A structure rating of 105% or less is within engineering tolerances and considered acceptable.
- 3) A foundation-soil interaction rating of 110% or less is within engineering tolerances for foundations and is considered acceptable.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

**APPENDIX A**  
**TNXTOWER OUTPUT**



<b>taxTower</b>  <b>Vertical Structures, Inc.</b> 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	<b>Job</b> Ira Stein Property, KS BU#877796	<b>Page</b> 1 of 12
	<b>Project</b> Vertical Structures Job No. 2018-003-084	<b>Date</b> 16:09:14 08/14/18
	<b>Client</b> Crown Castle	<b>Designed by</b> Bryce Collins

## Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in Johnson County, Kansas.

ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).

Basic wind speed of 89 mph.

Structure Class II.

Exposure Category C.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 40 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

<ul style="list-style-type: none"> <li>Consider Moments - Legs</li> <li>Consider Moments - Horizontals</li> <li>Consider Moments - Diagonals</li> <li>Use Moment Magnification</li> <li>√ Use Code Stress Ratios</li> <li>√ Use Code Safety Factors - Guys</li> <li>Escalate Ice</li> <li>Always Use Max Kz</li> <li>Use Special Wind Profile</li> <li>√ Include Bolts In Member Capacity</li> <li>√ Leg Bolts Are At Top Of Section</li> <li>√ Secondary Horizontal Braces Leg</li> <li>Use Diamond Inner Bracing (4 Sided)</li> <li>√ SR Members Have Cut Ends</li> <li>SR Members Are Concentric</li> </ul>	<ul style="list-style-type: none"> <li>Distribute Leg Loads As Uniform</li> <li>Assume Legs Pinned</li> <li>√ Assume Rigid Index Plate</li> <li>√ Use Clear Spans For Wind Area</li> <li>√ Use Clear Spans For KL/r</li> <li>√ Retension Guys To Initial Tension</li> <li>√ Bypass Mast Stability Checks</li> <li>√ Use Azimuth Dish Coefficients</li> <li>√ Project Wind Area of Appurt.</li> <li>√ Autocalc Torque Arm Areas</li> <li>Add IBC .6D+W Combination</li> <li>Sort Capacity Reports By Component</li> <li>√ Triangulate Diamond Inner Bracing</li> <li>Treat Feed Line Bundles As Cylinder</li> </ul>	<ul style="list-style-type: none"> <li>Use ASCE 10 X-Brace Ly Rules</li> <li>√ Calculate Redundant Bracing Forces</li> <li>Ignore Redundant Members in FEA</li> <li>√ SR Leg Bolts Resist Compression</li> <li>√ All Leg Panels Have Same Allowable Offset Girt At Foundation</li> <li>√ Consider Feed Line Torque</li> <li>Include Angle Block Shear Check</li> <li>Use TIA-222-G Bracing Resist. Exemption</li> <li>Use TIA-222-G Tension Splice Exemption</li> <li>Poles</li> <li>Include Shear-Torsion Interaction</li> <li>Always Use Sub-Critical Flow</li> <li>Use Top Mounted Sockets</li> <li>Pole Without Linear Attachments</li> <li>Pole With Shroud Or No Appurtenances</li> <li>Outside and Inside Corner Radii Are Known</li> </ul>
--	--	--

## Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	

<b>inxTower</b>  <b>Vertical Structures, Inc.</b> 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	<b>Job</b>	Ira Stein Property, KS BU#877796	<b>Page</b>	2 of 12
	<b>Project</b>	Vertical Structures Job No. 2018-003-084	<b>Date</b>	16:08:14 08/14/18
	<b>Client</b>	Crown Castle	<b>Designed by</b>	Bryce Collins

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	169.66-117.68	51.98	4.21	12	18.0000	29.6996	0.2500	1.0000	A572-65 (65 ksi)
L2	117.68-74.11	47.78	5.35	12	28.2513	38.8186	0.3750	1.5000	A572-65 (65 ksi)
L3	74.11-34.62	44.85	6.35	12	36.8850	46.7708	0.4375	1.7500	A572-65 (65 ksi)
L4	34.62-0.00	40.96		12	44.4969	53.5000	0.4688	1.8750	A572-65 (65 ksi)

### Tapered Pole Properties

Section	Tip Dia.	Area	I	r	C	I/C	J	Iu/Q	w	w/t
	in	in <sup>2</sup>	in <sup>4</sup>	in	in	in <sup>3</sup>	in <sup>4</sup>	in <sup>2</sup>	in	
L1	18.5468	14.2888	574.6149	6.3545	9.3240	61.6275	1164.3256	7.0325	4.1540	16.616
	30.6591	23.7069	2624.3396	10.5430	15.3844	170.5845	5317.6235	11.6678	7.2895	29.158
L2	30.0803	33.6606	3338.6950	9.9797	14.6342	228.1440	6765.1013	16.5667	6.5663	17.51
	40.0557	46.4206	8756.7961	13.7628	20.1080	435.4874	17743.6431	22.8468	9.3984	25.062
L3	39.2531	51.3455	8706.1157	13.0482	19.1064	455.6637	17640.9508	25.2707	8.7127	19.915
	48.2664	65.2720	17885.4379	16.5873	24.2273	738.2357	36240.7462	32.1249	11.3621	25.97
L4	47.3453	66.4550	16442.7553	15.7621	23.0494	713.3703	33317.4800	32.7071	10.6689	22.76
	55.2219	80.0440	28732.8493	18.9852	27.7130	1036.8004	58220.5425	39.3952	13.0818	27.908

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft <sup>2</sup>	in					in	in	in
L1 169.66-117.68				1	1	1			
L2 117.68-74.11				1	1	1			
L3 74.11-34.62				1	1	1			
L4 34.62-0.00				1	1	1			

### Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter	Perimeter	Weight
			ft				in	in	lb/ft
*** LDF5-50A (7/8 FOAM)	C	Surface Ar (CaAa)	95.00 - 6.00	1	1	0.000 0.000	1.0900		0.33

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	C <sub>A</sub> A <sub>A</sub>	Weight
				ft		ft <sup>2</sup> /ft	lb/ft
ASU9325TYP01 (1-3/5")	C	No	Inside Pole	157.00 - 6.00	2	No Ice 0.00	1.61

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	<b>Client</b> Crown Castle	<b>Designed by</b> Bryce Collins

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		$C_d A_A$	Weight
							$ft^2/ft$	$lb$
LDF5-50A (7/8 FOAM)	C	No	Inside Pole	157.00 - 6.00	12	1/2" Ice	0.00	1.61
						1" Ice	0.00	1.61
						No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
**								
LDF7-50A (1-5/8 FOAM)	B	No	Inside Pole	116.00 - 6.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
LDF6-50A (1-1/4 FOAM)	B	No	Inside Pole	116.00 - 6.00	1	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
LDF7-50A (1-5/8 FOAM)	B	No	Inside Pole	125.00 - 6.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
LDF6-50A (1-1/4 FOAM)	B	No	Inside Pole	125.00 - 6.00	1	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
**								
LDF5-50A (7/8 FOAM) (Sprint PCS)	A	No	Inside Pole	164.00 - 6.00	3	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						Type 1A (1" (Sprint PCS)	0.00	0.79
942-98888-1FXXX (1-5/8" Fiber) (Sprint PCS)	A	No	Inside Pole	164.00 - 6.00	1	1/2" Ice	0.00	0.79
						1" Ice	0.00	0.79
						No Ice	0.00	2.33
**								
FB-L98-002-XXX (3/8")	C	No	Inside Pole	135.00 - 6.00	1	No Ice	0.00	0.07
						1/2" Ice	0.00	0.07
						1" Ice	0.00	0.07
						No Ice	0.00	0.53
WR-VG86T (Power Cable)	C	No	Inside Pole	135.00 - 6.00	3	1/2" Ice	0.00	0.53
						1" Ice	0.00	0.53
						No Ice	0.00	0.53
						1" Ice	0.00	0.53
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	135.00 - 6.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
FB-L98-002-XXX (3/8")	C	No	Inside Pole	145.00 - 6.00	1	No Ice	0.00	0.07
						1/2" Ice	0.00	0.07
						1" Ice	0.00	0.07
						No Ice	0.00	0.53
WR-VG86T (Power Cable)	C	No	Inside Pole	145.00 - 6.00	3	1/2" Ice	0.00	0.53
						1" Ice	0.00	0.53
						No Ice	0.00	0.53
						1" Ice	0.00	0.53
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	145.00 - 6.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						1" Ice	0.00	0.82

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	$A_R$	$A_F$	$C_d A_A$	$C_d A_A$	Weight lb
			$ft^2$	$ft^2$	In Face $ft^2$	Out Face $ft^2$	
L1	169.66-117.68	A	0.000	0.000	0.000	0.000	190.42
		B	0.000	0.000	0.000	0.000	40.84
		C	0.000	0.000	0.000	0.000	575.98
L2	117.68-74.11	A	0.000	0.000	0.000	0.000	179.11
		B	0.000	0.000	0.000	0.000	476.84

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Tower Section	Tower Elevation ft	Face	$A_R$	$A_F$	$C_{AA}$ In Face	$C_{AA}$ Out Face	Weight lb
			ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	
L3	74.11-34.62	C	0.000	0.000	2.277	0.000	892.71
		A	0.000	0.000	0.000	0.000	162.37
		B	0.000	0.000	0.000	0.000	440.79
L4	34.62-0.00	C	0.000	0.000	4.305	0.000	816.10
		A	0.000	0.000	0.000	0.000	117.64
		B	0.000	0.000	0.000	0.000	319.35
		C	0.000	0.000	3.119	0.000	591.26

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Lev.	Ice Thickness in	$A_R$	$A_F$	$C_{AA}$ In Face	$C_{AA}$ Out Face	Weight lb
				ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	
L1	169.66-117.68	A	2.314	0.000	0.000	0.000	0.000	190.42
		B		0.000	0.000	0.000	0.000	40.84
		C		0.000	0.000	0.000	0.000	575.98
L2	117.68-74.11	A	2.223	0.000	0.000	0.000	0.000	179.11
		B		0.000	0.000	0.000	0.000	476.84
		C		0.000	0.000	11.942	0.000	1093.70
L3	74.11-34.62	A	2.101	0.000	0.000	0.000	0.000	162.37
		B		0.000	0.000	0.000	0.000	440.79
		C		0.000	0.000	21.869	0.000	1171.58
L4	34.62-0.00	A	1.876	0.000	0.000	0.000	0.000	117.64
		B		0.000	0.000	0.000	0.000	319.35
		C		0.000	0.000	15.145	0.000	825.69

### Feed Line Center of Pressure

Section	Elevation ft	$CP_x$	$CP_z$	$CP_x$ Ice	$CP_z$ Ice
		in	in	in	in
L1	169.66-117.68	0.0000	0.0000	0.0000	0.0000
L2	117.68-74.11	0.0000	0.3303	0.0000	1.2143
L3	74.11-34.62	0.0000	0.6314	0.0000	2.2411
L4	34.62-0.00	0.0000	0.5175	0.0000	1.8318

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
L1	20	LDF5-50A (7/8 FOAM)	117.68 - 95.00	1.0000	1.0000
L2	20	LDF5-50A (7/8 FOAM)	74.11 - 95.00	1.0000	1.0000
L3	20	LDF5-50A (7/8 FOAM)	34.62 - 74.11	1.0000	1.0000

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### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>A</sub> Front	C <sub>A</sub> A <sub>A</sub> Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb
Lightning Rod 8" x 5/8" (VST)	C	None			0.0000	174.00	No Ice 0.50 1/2" Ice 1.31 1" Ice 2.14	0.50 1.31 2.14	90.00 95.56 106.23
**									
Platform Mount [LP 716-1] (Sprint PCS)	C	None			0.0000	163.00	No Ice 26.80 1/2" Ice 32.20 1" Ice 37.60	26.80 32.20 37.60	1509.44 1811.33 2113.22
(3) ACU-A20-N Diplexer (Sprint PCS)	A	From Centroid-Le	6.20 0.00 g 2.00		10.0000	163.00	No Ice 0.12 1/2" Ice 0.16 1" Ice 0.21	0.07 0.10 0.15	1.04 2.32 4.41
(3) ACU-A20-N Diplexer (Sprint PCS)	A	From Centroid-Le	6.20 0.00 g 2.00		40.0000	163.00	No Ice 0.12 1/2" Ice 0.16 1" Ice 0.21	0.07 0.10 0.15	1.04 2.32 4.41
(3) ACU-A20-N Diplexer (Sprint PCS)	B	From Centroid-Le	6.20 0.00 g 2.00		10.0000	163.00	No Ice 0.12 1/2" Ice 0.16 1" Ice 0.21	0.07 0.10 0.15	1.04 2.32 4.41
(3) ACU-A20-N Diplexer (Sprint PCS)	B	From Centroid-Le	6.20 0.00 g 2.00		40.0000	163.00	No Ice 0.12 1/2" Ice 0.16 1" Ice 0.21	0.07 0.10 0.15	1.04 2.32 4.41
(3) ACU-A20-N Diplexer (Sprint PCS)	C	From Centroid-Le	6.20 0.00 g 2.00		-20.0000	163.00	No Ice 0.12 1/2" Ice 0.16 1" Ice 0.21	0.07 0.10 0.15	1.04 2.32 4.41
(3) ACU-A20-N Diplexer (Sprint PCS)	C	From Centroid-Le	6.20 0.00 g 2.00		0.0000	163.00	No Ice 0.12 1/2" Ice 0.16 1" Ice 0.21	0.07 0.10 0.15	1.04 2.32 4.41
(2) RRUS 31 B25 BTS (Sprint PCS)	A	From Centroid-Le	6.20 0.00 g 2.00		40.0000	163.00	No Ice 1.62 1/2" Ice 1.78 1" Ice 1.95	1.28 1.43 1.58	56.10 72.19 90.91
(2) RRUS 31 B25 BTS (Sprint PCS)	B	From Centroid-Le	6.20 0.00 g 2.00		40.0000	163.00	No Ice 1.62 1/2" Ice 1.78 1" Ice 1.95	1.28 1.43 1.58	56.10 72.19 90.91
(2) RRUS 31 B25 BTS (Sprint PCS)	C	From Centroid-Le	6.20 0.00 g 2.00		0.0000	163.00	No Ice 1.62 1/2" Ice 1.78 1" Ice 1.95	1.28 1.43 1.58	56.10 72.19 90.91
RRUS 11 B26A BTS (Sprint PCS)	A	From Centroid-Le	6.20 0.00 g 2.00		40.0000	163.00	No Ice 2.79 1/2" Ice 3.00 1" Ice 3.21	1.19 1.34 1.50	50.71 71.58 95.49
RRUS 11 B26A BTS (Sprint PCS)	B	From Centroid-Le	6.20 0.00 g 2.00		40.0000	163.00	No Ice 2.79 1/2" Ice 3.00 1" Ice 3.21	1.19 1.34 1.50	50.71 71.58 95.49
RRUS 11 B26A BTS (Sprint PCS)	C	From Centroid-Le	6.20 0.00 g 2.00		0.0000	163.00	No Ice 2.79 1/2" Ice 3.00 1" Ice 3.21	1.19 1.34 1.50	50.71 71.58 95.49
(2) APXVSPP18-C w/ Mount Pipe (Sprint PCS)	A	From Centroid-Le	6.20 0.00 g 1.00		40.0000	163.00	No Ice 8.50 1/2" Ice 9.16 1" Ice 9.79	7.18 8.46 9.60	86.20 156.82 235.60
(2) APXVSPP18-C w/ Mount Pipe (Sprint PCS)	B	From Centroid-Le	6.20 0.00 g 1.00		40.0000	163.00	No Ice 8.50 1/2" Ice 9.16 1" Ice 9.79	7.18 8.46 9.60	86.20 156.82 235.60

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	<b>Client</b> Crown Castle	<b>Designed by</b> Bryce Collins

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>A</sub> Front	C <sub>A</sub> A <sub>A</sub> Side	Weight
			Horz	Vert					
			Lateral		°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb
(2) APXVSPF18-C w/ Mount Pipe (Sprint PCS)	C	From	6.20	0.0000	163.00	No Ice	8.50	7.18	86.20
		Centroid-Le	0.00			1/2" Ice	9.16	8.46	156.82
		g	1.00			1" Ice	9.79	9.60	235.60
AIR 6468 B41 w/ Mount Pipe (Sprint PCS)	A	From	6.20	10.0000	163.00	No Ice	7.68	4.44	162.36
		Centroid-Le	0.00			1/2" Ice	8.51	5.51	224.79
		g	1.00			1" Ice	9.26	6.44	293.78
AIR 6468 B41 w/ Mount Pipe (Sprint PCS)	B	From	6.20	10.0000	163.00	No Ice	7.68	4.44	162.36
		Centroid-Le	0.00			1/2" Ice	8.51	5.51	224.79
		g	1.00			1" Ice	9.26	6.44	293.78
AIR 6468 B41 w/ Mount Pipe (Sprint PCS)	C	From	6.20	-20.0000	163.00	No Ice	7.68	4.44	162.36
		Centroid-Le	0.00			1/2" Ice	8.51	5.51	224.79
		g	1.00			1" Ice	9.26	6.44	293.78
** Platform Mount [LP 716-1]	C	None		0.0000	155.00	No Ice	26.80	26.80	1509.44
SBNHH-ID65C w/ Mount Pipe	A	From	6.20	0.0000	155.00	1/2" Ice	32.20	32.20	1811.33
		Centroid-Le	0.00			1" Ice	37.60	37.60	2113.22
		g	2.00			No Ice	11.35	9.56	95.34
SBNHH-ID65C w/ Mount Pipe	B	From	6.20	0.0000	155.00	1/2" Ice	11.97	10.97	181.88
		Centroid-Le	0.00			1" Ice	12.59	12.24	278.14
		g	2.00			No Ice	11.35	9.56	95.34
SBNHH-ID65C w/ Mount Pipe	C	From	6.20	0.0000	155.00	1/2" Ice	11.97	10.97	181.88
		Centroid-Le	0.00			1" Ice	12.59	12.24	278.14
		g	2.00			No Ice	11.35	9.56	95.34
FHFB BTS	A	From	6.20	0.0000	155.00	1/2" Ice	11.97	10.97	181.88
		Centroid-Le	0.00			1" Ice	12.59	12.24	278.14
		g	4.00			No Ice	3.63	2.39	52.90
FHFB BTS	B	From	6.20	0.0000	155.00	1/2" Ice	3.89	2.62	80.57
		Centroid-Le	0.00			1" Ice	4.15	2.85	111.97
		g	4.00			No Ice	3.63	2.39	52.90
FHFB BTS	C	From	6.20	0.0000	155.00	1/2" Ice	3.89	2.62	80.57
		Centroid-Le	0.00			1" Ice	4.15	2.85	111.97
		g	4.00			No Ice	3.63	2.39	52.90
(6) ATM200-A20 TMA	A	From	6.20	0.0000	155.00	1/2" Ice	0.19	0.15	0.50
		Centroid-Le	0.00			1" Ice	0.25	0.20	2.41
		g	4.00			No Ice	0.32	0.27	5.35
(6) ATM200-A20 TMA	B	From	6.20	0.0000	155.00	1/2" Ice	0.19	0.15	0.50
		Centroid-Le	0.00			1" Ice	0.25	0.20	2.41
		g	4.00			No Ice	0.32	0.27	5.35
(6) ATM200-A20 TMA	C	From	6.20	0.0000	155.00	1/2" Ice	0.19	0.15	0.50
		Centroid-Le	0.00			1" Ice	0.25	0.20	2.41
		g	4.00			No Ice	0.32	0.27	5.35
(3) TMBXX-6517-A2M w/ Mount Pipe	A	From	6.20	0.0000	155.00	1/2" Ice	8.95	7.14	73.60
		Centroid-Le	0.00			1" Ice	9.60	8.44	145.19
		g	2.00			No Ice	10.23	9.58	225.11
(3) TMBXX-6517-A2M w/ Mount Pipe	B	From	6.20	0.0000	155.00	1/2" Ice	8.95	7.14	73.60
		Centroid-Le	0.00			1" Ice	9.60	8.44	145.19
		g	2.00			No Ice	10.23	9.58	225.11
(3) TMBXX-6517-A2M w/ Mount Pipe	C	From	6.20	0.0000	155.00	1/2" Ice	8.95	7.14	73.60
		Centroid-Le	0.00			1" Ice	9.60	8.44	145.19
		g	2.00			No Ice	10.23	9.58	225.11
FRLB BTS	A	From	6.20	0.0000	155.00	1/2" Ice	2.07	0.78	59.52
		Centroid-Le	0.00			1" Ice	2.25	0.90	74.83
		g	4.00			No Ice	2.43	1.03	92.75
FRLB BTS	B	From	6.20	0.0000	155.00	1/2" Ice	2.07	0.78	59.52
		Centroid-Le	0.00			1" Ice	2.25	0.90	74.83
		g	4.00			No Ice	2.43	1.03	92.75

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<b>Client</b>		<b>Designed by</b>	
Crown Castle		Bryce Collins	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub>		Weight	
			Horz	Lateral			Front	Side		
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
FRLB BTS	C	g	4.00			1" Ice	2.43	1.03	92.75	
		From	6.20		0.0000	155.00	No Ice	2.07	0.78	59.52
		Centroid-Le	0.00				1/2" Ice	2.25	0.90	74.83
FXFC BTS (22.1x19.4x5.2)	A	g	4.00			1" Ice	2.43	1.03	92.75	
		From	6.20		0.0000	155.00	No Ice	3.57	1.02	55.10
		Centroid-Le	0.00				1/2" Ice	3.81	1.17	77.53
FRIG BTS	A	g	0.00			1" Ice	4.05	1.33	103.19	
		From	6.20		0.0000	155.00	No Ice	2.39	0.97	57.32
		Centroid-Le	0.00				1/2" Ice	2.59	1.10	74.59
FRIG BTS	B	g	3.00			1" Ice	2.79	1.25	94.66	
		From	6.20		0.0000	155.00	No Ice	2.39	0.97	57.32
		Centroid-Le	0.00				1/2" Ice	2.59	1.10	74.59
FRIG BTS	C	g	3.00			1" Ice	2.79	1.25	94.66	
		From	6.20		0.0000	155.00	No Ice	2.39	0.97	57.32
		Centroid-Le	0.00				1/2" Ice	2.59	1.10	74.59
RNSNDC-7771-PF-48	A	g	3.00			1" Ice	2.79	1.25	94.66	
		From	6.20		0.0000	155.00	No Ice	2.73	1.03	14.85
		Centroid-Le	0.00				1/2" Ice	2.94	1.17	33.76
RNSNDC-7771-PF-48	C	g	1.00			1" Ice	3.15	1.32	55.61	
		From	6.20		0.0000	155.00	No Ice	2.73	1.03	14.85
		Centroid-Le	0.00				1/2" Ice	2.94	1.17	33.76
**		g	1.00			1" Ice	3.15	1.32	55.61	
Platform Mount [LP 716-1]	C	None			0.0000	145.00	No Ice	26.80	26.80	1509.44
							1/2" Ice	32.20	32.20	1811.33
							1" Ice	37.60	37.60	2113.22
DC6-48-60-18-8C	A	From	6.20		29.0000	145.00	No Ice	2.74	2.74	26.20
		Centroid-Le	0.00				1/2" Ice	2.96	2.96	52.16
		g	0.00				1" Ice	3.20	3.20	81.68
DC6-48-60-0-8F (24 x 11 x 11)	B	From	6.20		29.0000	145.00	No Ice	0.92	0.92	18.90
		Centroid-Le	0.00				1/2" Ice	1.46	1.46	36.62
		g	0.00				1" Ice	1.64	1.64	56.82
B66A RRH4x45-4R BTS	A	From	6.20		29.0000	145.00	No Ice	2.54	1.61	56.80
		Centroid-Le	0.00				1/2" Ice	2.75	1.79	76.92
		g	0.00				1" Ice	2.97	1.98	100.15
B66A RRH4x45-4R BTS	B	From	6.20		29.0000	145.00	No Ice	2.54	1.61	56.80
		Centroid-Le	0.00				1/2" Ice	2.75	1.79	76.92
		g	0.00				1" Ice	2.97	1.98	100.15
B66A RRH4x45-4R BTS	C	From	6.20		29.0000	145.00	No Ice	2.54	1.61	56.80
		Centroid-Le	0.00				1/2" Ice	2.75	1.79	76.92
		g	0.00				1" Ice	2.97	1.98	100.15
(2) JAH4-65C-R4 w/ Mount Pipe	A	From	6.20		29.0000	145.00	No Ice	12.86	10.41	116.50
		Centroid-Le	0.00				1/2" Ice	13.46	11.84	213.57
		g	0.00				1" Ice	14.06	13.11	320.56
(2) JAH4-65C-R4 w/ Mount Pipe	B	From	6.20		29.0000	145.00	No Ice	12.86	10.41	116.50
		Centroid-Le	0.00				1/2" Ice	13.46	11.84	213.57
		g	0.00				1" Ice	14.06	13.11	320.56
(2) JAH4-65C-R4 w/ Mount Pipe	C	From	6.20		29.0000	145.00	No Ice	12.86	10.41	116.50
		Centroid-Le	0.00				1/2" Ice	13.46	11.84	213.57
		g	0.00				1" Ice	14.06	13.11	320.56
AHLBA BTS	A	From	6.20		29.0000	145.00	No Ice	3.67	2.31	101.40
		Centroid-Le	0.00				1/2" Ice	3.92	2.51	130.93
		g	0.00				1" Ice	4.18	2.73	164.13
AHLBA BTS	B	From	6.20		29.0000	145.00	No Ice	3.67	2.31	101.40
		Centroid-Le	0.00				1/2" Ice	3.92	2.51	130.93
		g	0.00				1" Ice	4.18	2.73	164.13
AHLBA BTS	C	From	6.20		29.0000	145.00	No Ice	3.67	2.31	101.40

<b>inxTower</b>  <b>Vertical Structures, Inc.</b> 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	<b>Job</b> Ira Stein Property, KS BU#877796	<b>Page</b> 8 of 12
	<b>Project</b> Vertical Structures Job No. 2018-003-084	<b>Date</b> 16:09:14 08/14/18
	<b>Client</b> Crown Castle	<b>Designed by</b> Bryce Collins

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>Front</sub>	C <sub>A</sub> A <sub>Side</sub>	Weight	
			Horz	Lateral						°
RRH2x60-850	A	Centroid-Le	0.00		29.0000	145.00	1/2" Ice	3.92	2.51	130.93
		g	0.00				1" Ice	4.18	2.73	164.13
		From	6.20				No Ice	1.73	1.37	48.00
RRH2x60-850	B	Centroid-Le	0.00		29.0000	145.00	1/2" Ice	1.90	1.52	64.54
		g	0.00				1" Ice	2.07	1.68	83.78
		From	6.20				No Ice	1.73	1.37	48.00
RRH2x60-850	C	Centroid-Le	0.00		29.0000	145.00	1/2" Ice	1.90	1.52	64.54
		g	0.00				1" Ice	2.07	1.68	83.78
		From	6.20				No Ice	1.73	1.37	48.00
B25 RRH4x30-4R BTS	A	Centroid-Le	0.00		29.0000	145.00	1/2" Ice	1.90	1.52	64.54
		g	0.00				1" Ice	2.07	1.68	83.78
		From	6.20				No Ice	1.73	1.37	48.00
B25 RRH4x30-4R BTS	B	Centroid-Le	0.00		29.0000	145.00	1/2" Ice	1.90	1.52	64.54
		g	0.00				1" Ice	2.07	1.68	83.78
		From	6.20				No Ice	2.14	1.31	51.00
B25 RRH4x30-4R BTS	C	Centroid-Le	0.00		29.0000	145.00	1/2" Ice	2.33	1.46	68.46
		g	0.00				1" Ice	2.53	1.63	88.75
		From	6.20				No Ice	2.14	1.31	51.00
(2) 8'x2" Antenna Mount Pipe	A	Centroid-Le	0.00		0.0000	145.00	1/2" Ice	2.33	1.46	68.46
		g	0.00				1" Ice	2.53	1.63	88.75
		From	6.20				No Ice	1.90	1.90	30.00
(2) 8'x2" Antenna Mount Pipe	B	Centroid-Le	0.00		0.0000	145.00	1/2" Ice	2.73	2.73	44.34
		g	0.00				1" Ice	3.40	3.40	63.96
		From	6.20				No Ice	1.90	1.90	30.00
(2) 8'x2" Antenna Mount Pipe	C	Centroid-Le	0.00		0.0000	145.00	1/2" Ice	2.73	2.73	44.34
		g	0.00				1" Ice	3.40	3.40	63.96
		From	6.20				No Ice	1.90	1.90	30.00
**										
Platform Mount [LP 716-1]	C	None			0.0000	135.00	No Ice	26.80	26.80	1509.44
							1/2" Ice	32.20	32.20	1811.33
							1" Ice	37.60	37.60	2113.22
(2) SBNHH-1D65C w/ Mount Pipe	A	From	6.20		29.0000	135.00	No Ice	11.35	9.56	95.34
		Centroid-Le	0.00				1/2" Ice	11.97	10.97	181.88
		g	0.00				1" Ice	12.59	12.24	278.14
(2) SBNHH-1D65C w/ Mount Pipe	B	From	6.20		29.0000	135.00	No Ice	11.35	9.56	95.34
		Centroid-Le	0.00				1/2" Ice	11.97	10.97	181.88
		g	0.00				1" Ice	12.59	12.24	278.14
(2) SBNHH-1D65C w/ Mount Pipe	C	From	6.20		29.0000	135.00	No Ice	11.35	9.56	95.34
		Centroid-Le	0.00				1/2" Ice	11.97	10.97	181.88
		g	0.00				1" Ice	12.59	12.24	278.14
(2) E15Z01P13 TMA	A	From	6.20		29.0000	135.00	No Ice	0.78	0.60	24.00
		Centroid-Le	0.00				1/2" Ice	0.90	0.70	31.50
		g	0.00				1" Ice	1.02	0.82	40.86
(2) E15Z01P13 TMA	B	From	6.20		29.0000	135.00	No Ice	0.78	0.60	24.00
		Centroid-Le	0.00				1/2" Ice	0.90	0.70	31.50
		g	0.00				1" Ice	1.02	0.82	40.86
(2) E15Z01P13 TMA	C	From	6.20		29.0000	135.00	No Ice	0.78	0.60	24.00
		Centroid-Le	0.00				1/2" Ice	0.90	0.70	31.50
		g	0.00				1" Ice	1.02	0.82	40.86
RRH4x25-WCS	A	From	6.20		29.0000	135.00	No Ice	3.84	3.34	91.00
		Centroid-Le	0.00				1/2" Ice	4.09	3.59	125.34
		g	0.00				1" Ice	4.36	3.84	163.70
RRH4x25-WCS	B	From	6.20		29.0000	135.00	No Ice	3.84	3.34	91.00
		Centroid-Le	0.00				1/2" Ice	4.09	3.59	125.34
		g	0.00				1" Ice	4.36	3.84	163.70

<b>tnxTower</b>  <b>Vertical Structures, Inc.</b> 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	<b>Job</b>	Ira Stein Property, KS BU#877796	<b>Page</b>	9 of 12
	<b>Project</b>	Vertical Structures Job No. 2018-003-084	<b>Date</b>	16:09:14 08/14/18
	<b>Client</b>	Crown Castle	<b>Designed by</b>	Bryce Collins

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>A</sub>		Weight	
			Horz	Lateral			Front	Side		
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
RRH4x25-WCS	C	From	6.20		29.0000	135.00	No Ice	3.84	3.34	91.00
		Centroid-Le	0.00				1/2" Ice	4.09	3.59	125.34
		g	0.00				1" Ice	4.36	3.84	163.70
DC6-48-60-18-8F (31.25x11x11 32.8lbs)	C	From	6.20		29.0000	135.00	No Ice	2.90	2.90	32.80
		Centroid-Le	0.00				1/2" Ice	3.13	3.13	60.76
		g	0.00				1" Ice	3.37	3.37	92.36
(2) 8"x2" Antenna Mount Pipe	A	From	6.20		0.0000	135.00	No Ice	1.90	1.90	30.00
		Centroid-Le	0.00				1/2" Ice	2.73	2.73	44.34
		g	0.00				1" Ice	3.40	3.40	63.96
(2) 8"x2" Antenna Mount Pipe	B	From	6.20		0.0000	135.00	No Ice	1.90	1.90	30.00
		Centroid-Le	0.00				1/2" Ice	2.73	2.73	44.34
		g	0.00				1" Ice	3.40	3.40	63.96
(2) 8"x2" Antenna Mount Pipe	C	From	6.20		0.0000	135.00	No Ice	1.90	1.90	30.00
		Centroid-Le	0.00				1/2" Ice	2.73	2.73	44.34
		g	0.00				1" Ice	3.40	3.40	63.96
**										
Platform Mount [LP 716-1]	C	None			0.0000	125.00	No Ice	26.80	26.80	1509.44
							1/2" Ice	32.20	32.20	1811.33
							1" Ice	37.60	37.60	2113.22
(2) LNX-6515DS-A1M w/ Mount Pipe	A	From	6.20		0.0000	125.00	No Ice	11.45	9.60	79.50
		Centroid-Le	0.00				1/2" Ice	12.06	11.02	166.47
		g	0.00				1" Ice	12.69	12.29	263.19
(2) LNX-6515DS-A1M w/ Mount Pipe	B	From	6.20		0.0000	125.00	No Ice	11.45	9.60	79.50
		Centroid-Le	0.00				1/2" Ice	12.06	11.02	166.47
		g	0.00				1" Ice	12.69	12.29	263.19
(2) LNX-6515DS-A1M w/ Mount Pipe	C	From	6.20		0.0000	125.00	No Ice	11.45	9.60	79.50
		Centroid-Le	0.00				1/2" Ice	12.06	11.02	166.47
		g	0.00				1" Ice	12.69	12.29	263.19
CBC78-DF-2X Diplexer	A	From	6.20		0.0000	125.00	No Ice	0.39	0.38	13.80
		Centroid-Le	0.00				1/2" Ice	0.47	0.45	18.52
		g	0.00				1" Ice	0.56	0.54	24.71
CBC78-DF-2X Diplexer	B	From	6.20		0.0000	125.00	No Ice	0.39	0.38	13.80
		Centroid-Le	0.00				1/2" Ice	0.47	0.45	18.52
		g	0.00				1" Ice	0.56	0.54	24.71
CBC78-DF-2X Diplexer	C	From	6.20		0.0000	125.00	No Ice	0.39	0.38	13.80
		Centroid-Le	0.00				1/2" Ice	0.47	0.45	18.52
		g	0.00				1" Ice	0.56	0.54	24.71
RRUS11 B2/RRUS A2 BTS	A	From	6.20		0.0000	125.00	No Ice	2.83	1.18	50.70
		Centroid-Le	0.00				1/2" Ice	3.04	1.33	71.57
		g	0.00				1" Ice	3.26	1.48	95.49
RRUS11 B2/RRUS A2 BTS	B	From	6.20		0.0000	125.00	No Ice	2.83	1.18	50.70
		Centroid-Le	0.00				1/2" Ice	3.04	1.33	71.57
		g	0.00				1" Ice	3.26	1.48	95.49
RRUS11 B2/RRUS A2 BTS	C	From	6.20		0.0000	125.00	No Ice	2.83	1.18	50.70
		Centroid-Le	0.00				1/2" Ice	3.04	1.33	71.57
		g	0.00				1" Ice	3.26	1.48	95.49
RRFDC-3315-PF-48 (28.93x15.73x10.31)	A	From	6.20		0.0000	125.00	No Ice	3.79	2.51	32.00
		Centroid-Le	0.00				1/2" Ice	4.04	2.73	63.48
		g	0.00				1" Ice	4.30	2.95	98.72
(2) 8"x2" Antenna Mount Pipe	A	From	6.20		0.0000	125.00	No Ice	1.90	1.90	30.00
		Centroid-Le	0.00				1/2" Ice	2.73	2.73	44.34
		g	0.00				1" Ice	3.40	3.40	63.96
(2) 8"x2" Antenna Mount Pipe	B	From	6.20		0.0000	125.00	No Ice	1.90	1.90	30.00
		Centroid-Le	0.00				1/2" Ice	2.73	2.73	44.34
		g	0.00				1" Ice	3.40	3.40	63.96
(2) 8"x2" Antenna Mount Pipe	C	From	6.20		0.0000	125.00	No Ice	1.90	1.90	30.00
		Centroid-Le	0.00				1/2" Ice	2.73	2.73	44.34

<b>inxTower</b>  <b>Vertical Structures, Inc.</b> 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	<b>Job</b> Ira Stein Property, KS BU#877796	<b>Page</b> 10 of 12
	<b>Project</b> Vertical Structures Job No. 2018-003-084	<b>Date</b> 16:09:14 08/14/18
	<b>Client</b> Crown Castle	<b>Designed by</b> Bryce Collins

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>Front</sub>	C <sub>A</sub> A <sub>Side</sub>	Weight	
			Horz	Lateral						ft
**		g		0.00			1" Ice	3.40	3.40	63.96
Platform Mount [LP 716-1]	C	None			0.0000	115.00	No Ice	26.80	26.80	1509.44
							1/2" Ice	32.20	32.20	1811.33
							1" Ice	37.60	37.60	2113.22
Air 32 w/ Mount Pipe	A	From	6.20		0.0000	115.00	No Ice	6.63	6.31	137.70
		Centroid-Le	0.00				1/2" Ice	7.35	7.48	200.64
		g	1.00				1" Ice	8.01	8.50	270.70
Air 32 w/ Mount Pipe	B	From	6.20		0.0000	115.00	No Ice	6.63	6.31	137.70
		Centroid-Le	0.00				1/2" Ice	7.35	7.48	200.64
		g	1.00				1" Ice	8.01	8.50	270.70
Air 32 w/ Mount Pipe	C	From	6.20		0.0000	115.00	No Ice	6.63	6.31	137.70
		Centroid-Le	0.00				1/2" Ice	7.35	7.48	200.64
		g	1.00				1" Ice	8.01	8.50	270.70
800 10510V01 w/ Mount Pipe	A	From	6.20		0.0000	115.00	No Ice	6.99	3.83	66.70
		Centroid-Le	0.00				1/2" Ice	7.72	4.99	118.74
		g	1.00				1" Ice	8.38	6.00	177.60
800 10510V01 w/ Mount Pipe	B	From	6.20		0.0000	115.00	No Ice	6.99	3.83	66.70
		Centroid-Le	0.00				1/2" Ice	7.72	4.99	118.74
		g	1.00				1" Ice	8.38	6.00	177.60
800 10510V01 w/ Mount Pipe	C	From	6.20		0.0000	115.00	No Ice	6.99	3.83	66.70
		Centroid-Le	0.00				1/2" Ice	7.72	4.99	118.74
		g	1.00				1" Ice	8.38	6.00	177.60
TMA-S-DB1921-DD-A TMA	A	From	6.20		0.0000	115.00	No Ice	0.72	0.39	22.00
		Centroid-Le	0.00				1/2" Ice	0.82	0.48	28.41
		g	1.00				1" Ice	0.94	0.57	36.52
TMA-S-DB1921-DD-A TMA	B	From	6.20		0.0000	115.00	No Ice	0.72	0.39	22.00
		Centroid-Le	0.00				1/2" Ice	0.82	0.48	28.41
		g	1.00				1" Ice	0.94	0.57	36.52
TMA-S-DB1921-DD-A TMA	C	From	6.20		0.0000	115.00	No Ice	0.72	0.39	22.00
		Centroid-Le	0.00				1/2" Ice	0.82	0.48	28.41
		g	1.00				1" Ice	0.94	0.57	36.52
RRFDC-3315-PF-48 (28.93x15.73x10.31)	A	From	6.20		0.0000	115.00	No Ice	3.79	2.51	32.00
		Centroid-Le	0.00				1/2" Ice	4.04	2.73	63.48
		g	1.00				1" Ice	4.30	2.95	98.72
(2) 8"x2" Antenna Mount Pipe	A	From	6.20		0.0000	115.00	No Ice	1.90	1.90	30.00
		Centroid-Le	0.00				1/2" Ice	2.73	2.73	44.34
		g	0.00				1" Ice	3.40	3.40	63.96
(2) 8"x2" Antenna Mount Pipe	B	From	6.20		0.0000	115.00	No Ice	1.90	1.90	30.00
		Centroid-Le	0.00				1/2" Ice	2.73	2.73	44.34
		g	0.00				1" Ice	3.40	3.40	63.96
(2) 8"x2" Antenna Mount Pipe	C	From	6.20		0.0000	115.00	No Ice	1.90	1.90	30.00
		Centroid-Le	0.00				1/2" Ice	2.73	2.73	44.34
		g	0.00				1" Ice	3.40	3.40	63.96
**										
Side Arm Mount [SO 302-1]	A	From	3.50		0.0000	95.00	No Ice	1.67	3.27	55.00
		Centroid-Le	0.00				1/2" Ice	2.51	4.99	88.07
		g	0.00				1" Ice	3.35	6.71	121.14
sensus Flexnet M400B2 TMA	A	From	5.50		0.0000	95.00	No Ice	4.03	1.93	120.00
		Centroid-Le	0.00				1/2" Ice	4.28	2.11	152.46
		g	0.00				1" Ice	4.54	2.30	188.64
DB589-Y	A	From	5.50		0.0000	95.00	No Ice	1.38	1.38	11.50
		Centroid-Le	0.00				1/2" Ice	2.31	2.31	22.86
		g	5.00				1" Ice	3.27	3.27	40.12

<b>tnxTower</b>  <b>Vertical Structures, Inc.</b> 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	<b>Job</b> Ira Stein Property, KS BU#877796	<b>Page</b> 11 of 12
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	<b>Client</b> Crown Castle	<b>Designed by</b> Bryce Collins

**Compression Checks**

**Pole Design Data**

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	K/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>u</sub> lb	Ratio P <sub>u</sub> /φP <sub>u</sub>
L1	169.663 - 117.681 (1)	TP29.6996x18x0.25	51.98	0.00	0.0	22.9435	-17510.70	1528500.00	0.011
L2	117.681 - 74.1134 (2)	TP38.8186x28.2513x0.375	47.78	0.00	0.0	44.9915	-30509.00	3170670.00	0.010
L3	74.1134 - 34.616 (3)	TP46.7708x36.885x0.4375	44.85	0.00	0.0	63.3013	-43756.10	4405280.00	0.010
L4	34.616 - 0 (4)	TP53.5x44.4969x0.4688 4.8.2 (1.02 CR) - 4	40.96	0.00	0.0	80.0440	-60976.00	5350900.00	0.011

**Pole Bending Design Data**

Section No.	Elevation ft	Size	M <sub>ux</sub> lb-ft	φM <sub>ux</sub> lb-ft	Ratio M <sub>ux</sub> /φM <sub>ux</sub>	M <sub>uy</sub> lb-ft	φM <sub>uy</sub> lb-ft	Ratio M <sub>uy</sub> /φM <sub>uy</sub>
L1	169.663 - 117.681 (1)	TP29.6996x18x0.25	769675.00	886775.00	0.868	0.00	886775.00	0.000
L2	117.681 - 74.1134 (2)	TP38.8186x28.2513x0.375	2334775.00	2401708.33	0.972	0.00	2401708.33	0.000
L3	74.1134 - 34.616 (3)	TP46.7708x36.885x0.4375	3956783.33	4025500.00	0.983	0.00	4025500.00	0.000
L4	34.616 - 0 (4)	TP53.5x44.4969x0.4688	5846274.67	5775791.33	1.012	0.00	5775791.33	0.000

**Pole Shear Design Data**

Section No.	Elevation ft	Size	Actual V <sub>u</sub> lb	φV <sub>u</sub> lb	Ratio V <sub>u</sub> /φV <sub>u</sub>	Actual T <sub>u</sub> lb-ft	φT <sub>u</sub> lb-ft	Ratio T <sub>u</sub> /φT <sub>u</sub>
L1	169.663 - 117.681 (1)	TP29.6996x18x0.25	31563.70	764250.00	0.041	1680.57	1803441.67	0.001
L2	117.681 - 74.1134 (2)	TP38.8186x28.2513x0.375	39917.90	1585340.00	0.025	2518.24	4886508.33	0.001
L3	74.1134 - 34.616 (3)	TP46.7708x36.885x0.4375	44186.30	2202640.00	0.020	2503.09	8189358.00	0.000
L4	34.616 - 0 (4)	TP53.5x44.4969x0.4688	47753.30	2675450.00	0.018	2497.82	11746582.67	0.000

**Pole Interaction Design Data**

<b>tnxTower</b>  <b>Vertical Structures, Inc.</b> 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	<b>Job</b> Ira Stein Property, KS BU#877796	<b>Page</b> 12 of 12
	<b>Project</b> Vertical Structures Job No. 2018-003-084	<b>Date</b> 16:09:14 08/14/18
	<b>Client</b> Crown Castle	<b>Designed by</b> Bryce Collins

Section No.	Elevation ft	Ratio $P_n$	Ratio $M_{ax}$	Ratio $M_{ay}$	Ratio $V_u$	Ratio $T_u$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$\phi P_n$	$\phi M_{ax}$	$\phi M_{ay}$	$\phi V_u$	$\phi T_u$			
L1	169.663 - 117.681 (1)	0.011	0.868	0.000	0.041	0.001	0.881	1.000	4.8.2
L2	117.681 - 74.1134 (2)	0.010	0.972	0.000	0.025	0.001	0.982	1.000	4.8.2
L3	74.1134 - 34.616 (3)	0.010	0.983	0.000	0.020	0.000	0.993	1.000	4.8.2
L4	34.616 - 0 (4)	0.011	1.012	0.000	0.018	0.000	<b>1.024</b>	1.000	4.8.2

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail	
L1	169.663 - 117.681	Pole	TP29.6996x18x0.25	1	-17510.70	1528500.00	88.1	Pass	
L2	117.681 - 74.1134	Pole	TP38.8186x28.2513x0.375	2	-30509.00	3170670.00	98.2	Pass	
L3	74.1134 - 34.616	Pole	TP46.7708x36.885x0.4375	3	-43756.10	4405280.00	99.3	Pass	
L4	34.616 - 0	Pole	TP53.5x44.4969x0.4688	4	-60976.00	5350900.00	102.4	Fail	
							Summary		
							Pole (L4)	102.4	Fail
							<b>RATING =</b>	<b>102.4</b>	<b>Fail</b>

**APPENDIX B**  
**BASE LEVEL DRAWING**



**APPENDIX C**  
**ADDITIONAL CALCULATIONS**

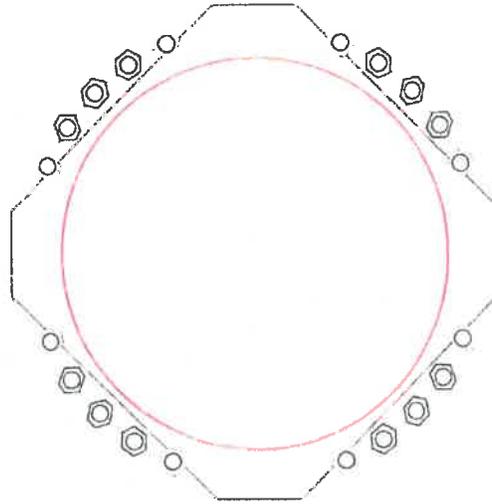
# Monopole Base Plate Connection



Site Info	
BLI #	877796
Site Name	Ira Stein Property, KS
Order #	434934, Rev. 0

Analysis Considerations	
TIA-222 Revision	G
Grout Considered:	No
$l_w$ (in)	0.75
Eta Factor, $\eta$	0.5

Applied Loads	
Moment (kip-ft)	5846.27
Axial Force (kips)	60.98
Shear Force (kips)	47.75



Connection Properties	Analysis Results
-----------------------	------------------

<b>Anchor Rod Data</b>
(20) 2-1/4" $\phi$ bolts (A615-75; Fy=75 ksi, Fu=100 ksi) on 62" 8C
<b>Base Plate Data</b>
67.5" OD x 2.5" Plate (A871-60; Fy=60 ksi, Fu=75 ksi)
<b>Stiffener Data</b>
N/A
<b>Pole Data</b>
53.5" x 0.46875" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Anchor Rod Summary			<i>(units of kips, kip-ft)</i>
$P_u = 229.23$	$\phi P_n = 260$		<b>Stress Rating</b>
$V_u = 2.39$	$\phi V_n = n/a$		<b>90.0%</b>
$M_u = n/a$	$\phi M_n = n/a$		Pass
<b>Base Plate Summary</b>			
Max Stress (ksi):	52.68		
Allowable Stress (ksi):	54		
Stress Ratio:	97.6%		Pass

## Drilled Pier Foundation

BU #: 877786  
 Site Name: Ira Stein Property, KS  
 Order Number: 434930, Rev. 0

TIA-222 Revision: G  
 Tower Type: Monopole



Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	5846.275	
Axial Force (kips)	81.02	
Shear Force (kips)	47.697	

Material Properties	
Concrete Strength, f <sub>c</sub> :	4 ksi
Rebar Strength, F <sub>y</sub> :	60 ksi

Pier Design Data	
Depth	38 ft
Ext. Above Grade	1 ft
<b>Pier Section 1</b>	
<i>From 1' above grade to 1' below grade</i>	
Pier Diameter	7 ft
Rebar Quantity	21
Rebar Size	11
Clear Cover to Ties	3 in
Tie Size	5
Rebar Quantity	6
Rebar Size	11
Rebar Cage Diameter	70.25 in
<b>Pier Section 2</b>	
<i>From 1' below grade to 36' below grade</i>	
Pier Diameter	7 ft
Rebar Quantity	21
Rebar Size	11
Clear Cover to Ties	3 in
Tie Size	5

Analysis Results		
<b>Soil Lateral Capacity</b>		
D <sub>req</sub> (ft from TOC)	9.95	-
Soil Safety Factor	16.35	-
Max Moment (kip-ft)	6262.89	-
Rating	8.1%	-
<b>Soil Vertical Capacity</b>		
Skin Friction (kips)	2117.28	-
End Bearing (kips)	288.63	-
Weight of Concrete (kips)	256.31	-
Total Capacity (kips)	2405.92	-
Axial (kips)	317.33	-
Rating	13.2%	-
<b>Reinforced Concrete Capacity</b>		
Critical Depth (ft from TOC)	10.23	-
Critical Moment (kip-ft)	6261.57	-
Critical Moment Capacity	6740.94	-
Rating	92.9%	-
<b>Soil Interaction Rating</b> 13.2%		
<b>Structural Foundation Rating</b> 92.9%		

Check Limitation	
N/A	<input type="checkbox"/>

Groundwater Depth		n/a		ft		# of Layers		4		Soil Profile					
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ <sub>soil</sub> (pcf)	γ <sub>concrete</sub> (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type	
1	0	3.5	3.5	121	150	0	0	0.000	0.000	0.00	0.00			Cohesionless	
2	3.5	6.5	3	121	150	1.025	0	0.564	0.564					Cohesive	
3	6.5	8	1.5	109	150	0.825	0	0.454	0.454					Cohesive	
4	8	35	28	140	150	10		4.500	4.500			10		Cohesive	

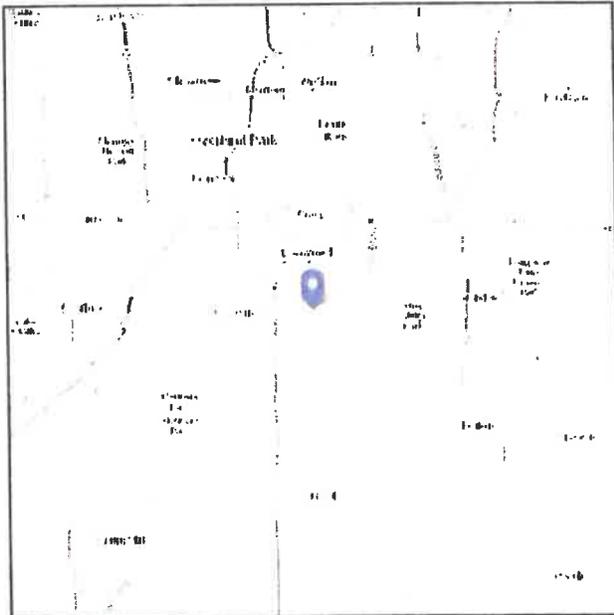
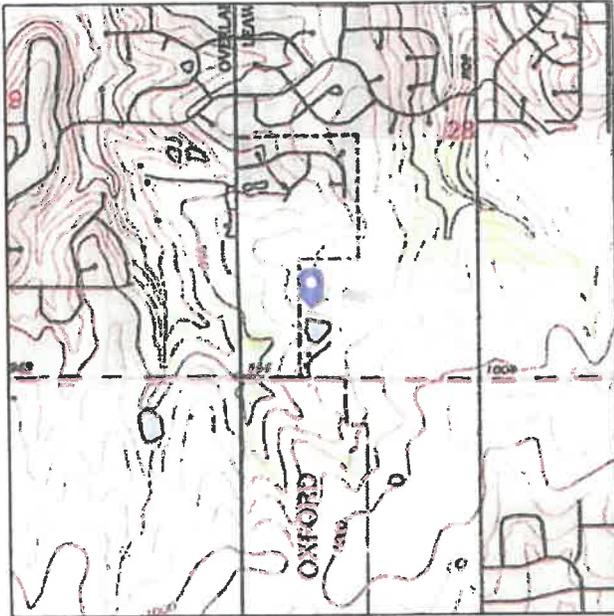


# ASCE 7 Hazards Report

**Address:**  
No Address at This  
Location

**Standard:** ASCE/SEI 7-10  
**Risk Category:** II  
**Soil Class:** B - Rock

**Elevation:** 971.36 ft (NAVD 88)  
**Latitude:** 38.885778  
**Longitude:** -94.6465



## Wind

### Results:

Wind Speed:	115 Vmph
10-year MRI	76 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

**Data Source:** ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1-CC-4, incorporating errata of March 12, 2014

**Date Accessed:** Tue Aug 14 2018

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.



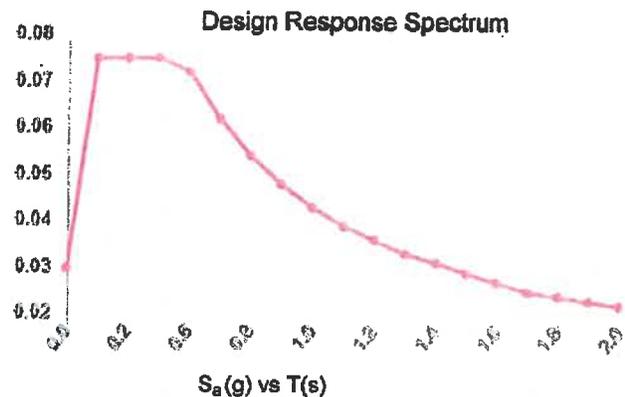
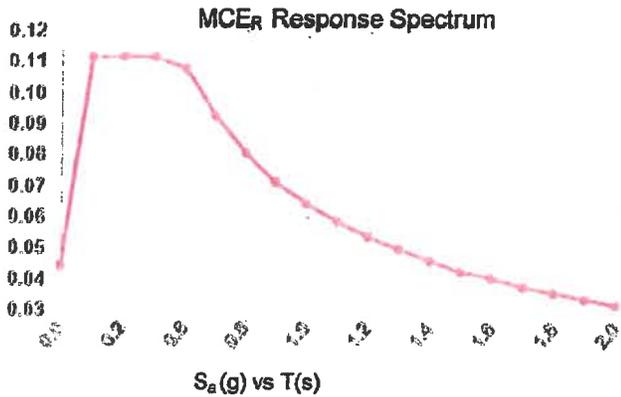
# Seismic

**Site Soil Class:** B - Rock

**Results:**

$S_s$ :	0.112	$S_{DS}$	0.075
$S_1$ :	0.065	$S_{D1}$	0.043
$F_a$ :	1.000	$T_L$ :	12.000
$F_v$ :	1.000	$PGA$ :	0.054
$S_{MS}$ :	0.112	$PGA_M$ :	0.054
$S_{M1}$ :	0.065	$F_{PGA}$ :	1.000
		$I_e$ :	1

**Seismic Design Category** A



**Data Accessed:**

Tue Aug 14 2018

**Date Source:**

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.



## Ice

---

### Results:

Ice Thickness: 1.00 in.

Concurrent Temperature: 5 F

Gust Speed: 40 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Tue Aug 14 2018

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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# City of Leawood Governing Body Staff Report

MEETING DATE: December 17, 2018

REPORT WRITTEN: November 26, 2018

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**LEAWOOD SOUTH COUNTRY CLUB – MONOPINE – SPRINT SPECTRUM REALTY COMPANY LLC EQUIPMENT UPGRADE – REQUEST FOR APPROVAL OF AN ELIGIBLE FACILITIES REQUEST FOR REPLACEMENT OF EXISTING ANTENNAS AND ASSOCIATED EQUIPMENT – Located north of Sagamore Road and west of Pembroke Circle – Case 136-18**

---

**STAFF RECOMMENDATION:**

Staff reviewed the application of Case 136-18, Leawood South Country Club – Monopine – Sprint Spectrum Realty Company LLC Equipment Upgrade, and has determined that it meets the requirements for 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012 to replace antennas. Staff recommends the Governing Body approve Case 136-18, Country Club of Leawood – Sprint Spectrum, LP.

**APPLICANT:**

- The applicant is Sprint Spectrum Realty Company, LLC.
- The property is owned by Capital Foresight Golf and Fitness II LLC.
- The tower is owned by SBA Communication Corporation.

**REQUEST:**

- The applicant is requesting approval of an Eligible Facilities Request to remove and replace antennas for Sprint.
- The application is limited to the replacement of three (3) antennas and three remote radio head units with three (3) Ericsson Air 6468 antennas along with other ancillary equipment. The proposed antennas are allowing the RRU's (Remote Radio Units) to be removed and integrated into the antennas. Any future modifications shall require the submittal of a new application.
- The equipment shall comply with and be maintained in accordance with all related federal guidelines and the requirements of the Leawood Development Ordinance pertaining to the required concealment elements.
- The application is eligible and meets the criteria for 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012.

**ZONING:**

- The property is currently zoned REC (Planned Recreation).

**COMPREHENSIVE PLAN:**

- The Comprehensive Plan designates this property as Open Space - Private

**SURROUNDING ZONING:**

- North, South, East, West      The property is surrounded on all sides by the Leawood South subdivision zoned R-1 (Planned Single Family Low-Density Residential), and is located within the Country Club of Leawood Golf Course zoned REC (Planned Recreation).

**LOCATION:**



**HISTORY:**

- On September 18, 2017, the Governing Body Case 86-17 for a Special Use Permit for a Wireless Communication Facility for a term of 20 years and a tower at a height of 75'. This case was approved by the Governing Body with Ordinance No. 2858

**SITE PLAN COMMENTS:**

- The tower is an existing 75' tall alternative tower structure (monopine), located on Leawood South Country Club's golf course.
- An existing storage building which houses wireless carrier's equipment is located adjacent to the tower at the ground level.
- No changes are proposed to the site.

**ELEVATIONS:**

- The applicant is proposing to mount three (3) Ericsson Air 6468 antennas, in place of three (3) antennas and three (3) RRU's. The antennas will be 38.29" in height, 20.47" wide and 7.19" deep. The proposed antennas are allowing the RRU's to be removed and integrated into the antennas.
- Cabling to the antennas shall be internalized within the tower structure, which shall comply with the Leawood Development Ordinance.
- The existing and proposed antennas are mounted to the monopine with brackets. New antennas will be painted to match the existing structure.
- The monopine is an existing 75' tall. The antennas to be replaced are at a height of 66'.

**SECTION 6409(A) ELIGIBILITY REQUIREMENTS:**

Staff has reviewed the application and determined that it complies with Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012 and the requirements of the Leawood Development Ordinance. The application is proposing to replace antennas, to be located in the same position as the antennas being removed, on an existing monopine. The modifications proposed do not constitute a substantial change under the act.

- The application meets the requirements of equipment co-location on a support structure as it is not increasing the height of the tower, does not involve any more equipment cabinets, and does not entail any excavation of the current site.
- The applicant's appurtenances, along with the other carriers on the tower, shall be screened by the branches of the monopine to comply with concealment efforts outlined in the Leawood Development Ordinance. The requirements the antennas are meeting are necessary for the tower to be a legal structure, such as:
  - Mounting the antennas in order to minimize the visual impact to the greatest extent practicable, and shall be screened by the branches of the monopine; and
  - Antennas are painted to match the color of the tower; and
  - Cabling to the antennas is internalized within the tower.

**RESOLUTION NO. \_\_\_\_\_**

**RESOLUTION APPROVING AN ELIGIBLE FACILITIES REQUEST FOR THE REPLACEMENT OF EXISTING ANTENNAS AND ASSOCIATED EQUIPMENT AT LEAWOOD SOUTH COUNTRY CLUB – MONOPINE FOR SPRINT SPECTRUM REALTY COMPANY, LLC, LOCATED NORTH OF SAGAMORE ROAD AND WEST OF PEMBROKE CIRCLE. (CASE 136-18)**

WHEREAS, Sprint Spectrum Realty Company LLC. desires to replace antennas and associated equipment on an existing wireless facility;

WHEREAS, the replacement of this equipment will not constitute a “substantial change” as that term is defined in Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012 or as defined in the Leawood Development Ordinance; and

WHEREAS, Sprint Spectrum Realty Company, LLC has submitted the required application with the required information.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF LEAWOOD, KANSAS:

**SECTION ONE:** That the Governing Body hereby approves Sprint Spectrum Realty Company, LLC’s eligible facilities request as more fully described in Exhibit “A,” attached hereto and incorporated by reference as if fully set out.

**SECTION TWO:** This resolution shall become effective upon passage.

PASSED by the Governing Body this 17<sup>th</sup> day of December, 2018.

APPROVED by the Mayor this 17<sup>th</sup> day of December, 2018.

\_\_\_\_\_  
Peggy J. Dunn, Mayor

[SEAL]

ATTEST:

\_\_\_\_\_  
Debra Harper, CMC, City Clerk

APPROVED AS TO FORM:

\_\_\_\_\_  
Andrew K. Hall, Assistant City Attorney

**PROJECT INFORMATION**

**APPLICANT:**  
SPRINT  
5500 SPRINT PARKWAY  
OVERLAND PARK, KANSAS 66251

**TOWER OWNER:**  
SEA COMMUNICATION CORPORATION  
8051 CONGRESS AVENUE  
BOCA RATON, FL 33487-1307  
PHONE: (800) 487-SITE (7483)

**SBA SITE NUMBER:**  
KS46619-A-01

**SBA SITE NAME:**  
LEAWOOD SOUTH CC (MONOPINE)

**SITE ADDRESS:**  
12838 PEMBROKE CIRCLE  
LEAWOOD, KS 66209  
JOHNSON COUNTY

**GEOGRAPHIC COORDINATES:**  
LATITUDE: 38.89327744°  
LONGITUDE: -94.91489111°

**ZONING JURISDICTION:**  
CITY OF LEAWOOD

**PROJECT DESCRIPTION:**

- (3) EXISTING 800/1800MHz PANEL ANTENNAS TO REMAIN
- (3) EXISTING 1800MHz RRH'S TO REMAIN
- (3) EXISTING 800MHz RRH'S TO REMAIN
- (3) EXISTING HYBRID CABLES TO REMAIN
- (3) EXISTING 800 ESMR FILTERS TO REMAIN
- REMOVE (3) 2500MHz PANEL ANTENNAS
- REMOVE (3) EXISTING 2500MHz RRH'S
- INSTALL (3) PANEL ANTENNAS W/INTERGRATED RRH
- REMOVE (1) EXISTING 0.7" HYBRID CABLE
- INSTALL (1) NEW 1.13" MIMO HYBRID CABLE
- INSTALL MIMO EQUIPMENT IN EXISTING RBS CABINET

**SITE ACQUISITION CONTACT:**  
SEA NETWORK SERVICES  
CONTACT: WILL SPICE  
PHONE: (317) 295-0513 x4712  
E-MAIL: wspi@seanets.com

**ASE FIRM:**  
W-T COMMUNICATION DESIGN GROUP, LLC  
2875 PRATUM AVENUE  
HOFFMAN ESTATES, ILLINOIS 60102  
PH: (224) 293-8333  
FAX: (224) 293-8444  
www.wtengineering.com  
CONTACT: THU KUEN  
PH: (224) 293-8413

**STRUCTURAL ENGINEER MOUNT:**  
T.B.D.

**SHEET INDEX**

SHEET:	SHEET TITLE:
T-1	TITLE SHEET & SITE PLAN
A-1	TOWER ELEVATION & ANTENNA PLANS
A-2	EQUIPMENT DETAILS
A-3	ANTENNA ONE LINE DIAGRAM
G-1	GROUNDING DETAILS
N-1	NOTES

**APPLICABLE CODES**

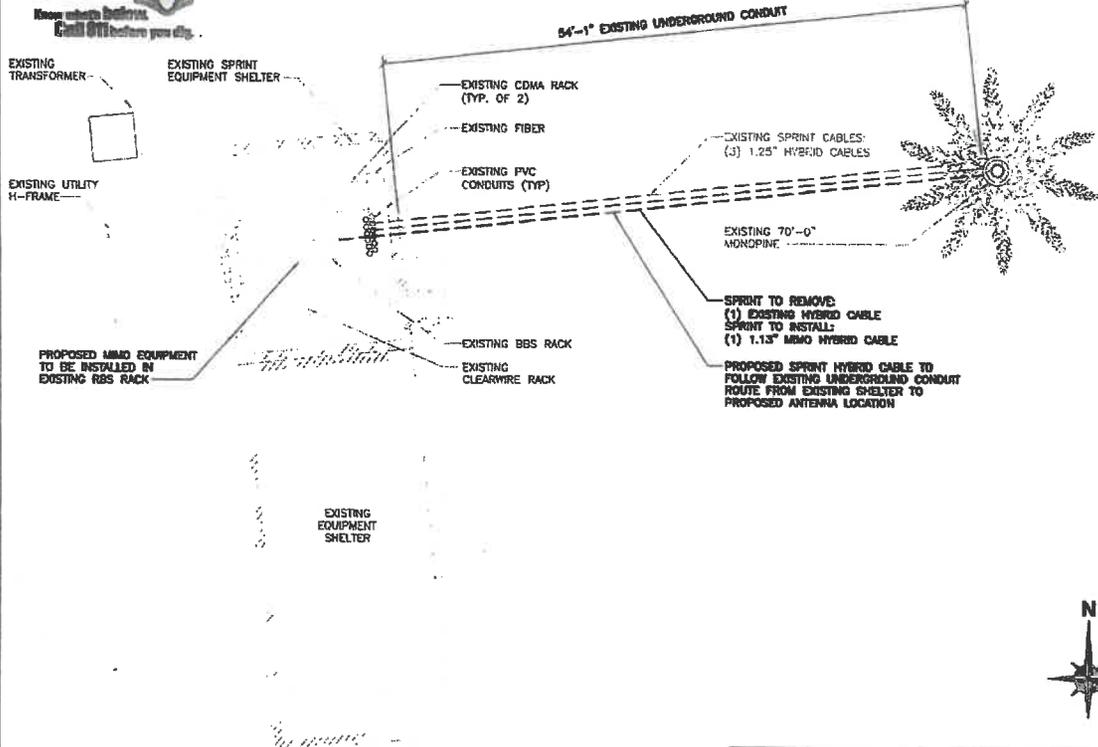
\* ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NORMS IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

BUILDING CODE: 2012 INTERNATIONAL BUILDING CODE  
ELECTRICAL CODE: 2011 NATIONAL ELECTRICAL CODE

**PROJECT:** 2.5 MIMO MOD  
**SITE CASCADE:** KC71XC104  
**SBA SITE NUMBER:** KS46619-A-01

**REFERENCED MATERIALS**

A SITE WALK WAS NOT PERFORMED FOR THIS SITE FOR SCOPE OF WORK. COMPOUND, ELEVATION, EQUIPMENT LAYOUT AND ANTENNA PLANS SHOWN WITHIN THIS SET WERE TAKEN FROM AVAILABLE DOCUMENTS/DRAWINGS PROVIDED BY OTHERS.



**VICINITY MAP**



**AERIAL MAP**



**SITE PLAN**  
SCALE: 3/32" = 1'-0"  
1

PLANS PREPARED FOR:

PLANS PREPARED FOR:

6100 SPRINT PARKWAY  
OVERLAND PARK, KS 66251

SBA PARTNER:

8051 Congress Avenue  
Boca Raton, FL 33487-1307

PLANS PREPARED BY:

**W-T COMMUNICATION DESIGN GROUP, LLC.**  
WIRELESS INFRASTRUCTURE  
2875 Pratum Avenue  
Hoffman Estates, Illinois 60108  
PH: (224) 293-8333 FAX: (224) 293-8444  
www.wtengineering.com

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REVISION	DESCRIPTION	DATE	BY	REV
FOR CLIENT REVIEW		10.15.18	MP	A
	FINAL	11.16.18	WTS	B

W-T PROJECT NUMBER: T180160

SPRINT SITE NAME: LEAWOOD SOUTH CC (MONOPINE)

SITE CASCADE: KC71XC104

SITE ADDRESS: 12838 PEMBROKE CIRCLE  
LEAWOOD, KS 66209

SHEET DESCRIPTION: TITLE SHEET & SITE PLAN

SHEET NUMBER: T-1

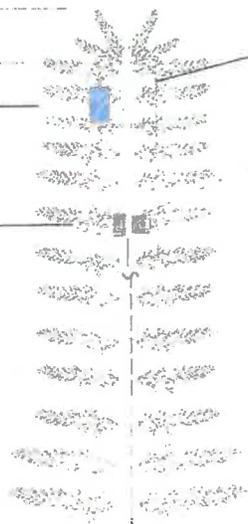
HIGHES: APERTURANCE  
±70'-0" A.G.L.

TOP OF EXISTING TOWER  
±73'-0" A.G.L.

EXISTING/PROPOSED  
SPRINT ANTENNAS ±  
±88'-0" A.G.L.

EXISTING SPRINT RRU'S ±  
±55'-0" A.G.L.

- NOTES:**
- ALL ANTENNAS AND HARDWARE TO BE PAINTED TO MATCH FOULAGE.
  - EXISTING ANTENNA WRAPS TO BE RE-USED ONCE ANTENNAS ARE INSTALLED.
  - EXISTING BRANCHES TO BE RE-INSTALLED SO THAT THEY SCREEN THE NEW AND EXISTING EQUIPMENT.



EXISTING/PROPOSED  
SPRINT ANTENNAS  
(TYP. PER SECTOR)

EXISTING SPRINT RRU'S  
(TYP. PER SECTOR)

PROPOSED SPRINT MINI  
HYBRID CABLE TO FOLLOW  
EXISTING CABLE ROUTE

**NOTE:**  
W-T'S SCOPE OF WORK DOES NOT INCLUDE A STRUCTURAL EVALUATION OF THIS TOWER OR STRUCTURE. PROPOSED ANTENNAS AND EQUIPMENT SHOWN ON THIS PLAN HAVE NOT BEEN EVALUATED TO VERIFY THE TOWER OR STRUCTURE HAS THE CAPACITY TO ADEQUATELY SUPPORT THESE ANTENNAS. PRIOR TO ANY ANTENNA OR EQUIPMENT INSTALLATION, A STRUCTURAL EVALUATION OF THE TOWER OR STRUCTURE, INCLUDING ALL ANTENNA MOUNTING SYSTEMS & HARDWARE SHALL BE PERFORMED.

GRADE  
0'-0"

**FINAL TOWER ELEVATION**

SCALE: 3/32" = 1'-0"

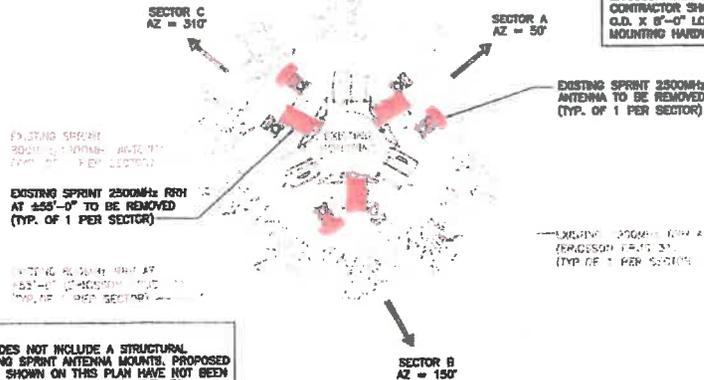
1

**LEGEND**

- REMOVED EQUIPMENT
- NEW EQUIPMENT

**NOTE:**  
EXISTING ANTENNA & RRU LOCATIONS TO BE VERIFIED PRIOR TO CONSTRUCTION.

**NOTE:**  
CONTRACTOR SHALL VERIFY EXISTING ANTENNA MOUNTING PIPE MEETS ERICSSON INSTALLATION REQUIREMENTS. CONTRACTOR SHALL INSTALL 3-1/2" O.D. X 8'-0" LONG ANTENNA PIPE AND MOUNTING HARDWARE PER SECTOR.



EXISTING SPRINT 2500MHz ANTENNA TO BE REMOVED (TYP. OF 1 PER SECTOR)

EXISTING SPRINT 2500MHz RRU'S (TYP. OF 1 PER SECTOR)

EXISTING SPRINT 2500MHz RRU AT ±55'-0" TO BE REMOVED (TYP. OF 1 PER SECTOR)

EXISTING SPRINT 2500MHz RRU AT ±55'-0" TO BE REMOVED (TYP. OF 1 PER SECTOR)

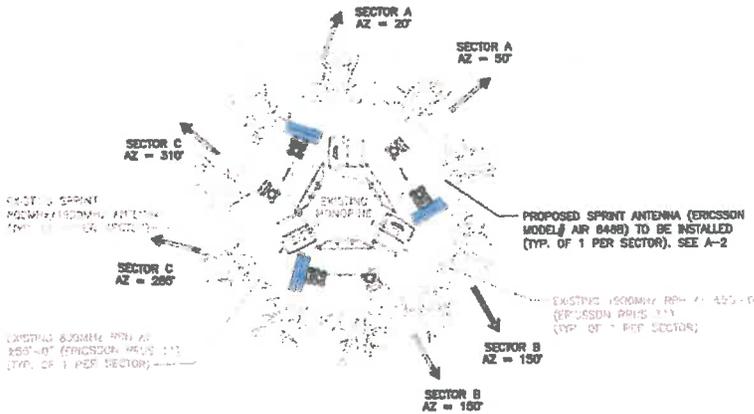
EXISTING SPRINT 2500MHz RRU AT ±55'-0" TO BE REMOVED (TYP. OF 1 PER SECTOR)

**NOTE:**  
W-T'S SCOPE OF WORK DOES NOT INCLUDE A STRUCTURAL EVALUATION OF THE EXISTING SPRINT ANTENNA MOUNTS. PROPOSED ANTENNAS AND EQUIPMENT SHOWN ON THIS PLAN HAVE NOT BEEN EVALUATED TO VERIFY THE MOUNTS HAVE THE CAPACITY TO ADEQUATELY SUPPORT THESE ANTENNAS. PRIOR TO ANY ANTENNA OR EQUIPMENT INSTALLATION, A STRUCTURAL EVALUATION OF THE MOUNTS, INCLUDING ALL ANTENNA MOUNTING SYSTEMS & HARDWARE SHALL BE PERFORMED.

**EXISTING ANTENNA & RRU LAYOUT**

SCALE: NONE

2



PROPOSED SPRINT ANTENNA (ERICSSON MODEL AIR 8488) TO BE INSTALLED (TYP. OF 1 PER SECTOR). SEE A-2

EXISTING 1500MHz RRU AT ±55'-0" (ERICSSON RRU'S 111) (TYP. OF 1 PER SECTOR)

EXISTING 2500MHz RRU AT ±55'-0" (ERICSSON RRU'S 111) (TYP. OF 1 PER SECTOR)

**FINAL ANTENNA & RRU LAYOUT**

SCALE: NONE

3

PLANS PREPARED FOR:  
**Sprint**

PLANS PREPARED FOR:  
**ERICSSON**  
6100 SPRINT PARKWAY  
OVERLAND PARK, KS 66201

PLANS PREPARED FOR:  
**SBA**  
8051 Congress Avenue  
Boca Raton, FL 33487-1307

PLANS PREPARED BY:  
**W-T**  
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EXPIRES 02/28/13 ISSUED 11/26/12

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REVISIONS	DESCRIPTION	DATE	BY	REV
FOR CLIENT REVIEW		10/18/10	SP	A
FINAL		11/24/10	TRK	0

W-T PROJECT NUMBER:  
T1601069

APPROX SITE NAME:  
**LEAWOOD SOUTH  
CC (MONOPINE)**

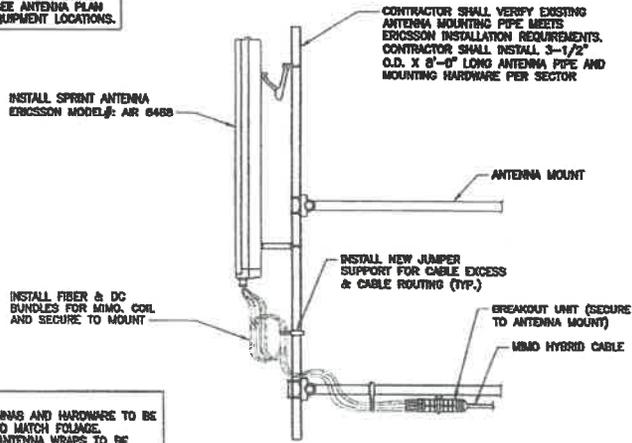
SITE CADENCE:  
**KC71XC104**

STREET ADDRESS:  
**12838 PEMBROKE CIRCLE  
LEAWOOD, KS 66209**

BEST DESCRIPTION:  
**TOWER ELEVATION &  
ANTENNA PLANS**

SHEET NUMBER:  
**A-1**

NOTE:  
THIS DETAIL IS DIAGRAMMATIC AND  
MAY NOT DEPICT SITE SPECIFIC  
CONDITIONS. SEE ANTENNA PLAN  
FOR EXACT EQUIPMENT LOCATIONS.



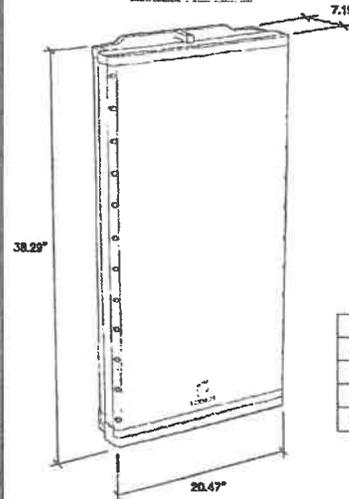
NOTES:  
• ALL ANTENNAS AND HARDWARE TO BE PAINTED TO MATCH FOLIAGE.  
• EXISTING ANTENNA WRAPS TO BE RE-USED ONCE ANTENNAS ARE INSTALLED.  
• EXISTING BRANCHES TO BE RE-INSTALLED SO THAT THEY SCREEN THE NEW AND EXISTING EQUIPMENT.

**MIMO ANTENNA/EQUIPMENT**

SCALE: NONE

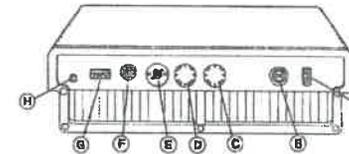
1

**ISOMETRIC VIEW**



**ERICSSON  
AIR 6468 ANTENNA**

DIMENSIONS, 1st/2nd: 38.29\"/>



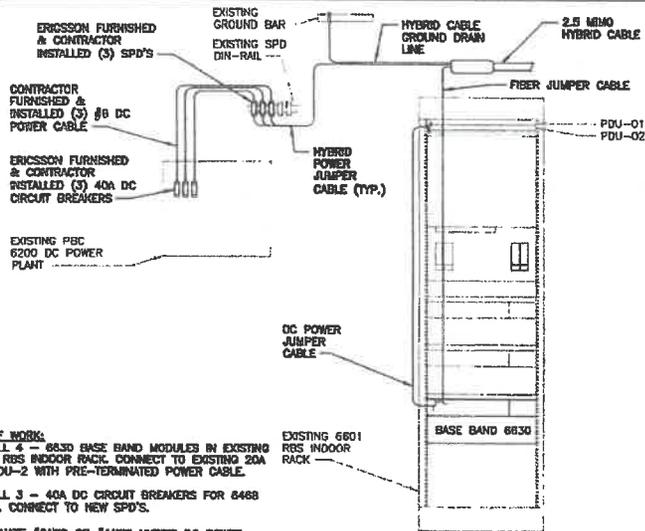
**AIR UNIT CONNECTION INTERFACES**

A GROUNDING POINT	E OPTIONAL SYNCHRONIZATION TIMING
B -48 V DC POWER SUPPLY	F EXT. ALARM/LED LIGHT INTERFACE
C OPTICAL CABLE 2	G OPTICAL INDICATORS
D OPTICAL CABLE 1	H TK MONITOR

**MIMO ANTENNA DETAIL**

SCALE: NONE

2

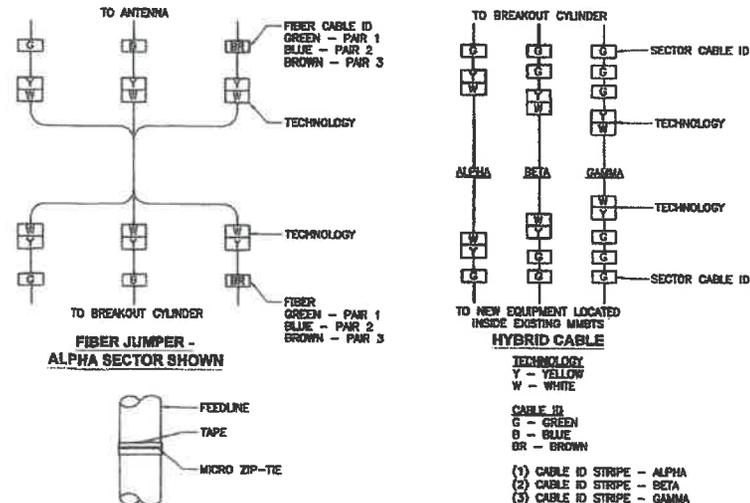


**SCOPE OF WORK:**  
• INSTALL 4 - 6630 BASE BAND MODULES IN EXISTING 6601 RBS INDOOR RACK. CONNECT TO EXISTING 20A DC PDU-2 WITH PRE-TERMINATED POWER CABLE.  
• INSTALL 3 - 40A DC CIRCUIT BREAKERS FOR 6468 UNITS. CONNECT TO NEW SPD'S.  
• TERMINATE #6AWG OR #4AWG HYBRID DC POWER CABLE TO NEW SPD'S LOCATED NEAR PBC 6200 ON SPD DIN-RAIL PER MANUFACTURERS SPECIFICATIONS (TYP. EACH SECTOR).

**RBS CABINET MODIFICATIONS**

SCALE: NONE

3



**TAPE INSTALLATION**

**COLOR CODE LEGEND**

**GROUNDING RISER DIAGRAM**

SCALE: NONE

4

PLAN PREPARED FOR:

PLAN PREPARED FOR:

8100 SPRINT PARKWAY  
OVERLAND PARK, KS 66251

MLA PARTNER:

8051 Congress Avenue  
Boca Raton, FL 33487-1307

PLAN PREPARED BY:

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REVISION	DESCRIPTION	DATE	BY	REV
	FOR CLIENT REVIEW	10.10.18	EP	A
	FINAL	11.16.18	TRE	B

SPRINT PROJECT NUMBER: T1801869

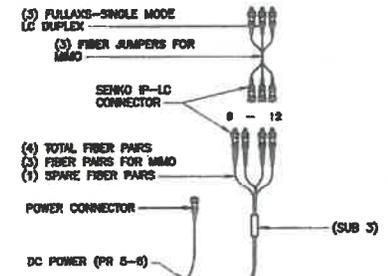
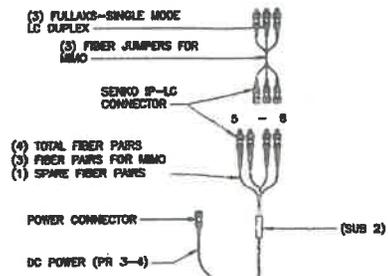
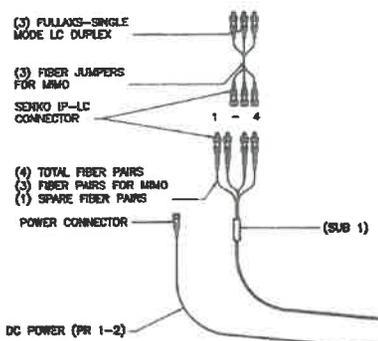
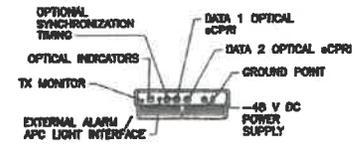
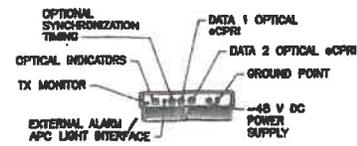
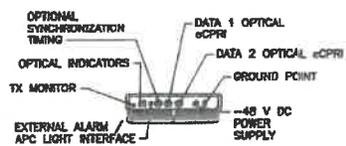
SPRINT SITE NAME: LEAWOOD SOUTH CC (MONOPINE)

SITE CAGECODE: KC71XC104

SITE ADDRESS: 12838 PEMBROKE CIRCLE LEAWOOD, KS 66209

SHEET DESCRIPTION: EQUIPMENT DETAILS

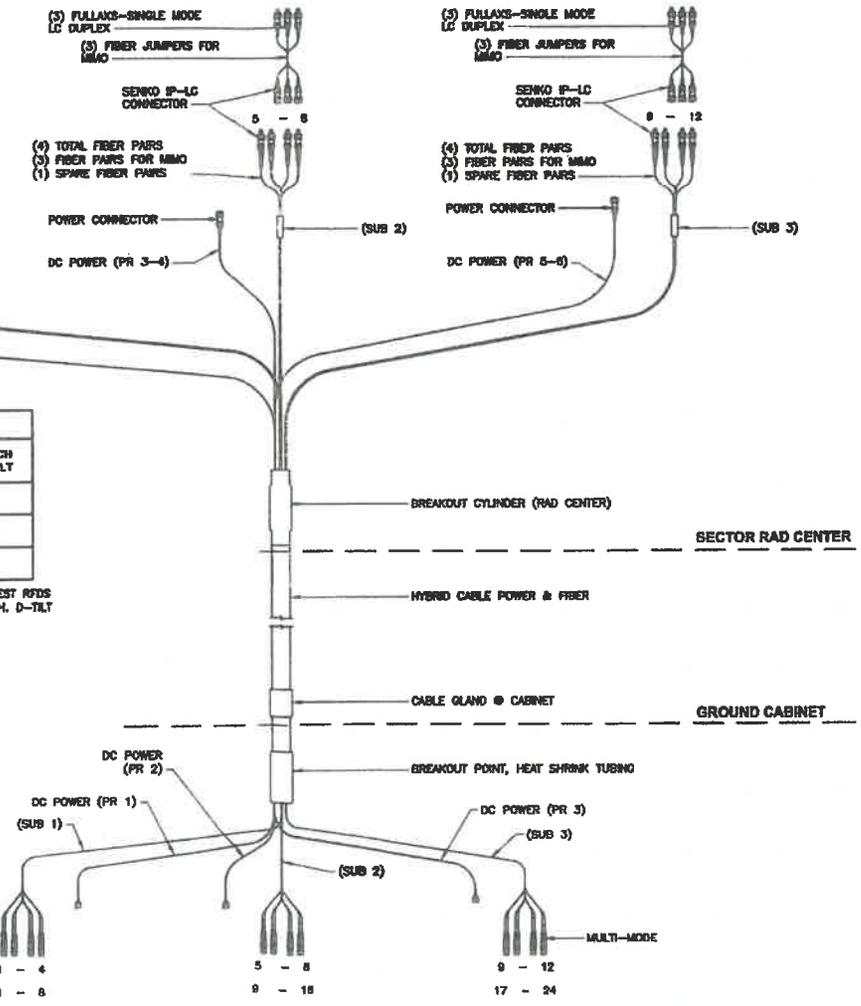
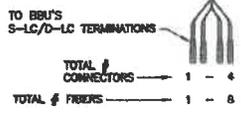
SHEET NUMBER: A-2



PROPOSED ANTENNA SCHEDULE						
SECTOR	ANTENNA MODEL NUMBER	ANTENNA MANUFACTURER	AZIMUTH	RAD CENTER	ELECT D-TILT	MECH D-TILT
1B	AR 6488 W/ INTEGRATED RRU	ERICSSON	60°	75'-0"	•	•
2B	AR 6488 W/ INTEGRATED RRU	ERICSSON	275°	75'-0"	•	•
3B	AR 6488 W/ INTEGRATED RRU	ERICSSON	275°	75'-0"	•	•

\* REFER TO LATEST RFDS FOR ELECT./MECH. D-TILT

CABLE SELECTION CHART				
ERICSSON SCENARIO#	CABLE DESCRIPTION	CABLE LENGTH	DIAMETER	WEIGHT
1 CABLE PER SITE (3) MIMO	1 PAIRS OF 6AWG DC CONDUCTORS WITH 6 SINGLE MODE FIBER PAIRS	60-120	0.74	0.42
1 CABLE PER SITE (3) MIMO	1 PAIRS OF 4AWG DC CONDUCTORS WITH 6 SINGLE MODE FIBER PAIRS	121-200	0.87	0.58
1 CABLE PER SITE (3) MIMO (WITH BI-WIRE)	2 PAIRS OF 4AWG DC CONDUCTORS WITH 6 SINGLE MODE FIBER PAIRS	201-375	1.06	0.88



PLANS PREPARED FOR:

PLANS PREPARED FOR:

8100 SPRINT PARKWAY  
OVERLAND PARK, KS 66251

BY: SBA PARTNER:

8081 Congress Avenue  
Boca Raton, FL 33487-1307

PLANS PREPARED BY:

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REVISION	DESCRIPTION	DATE	BY	REV
	FOR CLIENT REVIEW	10/14/18	MP	A
	FINAL	11/14/18	WRC	C

WT PROJECT NUMBER: T1801690

REPORT SITE NAME: LEAWOOD SOUTH CC (MONOPINE)

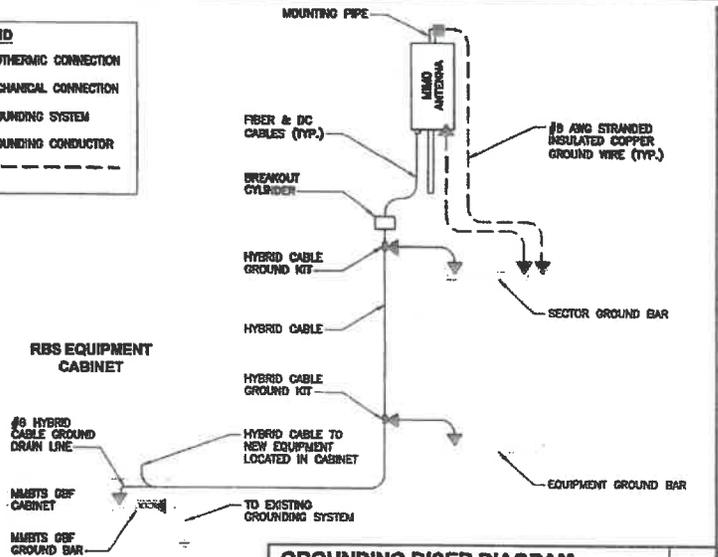
SITE CADENCE: KC71XC104

SITE ADDRESS: 12838 PEMBROKE CIRCLE  
LEAWOOD, KS 66209

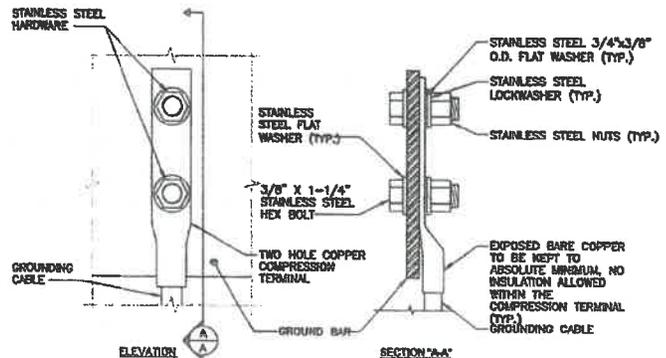
DRAWING DESCRIPTION: ANTENNA ONE LINE DIAGRAM

SHEET NUMBER: A-3

- LEGEND**
- EXOTHERMIC CONNECTION
  - ▼ MECHANICAL CONNECTION
  - ≡ GROUNDING SYSTEM
  - GROUNDING CONDUCTOR



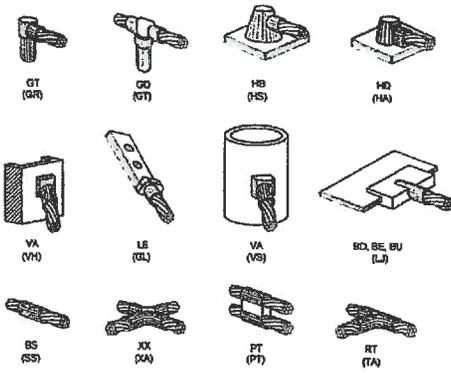
**GROUNDING RISER DIAGRAM**  
SCALE: NONE



1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS
2. NO CRIMPING OF SOLID #2. USE EXOTHERMIC WELD ONLY

**GROUND BAR CONNECTION DETAIL**  
SCALE: NONE

NOTE: THE FOLLOWING SYMBOLS SHOWN ARE MARKED JULIUSWELD EXOTHERMIC CONNECTIONS WITH PART NUMBERS BELOW. THESE CONNECTIONS MAY BE CROSS-REFERENCED WITH DASHED CONNECTIONS WHICH ARE SHOWN IN PARENTHESES.



**EXOTHERMIC CONNECTIONS**  
SCALE: NONE

**KEY NOTES:**

1. 1/4" THK ELECTRICAL TINED GROUND BAR HARGER OR APPROVED EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
2. INSULATORS (UNLESS NOTED OTHERWISE)
3. 3/8" STAINLESS STEEL LOCKWASHERS
4. WALL MOUNTING BRACKET
5. 3/8" STAINLESS STEEL UNLF BOLTS
6. EXOTHERMICALLY WELD #2 AWG BARE TINED SOLID COPPER CONDUCTOR TO GROUND BAR. ROUTE CONDUCTOR TO BURIED GROUND RING AND PROVIDE PERMANENT EXOTHERMIC WELD. CONTRACTOR SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "N", "I") WITH 1" HIGH LETTERS
7. USE THEFT PROOF FASTENERS ON ALL GROUND BARS. COMMSCOPE PART# MTC9874KEY

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

**SECTION "P" - SURGE PRODUCERS**

- COLLECTOR GROUND BAR
- GENERATOR FRAMEWORK (IF AVAILABLE)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND
- FIBER GROUND BAR
- EQUIPMENT ROOM COLLECTOR GROUND BAR
- HVAC

**SECTION "A" - SURGE PRODUCERS**

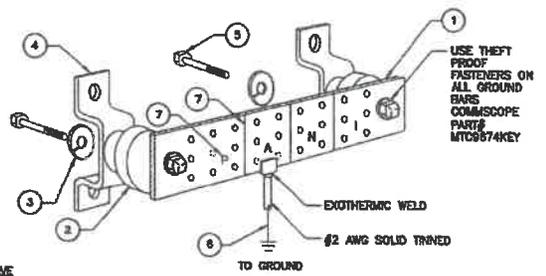
- INTERIOR GROUND RING
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING)
- METALLIC COLD WATER PIPE (IF AVAILABLE)
- BUILDING STEEL (IF AVAILABLE)
- AC POWER

**SECTION "N" - NON-ISOLATED GROUND ZONE EQUIPMENT**

- MISCELLANEOUS NON-ISOLATED GROUND ZONE EQUIPMENT
- CABLE TRAY SYSTEM
- EQUIPMENT FRAMES
- BATTERY RACKS

**SECTION "I" - ISOLATED GROUND ZONE**

- ISOLATED EQUIPMENT FRAMES
- ISOLATED GROUND BAR - IES



- NOTES:**
- EXTERIOR GROUND BARS TO BE TIN PLATED
  - HARDWARE SHALL BE STAINLESS STEEL
  - CONTRACTOR SHALL GROUP INCOMING WIRES
  - CONTRACTOR TO APPLY "KOPR-SHIELD" TO ALL CONNECTIONS

**GROUNDING BAR DETAIL**  
SCALE: NONE

PLANS PREPARED FOR:

**Sprint**

PLANS PREPARED FOR:

**ERICSSON**

6100 SPRINT PARKWAY  
OVERLAND PARK, KS 66281

8501 Congress Avenue  
Boca Raton, FL 33487-1307

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DESCRIPTION	DATE	BY	REV
FOR CLIENT REVIEW	10/10/08	MP	A
FINAL	11/16/08	TRK	D

W-T PROJECT NUMBER:  
T1801860

SPRINT SITE NAME:  
**LEAWOOD SOUTH  
CC (MONOPINE)**

SITE CODE:  
**KC71XC104**

SITE ADDRESS:  
**12838 PEMBROKE CIRCLE  
LEAWOOD, KS 66209**

SHEET DESCRIPTION:  
**GROUNDING DETAILS**

SHEET NUMBER:  
**G-1**

### BASIC REQUIREMENTS:

- A. MEET ALL REQUIREMENTS OF JURISDICTION.
- B. IF EQUIPMENT FURNISHED BY THE COMPANY DOES NOT MATCH THE EQUIPMENT LISTED ON THE RFDS AND SHOWN ON THE PERMITTING DRAWINGS, RESOLVE DISCREPANCY THROUGH INSTALLER'S CONSTRUCTION MANAGER AND COMPANY'S POINT OF CONTACT.
- C. CABLE INSTALLATIONS
  - 1. ALL CABLES MUST BE OUTDOOR RATED AND HAVE UV RESISTANT OUTER JACKETS.
  - 2. CABLE BENDS MUST NOT EXCEED MANUFACTURER'S ALLOWANCE CABLE BEND RADII.
  - 3. AT RADIUS INSTALL SERVICE LOOPS FOR POWER, FIBER, AND ETHERNET SECURED AT LEAST TWICE 180° TO STRUCTURE.
  - 4. SPARE FIBERS MUST BE ENCASED IN A LOW PROFILE WEATHER TIGHT ASSEMBLY.
- D. FIBER MUST BE FIELD-TERMINATED WITH LC TYPE CONNECTORS.
- E. CONDUITS IN EARTH PROVIDE PVC CONDUITS EXPOSED IN FACILITIES; PROVIDE RGS, HAND DIG TRENCHES IN COMPOUNDS.
- F. SECURE AND SUPPORT CONDUITS AND CABLES ON NO MORE THAN 48" INTERVALS.
- G. ON TOWER SITES, RGS CONDUITS MAY BE SURFACE MOUNTED AWAY FROM WALKWAYS AND ACCESS/EGRESS PATHS. IF INSTALLATIONS IN WALKWAYS AND INGRESS/EGRESS PATHS CANNOT BE AVOIDED, IDENTIFY THE CONDUIT ENVELOPE/TRIP HAZARD BY ALTERNATING YELLOW AND BLACK STRIPES PAINTED ON CONDUIT.

### SPRINT - FURNISHED EQUIPMENT:

- A. INSTALL THE FOLLOWING EQUIPMENT AT LOCATIONS AND AZIMUTHS SHOWN ON THE CONSTRUCTION DRAWINGS.
  - 1. PANEL ANTENNAS
  - 2. RADIOS
  - 3. GPS ANTENNAS
  - 4. FILTERS
  - 5. 120 VOLT DIN-RAIL CIRCUIT BREAKER ASSEMBLY

### TOWER INSTALLATIONS:

- A. MEET ALL REQUIREMENTS OF THE TOWER OWNER.
- B. INSTALL CORRUGATED FLEXIBLE CONDUIT UP THE TOWER TO COMPANY'S RAD CENTER.
- C. PROVIDE HANGING GRIPS OR CONDUIT CLAMPS AND ENSURE CONDUITS AS WELL AS INNER CABLES ARE SUPPORTED.
- D. CONDUIT RISERS: AT THE TOP OF THE TOWER TURN CONDUIT DOWN AND PROVIDE CABLE TERMINATION FITTINGS, EXTEND CABLES TO RADIOS EXPOSED AND SECURED TO THE STRUCTURE. AT CONDUIT EXIT FROM TOWER, PROVIDE DRIP LOOPS AND WEEP HOLES.
- E. AT THE ICE BRIDGE RUN CABLES IN RGS CONDUIT, UTILIZE CONDULETS TO MAKE 90 DEGREE TURNS.

### AC POWER TIE-IN:

- A. INSTALL SPRINT'S 120 VOLT DIN-RAIL BREAKER ASSEMBLY IN THE EXISTING POWER PROTECTION CABINET TELCO SECTION.
- B. DIN-RAIL CORD WITH NEMA 5-15P TO PLUG INTO EXISTING 120 VOLT RECEPTACLE IN THE EXISTING POWER PROTECTION CABINET TELCO SECTION.

### GROUNDING:

- A. 12-VOLT CIRCUITS: POWER CABLES MUST BE 3-WIRE WITH EQUIPMENT GROUNDING CONDUCTOR.
- B. SUPPLEMENTAL GROUNDING: ALL GROUNDING HARDWARE MUST BE UL STAMPED AS SUITABLE FOR GROUNDING HARDWARE.
- C. RADIOS: BOND RADIO TO THE TOWER TOP OR SECTOR GROUND BAR WITH #8 BARE TINNED COPPER WIRE (GREEN INSULATED ON ROOFTOPS).
- D. DIN RAIL CIRCUIT BREAKER ASSEMBLY: BOND SURGE ARRESTOR TO PFC TELCO BOARD GROUND BAR.

### MINOR MATERIALS:

- A. CONDUIT
  - 1. RIGID GALVANIZED STEEL CONDUIT (RGS): UL LISTED, COMPLIANT WITH ANSI STANDARD C80, HOT-DIP GALVANIZED WITH THREADED FITTINGS; MANUFACTURERS: ALLIED REPUBLIC, WHEATLAND OR EQUAL.
  - 2. CORRUGATED FLEXIBLE CONDUIT: DURALINE OR EQUAL.
  - 3. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LFMC): UL LABELED, UV RESISTANT, FLAME RETARDANT PVC JACKET, HOT-DIP GALVANIZED, GRAY, MANUFACTURERS: AFC, ANACONDA, SOUTH-WIRE, OR EQUAL.
  - 4. PVC CONDUIT: SCHEDULE 40, CARLON OR EQUAL.
  - 5. CABINET HUBS AND CABLE TERMINATION FITTINGS: QZ GEDNEY OR ROKTEC.
- B. COAXIAL CABLE JUMPERS: 1/2" LDF-4 MANUFACTURERS: COMMSCOPE, FRS OR FCT.
- C. FASTENERS AND HARDWARE
  - 1. TO SECURE RACENAYS, UTILIZE NON CORRODING NON-MAGNETIC FASTENERS AND HARDWARE SUITABLE FOR THE PURPOSE.
  - 2. POWER CABLES - 3/8" #12 3000V BY SOUTH-WIRE OR EQUAL.
  - 3. ETHERNET CABLES AND CONNECTORS: OUTDOOR RATED, CAT 5E, BELDEN, OR EQUAL.
  - 4. FIBER CABLES: PAINT FOR ANTENNA CONCEALMENT: SELECT NO/LOW CARBON PAINTS, WITH NO/LOW TITANIUM DIOXIDE, AND WITHOUT SUSPENDED METAL PARTICLES (ALUMINUM, ZINC, COPPER, ETC).

### COLOR CODING:

- A. SWEEP ALL COAXIAL CABLES ACCORDING TO SPRINT STANDARD TS-0200.

### TESTING AND CONSTRUCTION COMPLETE:

- A. SWEEP ALL COAXIAL CABLES ACCORDING TO SPRINT STANDARD TS-0200.
- B. PANEL ANTENNA ALIGNMENT - USING ELECTRONIC ALIGNMENT TOOL AZIMUTH/DOWNTILT +/- 1 DEGREE.
- C. LEAVE EQUIPMENT DE-ENERGIZE UNTIL INSTRUCTED BY THE COMMISSIONING ANT INTEGRATION TEAM TO ENERGIZE.
- D. OTHER REQUIREMENTS AND DELIVERABLES MAY BE REQUIRED BEFORE THE CONSTRUCTION COMPLETE MILESTONE CAN BE ACTUALIZED IN SITERRA (SPRINT'S DATABASE-OF RECORD).

### COAXIAL ANTENNA CABLE NOTES:

- A. THE MANUFACTURER'S RECOMMENDED UNSUPPORTED CABLE LENGTH IS 100'. HOIST GRIP(S) ARE REQUIRED IN EACH CABLE DURING HOISTING AND INSTALLATION. HOIST GRIPS MUST REMAIN IN PLACE EVEN AFTER INSTALLATION.
- B. WHEN INSTALLING CABLES GREATER THAN 100' INSIDE TUBULAR MONOPOLES, IT IS NECESSARY TO INSTALL A 3/16" OR 1/4" SS OR GALVANIZED AIRCRAFT CABLE TO PROVIDE A MANGER FOR EACH 100' FOR THE GRIP INSIDE THE POLE SHAFT.
- C. THE ANTENNA COAXIAL CABLE INSTALLER SHALL BE RESPONSIBLE FOR PERFORMING AND SUPPLYING SPRINT WITH 3 TYPEDWRITTEN SWEEP TESTS (ANTENNA RETURN LOSS TEST). THIS TEST SHALL BE PERFORMED TO THE SPECIFICATIONS AND PARAMETERS OUTLINED BY THE SPRINT RADIO FREQUENCY (RF) ENGINEER. THIS TEST SHALL BE PERFORMED PRIOR TO FINAL ACCEPTANCE OF THE SITE.
- D. THE COAXIAL ANTENNA CABLE INSTALLER SHALL BE RESPONSIBLE FOR REFLECTOMETER (TDR) TEST TO VERIFY CABLE LENGTH AND TO CHECK FOR WATER DAMAGE. VAPOR WRAP WILL BE USED TO SEAL ALL CONNECTIONS. ALL JUMPERS TO THE ANTENNA FROM THE MAIN TRANSMISSION LINE WILL BE 1/2" JUMPERS AND SHALL NOT EXCEED 6'-0" MAXIMUM LENGTH FOR THE JUMPERS AT WMAX BITS UNITS WILL BE 6'-0".
- E. IF COAX IS BEING RE-USED FOR THE INSTALLATION, PRE AND POST ANTENNA LINE SWEEPS ARE REQUIRED.
- F. UPON COMPLETION, PROVIDE HEIGHT VERIFICATION DEPICTING RAD CENTER AND TOP OF ANTENNA.

### ANTENNA MOUNTING NOTES:

- A. DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO CURRENT ANSI/EIA/TIA-222; APPENDIX B FOR WIND LOADING; STRUCTURAL STANDARDS FOR STEEL ANTENNA AND ANTENNA SUPPORTING STRUCTURES OR APPLICABLE LOCAL CODES.
- B. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 ZINC (HOT-DIPPED GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS, UNLESS OTHERWISE NOTED.
- C. ALL BOLTS, ANCHORS, AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM153 ZINC COATING (HOT DIP) ON IRON STEEL HARDWARE UNLESS OTHERWISE NOTED.
- D. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
- E. ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH DOUBLE NUTS AND SHALL BE INSTALLED SUNG TIGHT.
- F. MINIMUM HORIZONTAL SPACING SHALL BE 2'-0" BETWEEN ALL ANTENNAS.

### CONTRACTORS NOTES:

- A. CONTRACTORS TO FIELD VERIFY ANTENNA CABLE LENGTHS.
- B. ALL MAIN CABLES WILL BE COLOR CODED AT THREE (3) LOCATIONS COLOR CODE ALL ANTENNA AND COAX WITH 2" WIDE BANDS OF COLORED TAPE WITH 1" SEPARATION BETWEEN BANDS.
- C. COLOR CODE ALL TOP AND BOTTOM GROUND KITS WITH 1" WIDE BANDS OF COLORED TAPE WITH 1/2" SEPARATION BETWEEN BANDS.
- D. START COLORED BANDS 2" BEYOND WEATHERPROOFING.
- E. START SECTOR COLOR NEXT TO END CONNECTOR.
- F. ALL MAIN CABLES WILL BE GROUNDING WITH COAXIAL CABLE GROUND KIT AT: THE ANTENNA LEVEL, MID LEVEL (IF TOWER IS OVER 200') BASE OF TOWER PRIOR TO TURNING HORIZONTAL, TERMINATION OF COAX LINES TO JUMPERS.
- G. ALL PROPOSED GROUND BAR DOWNLEADS ARE TO HAVE AN EXOTHERMIC CONNECTION TO THE EXISTING ADJACENT GROUND BAR DOWNLEADS A MINIMUM DISTANCE OF 4 FT. BELOW THE GROUND BAR.
- H. PROVIDE BUSS BAR NEAR BITS FOR ATTACHMENT OF WMAX COAX GROUND KITS.

### CONTRACTORS NOTES:

- A. ALL AZIMUTHS ARE TO BE ESTABLISHED CLOCKWISE FROM THE TRUE NORTH HEADING.
- B. CONTRACTOR SHALL VERIFY PROPOSED ANTENNA RAD CENTER AND ORIENTATIONS WITH SPRINT PRIOR TO INSTALLATION OF ANTENNAS.
- C. PRIOR TO ATTACHING ANTENNAS AND MOUNTING SECTIONS, EXISTING TOWER AND TOWER FOUNDATION MUST BE ANALYZED BY A LICENSED STRUCTURAL ENGINEER TO VERIFY TOWER IS CAPABLE OF SUPPORTING THE PROPOSED LOADS. REFER TO THE STRUCTURAL ANALYSIS BY OTHERS.
- D. CONTRACTOR SHALL REFER TO TOWER STRUCTURAL CALCULATIONS FOR ADDITIONAL LOADS. NO ERECTION OR MODIFICATIONS OF THE TOWER SHALL BE MADE WITHOUT APPROVAL OF A STRUCTURAL ENGINEER.

### NOTES

SCALE: NONE

1



DRAWING NOTICE: WORK SHOWN ON ANY CONTRACTORS AND ARE THE SOLE PROPERTY OF LEWOOD SOUTH CC AND SHALL BE SUBJECT TO THE CHANGES WITHIN THE SCOPE OF WORK.

REVISIONS	DESCRIPTION	DATE	BY	REV
FOR CLIENT REVIEW		10/11/18	MP	A
		11/14/19	TRC	B

W-T PROJECT NUMBER: T1801889

SPRINT SITE NAME: LEWOOD SOUTH CC (MONOPINE)

KC71XC104

12838 PEMBROKE CIRCLE  
LEAWOOD, KS 66209

NOTES

SHEET LABEL: N-1

**LEAWOOD COUNTRY CLUB MONOPINE**

**SPRINT KC71XC104 / SBA KS46619-A**



# Proposed Antennas



# AIR 6468

# B41

AIR 6468, an Advanced Antenna System(AAS) with 64 transmitters and 64 receivers, improves LTE TDD spectral efficiency.

Enhanced bitrate per user achieved through interference suppression by applying beamforming capabilities in the downlink and the uplink.

Capacity increased by scheduling users in the cell on different layers supporting both Single User MIMO(SU-MIMO) and

Multi User MIMO(MU-MIMO).

Application coverage is improved through beamforming in both the vertical and horizontal dimensions.

To support cost efficient site deployments, the AIR 6468 includes Layer 1 beamforming enabling enhanced Common Public Radio Interface(eCPRI) to be used between the AIR 6468 and Baseband 5216 or Baseband 6630.



The increasing capacity demands in operator's networks create needs for new spectrum efficient solutions. An Advanced Antenna System(AAS) such as AIR 6468 together with the Massive MIMO and Multi-User MIMO software features enables **greater spectral efficiency**.

The AIR 6468 has in total 64 Transmitters(T) and 64 Receivers(R) connected to an array of dual polarized antenna elements.

**Capacity gains** of up to 3 to 5 times compared with 8T8R configurations can be expected in favorable traffic scenarios.

Beamforming algorithms allow for better control of the transmitted energy in traffic channels for downlink(DL). Usage of large numbers of antenna branches improves the radio environment for single users, improves SINR, and allow for **higher DL speeds per user** with Single User MIMO(SU-MIMO).

When users are sufficiently separated in the cell, beamforming capabilities enable the same time- frequency resources to be reused among the different users thereby **increasing capacity** in high load scenarios with Multi User MIMO(MU-MIMO).

In the uplink(UL), up to 64 receiver branches coupled with baseband functionality for receiver diversity, interference rejection(Interference Rejection Combining, IRC) provides significant **uplink performance improvements** over conventional two, four and eight receiver branch capabilities. Correspondingly, this also adds user specific receiver-side beamforming functionality.

Normally the users' angular distribution in the cell is a key parameter in determining an AAS performance capability. Hence performance gains are very much scenario and traffic load dependent.

The AIR 6468 will support **different cell or broadcast beam shapes**, to meet different user distribution scenarios. The flexibility to steer the transmitted energy for control signaling in both azimuth and elevation will enable **improved efficiency** in various deployments scenarios including Macro, Hotspot and High-rise.

The **front haul transport is made more efficient** by implementing Layer 1 beamforming in the AIR 6468. Using the enhanced Common Public Radio Interface(eCPRI) between the Baseband and the AAS enables affordable 10 Gbps Small Form-factor Pluggable optical fiber transceivers(SFPs) to interconnect. This allows for a more **cost-efficient deployment** offering the flexibility needed in real-life site environments.

The design of AIR 6468 enables fast roll out with minimal site impact, improved application coverage and capacity boost for both existing and new bands compared to using more traditional radio and antenna systems.



AIR 6468 B41

# TECHNICAL SPECIFICATIONS AIR 6468 B41

<b>PRODUCT NUMBER:</b>	KRD 901 075/11		
<b>ADVANCED ANTENNA SYSTEM</b>			
Operating frequency band:	3GPP Band 41, 2496 – 2690 MHz (full band)		
Instantaneous bandwidth:	60 MHz		
Architecture:	64T64R connected to an array of dual polarized antenna elements.		
Carrier capacity per sector:	Up to 3x20 MHz LTE (TDD)		
<b>Modulation:</b>	Downlink	Up to 256 QAM.	
	Uplink	Up to 64 QAM.	
<b>Multi-antenna beamforming functionality*:</b>	Downlink SU-MIMO	Up to 16 layers per carrier.	
	Downlink MU-MIMO		
	Uplink SU-MIMO	Up to 16 layers per carrier.	
	Uplink MU-MIMO		
	Cell shaping	Pre-defined cell or broadcast beam shapes; Macro, Hotspot and High-rise.	
	Digital downtilt	Continuously adjustable for macro scenario, fixed for Hotspot and High-rise scenario.	
<b>Spatial characteristics broadcast beam Scenario**:</b>			
EIRP max***:	Macro	Hotspot	High-rise
Beam Parallelity:	2x 64.5 dBm	2x 59.5 dBm	2x 64 dBm
	≤ - 10 dB	≤ - 10 dB	≤ - 10 dB
<b>Horizontal Pattern</b>			
Azimuth Beamwidth:	65° ± 5°	65° ± 5°	20° ± 2°
Front-to-Back Ratio, Total Power ±30°:	≥ 25 dB	≥ 25 dB	≥ 25 dB
Beam Pointing Direction:	0° ± 5°	0° ± 5°	0° ± 2°
<b>Vertical Pattern</b>			
Elevation Beamwidth:	10° ± 1°	30° ± 3°	30° ± 3°
First Upper Side Lobe Suppression:	≥ 16 dB	≥ 12 dB	≥ 12 dB
Beam Pointing Error:	≤ 1°	≤ 3°	≤ 3°
Digital Downtilt:	Continuously - 8° to + 8°	Fixed 3°	Fixed 3°
<b>Spatial characteristics traffic beams</b>			
EIRP max**:	2x 71.5 dBm		
<b>Mechanical specifications</b>			
Weight:	133.16 lbs. 60.4 kg excluding installation kit		
Size (H x W x D):	972.5 mm x 520 mm x 182.5 mm excluding smaller protrusions 38.28" x 20.47" x 7.19"		
<b>Operational specifications</b>			
Wind Load Maximum:	580 N @ 42 m/s wind speed.		
Wind Load (Frontal/ Lateral/ Rear):	580 N / 204 N / 580 N @ 42 m/s wind speed excluding installation kit.		
Survival Wind Speed****:	67 m/s		
Operating Temperature Range:	- 40° to + 55° C		
IP Classification:	IP65		
<b>Main Interfaces</b>			
Baseband:	Two eCPRI interfaces using 10G SFP+ ports with link capacity 10.3 Gb/s. One 10.3 Gb/s eCPRI interface is sufficient for up to 60 MHz carrier bandwidth and 16 layers.		
Power Supply:	- 48 V DC nominal on a 2-wire connection. Recommended fuse rating is 40 A.		
Mounting:	Optional mechanical tilt and swivel installation kit for wall and pole mounting.		
Handling:	Eyelet for lifting and hoisting.		

\* Actual software support aligned with the user equipment(UE) echo system. Please refer to the Ericsson radio access network(RAN) software roadmap and feature descriptions.

\*\* Additional scenarios, cells or broadcast beam shapes possible with future software releases.

\*\*\* Two simultaneous orthogonal beams.

## TECHNICAL SPECIFICATIONS AIR 6468 B41

### Connection Interfaces

Grounding Point:	2x M6 bolt to support an M6 dual cable lug.
- 48 V DC Power Supply:	2-wire TVS connector
Data 1 Optical eCPRI:	LC (on SFP) with support for FullAXS.
Data 2 Optical eCPRI:	LC (on SFP) with support for FullAXS.
Optional Synchronization Timing (AUX):	LC (on SFP) with support for FullAXS.
External Alarm/APC Light Interface:	Mini-DIN connector, 14 pin
Optical Indicators:	LEDs
TX Monitor:	SMA connector

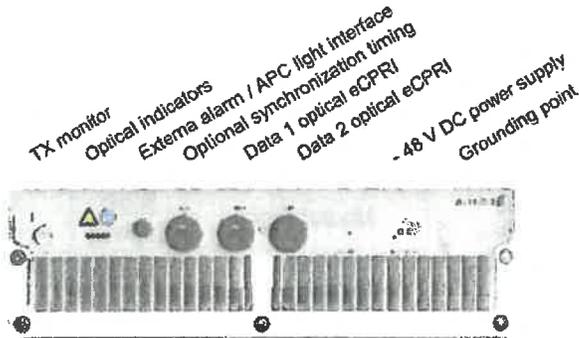
### BASEBAND CONFIGURATION

Number of baseband units depending on configuration.

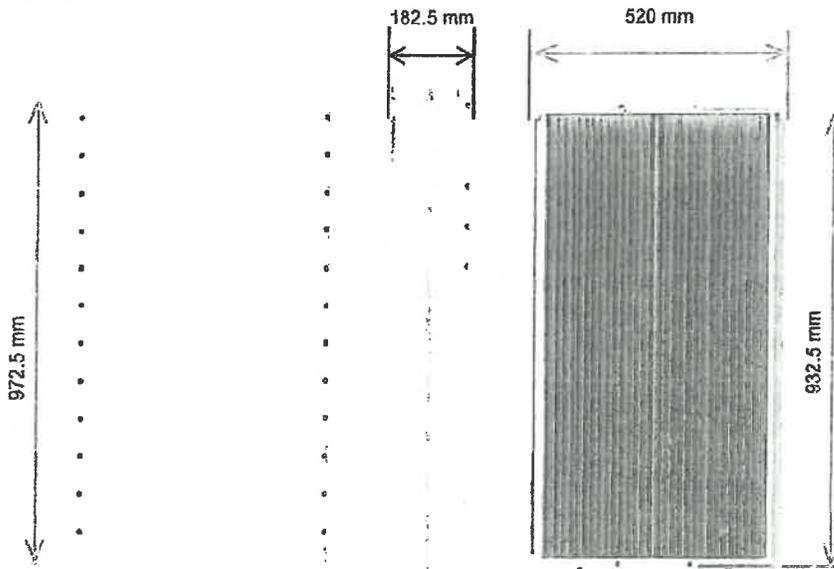
### ACCESSORIES

Installation accessories are available from the Ericsson Radio Site System portfolio.

\*\*\*\* As a result of more stringent legal regulations and judgments regarding product liability, we are obliged to point out certain risks that may arise when products are used under extraordinary operating conditions. The mechanical design is based on environmental conditions which are equal to or exceeding class 4.1 as specified in ETS 300 019-1-4 and thereby respects the static mechanical load imposed on an AIR unit by wind at maximum velocity. Wind loads in this datasheet are calculated with reference to wind pressure. For more accurate and site specific results, terrain information needs to be considered and calculate according to EN 1991-1-4 or GB 50009. Pole clamps and mounting accessories as specified by Ericsson in the Customer Product Information documentation must be used. Extraordinary operating conditions, such as heavy icing or exceptional dynamic stress (e.g. strain caused by oscillating support structures), may result in the breakage of an AIR unit or its installation kit and even cause the unit to fall to the ground. These facts must be considered during the site planning process.



AIR 6468 B41 interfaces.



AIR 6468 B41 size and vertical bracket spacing.



**Sprint**  
 6220 Sprint Parkway,  
 Overland Park, KS 66251  
 Office: (913) 315-1270

**Ivan Blanco**  
 RF Engineer IV  
 Kansas City Market  
 RF Engineering

Nov. 1, 2018

City of Leawood  
 4800 Town Center Drive  
 Leawood, KS 66211

**RE: Sprint Site KC71XC104  
 12838 Pembroke Circle, Leawood, KS 66209  
 2.5 GHz mMIMO Upgrade Project**

Dear Sir or Madam,

This responds to your request regarding the proposed Sprint wireless telecommunications project referenced above.

Sprint operates up to 5 wireless networks at each site. 800MHz and 1900MHz CDMA (Code Division Multiple Access), 800MHz and 1900MHz FDD LTE(Frequency Division Duplex Long Term Evolution), and 2500 TDD LTE (Time Division Duplex Long Term Evolution) Network.

Band	Technology	Tower Frequencies	Handset Frequencies	Modulation	ERP (dBm)	Antenna Azimuths
800	CDMA	862.900 MHz	812.900 MHz	QPSK-16QAM	55.85	50, 150, 310
800	5MHz FDD LTE	863.8 -868.8 MHz	818.8-823.8 MHz	QPSK, 16QAM, 64QAM	55.15	50, 150, 310
1900	CDMA	1931.25-1938.75 MHz	1851.25-1858.75 MHz	QPSK-16QAM, 64QAM	58.15	50, 150, 310
1900	5Mhz FDD LTE	1940-1945 / 1990-1995 MHz	1860-1865 / 1910-1915 MHz	QPSK, 16QAM, 64QAM	61.2	50, 150, 310
2500	20Mhz TDD LTE	2496 – 2690 MHz	2496 – 2690 MHz	QPSK, 256 QAM, 16QAM, 64QAM	62.4	20, 150, 285

Sprint designs, constructs and operates its wireless telecommunications facilities to comply with the Federal Communications Commission rules and regulations. Sprint will undertake best efforts to prevent harmful radiofrequency interference from its wireless telecommunications facilities to other authorized wireless telecommunications operators in the surrounding area, including those related to public safety.

If you have any questions, please call me directly.

Sincerely,

  
 Ivan Blanco  
 RF Engineer IV



**Tower Engineering Solutions**

Phone (972) 483-0607, Fax (972) 975-9615  
1320 Greenway Drive, Suite 600, Irving, Texas 75038

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## Structural Analysis Report

**Existing 70 ft Monopine**

**Customer Name: SBA Communications Corp**

**Customer Site Number: KS46619-A**

**Customer Site Name: Leawood South Cc (Monopine)**

**Carrier Name: Sprint Nextel (App#: 91593, V1)**

**Carrier Site ID / Name: KC71XC104 / F2/Leawood South CC (Monopine)**

**Site Location: 12700 Overbrook Road**

**Leawood, Kansas**

**Johnson County**

**Latitude: 38.893277**

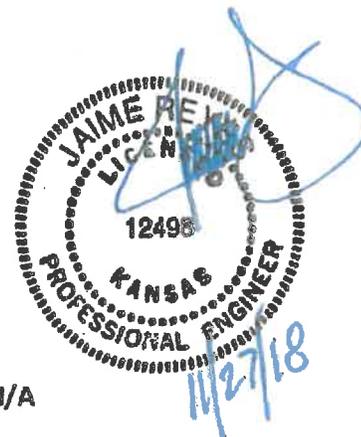
**Longitude: -94.614861**

**Analysis Result:**

**Max Structural Usage: 67.7% [Pass]**

**Max Foundation Usage: 67.0% [Pass]**

**Additional Usage Caused by New Mount/Mount Modification: N/A**



**Report Prepared By: Tawfeeq Alajaj**

## Introduction

The purpose of this report is to summarize the analysis results on the 70 ft Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

## Sources of Information

<b>Tower Drawings</b>	Sabre Communications Project No: 08-11090 Dated 11/30/2007.
<b>Foundation Drawing</b>	Sabre Communications Project No: 08-11090 Dated 11/30/2007.
<b>Geotechnical Report</b>	Terracon Project No: 02075303 Dated 09/11/2007.
<b>Modification Drawings</b>	N/A

## Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-G. In accordance with this standard, the structure was analyzed using **TESPoles**, a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

<b>Wind Speed Used in the Analysis:</b>	Ultimate Design Wind Speed $V_{ult} = 115.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{nsd} = 89.0$ mph (3-Sec. Gust)
<b>Wind Speed with Ice:</b>	40 mph (3-Sec. Gust) with 1" radial ice concurrent
<b>Operational Wind Speed:</b>	60 mph + 0" Radial ice
<b>Standard/Codes:</b>	ANSI/TIA/EIA 222-G / 2012 IBC
<b>Exposure Category:</b>	C
<b>Structure Class:</b>	II
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Seismic Parameters:</b>	$S_S = 0.112$ , $S_1 = 0.065$

This structural analysis is based upon the tower being classified as a Structure Class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

**Existing Antennas, Mounts and Transmission Lines**

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
-	69.5	1	VHLP2	Pipe Mount	(1) 1/2"	Sprint Nextel
-		1	Horizon ODU			
-	66.0	3	TTTT65AP-1XR - Panel	(3) T-Arms	(1) 1.37" Hybrid (3) 1.25" Hybrid	
-		3	RFS - APXVERR18-C-A20 - Panel			
-		9	RFS ACU-A20-N RET			
-	55.0	3	FZHJ (AKA FZHE++)	Collar Mount		
-		3	Ericsson RRUS-11 800MHz			
-		3	Ericsson RRUS 31 1900 MHz			
-		3	Ericsson 800 ESMR Filters			
-	47.0	3	WAP 450	Collar Mount	(3) 5/16"	
-	45.0	3	840 10054			

**Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines**

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
3	66.0	3	RFS - APXVERR18-C-A20 - Panel	(3) T-Arms	(1) 1.13" Hybrid (3) 1.25" Hybrid	Sprint Nextel
4		3	Ericsson - AIR 6468 - Panel			
5		9	RFS ACU-A20-N RET			
6	55.0	3	Ericsson RRUS-11 800MHz	Collar Mount		
7		3	Ericsson RRUS 31 1900 MHz			
8		3	Ericsson 800 ESMR Filters			

All transmission lines are considered running inside of the pole shafts.

## **Analysis Results**

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	67.7%	0.0%	0.0%
Pass/Fail	Pass	Pass	Pass

## **Foundations**

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	1109.5	25.1	45.9

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

### **Operational Condition (Rigidity):**

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.8364 degrees under the operational wind speed as specified in the Analysis Criteria.

### **Conclusions**

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-G Standard under the design basic wind speed as specified in the Analysis Criteria.

## Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.
3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of **ANSI/TIA-222**. If wind speed and/or ice loads are different from the minimum values recommended by the **EIA/TIA-222** standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.
5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.
6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Structure: KS46619-A-SBA  
 Site Name: Leawood South Cc (Monopine)  
 Height: 69.50 (ft)  
 Base Elev: 0.000 (ft)

Code: EIA/TIA-222-G  
 Exposure: C  
 Gh: 1.1

11/27/2018

Page: 1



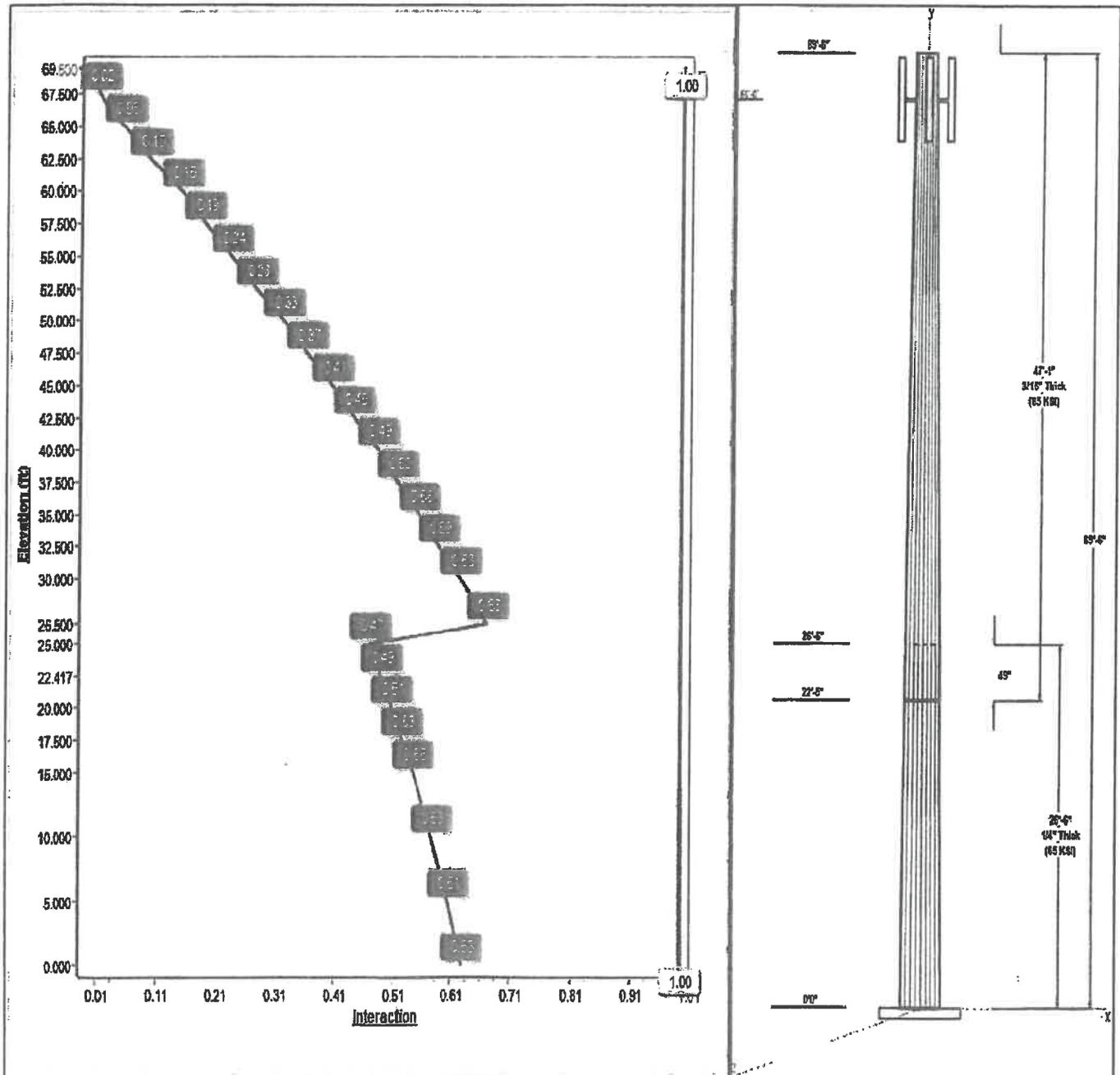
Dead Load Factor: 1.20  
 Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 89 mph Wind



Iterations: 18

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Type: Tapered  
 Site Name: Leawood South Cc (Monopine)  
 Height: 69.50 (ft)  
 Base Elev: 0.00 (ft)

Base Shape: 18 Sided  
 Taper: 0.44237

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**Shaft Properties**

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	26.50	30.65	42.37	0.250		0.44237	65
2	47.08	12.00	32.83	0.188	Slip	0.44237	65

**Discrete Appurtenances**

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
69.50	69.50	1	Pine Branches	
67.50	67.50	1	Pine Branches	
66.00	66.00	3	APXVERR18-C-A20	Sprint Nextel
66.00	66.00	3	AIR 6468	Sprint Nextel
66.00	66.00	9	RFS ACU-A20-N RET	Sprint Nextel
66.00	66.00	3	T-Arms	Sprint Nextel
62.50	62.50	1	Pine Branches	
57.50	57.50	1	Pine Branches	
55.00	55.00	3	Ericsson RRUS-11	Sprint Nextel
55.00	55.00	3	Ericsson RRUS 31 1900	Sprint Nextel
55.00	55.00	3	Ericsson 800 ESMR Filters	Sprint Nextel
52.50	52.50	1	Pine Branches	
47.50	47.50	1	Pine Branches	
42.50	42.50	1	Pine Branches	
37.50	37.50	1	Pine Branches	
32.50	32.50	1	Pine Branches	
27.50	27.50	1	Pine Branches	
22.50	22.50	1	Pine Branches	
17.50	17.50	1	Pine Branches	

**Linear Appurtenances**

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	66.00	Inside	1.13" Hybrid	Sprint Nextel
0.00	66.00	Inside	1.25" Hybrid	Sprint Nextel

**Anchor Bolts**

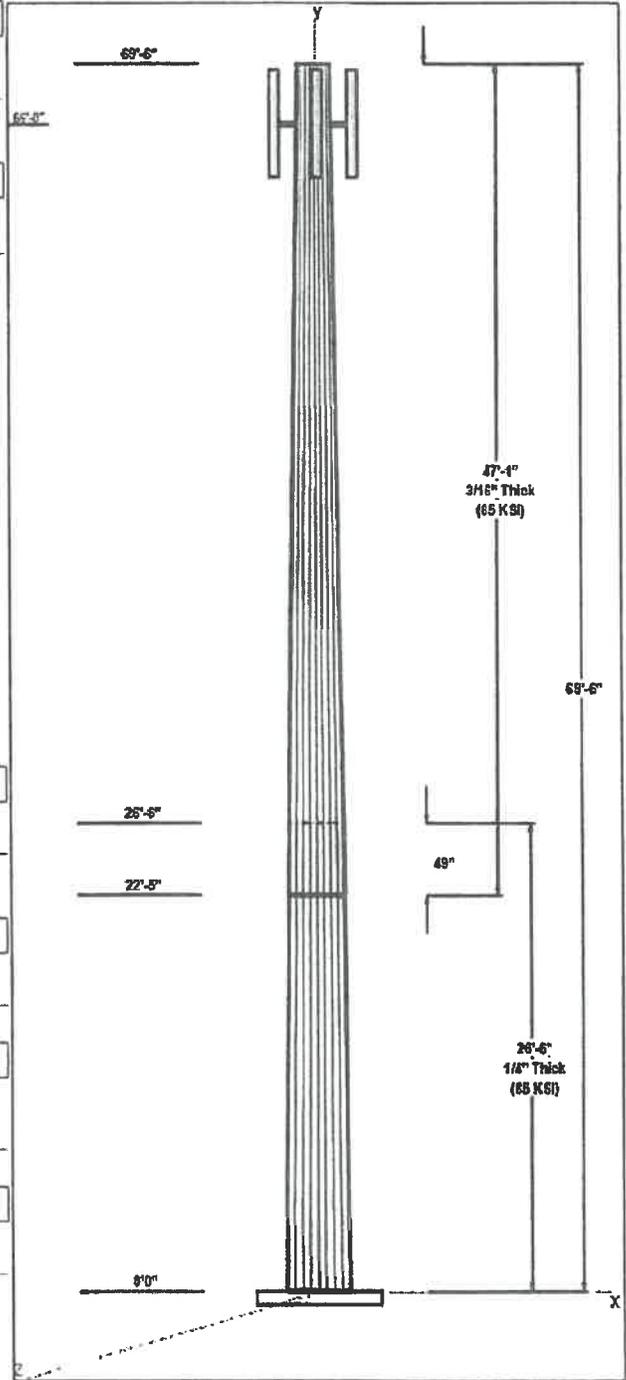
Qty	Specifications	Grade (ksi)	Arrangement
0	2.25" 18J	75.0	0

**Base Plate**

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
0.0000		60.0	0

**Reactions**

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 89 mph Wind	1109.5	25.1	15.1
0.9D + 1.6W 89 mph Wind	1106.4	25.1	11.3
1.2D + 1.0Di + 1.0Wf 40 mph Wind	264.4	5.9	45.9
1.2D + 1.0E	42.1	0.7	15.1
0.9D + 1.0E	42.0	0.7	11.4
1.0D + 1.0W 60 mph Wind	314.6	7.1	12.6



Type: Monopole  
Site Name: Leawood South Cc (Monopine)  
Height: 69.50 (ft)

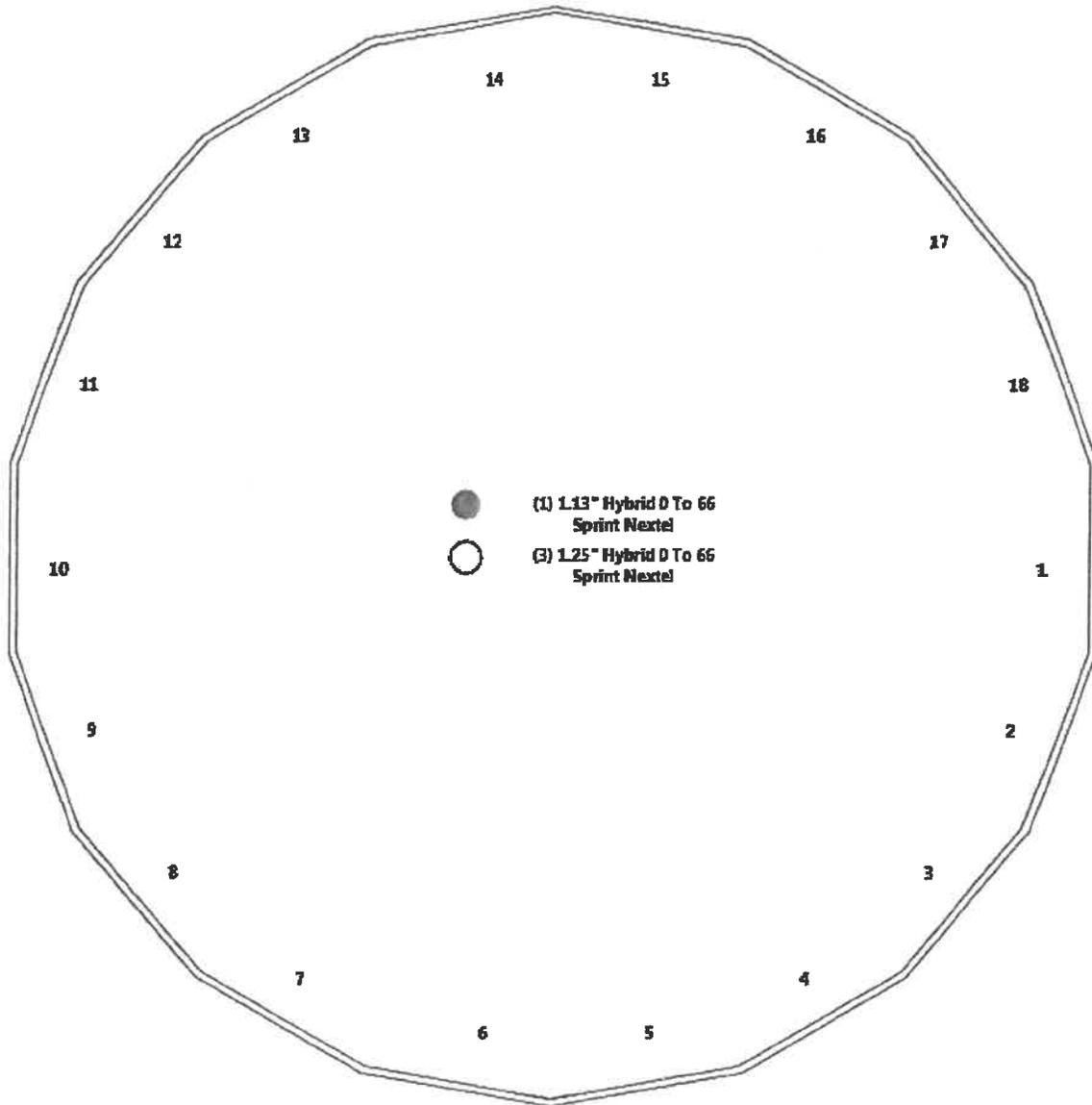
11/27/2018



IES

Tower Engineering Solutions

Page: 3



**Structure:** KS46619-A-SBA      **Code:** EIA/TIA-222-G      11/27/2018  
**Site Name:** Leawood South Cc (Monopine)      **Exposure:** C  
**Height:** 69.50 (ft)      **Crest Height:** 0.00  
**Base Elev:** 0.000 (ft)      **Site Class:** D - Stiff Soil  
**Gh:** 1.1      **Topography:** 1      **Struct Class:** II      **Page:** 4



Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	26.500	0.2500	65		0.00	2,595
2	18	47.083	0.1875	65	Slip	49.00	2,124
<b>Total Shaft Weight:</b>							<b>4,719</b>

Sec. No.	Bottom						Top						Taper
	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	
1	42.37	0.00	33.42	7491.17	28.47	169.48	30.65	26.50	24.14	2823.47	20.22	122.5	0.442374
2	32.83	22.42	19.44	2620.49	29.48	175.09	12.00	69.50	7.07	126.26	9.94	64.00	0.442374

**Structure:** KS46619-A-SBA      **Code:** EIA/TIA-222-G      11/27/2018  
**Site Name:** Leawood South Cc (Monopine)      **Exposure:** C  
**Height:** 69.50 (ft)      **Crest Height:** 0.00  
**Base Elev:** 0.000 (ft)      **Site Class:** D - Stiff Soil  
**Gh:** 1.1      **Topography:** 1      **Struct Class:** II      Page: 5



### Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	69.50	Pine Branches	1	250.00	25.00	1.00	1111.86	46.547	1.00	0.00	0.00
2	67.50	Pine Branches	1	250.00	25.00	1.00	1109.35	46.484	1.00	0.00	0.00
3	66.00	APXVERR18-C-A20	3	50.00	8.02	0.80	262.30	11.451	0.80	0.00	0.00
4	66.00	AIR 6468	3	133.20	6.53	0.70	342.97	7.858	0.70	0.00	0.00
5	66.00	RFS ACU-A20-N RET	9	1.00	0.14	0.79	6.28	0.504	0.79	0.00	0.00
6	66.00	T-Arms	3	400.00	10.00	0.75	742.97	20.718	0.75	0.00	0.00
7	62.50	Pine Branches	1	500.00	50.00	1.00	2205.52	92.638	1.00	0.00	0.00
8	57.50	Pine Branches	1	500.00	50.00	1.00	2191.36	92.284	1.00	0.00	0.00
9	55.00	Ericsson RRUS-11 800MHz	3	54.00	2.52	0.67	132.65	3.284	0.67	0.00	0.00
10	55.00	Ericsson RRUS 31 1900 MHz	3	59.50	1.63	0.67	145.98	2.288	0.67	0.00	0.00
11	55.00	Ericsson 800 ESMR Filters	3	10.00	0.42	0.67	40.44	0.827	0.67	0.00	0.00
12	52.50	Pine Branches	1	500.00	50.00	1.00	2176.04	91.901	1.00	0.00	0.00
13	47.50	Pine Branches	1	500.00	50.00	1.00	2159.35	91.484	1.00	0.00	0.00
14	42.50	Pine Branches	1	500.00	50.00	1.00	2141.00	91.025	1.00	0.00	0.00
15	37.50	Pine Branches	1	500.00	50.00	1.00	2120.58	90.515	1.00	0.00	0.00
16	32.50	Pine Branches	1	500.00	50.00	1.00	2097.56	89.939	1.00	0.00	0.00
17	27.50	Pine Branches	1	500.00	50.00	1.00	2071.09	89.277	1.00	0.00	0.00
18	22.50	Pine Branches	1	500.00	50.00	1.00	2039.88	88.487	1.00	0.00	0.00
19	17.50	Pine Branches	1	500.00	55.60	1.00	2001.66	97.346	1.00	0.00	0.00
<b>Totals:</b>			<b>39</b>	<b>7,629.10</b>			<b>28,483.65</b>				

### Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	66.00	(1) 1.13" Hybrid	0.00	Inside
0.00	66.00	(3) 1.25" Hybrid	0.00	Inside

**Structure:** KS46619-A-SBA      **Code:** EIA/TIA-222-G      **11/27/2018**  
**Site Name:** Leawood South Cc (Monopine)      **Exposure:** C  
**Height:** 69.50 (ft)      **Crest Height:** 0.00  
**Base Elev:** 0.000 (ft)      **Site Class:** D - Stiff Soil  
**Gh:** 1.1      **Topography:** 1      **Struct Class:** II      **Page: 6**



**Increment Length:** 5 (ft)

Elev (ft)	Description	Thick (In)	Dia (In)	Area (In <sup>2</sup> )	Ix (In <sup>4</sup> )	W/t Ratio	D/t Ratio	Fpy (ksi)	S (In <sup>3</sup> )	Weight (lb)
0.00		0.2500	42.370	33.421	7491.2	28.47	169.48	67.8	348.2	0.0
5.00		0.2500	40.163	31.670	6374.4	26.92	160.65	69.7	312.6	553.7
10.00		0.2500	37.957	29.919	5374.6	25.36	151.83	71.6	278.9	523.9
15.00		0.2500	35.750	28.168	4485.2	23.80	143.00	73.4	247.1	494.1
17.50		0.2500	34.647	27.293	4079.9	23.03	138.59	74.3	231.9	235.9
20.00		0.2500	33.544	26.418	3699.7	22.26	134.17	75.2	217.2	228.5
22.42	Bol - Section 2	0.2500	32.477	25.571	3355.5	21.50	129.91	76.1	203.5	213.8
22.50		0.2500	32.440	25.542	3344.0	21.47	129.76	76.1	203.0	12.8
25.00		0.2500	31.337	24.667	3011.8	20.69	125.35	77.1	189.3	375.9
26.50	Top - Section 1	0.1875	31.050	18.366	2210.3	27.79	165.60	0.0	0.0	219.3
27.50		0.1875	30.609	18.104	2116.8	27.37	163.25	69.2	136.2	62.1
30.00		0.1875	29.506	17.447	1894.8	26.34	157.36	70.4	126.5	151.2
32.50		0.1875	28.402	16.791	1688.8	25.30	151.48	71.6	117.1	145.6
35.00		0.1875	27.299	16.134	1498.3	24.26	145.59	72.9	108.1	140.0
37.50		0.1875	26.196	15.478	1322.8	23.22	139.71	74.1	99.5	134.5
40.00		0.1875	25.092	14.821	1161.5	22.19	133.83	75.3	91.2	128.9
42.50		0.1875	23.989	14.164	1013.8	21.15	127.94	76.5	83.2	123.3
45.00		0.1875	22.886	13.508	879.3	20.11	122.06	77.7	75.7	117.7
47.50		0.1875	21.783	12.851	757.2	19.07	116.17	79.0	68.5	112.1
50.00		0.1875	20.679	12.195	647.0	18.04	110.29	80.2	61.6	106.5
52.50		0.1875	19.576	11.538	546.0	17.00	104.41	81.4	55.1	100.9
55.00		0.1875	18.473	10.882	459.7	15.96	98.52	82.6	49.0	95.4
57.50		0.1875	17.369	10.225	381.4	14.92	92.64	82.6	43.2	89.8
60.00		0.1875	16.266	9.568	312.5	13.89	86.75	82.6	37.8	84.2
62.50		0.1875	15.163	8.912	252.5	12.85	80.87	82.6	32.8	78.6
65.00		0.1875	14.060	8.255	200.7	11.81	74.98	82.6	28.1	73.0
66.00		0.1875	13.618	7.993	182.2	11.40	72.63	82.6	26.3	27.6
67.50		0.1875	12.956	7.599	156.5	10.77	69.10	82.6	23.8	39.8
69.50		0.1875	12.074	7.074	126.3	9.94	64.39	82.6	20.6	49.9
										<b>4719.1</b>

Structure: KS46619-A-SBA  
 Site Name: Leawood South Cc (Monopine)  
 Height: 69.50 (ft)  
 Base Elev: 0.000 (ft)  
 Gh: 1.1

Topography: 1

Code: EIA/TIA-222-G  
 Exposure: C  
 Crest Height: 0.00  
 Site Class: D - Stiff Soil  
 Struct Class: II

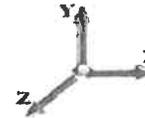
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Load Case: 1.2D + 1.6W 89 mph Wind

Dead Load Factor 1.20  
 Wind Load Factor 1.60



Iterations 18

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	16.374	18.01	294.19	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	16.374	18.01	278.87	0.650	0.000	5.00	17.460	11.35	327.1	0.0	684.5
10.00		1.00	0.85	16.374	18.01	263.55	0.650	0.000	5.00	16.526	10.74	309.6	0.0	628.7
15.00		1.00	0.85	16.374	18.01	248.23	0.650	0.000	5.00	15.593	10.14	292.1	0.0	593.0
17.50	Appurtenance(s)	1.00	0.88	16.892	18.58	244.34	0.650	0.000	2.50	7.446	4.84	143.9	0.0	283.1
20.00		1.00	0.90	17.374	19.11	239.91	0.650	0.000	2.50	7.213	4.69	143.4	0.0	274.1
22.42	Bot - Section 2	1.00	0.92	17.796	19.58	235.09	0.650	0.000	2.42	6.750	4.39	137.4	0.0	256.5
22.50	Appurtenance(s)	1.00	0.92	17.810	19.59	234.91	0.650	0.000	0.08	0.232	0.15	4.7	0.0	15.3
25.00		1.00	0.95	18.209	20.03	229.45	0.650	0.000	2.50	6.825	4.44	142.2	0.0	451.1
26.50	Top - Section 1	1.00	0.96	18.434	20.28	225.99	0.650	0.000	1.50	3.983	2.59	84.0	0.0	263.2
27.50	Appurtenance(s)	1.00	0.96	18.579	20.44	226.38	0.650	0.000	1.00	2.609	1.70	55.4	0.0	74.5
30.00		1.00	0.98	18.922	20.81	220.23	0.650	0.000	2.50	6.359	4.13	137.6	0.0	181.5
32.50	Appurtenance(s)	1.00	1.00	19.244	21.17	213.79	0.650	0.000	2.50	6.125	3.98	134.8	0.0	174.8
35.00		1.00	1.01	19.546	21.50	207.09	0.650	0.000	2.50	5.892	3.83	131.7	0.0	168.1
37.50	Appurtenance(s)	1.00	1.03	19.832	21.82	200.17	0.650	0.000	2.50	5.658	3.68	128.4	0.0	161.4
40.00		1.00	1.04	20.103	22.11	193.05	0.650	0.000	2.50	5.425	3.53	124.8	0.0	154.6
42.50	Appurtenance(s)	1.00	1.06	20.362	22.40	185.74	0.650	0.000	2.50	5.192	3.37	120.9	0.0	147.9
45.00		1.00	1.07	20.608	22.67	178.27	0.650	0.000	2.50	4.958	3.22	116.9	0.0	141.2
47.50	Appurtenance(s)	1.00	1.08	20.844	22.93	170.64	0.650	0.000	2.50	4.725	3.07	112.7	0.0	134.5
50.00		1.00	1.09	21.070	23.18	162.88	0.650	0.000	2.50	4.491	2.92	108.3	0.0	127.8
52.50	Appurtenance(s)	1.00	1.11	21.288	23.42	154.98	0.650	0.000	2.50	4.258	2.77	103.7	0.0	121.1
55.00	Appurtenance(s)	1.00	1.12	21.497	23.65	146.96	0.650	0.000	2.50	4.025	2.62	99.0	0.0	114.4
57.50	Appurtenance(s)	1.00	1.13	21.700	23.87	138.83	0.650	0.000	2.50	3.791	2.46	94.1	0.0	107.7
60.00		1.00	1.14	21.895	24.08	130.60	0.650	0.000	2.50	3.558	2.31	89.1	0.0	101.0
62.50	Appurtenance(s)	1.00	1.15	22.084	24.29	122.27	0.650	0.000	2.50	3.324	2.16	84.0	0.0	94.3
65.00		1.00	1.16	22.267	24.49	113.84	0.650	0.000	2.50	3.091	2.01	78.7	0.0	87.6
66.00	Appurtenance(s)	1.00	1.16	22.339	24.57	110.44	0.650	0.000	1.00	1.171	0.76	29.9	0.0	33.2
67.50	Appurtenance(s)	1.00	1.17	22.445	24.69	105.32	0.650	0.000	1.50	1.687	1.10	43.3	0.0	47.7
69.50	Appurtenance(s)	1.00	1.17	22.583	24.84	98.45	0.650	0.000	2.00	2.118	1.38	54.7	0.0	59.9
<b>Totals:</b>									<b>69.50</b>			<b>3,432.4</b>		<b>5,663.0</b>

**Structure:** KS46619-A-SBA  
**Site Name:** Leawood South Cc (Monopine)  
**Height:** 69.50 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

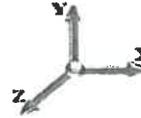
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**Load Case:** 1.2D + 1.6W 89 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 18

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	69.50	Pine Branches	1	22.583	24.841	1.00	1.00	25.00	300.00	0.000	0.000	993.65	0.00	0.00
2	67.50	Pine Branches	1	22.445	24.688	1.00	1.00	25.00	300.00	0.000	0.000	987.56	0.00	0.00
3	66.00	T-Arms	3	22.339	24.572	0.56	0.75	16.88	1440.00	0.000	0.000	663.46	0.00	0.00
4	66.00	RFS ACU-A20-N RET	9	22.339	24.572	0.63	0.80	0.80	10.80	0.000	0.000	31.31	0.00	0.00
5	66.00	AIR 6468	3	22.339	24.572	0.56	0.80	10.97	479.52	0.000	0.000	431.31	0.00	0.00
6	66.00	APXVERR18-C-A20	3	22.339	24.572	0.64	0.80	15.40	180.00	0.000	0.000	605.40	0.00	0.00
7	62.50	Pine Branches	1	22.084	24.292	1.00	1.00	50.00	600.00	0.000	0.000	1943.37	0.00	0.00
8	57.50	Pine Branches	1	21.700	23.869	1.00	1.00	50.00	600.00	0.000	0.000	1909.56	0.00	0.00
9	55.00	Ericsson 800 ESMR	3	21.497	23.647	0.54	0.80	0.68	36.00	0.000	0.000	25.55	0.00	0.00
10	55.00	Ericsson RRUS 31 1900	3	21.497	23.647	0.54	0.80	2.62	214.20	0.000	0.000	99.17	0.00	0.00
11	55.00	Ericsson RRUS-11	3	21.497	23.647	0.54	0.80	4.05	194.40	0.000	0.000	153.32	0.00	0.00
12	52.50	Pine Branches	1	21.288	23.417	1.00	1.00	50.00	600.00	0.000	0.000	1873.33	0.00	0.00
13	47.50	Pine Branches	1	20.844	22.928	1.00	1.00	50.00	600.00	0.000	0.000	1834.28	0.00	0.00
14	42.50	Pine Branches	1	20.362	22.398	1.00	1.00	50.00	600.00	0.000	0.000	1791.82	0.00	0.00
15	37.50	Pine Branches	1	19.832	21.815	1.00	1.00	50.00	600.00	0.000	0.000	1745.23	0.00	0.00
16	32.50	Pine Branches	1	19.244	21.168	1.00	1.00	50.00	600.00	0.000	0.000	1693.43	0.00	0.00
17	27.50	Pine Branches	1	18.579	20.436	1.00	1.00	50.00	600.00	0.000	0.000	1634.91	0.00	0.00
18	22.50	Pine Branches	1	17.810	19.591	1.00	1.00	50.00	600.00	0.000	0.000	1567.28	0.00	0.00
19	17.50	Pine Branches	1	16.892	18.581	1.00	1.00	55.60	600.00	0.000	0.000	1653.00	0.00	0.00
<b>Totals:</b>									<b>9,154.92</b>			<b>21,636.94</b>		

**Structure:** KS46619-A-SBA      **Code:** EIA/TIA-222-G      11/27/2018  
**Site Name:** Leawood South Cc (Monopine)      **Exposure:** C  
**Height:** 69.50 (ft)      **Crest Height:** 0.00  
**Base Elev:** 0.000 (ft)      **Site Class:** D - Stiff Soil  
**Gh:** 1.1      **Topography:** 1      **Struct Class:** II      **Page:** 9



**Load Case:** 1.2D + 1.6W 89 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 18

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		327.06	688.47	0.00	0.00
10.00		309.57	652.73	0.00	0.00
15.00		292.08	616.98	0.00	0.00
17.50	(1) attachments	1796.90	895.08	0.00	0.00
20.00		143.36	286.15	0.00	0.00
22.42		137.43	268.12	0.00	0.00
22.50	(1) attachments	1572.00	615.71	0.00	0.00
25.00		142.18	463.14	0.00	0.00
26.50		84.00	270.38	0.00	0.00
27.50	(1) attachments	1690.36	679.26	0.00	0.00
30.00		137.64	193.46	0.00	0.00
32.50	(1) attachments	1828.27	786.76	0.00	0.00
35.00		131.74	180.05	0.00	0.00
37.50	(1) attachments	1873.60	773.35	0.00	0.00
40.00		124.76	166.65	0.00	0.00
42.50	(1) attachments	1912.75	759.95	0.00	0.00
45.00		116.89	153.24	0.00	0.00
47.50	(1) attachments	1946.94	746.54	0.00	0.00
50.00		108.26	139.84	0.00	0.00
52.50	(1) attachments	1977.03	733.14	0.00	0.00
55.00	(9) attachments	377.01	571.03	0.00	0.00
57.50	(1) attachments	2003.67	719.73	0.00	0.00
60.00		89.11	113.03	0.00	0.00
62.50	(1) attachments	2027.36	706.33	0.00	0.00
65.00		78.74	99.62	0.00	0.00
66.00	(18) attachments	1761.40	2148.29	0.00	0.00
67.50	(1) attachments	1030.86	347.75	0.00	0.00
69.50	(1) attachments	1048.37	359.91	0.00	0.00
	<b>Totals:</b>	<b>25,069.37</b>	<b>15,134.69</b>	<b>0.00</b>	<b>0.00</b>

Structure: KS46619-A-SBA

Code: EIA/TIA-222-G

11/27/2018

Site Name: Leawood South Cc (Monopine)

Exposure: C

Height: 69.50 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

Page: 10



Load Case: 1.2D + 1.6W 89 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 18

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-15.09	-25.10	0.00	-1109.4	0.00	1109.49	2042.70	1021.35	3542.10	1773.68	0.00	0.000	0.000	0.634
5.00	-14.31	-24.82	0.00	-984.01	0.00	984.01	1987.86	993.93	3265.36	1635.11	0.11	-0.199	0.000	0.610
10.00	-13.57	-24.56	0.00	-859.92	0.00	859.92	1927.25	963.63	2989.69	1497.07	0.43	-0.405	0.000	0.582
15.00	-12.89	-24.29	0.00	-737.14	0.00	737.14	1860.87	930.44	2716.69	1360.36	0.97	-0.616	0.000	0.549
17.50	-11.97	-22.51	0.00	-676.41	0.00	676.41	1825.52	912.76	2581.67	1292.75	1.33	-0.728	0.000	0.530
20.00	-11.65	-22.39	0.00	-620.13	0.00	620.13	1788.73	894.36	2447.92	1225.78	1.74	-0.841	0.000	0.513
22.42	-11.36	-22.25	0.00	-566.04	0.00	566.04	1751.79	875.90	2320.00	1161.72	2.19	-0.951	0.000	0.494
22.50	-10.75	-20.68	0.00	-564.18	0.00	564.18	1750.49	875.25	2315.61	1159.53	2.21	-0.955	0.000	0.493
25.00	-10.25	-20.55	0.00	-512.47	0.00	512.47	1710.82	855.41	2184.96	1094.11	2.74	-1.070	0.000	0.475
26.50	-9.96	-20.47	0.00	-481.65	0.00	481.65	1135.86	567.93	1443.00	722.57	3.09	-1.140	0.000	0.677
27.50	-9.29	-18.78	0.00	-461.18	0.00	461.18	1127.57	563.79	1411.86	706.98	3.34	-1.188	0.000	0.662
30.00	-9.05	-18.67	0.00	-414.22	0.00	414.22	1105.84	552.92	1334.13	668.06	4.00	-1.335	0.000	0.629
32.50	-8.26	-16.84	0.00	-367.56	0.00	367.56	1082.67	541.33	1268.70	629.29	4.74	-1.481	0.000	0.593
35.00	-8.04	-16.72	0.00	-325.46	0.00	325.46	1058.05	529.02	1179.79	590.77	5.56	-1.627	0.000	0.560
37.50	-7.29	-14.85	0.00	-283.65	0.00	283.65	1031.99	516.00	1103.58	552.61	6.45	-1.772	0.000	0.521
40.00	-7.09	-14.73	0.00	-246.54	0.00	246.54	1004.49	502.25	1028.28	514.81	7.42	-1.914	0.000	0.487
42.50	-6.37	-12.81	0.00	-209.71	0.00	209.71	975.55	487.77	954.08	477.75	8.46	-2.054	0.000	0.446
45.00	-6.19	-12.70	0.00	-177.68	0.00	177.68	945.16	472.58	881.19	441.25	9.57	-2.180	0.000	0.410
47.50	-5.50	-10.74	0.00	-145.93	0.00	145.93	913.34	456.67	809.79	405.49	10.75	-2.321	0.000	0.366
50.00	-5.34	-10.64	0.00	-119.08	0.00	119.08	880.07	440.03	740.08	370.59	12.01	-2.445	0.000	0.328
52.50	-4.68	-8.64	0.00	-92.49	0.00	92.49	845.36	422.68	672.27	336.63	13.32	-2.562	0.000	0.281
55.00	-4.11	-8.24	0.00	-70.89	0.00	70.89	808.45	404.22	605.98	303.44	14.69	-2.668	0.000	0.239
57.50	-3.47	-6.21	0.00	-50.28	0.00	50.28	759.67	379.83	534.71	267.75	16.11	-2.761	0.000	0.193
60.00	-3.36	-6.12	0.00	-34.75	0.00	34.75	710.89	355.44	467.80	234.30	17.58	-2.841	0.000	0.153
62.50	-2.75	-4.06	0.00	-19.44	0.00	19.44	662.11	331.05	405.55	203.08	19.09	-2.902	0.000	0.100
65.00	-2.65	-3.98	0.00	-9.28	0.00	9.28	613.33	308.67	347.65	174.08	20.62	-2.943	0.000	0.058
66.00	-0.60	-2.11	0.00	-5.30	0.00	5.30	593.82	296.91	325.74	163.11	21.24	-2.953	0.000	0.034
67.50	-0.31	-1.07	0.00	-2.13	0.00	2.13	564.55	282.28	294.21	147.32	22.17	-2.962	0.000	0.015
69.50	0.00	-1.05	0.00	0.00	0.00	0.00	525.53	262.76	254.67	127.52	23.41	-2.966	0.000	0.000

**Structure:** KS46619-A-SBA      **Code:** EIA/TIA-222-G      11/27/2018  
**Site Name:** Leawood South Cc (Monopine)      **Exposure:** C  
**Height:** 69.50 (ft)      **Crest Height:** 0.00  
**Base Elev:** 0.000 (ft)      **Site Class:** D - Stiff Soil  
**Gh:** 1.1      **Topography:** 1      **Struct Class:** II      Page: 11



**Load Case:** 0.9D + 1.6W 89 mph Wind

**Iterations** 18

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ica Thick (ln)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	16.374	18.01	294.19	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	16.374	18.01	278.87	0.650	0.000	5.00	17.460	11.35	327.1	0.0	498.4
10.00		1.00	0.85	16.374	18.01	263.55	0.650	0.000	5.00	16.526	10.74	309.6	0.0	471.5
15.00		1.00	0.85	16.374	18.01	248.23	0.650	0.000	5.00	15.593	10.14	292.1	0.0	444.7
17.50	Appurtenance(s)	1.00	0.88	16.892	18.58	244.34	0.650	0.000	2.50	7.446	4.84	143.9	0.0	212.3
20.00		1.00	0.90	17.374	19.11	239.91	0.650	0.000	2.50	7.213	4.69	143.4	0.0	205.6
22.42	Bot - Section 2	1.00	0.92	17.796	19.58	235.09	0.650	0.000	2.42	6.750	4.39	137.4	0.0	192.4
22.50	Appurtenance(s)	1.00	0.92	17.810	19.59	234.91	0.650	0.000	0.08	0.232	0.15	4.7	0.0	11.5
25.00		1.00	0.95	18.209	20.03	229.45	0.650	0.000	2.50	6.825	4.44	142.2	0.0	338.4
26.50	Top - Section 1	1.00	0.96	18.434	20.28	225.99	0.650	0.000	1.50	3.983	2.59	84.0	0.0	197.4
27.50	Appurtenance(s)	1.00	0.96	18.579	20.44	226.38	0.650	0.000	1.00	2.609	1.70	55.4	0.0	55.8
30.00		1.00	0.98	18.922	20.81	220.23	0.650	0.000	2.50	6.359	4.13	137.6	0.0	136.1
32.50	Appurtenance(s)	1.00	1.00	19.244	21.17	213.79	0.650	0.000	2.50	6.125	3.98	134.8	0.0	131.1
35.00		1.00	1.01	19.546	21.50	207.09	0.650	0.000	2.50	5.892	3.83	131.7	0.0	126.0
37.50	Appurtenance(s)	1.00	1.03	19.832	21.82	200.17	0.650	0.000	2.50	5.658	3.68	128.4	0.0	121.0
40.00		1.00	1.04	20.103	22.11	193.05	0.650	0.000	2.50	5.425	3.53	124.8	0.0	116.0
42.50	Appurtenance(s)	1.00	1.06	20.362	22.40	185.74	0.650	0.000	2.50	5.192	3.37	120.9	0.0	111.0
45.00		1.00	1.07	20.608	22.67	178.27	0.650	0.000	2.50	4.958	3.22	116.9	0.0	105.9
47.50	Appurtenance(s)	1.00	1.08	20.844	22.93	170.64	0.650	0.000	2.50	4.725	3.07	112.7	0.0	100.9
50.00		1.00	1.09	21.070	23.18	162.88	0.650	0.000	2.50	4.491	2.92	108.3	0.0	95.9
52.50	Appurtenance(s)	1.00	1.11	21.288	23.42	154.98	0.650	0.000	2.50	4.258	2.77	103.7	0.0	90.9
55.00	Appurtenance(s)	1.00	1.12	21.497	23.65	146.96	0.650	0.000	2.50	4.025	2.62	99.0	0.0	85.8
57.50	Appurtenance(s)	1.00	1.13	21.700	23.87	138.83	0.650	0.000	2.50	3.791	2.46	94.1	0.0	80.8
60.00		1.00	1.14	21.895	24.08	130.60	0.650	0.000	2.50	3.558	2.31	89.1	0.0	75.8
62.50	Appurtenance(s)	1.00	1.15	22.084	24.29	122.27	0.650	0.000	2.50	3.324	2.16	84.0	0.0	70.7
65.00		1.00	1.16	22.267	24.49	113.84	0.650	0.000	2.50	3.091	2.01	78.7	0.0	65.7
66.00	Appurtenance(s)	1.00	1.16	22.339	24.57	110.44	0.650	0.000	1.00	1.171	0.76	29.9	0.0	24.9
67.50	Appurtenance(s)	1.00	1.17	22.445	24.69	105.32	0.650	0.000	1.50	1.687	1.10	43.3	0.0	35.8
69.50	Appurtenance(s)	1.00	1.17	22.583	24.84	98.45	0.650	0.000	2.00	2.118	1.38	54.7	0.0	44.9
<b>Totals:</b>									<b>69.50</b>			<b>3,432.4</b>		<b>4,247.2</b>

**Structure:** KS46619-A-SBA  
**Site Name:** Leawood South Cc (Monopine)  
**Height:** 69.50 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

11/27/2018



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**Load Case:** 0.9D + 1.6W 89 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 18

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	69.50	Pine Branches	1	22.583	24.841	1.00	1.00	25.00	225.00	0.000	0.000	993.65	0.00	0.00
2	67.50	Pine Branches	1	22.445	24.689	1.00	1.00	25.00	225.00	0.000	0.000	987.56	0.00	0.00
3	66.00	T-Arms	3	22.339	24.572	0.56	0.75	16.88	1080.00	0.000	0.000	663.46	0.00	0.00
4	66.00	RFS ACU-A20-N RET	9	22.339	24.572	0.63	0.80	0.80	8.10	0.000	0.000	31.31	0.00	0.00
5	66.00	AJR 6468	3	22.339	24.572	0.56	0.80	10.97	359.64	0.000	0.000	431.31	0.00	0.00
6	66.00	APXVERR18-C-A20	3	22.339	24.572	0.64	0.80	15.40	135.00	0.000	0.000	605.40	0.00	0.00
7	62.50	Pine Branches	1	22.084	24.292	1.00	1.00	50.00	450.00	0.000	0.000	1943.37	0.00	0.00
8	57.50	Pine Branches	1	21.700	23.869	1.00	1.00	50.00	450.00	0.000	0.000	1909.56	0.00	0.00
9	55.00	Ericsson 800 ESMR	3	21.497	23.647	0.54	0.80	0.68	27.00	0.000	0.000	25.55	0.00	0.00
10	55.00	Ericsson RRUS 31 1800	3	21.497	23.647	0.54	0.80	2.62	160.65	0.000	0.000	99.17	0.00	0.00
11	55.00	Ericsson RRUS-11	3	21.497	23.647	0.54	0.80	4.05	145.80	0.000	0.000	153.32	0.00	0.00
12	52.50	Pine Branches	1	21.288	23.417	1.00	1.00	50.00	450.00	0.000	0.000	1873.33	0.00	0.00
13	47.50	Pine Branches	1	20.844	22.928	1.00	1.00	50.00	450.00	0.000	0.000	1834.28	0.00	0.00
14	42.50	Pine Branches	1	20.362	22.398	1.00	1.00	50.00	450.00	0.000	0.000	1791.82	0.00	0.00
15	37.50	Pine Branches	1	19.832	21.815	1.00	1.00	50.00	450.00	0.000	0.000	1745.23	0.00	0.00
16	32.50	Pine Branches	1	19.244	21.168	1.00	1.00	50.00	450.00	0.000	0.000	1693.43	0.00	0.00
17	27.50	Pine Branches	1	18.579	20.436	1.00	1.00	50.00	450.00	0.000	0.000	1634.91	0.00	0.00
18	22.50	Pine Branches	1	17.810	19.591	1.00	1.00	50.00	450.00	0.000	0.000	1567.28	0.00	0.00
19	17.50	Pine Branches	1	16.892	18.581	1.00	1.00	55.60	450.00	0.000	0.000	1653.00	0.00	0.00
<b>Totals:</b>									<b>6,866.19</b>			<b>21,636.94</b>		

**Structure:** KS46619-A-SBA      **Code:** EIA/TIA-222-G      11/27/2018  
**Site Name:** Leawood South Cc (Monopine)      **Exposure:** C  
**Height:** 69.50 (ft)      **Crest Height:** 0.00  
**Base Elev:** 0.000 (ft)      **Site Class:** D - Stiff Soil  
**Gh:** 1.1      **Topography:** 1      **Struct Class:** II      **Page:** 13



**Load Case:** 0.9D + 1.6W 89 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 18

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		327.06	516.35	0.00	0.00
10.00		309.57	489.54	0.00	0.00
15.00		292.08	462.73	0.00	0.00
17.50	(1) attachments	1796.90	671.31	0.00	0.00
20.00		143.36	214.61	0.00	0.00
22.42		137.43	201.09	0.00	0.00
22.50	(1) attachments	1572.00	461.78	0.00	0.00
25.00		142.18	347.35	0.00	0.00
26.50		84.00	202.78	0.00	0.00
27.50	(1) attachments	1690.36	509.45	0.00	0.00
30.00		137.64	145.09	0.00	0.00
32.50	(1) attachments	1828.27	590.07	0.00	0.00
35.00		131.74	135.04	0.00	0.00
37.50	(1) attachments	1873.60	580.01	0.00	0.00
40.00		124.76	124.99	0.00	0.00
42.50	(1) attachments	1912.75	569.96	0.00	0.00
45.00		118.89	114.93	0.00	0.00
47.50	(1) attachments	1946.94	559.91	0.00	0.00
50.00		108.26	104.88	0.00	0.00
52.50	(1) attachments	1977.03	549.85	0.00	0.00
55.00	(9) attachments	377.01	428.28	0.00	0.00
57.50	(1) attachments	2003.67	539.80	0.00	0.00
60.00		89.11	84.77	0.00	0.00
62.50	(1) attachments	2027.36	529.75	0.00	0.00
65.00		78.74	74.72	0.00	0.00
66.00	(18) attachments	1761.40	1611.22	0.00	0.00
67.50	(1) attachments	1030.86	260.81	0.00	0.00
69.50	(1) attachments	1048.37	269.93	0.00	0.00
	<b>Totals:</b>	<b>25,069.37</b>	<b>11,351.02</b>	<b>0.00</b>	<b>0.00</b>

**Structure:** KS46619-A-SBA  
**Site Name:** Leawood South Cc (Monopine)  
**Height:** 69.50 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

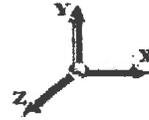
11/27/2018



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**Load Case:** 0.9D + 1.6W 89 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 18

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-11.31	-25.09	0.00	-1106.3	0.00	1106.39	2042.70	1021.35	3542.10	1773.68	0.00	0.000	0.000	0.630
5.00	-10.70	-24.80	0.00	-980.94	0.00	980.94	1987.86	993.93	3265.36	1635.11	0.11	-0.198	0.000	0.606
10.00	-10.13	-24.52	0.00	-856.95	0.00	856.95	1927.25	963.63	2989.69	1497.07	0.43	-0.403	0.000	0.578
15.00	-9.60	-24.25	0.00	-734.33	0.00	734.33	1860.87	930.44	2716.69	1360.36	0.97	-0.614	0.000	0.546
17.50	-8.90	-22.47	0.00	-673.69	0.00	673.69	1625.52	912.76	2581.67	1292.75	1.32	-0.725	0.000	0.527
20.00	-8.65	-22.34	0.00	-617.53	0.00	617.53	1788.73	894.36	2447.92	1225.78	1.73	-0.838	0.000	0.509
22.42	-8.43	-22.21	0.00	-563.54	0.00	563.54	1751.79	875.90	2320.00	1161.72	2.19	-0.948	0.000	0.491
22.50	-7.97	-20.63	0.00	-561.69	0.00	561.69	1750.49	875.25	2315.61	1159.53	2.20	-0.952	0.000	0.490
25.00	-7.59	-20.50	0.00	-510.11	0.00	510.11	1710.82	855.41	2184.96	1094.11	2.73	-1.066	0.000	0.471
26.50	-7.37	-20.42	0.00	-479.36	0.00	479.36	1135.86	567.93	1443.00	722.57	3.08	-1.136	0.000	0.671
27.50	-6.86	-18.73	0.00	-458.94	0.00	458.94	1127.57	563.79	1411.86	706.98	3.32	-1.183	0.000	0.656
30.00	-6.67	-18.61	0.00	-412.12	0.00	412.12	1105.84	552.92	1334.13	668.06	3.98	-1.329	0.000	0.624
32.50	-6.09	-16.78	0.00	-365.61	0.00	365.61	1082.67	541.33	1256.70	629.29	4.72	-1.475	0.000	0.588
35.00	-5.91	-16.66	0.00	-323.66	0.00	323.66	1058.05	529.02	1179.79	590.77	5.54	-1.621	0.000	0.554
37.50	-5.35	-14.78	0.00	-282.01	0.00	282.01	1031.99	516.00	1103.58	552.61	6.42	-1.764	0.000	0.516
40.00	-5.19	-14.67	0.00	-245.06	0.00	245.06	1004.49	502.25	1028.28	514.91	7.39	-1.906	0.000	0.482
42.50	-4.66	-12.75	0.00	-208.39	0.00	208.39	975.55	487.77	954.08	477.75	8.42	-2.045	0.000	0.442
45.00	-4.52	-12.64	0.00	-176.53	0.00	176.53	945.16	472.58	881.19	441.25	9.53	-2.180	0.000	0.406
47.50	-4.01	-10.68	0.00	-144.94	0.00	144.94	913.34	456.67	809.79	405.49	10.71	-2.310	0.000	0.362
50.00	-3.89	-10.57	0.00	-118.25	0.00	118.25	880.07	440.03	740.08	370.59	11.96	-2.434	0.000	0.324
52.50	-3.41	-8.58	0.00	-91.82	0.00	91.82	845.36	422.68	672.27	336.63	13.26	-2.549	0.000	0.277
55.00	-2.99	-8.19	0.00	-70.37	0.00	70.37	808.45	404.22	605.98	303.44	14.63	-2.654	0.000	0.236
57.50	-2.53	-6.17	0.00	-49.89	0.00	49.89	759.67	379.83	534.71	267.75	16.04	-2.747	0.000	0.190
60.00	-2.45	-6.08	0.00	-34.48	0.00	34.48	710.89	355.44	467.90	234.30	17.50	-2.826	0.000	0.151
62.50	-2.01	-4.03	0.00	-19.29	0.00	19.29	662.11	331.05	405.55	203.08	19.00	-2.887	0.000	0.098
65.00	-1.94	-3.95	0.00	-9.22	0.00	9.22	613.33	306.67	347.65	174.08	20.53	-2.927	0.000	0.056
66.00	-0.42	-2.10	0.00	-5.28	0.00	5.28	593.82	296.91	325.74	163.11	21.14	-2.938	0.000	0.033
67.50	-0.22	-1.06	0.00	-2.12	0.00	2.12	564.55	282.28	294.21	147.32	22.07	-2.946	0.000	0.015
69.50	0.00	-1.05	0.00	0.00	0.00	0.00	525.53	262.76	254.67	127.52	23.30	-2.950	0.000	0.000

Structure: KS46619-A-SBA  
 Site Name: Leawood South Cc (Monopine)  
 Height: 69.50 (ft)  
 Base Elev: 0.000 (ft)  
 Gh: 1.1

Topography: 1

Code: EIA/TIA-222-G 11/27/2018  
 Exposure: C  
 Crest Height: 0.00  
 Site Class: D - Stiff Soil  
 Struct Class: II

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Load Case: 1.2D + 1.0Di + 1.0Wi 40 mph Wind

Dead Load Factor 1.20  
 Wind Load Factor 1.00



Iterations 17

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	3.308	3.64	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	3.308	3.64	0.00	1.200	1.656	5.00	18.840	22.61	82.3	433.7	1098.2
10.00		1.00	0.85	3.308	3.64	0.00	1.200	1.775	5.00	18.005	21.61	78.6	441.6	1070.4
15.00		1.00	0.85	3.308	3.64	0.00	1.200	1.848	5.00	17.133	20.56	74.8	435.2	1028.2
17.50	Appurtenance(s)	1.00	0.88	3.412	3.75	0.00	1.200	1.877	2.50	8.228	9.87	37.1	214.6	497.7
20.00		1.00	0.90	3.509	3.86	0.00	1.200	1.902	2.50	8.005	9.61	37.1	211.1	485.3
22.42	Bot - Section 2	1.00	0.92	3.595	3.95	0.00	1.200	1.924	2.42	7.525	9.03	35.7	200.3	456.8
22.50	Appurtenance(s)	1.00	0.92	3.598	3.96	0.00	1.200	1.925	0.08	0.258	0.31	1.2	7.0	22.3
25.00		1.00	0.95	3.678	4.05	0.00	1.200	1.945	2.50	7.636	9.16	37.1	205.0	656.1
26.50	Top - Section 1	1.00	0.98	3.724	4.10	0.00	1.200	1.957	1.50	4.472	5.37	22.0	121.3	384.5
27.50	Appurtenance(s)	1.00	0.96	3.753	4.13	0.00	1.200	1.964	1.00	2.936	3.52	14.5	80.1	154.6
30.00		1.00	0.98	3.822	4.20	0.00	1.200	1.981	2.50	7.184	8.62	36.2	195.3	376.7
32.50	Appurtenance(s)	1.00	1.00	3.887	4.28	0.00	1.200	1.997	2.50	6.957	8.35	35.7	190.0	364.8
35.00		1.00	1.01	3.948	4.34	0.00	1.200	2.012	2.50	6.730	8.08	35.1	184.6	352.6
37.50	Appurtenance(s)	1.00	1.03	4.006	4.41	0.00	1.200	2.026	2.50	6.502	7.80	34.4	178.9	340.3
40.00		1.00	1.04	4.061	4.47	0.00	1.200	2.039	2.50	6.274	7.53	33.6	173.1	327.8
42.50	Appurtenance(s)	1.00	1.06	4.113	4.52	0.00	1.200	2.051	2.50	6.046	7.26	32.8	167.2	315.1
45.00		1.00	1.07	4.163	4.58	0.00	1.200	2.063	2.50	5.818	6.98	32.0	161.1	302.3
47.50	Appurtenance(s)	1.00	1.08	4.210	4.63	0.00	1.200	2.074	2.50	5.589	6.71	31.1	154.8	289.4
50.00		1.00	1.09	4.256	4.68	0.00	1.200	2.085	2.50	5.360	6.43	30.1	148.5	276.3
52.50	Appurtenance(s)	1.00	1.11	4.300	4.73	0.00	1.200	2.095	2.50	5.131	6.16	29.1	142.1	263.2
55.00	Appurtenance(s)	1.00	1.12	4.342	4.78	0.00	1.200	2.105	2.50	4.902	5.88	28.1	135.5	249.9
57.50	Appurtenance(s)	1.00	1.13	4.383	4.82	0.00	1.200	2.114	2.50	4.672	5.61	27.0	128.9	236.6
60.00		1.00	1.14	4.423	4.86	0.00	1.200	2.123	2.50	4.442	5.33	25.9	122.1	223.2
62.50	Appurtenance(s)	1.00	1.15	4.461	4.91	0.00	1.200	2.132	2.50	4.213	5.06	24.8	115.3	209.6
65.00		1.00	1.16	4.498	4.95	0.00	1.200	2.140	2.50	3.983	4.78	23.6	108.4	196.0
66.00	Appurtenance(s)	1.00	1.16	4.512	4.96	0.00	1.200	2.144	1.00	1.528	1.83	9.1	42.3	75.4
67.50	Appurtenance(s)	1.00	1.17	4.534	4.99	0.00	1.200	2.148	1.50	2.224	2.67	13.3	60.9	108.6
69.50	Appurtenance(s)	1.00	1.17	4.562	5.02	0.00	1.200	2.155	2.00	2.836	3.40	17.1	76.7	136.6
<b>Totals:</b>									<b>69.50</b>			<b>919.5</b>		<b>10,488.5</b>

**Structure:** KS46619-A-SBA  
**Site Name:** Leawood South Cc (Monopine)  
**Height:** 69.50 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

11/27/2018  
 Page: 16



**Load Case:** 1.2D + 1.0Di + 1.0Wi 40 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 17

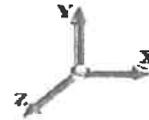
No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	69.50	Pine Branches	1	4.562	5.018	1.00	1.00	46.55	1411.86	0.000	0.000	233.56	0.00	0.00
2	67.50	Pine Branches	1	4.534	4.987	1.00	1.00	46.48	1409.35	0.000	0.000	231.82	0.00	0.00
3	66.00	T-Arms	3	4.512	4.964	0.56	0.75	34.96	2228.90	0.000	0.000	173.53	0.00	0.00
4	66.00	RFS ACU-A20-N RET	9	4.512	4.964	0.63	0.80	2.87	46.59	0.000	0.000	14.24	0.00	0.00
5	66.00	AIR 6468	3	4.512	4.964	0.56	0.80	13.20	1108.82	0.000	0.000	65.52	0.00	0.00
6	66.00	APXVERR18-C-A20	3	4.512	4.964	0.64	0.80	21.99	668.39	0.000	0.000	109.13	0.00	0.00
7	62.50	Pine Branches	1	4.461	4.907	1.00	1.00	92.64	2805.52	0.000	0.000	454.56	0.00	0.00
8	57.50	Pine Branches	1	4.383	4.822	1.00	1.00	92.28	2791.36	0.000	0.000	444.95	0.00	0.00
9	55.00	Ericsson 800 ESMR	3	4.342	4.777	0.54	0.80	1.33	127.32	0.000	0.000	6.35	0.00	0.00
10	55.00	Ericsson RRUS 31 1900	3	4.342	4.777	0.54	0.80	3.68	473.63	0.000	0.000	17.57	0.00	0.00
11	55.00	Ericsson RRUS-11	3	4.342	4.777	0.54	0.80	5.28	383.56	0.000	0.000	25.22	0.00	0.00
12	52.50	Pine Branches	1	4.300	4.730	1.00	1.00	91.90	2776.04	0.000	0.000	434.70	0.00	0.00
13	47.50	Pine Branches	1	4.210	4.631	1.00	1.00	91.48	2759.35	0.000	0.000	423.70	0.00	0.00
14	42.50	Pine Branches	1	4.113	4.524	1.00	1.00	91.02	2741.00	0.000	0.000	411.82	0.00	0.00
15	37.50	Pine Branches	1	4.006	4.407	1.00	1.00	90.51	2720.58	0.000	0.000	398.86	0.00	0.00
16	32.50	Pine Branches	1	3.887	4.276	1.00	1.00	89.94	2697.56	0.000	0.000	384.56	0.00	0.00
17	27.50	Pine Branches	1	3.753	4.128	1.00	1.00	89.28	2671.09	0.000	0.000	368.54	0.00	0.00
18	22.50	Pine Branches	1	3.598	3.957	1.00	1.00	88.50	2639.88	0.000	0.000	350.21	0.00	0.00
19	17.50	Pine Branches	1	3.412	3.753	1.00	1.00	97.35	2601.66	0.000	0.000	365.37	0.00	0.00
<b>Totals:</b>								<b>35,062.47</b>				<b>4,914.22</b>		

**Structure:** KS46619-A-SBA      **Code:** EIA/TIA-222-G      11/27/2018  
**Site Name:** Leawood South Cc (Monopine)      **Exposure:** C  
**Height:** 69.50 (ft)      **Crest Height:** 0.00  
**Base Elev:** 0.000 (ft)      **Site Class:** D - Stiff Soil  
**Gh:** 1.1      **Topography:** 1      **Struct Class:** II      **Page:** 17



**Load Case:** 1.2D + 1.0Di + 1.0Wi 40 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 17

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		82.25	1122.21	0.00	0.00
10.00		78.61	1094.35	0.00	0.00
15.00		74.80	1052.16	0.00	0.00
17.50	(1) attachments	402.43	3111.40	0.00	0.00
20.00		37.08	497.25	0.00	0.00
22.42		35.71	488.44	0.00	0.00
22.50	(1) attachments	351.43	2662.57	0.00	0.00
25.00		37.07	688.10	0.00	0.00
26.50		21.98	391.68	0.00	0.00
27.50	(1) attachments	383.08	2830.45	0.00	0.00
30.00		36.24	388.72	0.00	0.00
32.50	(1) attachments	420.26	3074.34	0.00	0.00
35.00		35.07	364.63	0.00	0.00
37.50	(1) attachments	433.24	3072.87	0.00	0.00
40.00		33.63	339.78	0.00	0.00
42.50	(1) attachments	444.64	3068.11	0.00	0.00
45.00		31.97	314.31	0.00	0.00
47.50	(1) attachments	454.76	3080.73	0.00	0.00
50.00		30.11	288.34	0.00	0.00
52.50	(1) attachments	463.82	3051.23	0.00	0.00
55.00	(9) attachments	77.24	1246.45	0.00	0.00
57.50	(1) attachments	471.98	3039.95	0.00	0.00
60.00		25.93	235.15	0.00	0.00
62.50	(1) attachments	479.37	3027.16	0.00	0.00
65.00		23.65	208.05	0.00	0.00
66.00	(18) attachments	371.53	4132.93	0.00	0.00
67.50	(1) attachments	245.12	1517.97	0.00	0.00
69.50	(1) attachments	250.64	1548.44	0.00	0.00
	<b>Totals:</b>	<b>5,833.68</b>	<b>45,877.76</b>	<b>0.00</b>	<b>0.00</b>

Structure: KS46619-A-SBA  
 Site Name: Leawood South Cc (Monopine)  
 Height: 69.50 (ft)  
 Base Elev: 0.000 (ft)  
 Gh: 1.1

Code: EIA/TIA-222-G  
 Exposure: C  
 Crest Height: 0.00  
 Site Class: D - Stiff Soil  
 Struct Class: II

11/27/2018  
 Page: 18



Load Case: 1.2D + 1.0Di + 1.0Wi 40 mph Wind

Dead Load Factor 1.20  
 Wind Load Factor 1.00



Iterations 17

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-45.88	-5.85	0.00	-264.38	0.00	264.38	2042.70	1021.35	3542.10	1773.68	0.00	0.000	0.000	0.172
5.00	-44.75	-5.81	0.00	-235.12	0.00	235.12	1987.86	993.93	3265.36	1635.11	0.03	-0.047	0.000	0.166
10.00	-43.65	-5.77	0.00	-206.09	0.00	206.09	1927.25	963.63	2989.69	1497.07	0.10	-0.097	0.000	0.160
15.00	-42.59	-5.72	0.00	-177.26	0.00	177.26	1860.87	930.44	2716.69	1360.36	0.23	-0.147	0.000	0.153
17.50	-39.48	-5.32	0.00	-162.97	0.00	162.97	1825.52	912.76	2581.67	1292.75	0.32	-0.174	0.000	0.148
20.00	-38.98	-5.30	0.00	-149.65	0.00	149.65	1788.73	894.36	2447.92	1225.78	0.42	-0.202	0.000	0.144
22.42	-38.51	-5.28	0.00	-136.84	0.00	136.84	1751.79	875.90	2320.00	1161.72	0.52	-0.228	0.000	0.140
22.50	-35.85	-4.92	0.00	-136.40	0.00	136.40	1750.49	875.25	2315.61	1159.53	0.53	-0.229	0.000	0.138
25.00	-35.18	-4.90	0.00	-124.09	0.00	124.09	1710.82	855.41	2184.96	1094.11	0.66	-0.257	0.000	0.134
26.50	-34.79	-4.88	0.00	-116.74	0.00	116.74	1135.86	567.93	1443.00	722.57	0.74	-0.274	0.000	0.192
27.50	-31.96	-4.50	0.00	-111.86	0.00	111.86	1127.57	563.79	1411.86	706.98	0.80	-0.285	0.000	0.187
30.00	-31.56	-4.48	0.00	-100.62	0.00	100.62	1105.84	552.92	1334.13	668.06	0.96	-0.321	0.000	0.179
32.50	-28.49	-4.06	0.00	-89.42	0.00	89.42	1082.67	541.33	1256.70	629.29	1.14	-0.357	0.000	0.168
35.00	-28.12	-4.04	0.00	-79.27	0.00	79.27	1058.05	529.02	1179.79	590.77	1.33	-0.392	0.000	0.161
37.50	-25.05	-3.60	0.00	-69.18	0.00	69.18	1031.99	516.00	1103.58	552.61	1.55	-0.428	0.000	0.150
40.00	-24.71	-3.58	0.00	-60.18	0.00	60.18	1004.49	502.25	1028.28	514.91	1.78	-0.462	0.000	0.142
42.50	-21.64	-3.12	0.00	-51.24	0.00	51.24	975.55	487.77	954.08	477.75	2.03	-0.497	0.000	0.129
45.00	-21.33	-3.10	0.00	-43.44	0.00	43.44	945.16	472.58	881.19	441.25	2.30	-0.530	0.000	0.121
47.50	-18.27	-2.62	0.00	-35.70	0.00	35.70	913.34	456.67	809.79	405.49	2.59	-0.562	0.000	0.108
50.00	-17.98	-2.60	0.00	-29.14	0.00	29.14	880.07	440.03	740.08	370.59	2.89	-0.592	0.000	0.099
52.50	-14.93	-2.11	0.00	-22.64	0.00	22.64	845.36	422.68	672.27	336.63	3.21	-0.621	0.000	0.085
55.00	-13.69	-2.03	0.00	-17.36	0.00	17.36	808.45	404.22	605.98	303.44	3.54	-0.647	0.000	0.074
57.50	-10.65	-1.52	0.00	-12.30	0.00	12.30	759.67	379.83	534.71	267.75	3.89	-0.670	0.000	0.060
60.00	-10.42	-1.50	0.00	-8.50	0.00	8.50	710.89	355.44	467.90	234.30	4.25	-0.689	0.000	0.051
62.50	-7.40	-0.98	0.00	-4.75	0.00	4.75	662.11	331.05	405.55	203.08	4.61	-0.704	0.000	0.035
65.00	-7.19	-0.96	0.00	-2.30	0.00	2.30	613.33	306.67	347.65	174.08	4.98	-0.714	0.000	0.025
66.00	-3.06	-0.53	0.00	-1.34	0.00	1.34	593.82	296.91	325.74	163.11	5.13	-0.717	0.000	0.013
67.50	-1.55	-0.27	0.00	-0.54	0.00	0.54	564.55	282.28	294.21	147.32	5.36	-0.719	0.000	0.006
69.50	0.00	-0.25	0.00	0.00	0.00	0.00	525.53	262.76	254.67	127.52	5.66	-0.720	0.000	0.000

**Structure:** KS46619-A-SBA      **Code:** EIA/TIA-222-G      11/27/2018  
**Site Name:** Leawood South Cc (Monopine)      **Exposure:** C  
**Height:** 69.50 (ft)      **Crest Height:** 0.00  
**Base Elev:** 0.000 (ft)      **Site Class:** D - Stiff Soil  
**Gh:** 1.1      **Topography:** 1      **Struct Class:** II      Page: 19



<b>Load Case:</b> 1.2D + 1.0E						<b>Iterations</b> 16
<b>Gust Response Factor</b> 1.10				<b>Sds</b> 0.12		<b>Ss</b> 0.11
<b>Dead Load Factor</b> 1.20	<b>Seismic Load Factor</b> 1.00			<b>Sd1</b> 0.10		<b>S1</b> 0.07
<b>Wind Load Factor</b> 0.00	<b>Structure Frequency</b> 0.93			<b>SA</b> 0.10	<b>Seismic Importance Factor</b> 1.00	



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		553.73	0.01	0.05	0.03	3.25	
10.00		523.94	0.04	0.07	0.04	4.78	
15.00		494.15	0.09	0.07	0.04	6.10	
17.50	Appurtenance(s)	735.90	0.12	0.07	0.03	10.48	
20.00		228.46	0.16	0.07	0.03	3.74	
22.42	Bot - Section 2	213.76	0.20	0.06	0.02	3.97	
22.50	Appurtenance(s)	512.76	0.20	0.06	0.02	9.55	
25.00		375.95	0.24	0.06	0.02	7.89	
26.50	Top - Section 1	219.31	0.27	0.05	0.01	4.92	
27.50	Appurtenance(s)	562.05	0.30	0.05	0.01	13.14	
30.00		151.22	0.35	0.03	0.01	3.88	
32.50	Appurtenance(s)	645.63	0.41	0.01	0.01	17.97	
35.00		140.05	0.48	-0.01	0.01	4.18	
37.50	Appurtenance(s)	634.46	0.55	-0.03	0.01	20.15	
40.00		128.87	0.63	-0.06	0.02	4.34	
42.50	Appurtenance(s)	623.29	0.71	-0.09	0.03	22.35	
45.00		117.70	0.79	-0.11	0.05	4.54	
47.50	Appurtenance(s)	612.12	0.88	-0.12	0.08	25.89	
50.00		106.53	0.98	-0.11	0.12	5.05	
52.50	Appurtenance(s)	600.95	1.08	-0.08	0.17	32.78	
55.00	Appurtenance(s)	465.86	1.18	-0.01	0.24	29.89	
57.50	Appurtenance(s)	589.78	1.29	0.11	0.33	45.30	
60.00		84.19	1.41	0.30	0.44	7.82	
62.50	Appurtenance(s)	578.61	1.53	0.57	0.58	65.29	
65.00		73.02	1.65	0.95	0.74	10.00	
66.00	Appurtenance(s)	1786.2	1.70	1.14	0.82	263.84	
67.50	Appurtenance(s)	289.79	1.78	1.46	0.95	47.89	
69.50	Appurtenance(s)	289.93	1.89	1.98	1.14	57.33	
<b>Totals:</b>		<b>12,348.2</b>				<b>736.3</b>	
							<b>Total Wind: 25,069.4</b>

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

**Structure:** KS46619-A-SBA  
**Site Name:** Leawood South Cc (Monopine)  
**Height:** 69.50 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

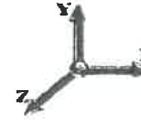
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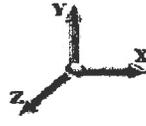
Load Case: 1.2D + 1.0E

**Gust Response Factor** 1.10      **Sds** 0.12      **Iterations** 16  
**Dead Load Factor** 1.20      **Seismic Load Factor** 1.00      **Sd1** 0.10      **Ss** 0.11  
**Wind Load Factor** 0.00      **Structure Frequency** 0.93      **SA** 0.10      **S1** 0.07  
**Seismic Importance Factor** 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-15.13	-0.74	0.00	-42.14	0.00	42.14	2042.70	1021.35	3542.10	1773.68	0.00	0.00	0.00	0.031
5.00	-14.45	-0.74	0.00	-38.46	0.00	38.46	1987.86	993.93	3265.36	1635.11	0.00	-0.01	-0.01	0.031
10.00	-13.79	-0.73	0.00	-34.78	0.00	34.78	1927.25	963.63	2989.69	1497.07	0.02	-0.02	-0.02	0.030
15.00	-13.18	-0.73	0.00	-31.12	0.00	31.12	1860.87	930.44	2716.69	1360.36	0.04	-0.02	-0.02	0.030
17.50	-12.28	-0.72	0.00	-29.30	0.00	29.30	1825.52	912.76	2581.67	1292.75	0.05	-0.03	-0.03	0.029
20.00	-11.99	-0.72	0.00	-27.51	0.00	27.51	1788.73	894.36	2447.92	1225.78	0.07	-0.03	-0.03	0.029
22.42	-11.73	-0.71	0.00	-25.78	0.00	25.78	1751.79	875.90	2320.00	1161.72	0.09	-0.04	-0.04	0.029
22.50	-11.11	-0.70	0.00	-25.72	0.00	25.72	1750.49	875.25	2315.61	1159.53	0.09	-0.04	-0.04	0.029
25.00	-10.65	-0.69	0.00	-23.97	0.00	23.97	1710.82	855.41	2184.96	1084.11	0.11	-0.04	-0.04	0.028
26.50	-10.38	-0.69	0.00	-22.92	0.00	22.92	1135.86	567.93	1443.00	722.57	0.12	-0.05	-0.05	0.041
27.50	-9.70	-0.68	0.00	-22.23	0.00	22.23	1127.57	563.79	1411.86	706.98	0.14	-0.05	-0.05	0.040
30.00	-9.50	-0.67	0.00	-20.54	0.00	20.54	1105.84	552.92	1334.13	688.06	0.16	-0.06	-0.06	0.039
32.50	-8.72	-0.66	0.00	-18.86	0.00	18.86	1082.67	541.33	1256.70	629.29	0.20	-0.06	-0.06	0.038
35.00	-8.54	-0.65	0.00	-17.21	0.00	17.21	1058.05	529.02	1179.79	590.77	0.23	-0.07	-0.07	0.037
37.50	-7.76	-0.63	0.00	-15.58	0.00	15.58	1031.99	518.00	1103.58	552.61	0.27	-0.08	-0.08	0.036
40.00	-7.60	-0.63	0.00	-14.00	0.00	14.00	1004.49	502.25	1028.28	514.91	0.32	-0.09	-0.09	0.035
42.50	-6.84	-0.61	0.00	-12.42	0.00	12.42	975.55	487.77	954.08	477.75	0.36	-0.10	-0.10	0.033
45.00	-6.68	-0.60	0.00	-10.91	0.00	10.91	945.16	472.58	881.19	441.25	0.42	-0.10	-0.10	0.032
47.50	-5.94	-0.58	0.00	-9.40	0.00	9.40	913.34	456.67	809.79	405.49	0.47	-0.11	-0.11	0.030
50.00	-5.80	-0.57	0.00	-7.96	0.00	7.96	880.07	440.03	740.08	370.59	0.54	-0.12	-0.12	0.028
52.50	-5.06	-0.54	0.00	-6.53	0.00	6.53	845.36	422.88	672.27	336.63	0.60	-0.13	-0.13	0.025
55.00	-4.49	-0.51	0.00	-5.18	0.00	5.18	808.45	404.22	605.98	303.44	0.67	-0.14	-0.14	0.023
57.50	-3.77	-0.46	0.00	-3.91	0.00	3.91	759.67	379.83	534.71	267.75	0.74	-0.14	-0.14	0.020
60.00	-3.66	-0.45	0.00	-2.76	0.00	2.76	710.89	355.44	467.90	234.30	0.82	-0.15	-0.15	0.017
62.50	-2.95	-0.39	0.00	-1.62	0.00	1.62	662.11	331.05	405.55	203.08	0.90	-0.15	-0.15	0.012
65.00	-2.85	-0.38	0.00	-0.65	0.00	0.65	613.33	306.67	347.65	174.08	0.98	-0.16	-0.16	0.008
66.00	-0.71	-0.11	0.00	-0.28	0.00	0.28	593.82	296.91	325.74	163.11	1.02	-0.16	-0.16	0.003
67.50	-0.36	-0.06	0.00	-0.12	0.00	0.12	564.55	282.28	294.21	147.32	1.07	-0.16	-0.16	0.001
69.50	0.00	-0.06	0.00	0.00	0.00	0.00	525.53	262.76	254.67	127.52	1.13	-0.16	-0.16	0.000

<b>Structure:</b> KS46619-A-SBA	<b>Code:</b> EIA/TIA-222-G	11/27/2018	
<b>Site Name:</b> Leawood South Cc (Monopine)	<b>Exposure:</b> C		
<b>Height:</b> 69.50 (ft)	<b>Crest Height:</b> 0.00		
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil		
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II	
		<b>Page:</b> 21	

<b>Load Case:</b> 0.9D + 1.0E					<b>Iterations</b> 16
<b>Gust Response Factor</b>	1.10			<b>Sds</b> 0.12	<b>Ss</b> 0.11
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b> 0.10	<b>S1</b> 0.07
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.93	<b>SA</b> 0.10	<b>Seismic Importance Factor</b> 1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		553.73	0.01	0.05	0.03	3.25	
10.00		523.94	0.04	0.07	0.04	4.78	
15.00		494.15	0.09	0.07	0.04	6.10	
17.50	Appurtenance(s)	735.90	0.12	0.07	0.03	10.48	
20.00		228.46	0.16	0.07	0.03	3.74	
22.42	Bot - Section 2	213.76	0.20	0.06	0.02	3.97	
22.50	Appurtenance(s)	512.76	0.20	0.06	0.02	9.55	
25.00		375.95	0.24	0.06	0.02	7.89	
26.50	Top - Section 1	219.31	0.27	0.05	0.01	4.92	
27.50	Appurtenance(s)	562.05	0.30	0.05	0.01	13.14	
30.00		151.22	0.35	0.03	0.01	3.88	
32.50	Appurtenance(s)	645.63	0.41	0.01	0.01	17.97	
35.00		140.05	0.48	-0.01	0.01	4.18	
37.50	Appurtenance(s)	634.46	0.55	-0.03	0.01	20.15	
40.00		128.87	0.63	-0.06	0.02	4.34	
42.50	Appurtenance(s)	623.29	0.71	-0.09	0.03	22.35	
45.00		117.70	0.79	-0.11	0.05	4.54	
47.50	Appurtenance(s)	612.12	0.88	-0.12	0.08	25.89	
50.00		106.53	0.98	-0.11	0.12	5.05	
52.50	Appurtenance(s)	600.95	1.08	-0.08	0.17	32.78	
55.00	Appurtenance(s)	465.86	1.18	-0.01	0.24	29.89	
57.50	Appurtenance(s)	589.78	1.29	0.11	0.33	45.30	
60.00		84.19	1.41	0.30	0.44	7.82	
62.50	Appurtenance(s)	578.61	1.53	0.57	0.58	65.29	
65.00		73.02	1.65	0.95	0.74	10.00	
66.00	Appurtenance(s)	1786.2	1.70	1.14	0.82	263.84	
67.50	Appurtenance(s)	289.79	1.78	1.46	0.95	47.89	
69.50	Appurtenance(s)	299.93	1.89	1.98	1.14	57.33	
<b>Totals:</b>		<b>12,348.2</b>				<b>736.3</b>	<b>Total Wind: 25,069.4</b>

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Structure: KS46619-A-SBA  
 Site Name: Leawood South Cc (Monopine)  
 Height: 69.50 (ft)  
 Base Elev: 0.000 (ft)  
 Gh: 1.1

Code: EIA/TIA-222-G  
 Exposure: C  
 Crest Height: 0.00  
 Site Class: D - Stiff Soil  
 Struct Class: II

11/27/2018  
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Load Case: 0.9D + 1.0E

Gust Response Factor: 1.10      Sds: 0.12      Iterations: 16  
 Dead Load Factor: 0.90      Seismic Load Factor: 1.00      Ss: 0.11  
 Wind Load Factor: 0.00      Structure Frequency: 0.93      Sd1: 0.10      S1: 0.07  
 SA: 0.10      Seismic Importance Factor: 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-11.35	-0.74	0.00	-42.00	0.00	42.00	2042.70	1021.35	3542.10	1773.68	0.00	0.00	0.00	0.029
5.00	-10.83	-0.73	0.00	-38.32	0.00	38.32	1987.86	993.93	3265.36	1635.11	0.00	-0.01	0.029	0.029
10.00	-10.34	-0.73	0.00	-34.65	0.00	34.65	1927.25	963.63	2989.69	1497.07	0.02	-0.02	0.029	0.029
15.00	-9.88	-0.73	0.00	-30.99	0.00	30.99	1860.87	930.44	2716.69	1360.36	0.04	-0.02	0.028	0.028
17.50	-9.21	-0.72	0.00	-29.18	0.00	29.18	1825.52	912.76	2581.67	1292.75	0.05	-0.03	0.028	0.028
20.00	-9.00	-0.71	0.00	-27.39	0.00	27.39	1788.73	894.36	2447.92	1225.78	0.07	-0.03	0.027	0.027
22.42	-8.79	-0.71	0.00	-25.66	0.00	25.66	1751.79	875.90	2320.00	1161.72	0.09	-0.04	0.027	0.027
22.50	-8.33	-0.70	0.00	-25.60	0.00	25.60	1750.49	875.25	2315.61	1159.53	0.09	-0.04	0.027	0.027
25.00	-7.99	-0.69	0.00	-23.85	0.00	23.85	1710.82	855.41	2184.96	1094.11	0.11	-0.04	0.026	0.026
26.50	-7.78	-0.69	0.00	-22.81	0.00	22.81	1135.86	567.93	1443.00	722.57	0.12	-0.05	0.038	0.038
27.50	-7.27	-0.67	0.00	-22.13	0.00	22.13	1127.57	563.79	1411.86	706.98	0.13	-0.05	0.038	0.038
30.00	-7.13	-0.67	0.00	-20.44	0.00	20.44	1105.84	552.92	1334.13	668.06	0.16	-0.06	0.037	0.037
32.50	-6.54	-0.65	0.00	-18.76	0.00	18.76	1082.67	541.33	1256.70	629.29	0.19	-0.06	0.036	0.036
35.00	-6.40	-0.65	0.00	-17.13	0.00	17.13	1058.05	529.02	1179.79	590.77	0.23	-0.07	0.035	0.035
37.50	-5.82	-0.63	0.00	-15.50	0.00	15.50	1031.99	516.00	1103.58	552.61	0.27	-0.08	0.034	0.034
40.00	-5.70	-0.63	0.00	-13.92	0.00	13.92	1004.49	502.25	1028.28	514.91	0.31	-0.09	0.033	0.033
42.50	-5.13	-0.60	0.00	-12.36	0.00	12.36	975.55	487.77	954.08	477.75	0.36	-0.10	0.031	0.031
45.00	-5.01	-0.60	0.00	-10.85	0.00	10.85	945.16	472.58	881.19	441.25	0.42	-0.10	0.030	0.030
47.50	-4.45	-0.57	0.00	-9.35	0.00	9.35	913.34	456.67	809.79	405.49	0.47	-0.11	0.028	0.028
50.00	-4.35	-0.57	0.00	-7.91	0.00	7.91	880.07	440.03	740.08	370.59	0.53	-0.12	0.026	0.026
52.50	-3.80	-0.54	0.00	-6.49	0.00	6.49	845.36	422.68	672.27	336.63	0.60	-0.13	0.024	0.024
55.00	-3.37	-0.51	0.00	-5.15	0.00	5.15	808.45	404.22	605.98	303.44	0.67	-0.14	0.021	0.021
57.50	-2.83	-0.46	0.00	-3.89	0.00	3.89	759.67	379.83	534.71	267.76	0.74	-0.14	0.018	0.018
60.00	-2.75	-0.45	0.00	-2.74	0.00	2.74	710.89	355.44	467.90	234.30	0.82	-0.15	0.016	0.016
62.50	-2.22	-0.38	0.00	-1.61	0.00	1.61	662.11	331.05	405.55	203.08	0.90	-0.15	0.011	0.011
65.00	-2.14	-0.37	0.00	-0.65	0.00	0.65	613.33	306.67	347.65	174.08	0.98	-0.16	0.007	0.007
66.00	-0.53	-0.11	0.00	-0.28	0.00	0.28	593.82	296.91	325.74	163.11	1.01	-0.16	0.003	0.003
67.50	-0.27	-0.06	0.00	-0.12	0.00	0.12	564.55	282.28	294.21	147.32	1.06	-0.16	0.001	0.001
69.50	0.00	-0.06	0.00	0.00	0.00	0.00	525.53	262.76	254.67	127.52	1.13	-0.16	0.000	0.000

**Structure:** KS46619-A-SBA  
**Site Name:** Leawood South Cc (Monopine)  
**Height:** 69.50 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

11/27/2018

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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 17

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	198.33	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	188.00	0.650	0.000	5.00	17.460	11.35	92.9	0.0	553.7
10.00		1.00	0.85	7.442	8.19	177.67	0.650	0.000	5.00	16.526	10.74	87.9	0.0	523.9
15.00		1.00	0.85	7.442	8.19	167.34	0.650	0.000	5.00	15.593	10.14	83.0	0.0	494.1
17.50	Appurtenance(s)	1.00	0.88	7.677	8.45	164.72	0.650	0.000	2.50	7.446	4.84	40.9	0.0	235.9
20.00		1.00	0.90	7.896	8.69	161.74	0.650	0.000	2.50	7.213	4.69	40.7	0.0	228.5
22.42	Bot - Section 2	1.00	0.92	8.088	8.90	158.48	0.650	0.000	2.42	6.760	4.39	39.0	0.0	213.8
22.50	Appurtenance(s)	1.00	0.92	8.094	8.90	158.37	0.650	0.000	0.08	0.232	0.15	1.3	0.0	12.8
25.00		1.00	0.95	8.276	9.10	154.69	0.650	0.000	2.50	6.825	4.44	40.4	0.0	375.9
26.50	Top - Section 1	1.00	0.96	8.378	9.22	152.35	0.650	0.000	1.50	3.983	2.59	23.9	0.0	219.3
27.50	Appurtenance(s)	1.00	0.96	8.444	9.29	152.62	0.650	0.000	1.00	2.609	1.70	15.7	0.0	62.1
30.00		1.00	0.98	8.600	9.46	148.47	0.650	0.000	2.50	6.369	4.13	39.1	0.0	151.2
32.50	Appurtenance(s)	1.00	1.00	8.746	9.62	144.13	0.650	0.000	2.50	6.125	3.98	38.3	0.0	145.6
35.00		1.00	1.01	8.883	9.77	139.61	0.650	0.000	2.50	5.892	3.83	37.4	0.0	140.0
37.50	Appurtenance(s)	1.00	1.03	9.013	9.91	134.96	0.650	0.000	2.50	5.658	3.68	36.5	0.0	134.5
40.00		1.00	1.04	9.137	10.05	130.14	0.650	0.000	2.50	5.425	3.53	35.4	0.0	128.9
42.50	Appurtenance(s)	1.00	1.06	9.264	10.18	125.22	0.650	0.000	2.50	5.192	3.37	34.4	0.0	123.3
45.00		1.00	1.07	9.366	10.30	120.18	0.650	0.000	2.50	4.958	3.22	33.2	0.0	117.7
47.50	Appurtenance(s)	1.00	1.08	9.473	10.42	115.04	0.650	0.000	2.50	4.725	3.07	32.0	0.0	112.1
50.00		1.00	1.09	9.576	10.53	109.80	0.650	0.000	2.50	4.491	2.92	30.8	0.0	106.5
52.50	Appurtenance(s)	1.00	1.11	9.675	10.64	104.48	0.650	0.000	2.50	4.258	2.77	29.5	0.0	100.9
55.00	Appurtenance(s)	1.00	1.12	9.770	10.75	99.08	0.650	0.000	2.50	4.025	2.62	28.1	0.0	95.4
57.50	Appurtenance(s)	1.00	1.13	9.862	10.85	93.60	0.650	0.000	2.50	3.791	2.46	26.7	0.0	89.8
60.00		1.00	1.14	9.951	10.95	88.04	0.650	0.000	2.50	3.558	2.31	25.3	0.0	84.2
62.50	Appurtenance(s)	1.00	1.15	10.037	11.04	82.43	0.650	0.000	2.50	3.324	2.16	23.9	0.0	78.6
65.00		1.00	1.16	10.120	11.13	76.74	0.650	0.000	2.50	3.091	2.01	22.4	0.0	73.0
66.00	Appurtenance(s)	1.00	1.16	10.153	11.17	74.46	0.650	0.000	1.00	1.171	0.76	8.5	0.0	27.6
67.50	Appurtenance(s)	1.00	1.17	10.201	11.22	71.00	0.650	0.000	1.50	1.687	1.10	12.3	0.0	39.8
69.50	Appurtenance(s)	1.00	1.17	10.264	11.29	66.37	0.650	0.000	2.00	2.118	1.38	15.5	0.0	49.9
<b>Totals:</b>									<b>69.50</b>			<b>976.0</b>		<b>4,719.1</b>

**Structure:** KS46619-A-SBA  
**Site Name:** Leawood South Cc.(Monopine)  
**Height:** 69.50 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

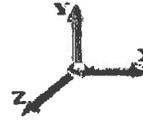
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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 17

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	69.50	Pine Branches	1	10.264	11.290	1.00	1.00	25.00	250.00	0.000	0.000	282.25	0.00	0.00
2	67.50	Pine Branches	1	10.201	11.221	1.00	1.00	25.00	250.00	0.000	0.000	280.52	0.00	0.00
3	66.00	T-Arms	3	10.153	11.168	0.56	0.75	16.88	1200.00	0.000	0.000	188.46	0.00	0.00
4	66.00	RFS ACU-A20-N RET	9	10.153	11.168	0.63	0.80	0.80	9.00	0.000	0.000	8.89	0.00	0.00
5	66.00	AIR 6468	3	10.153	11.168	0.56	0.80	10.97	399.60	0.000	0.000	122.52	0.00	0.00
6	66.00	APXVERR18-C-A20	3	10.153	11.168	0.64	0.80	15.40	150.00	0.000	0.000	171.97	0.00	0.00
7	62.50	Pine Branches	1	10.037	11.041	1.00	1.00	50.00	500.00	0.000	0.000	552.03	0.00	0.00
8	57.50	Pine Branches	1	9.862	10.848	1.00	1.00	50.00	500.00	0.000	0.000	542.42	0.00	0.00
9	55.00	Ericsson 800 ESMR	3	9.770	10.747	0.54	0.80	0.68	30.00	0.000	0.000	7.26	0.00	0.00
10	55.00	Ericsson RRUS 31 1900	3	9.770	10.747	0.54	0.80	2.62	178.50	0.000	0.000	28.17	0.00	0.00
11	55.00	Ericsson RRUS-11	3	9.770	10.747	0.54	0.80	4.05	162.00	0.000	0.000	43.55	0.00	0.00
12	52.50	Pine Branches	1	9.675	10.643	1.00	1.00	50.00	500.00	0.000	0.000	532.13	0.00	0.00
13	47.50	Pine Branches	1	9.473	10.421	1.00	1.00	50.00	500.00	0.000	0.000	521.04	0.00	0.00
14	42.50	Pine Branches	1	9.254	10.180	1.00	1.00	50.00	500.00	0.000	0.000	508.98	0.00	0.00
15	37.50	Pine Branches	1	9.013	9.915	1.00	1.00	50.00	500.00	0.000	0.000	495.74	0.00	0.00
16	32.50	Pine Branches	1	8.746	9.621	1.00	1.00	50.00	500.00	0.000	0.000	481.03	0.00	0.00
17	27.50	Pine Branches	1	8.444	9.288	1.00	1.00	50.00	500.00	0.000	0.000	464.40	0.00	0.00
18	22.50	Pine Branches	1	8.094	8.904	1.00	1.00	50.00	500.00	0.000	0.000	445.19	0.00	0.00
19	17.50	Pine Branches	1	7.677	8.445	1.00	1.00	55.60	500.00	0.000	0.000	469.54	0.00	0.00
<b>Totals:</b>									<b>7,629.10</b>			<b>6,146.08</b>		

**Structure:** . KS46619-A-SBA  
**Site Name:** Leawood South Cc (Monopine)  
**Height:** 69.50 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

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**TES**

Tower Engineering Solutions

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**Topography:** 1

**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00

**Wind Load Factor** 1.00



**Iterations** 17

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		92.90	573.73	0.00	0.00
10.00		87.94	543.94	0.00	0.00
15.00		82.97	514.15	0.00	0.00
17.50	(1) attachments	510.42	745.90	0.00	0.00
20.00		40.72	238.46	0.00	0.00
22.42		39.04	223.43	0.00	0.00
22.50	(1) attachments	446.53	513.09	0.00	0.00
25.00		40.39	385.95	0.00	0.00
26.50		23.86	225.31	0.00	0.00
27.50	(1) attachments	480.15	566.05	0.00	0.00
30.00		39.10	161.22	0.00	0.00
32.50	(1) attachments	519.33	655.63	0.00	0.00
35.00		37.42	150.05	0.00	0.00
37.50	(1) attachments	532.21	644.46	0.00	0.00
40.00		35.44	138.87	0.00	0.00
42.50	(1) attachments	543.33	633.29	0.00	0.00
45.00		33.20	127.70	0.00	0.00
47.50	(1) attachments	553.04	622.12	0.00	0.00
50.00		30.75	116.53	0.00	0.00
52.50	(1) attachments	561.59	610.95	0.00	0.00
55.00	(9) attachments	107.09	475.86	0.00	0.00
57.50	(1) attachments	569.15	599.78	0.00	0.00
60.00		25.31	94.19	0.00	0.00
62.50	(1) attachments	575.88	588.61	0.00	0.00
65.00		22.37	83.02	0.00	0.00
66.00	(18) attachments	500.34	1790.24	0.00	0.00
67.50	(1) attachments	292.82	289.79	0.00	0.00
69.50	(1) attachments	297.79	299.93	0.00	0.00
	<b>Totals:</b>	<b>7,121.08</b>	<b>12,612.24</b>	<b>0.00</b>	<b>0.00</b>

Structure: KS46619-A-SBA  
 Site Name: Leawood South Cc (Monopine)  
 Height: 69.50 (ft)  
 Base Elev: 0.000 (ft)  
 Gh: 1.1

Code: EIA/TIA-222-G  
 Exposure: C  
 Crest Height: 0.00  
 Site Class: D - Stiff Soil  
 Struct Class: II

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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00  
 Wind Load Factor 1.00



Iterations 17

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-12.61	-7.13	0.00	-314.62	0.00	314.62	2042.70	1021.35	3542.10	1773.68	0.00	0.000	0.000	0.184
5.00	-12.03	-7.05	0.00	-278.98	0.00	278.98	1987.86	993.93	3265.36	1635.11	0.03	-0.056	0.000	0.177
10.00	-11.48	-6.97	0.00	-243.76	0.00	243.76	1927.25	963.63	2989.69	1497.07	0.12	-0.115	0.000	0.169
15.00	-10.96	-6.89	0.00	-208.91	0.00	208.91	1860.87	930.44	2716.69	1360.36	0.28	-0.175	0.000	0.160
17.50	-10.21	-6.39	0.00	-191.68	0.00	191.68	1825.52	912.76	2581.67	1292.75	0.38	-0.206	0.000	0.154
20.00	-9.97	-6.35	0.00	-175.72	0.00	175.72	1788.73	894.36	2447.92	1225.78	0.49	-0.238	0.000	0.149
22.42	-9.74	-6.31	0.00	-160.37	0.00	160.37	1751.79	875.90	2320.00	1161.72	0.62	-0.270	0.000	0.144
22.50	-9.23	-5.87	0.00	-159.85	0.00	159.85	1750.49	875.25	2315.61	1159.53	0.63	-0.271	0.000	0.143
25.00	-8.84	-5.83	0.00	-145.18	0.00	145.18	1710.82	855.41	2184.96	1094.11	0.78	-0.303	0.000	0.138
26.50	-8.61	-5.81	0.00	-136.44	0.00	136.44	1135.86	567.93	1443.00	722.57	0.88	-0.323	0.000	0.197
27.50	-8.05	-5.33	0.00	-130.63	0.00	130.63	1127.57	563.79	1411.86	706.98	0.95	-0.337	0.000	0.192
30.00	-7.88	-5.29	0.00	-117.32	0.00	117.32	1105.84	552.92	1334.13	668.06	1.13	-0.378	0.000	0.183
32.50	-7.23	-4.77	0.00	-104.09	0.00	104.09	1082.67	541.33	1266.70	629.29	1.34	-0.420	0.000	0.172
35.00	-7.08	-4.74	0.00	-92.16	0.00	92.16	1058.05	529.02	1179.79	590.77	1.57	-0.461	0.000	0.163
37.50	-6.43	-4.21	0.00	-80.31	0.00	80.31	1031.99	516.00	1103.58	552.61	1.83	-0.502	0.000	0.152
40.00	-6.29	-4.17	0.00	-69.80	0.00	69.80	1004.49	502.25	1028.28	514.91	2.10	-0.542	0.000	0.142
42.50	-5.86	-3.63	0.00	-59.36	0.00	59.36	975.55	487.77	954.08	477.75	2.40	-0.582	0.000	0.130
45.00	-5.53	-3.60	0.00	-50.29	0.00	50.29	945.16	472.58	881.19	441.25	2.71	-0.620	0.000	0.120
47.50	-4.91	-3.04	0.00	-41.30	0.00	41.30	913.34	456.67	809.79	405.49	3.05	-0.657	0.000	0.107
50.00	-4.80	-3.01	0.00	-33.70	0.00	33.70	880.07	440.03	740.08	370.59	3.40	-0.693	0.000	0.096
52.50	-4.19	-2.44	0.00	-26.17	0.00	26.17	845.36	422.68	672.27	336.63	3.77	-0.726	0.000	0.083
55.00	-3.71	-2.33	0.00	-20.06	0.00	20.06	808.45	404.22	605.98	303.44	4.16	-0.756	0.000	0.071
57.50	-3.12	-1.76	0.00	-14.22	0.00	14.22	759.87	379.83	534.71	267.75	4.57	-0.782	0.000	0.057
60.00	-3.03	-1.73	0.00	-9.83	0.00	9.83	710.89	355.44	467.90	234.30	4.98	-0.805	0.000	0.046
62.50	-2.45	-1.15	0.00	-5.60	0.00	5.60	662.11	331.05	405.55	203.08	5.41	-0.822	0.000	0.031
65.00	-2.36	-1.13	0.00	-2.63	0.00	2.63	613.33	306.67	347.65	174.08	5.84	-0.833	0.000	0.019
66.00	-0.58	-0.60	0.00	-1.50	0.00	1.50	593.82	296.91	325.74	163.11	6.02	-0.836	0.000	0.010
67.50	-0.30	-0.30	0.00	-0.60	0.00	0.60	564.55	282.28	294.21	147.32	6.28	-0.839	0.000	0.006
69.50	0.00	-0.30	0.00	0.00	0.00	0.00	525.53	262.76	254.67	127.52	6.63	-0.840	0.000	0.000

**Structure:** KS46619-A-SBA  
**Site Name:** Leawood South Cc (Monopine)  
**Height:** 69.50 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

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### Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 89 mph Wind	25.1	0.00	15.09	0.00	0.00	1109.49
0.9D + 1.6W 89 mph Wind	25.1	0.00	11.31	0.00	0.00	1106.39
1.2D + 1.0Di + 1.0Wi 40 mph Wind	5.9	0.00	45.88	0.00	0.00	264.38
1.2D + 1.0E	0.7	0.00	15.13	0.00	0.00	42.14
0.9D + 1.0E	0.7	0.00	11.35	0.00	0.00	42.00
1.0D + 1.0W 60 mph Wind	7.1	0.00	12.61	0.00	0.00	314.62

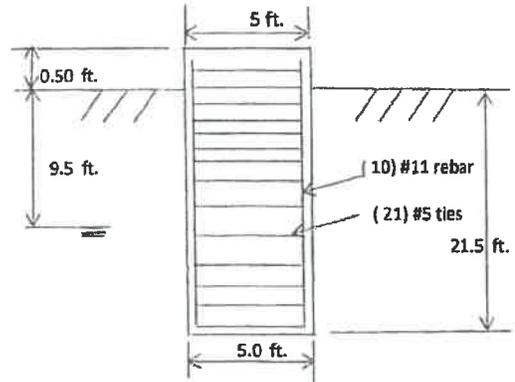
### Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 89 mph Wind	-9.96	-20.47	0.00	-481.85	0.00	-481.85	1135.86	567.93	1443.00	722.57	26.50	0.677
0.9D + 1.6W 89 mph Wind	-7.37	-20.42	0.00	-479.36	0.00	-479.36	1135.86	567.93	1443.00	722.57	26.50	0.671
1.2D + 1.0Di + 1.0Wi 40 mph Wind	-34.79	-4.88	0.00	-116.74	0.00	-116.74	1135.86	567.93	1443.00	722.57	26.50	0.192
1.2D + 1.0E	-10.38	-0.69	0.00	-22.92	0.00	-22.92	1135.86	567.93	1443.00	722.57	26.50	0.041
0.9D + 1.0E	-7.78	-0.69	0.00	-22.81	0.00	-22.81	1135.86	567.93	1443.00	722.57	26.50	0.036
1.0D + 1.0W 60 mph Wind	-8.61	-5.81	0.00	-136.44	0.00	-136.44	1135.86	567.93	1443.00	722.57	26.50	0.197

	<b>Pier Foundation Design For Monopole</b>		Date 11/27/2018	
	Customer Name:	Sprint Nextel	EIA/TIA Standard:	EIA-222-G
	Site Name:		Structure Height (Ft.):	69.5
	Site Number:	KS48619-A-SBA	Engineer Name:	T. Alajaj
	Engr. Number:	68531	Engineer Login ID:	

Foundation Info Obtained from: Drawings/Calculations

**Structure Type:** Monopole  
**Analysis or Design?** Analysis  
**Base Reactions (Factored):**  
 Axial Load (Kips): 45.9 Shear Force (Kips): 25.1  
 Uplift Force (Kips): 0.0 Moment (Kips-ft): 1109.5  
**Foundation Geometries:**  
 Diameter of Pier (ft.): 5.0 Depth of Base B. G. S.: 21.5 ft.  
 Pier Height A. G. (ft.): 0.50



**Material Properties and Rebar Info:**  
 Concrete Strength (psi): 3000 Steel Elastic Modulus: 29000 ksi  
 Vertical bar yield (ksi): 60 Tie steel yield strength: 60 ksi  
 Vertical Rebar Size #: 11 Tie / Stirrup Size #: 5  
 Qty. of Vertical Rebars: 10 Tie Spacing: 18.0 in.  
 Concrete Cover (in.): 3 Concrete unit weight: 150.0 pcf



**Monopole Pier Foundation**

**Soil Design Parameters:**

Water Table B.G.S. (ft): 9.5 Unit weight of water: 62.4 psf  
 Ratio of Uplift/Axial Skin Friction: 1.0 Pullout failure Angle: 30 (°)  
 Skin Frictions are to be obtained from: Soil Report

Clay  
5000

Depth of Layers (ft)		$\gamma_{soil}$	$\phi$	Cohesion	Ultimate Skin Friction (psf)	Ultimate Bearing (psf)	Soil Types
Top	Bottom	(pcf)	(°)	(psf)			
0.0	3.0	120	0	0	0	0	Clay
3.0	7.0	120	0	2000	0	0	Clay
7.0	12.5	120	0	1000	0	0	Clay
12.5	20.0	140	0	2000	0	0	Clay
20.0	22.0	140	0	2000	0	15000	Clay
22.0	27.0						

Soil weight Increase Factor for bouyant soils (1.0 to 1.15): 1.1

**Foundation Analysis and Design:**

Uplift Strength Reduction Factor: 0.75 Soil Bearing Strength Reduction Factor: 0.75  
 Total Dry Soil Volume from Conical Failure (cu. Ft.): 4299 Dry Soil Weight from Conical Failure: 516 Kips  
 Total Buoyant Soil Volume from Conical Failure (cu. Ft.): 1256 Buoyant Soil Weight from Conical Failure (K): 61 Kips  
 Total Dry Concrete Volume (cu. Ft.): 196 Total Dry Concrete Weight: 29.5 Kips  
 Total Buoyant Concrete Volume (cu. Ft.): 235.6 Total Buoyant Concrete Weight: 20.64 Kips  
 Total Effective Concrete Weight (Kips): 50.1 Total Effective Soil Weight: 577.0 Kips  
 Total Effective Vertical Load on Base (Kips): 62.1

**Check Soil Capacities:**

Allowable Foundation Overturning Resistance (kips-ft.):	5314.3	>	Design Factored Moment (kips-ft):	1453	Usage	0.27	OK!
Factor of Safety of Passive Soil Resistance against Moment:	3.66	OK!					

**Check the capacities of Reinforcing Concrete:**

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.00

**Reinforcing Concrete Pier:**

Vertical Steel Rebar Area (sq. in./each):	1.56	Tie / Stirrup Area (sq. in./each):	0.31	Usage		
Calculated Moment Capacity (Mn, Kips-Ft):	1825.1	>	Design Factored Moment (Mu, K-Ft):	1227.5	0.67	OK!
Calculated Shear Capacity (Kips):	462.0	>	Design Factored Shear (Kips):	131.9	0.29	OK!
Calculated Tension Capacity (Tn, Kips):	842.4	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	3728	>	Design Factored Axial Load (Pu Kips):	45.9	0.01	OK!
Moment & Axial Strength Combination:	0.67	OK!	Max. Allowable Tie/Stirrup Spacing:	12.00	in.	
Pier Reinforcement Ratio:	0.005	OK!	Reinforcement Ratio is satisfied per ACI			

# City of Leawood Governing Body Staff Report

**MEETING DATE:** December 17, 2018

**REPORT WRITTEN:** November 26, 2018

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**LEAWOOD SOUTH COUNTRY CLUB MAINTENANCE FACILITY – MONOPINE – SPRINT SPECTRUM L.P. EQUIPMENT UPGRADE - REQUEST FOR APPROVAL OF AN ELIGIBLE FACILITIES REQUEST FOR REPLACEMENT OF EXISTING WIRELESS ANTENNAS AND ASSOCIATED EQUIPMENT – Located south of 123<sup>rd</sup> Street and east of Mission Road – Case 138-18**

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**STAFF RECOMMENDATION:**

Staff reviewed the application of Case 138-18, Leawood South Country Club Maintenance Facility– Monopine – Sprint Equipment Upgrade, and has determined that it meets the requirements for 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012 to replace antennas. Staff recommends the Governing Body approve Case 138-18, Parkway Plaza – Sprint Spectrum, LP.

**APPLICANT:**

- The applicant is SSC, INC for Sprint Spectrum L.P.
- The property is owned by Capital Foresight Gold and Fitness II LLC.
- The tower is owned by Ericsson.

**REQUEST:**

- The applicant is requesting approval of an Eligible Facilities Request to remove and replace antennas for Sprint.
- The application is limited to the replacement of three (3) antennas and three remote radio head units with three (3) Ericsson Air 6468 antennas along with other ancillary equipment. The proposed antennas are allowing the RRU's (Remote Radio Units) to be removed and integrated into the new antennas. Any future modifications shall require the submittal of a new application.
- The equipment shall comply with and be maintained in accordance with all related federal guidelines and the requirements of the Leawood Development Ordinance pertaining to the required concealment elements.
- The application is eligible and meets the criteria for 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012.

**ZONING:**

- The property is currently zoned REC (Planned Recreation).

**COMPREHENSIVE PLAN:**

- The Comprehensive Plan designates this property as Low Density Residential.

**SURROUNDING ZONING:**

- North To the north is the single family subdivision of Bradford Place zoned R-1 (Planned Single Family Low-Density Residential)
- South Directly to the south is the most northern portion of the Leawood South golf course zoned REC (Planned Recreation)
- East Directly to the east is the single family subdivision of Leawood South zoned R-1
- West To the west is a single family home within the B.S.D Estates subdivision zoned R-1.



- The application meets the requirements of equipment co-location on a support structure as it is not increasing the height of the tower, does not involve any more equipment cabinets, and does not entail any excavation of the current site.
- The applicant's appurtenances, along with the other carriers on the tower, shall be screened by the branches of the monopine to comply with concealment efforts outlined in the Leawood Development Ordinance. The requirements the antennas are meeting are necessary for the tower to be a legal structure, such as:
  - Mounting the antennas in order to minimize the visual impact to the greatest extent practicable, shall be screened by the branches of the monopine; and
  - Antennas are painted to match the color of the tower; and
  - Cabling to the antennas is internalized within the tower; and
  - The property is landscaped.

**RESOLUTION NO. \_\_\_\_\_**

**RESOLUTION APPROVING AN ELIGIBLE FACILITIES REQUEST FOR THE REPLACEMENT OF EXISTING WIRELESS ANTENNAS AND ASSOCIATED EQUIPMENT AT LEAWOOD SOUTH COUNTRY CLUB MAINTENANCE FACILITY – MONOPINE FOR SPRINT SPECTRUM L.P., LOCATED SOUTH OF 123<sup>RD</sup> STREET AND EAST OF MISSION ROAD. (CASE 138-18)**

WHEREAS, Sprint Spectrum L.P. desires to replace antennas and associated equipment on an existing wireless facility;

WHEREAS, the replacement of this equipment will not constitute a “substantial change” as that term is defined in Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012 or as defined in the Leawood Development Ordinance; and

WHEREAS, Sprint Spectrum L.P. has submitted the required application with the required information.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF LEAWOOD, KANSAS:

**SECTION ONE:** That the Governing Body hereby approves Sprint Spectrum L.P. eligible facilities request as more fully described in Exhibit “A,” attached hereto and incorporated by reference as if fully set out.

**SECTION TWO:** This resolution shall become effective upon passage.

PASSED by the Governing Body this 17<sup>th</sup> day of December, 2018.

APPROVED by the Mayor this 17<sup>th</sup> day of December, 2018.

\_\_\_\_\_  
Peggy J. Dunn, Mayor

[SEAL]

ATTEST:

\_\_\_\_\_  
Debra Harper, CMC, City Clerk

APPROVED AS TO FORM:

\_\_\_\_\_  
Andrew K. Hall, Assistant City Attorney

**PROJECT INFORMATION:**

**STRUCTURE INFORMATION:**

LAT: 38° 56' 19.23"  
 LONG: -94° 37' 43.00"  
 ELEV: 925.0'  
 SITE TYPE: MONOPOLITE  
 COUNTY: JOHNSON  
 JURISDICTION: CITY OF LEAWOOD, KS  
 OCCUPANCY GROUP: U  
 CONSTRUCTION TYPE: VB  
 ERICSSON CONSTRUCTION PHASE: TYPE 1

**APPLICANT:**

SPRINT  
 6860 SPRINT PARKWAY  
 OVERLAND PARK, KANSAS 66251

**OEM:**

ERICSSON  
 6100 SPRINT PARKWAY  
 OVERLAND PARK, KS 66251

**LANDLORD:**

LEAWOOD SOUTH  
 COUNTRY CLUB INC  
 12700 OVERBROOK ROAD  
 LEAWOOD KANSAS 66209

**A&E FIRM:**

SSC, INC  
 7171 WEST 95TH STREET, SUITE 600  
 OVERLAND PARK, KS 66212  
 PHONE: (913) 438-7700

**SCOPE OF WORK:**

**ERICSSON FURNISHED MATERIALS TO BE INSTALLED:**

- (3) AIR PANEL ANTENNAS
- (1) 2.5 MIMO HYBRIDS CABLE TOWER/FIBER NUMBERS

**EQUIPMENT TO BE REMOVED:**

- (3) 2.5 PANEL ANTENNAS
  - (1) 2.5 HYBRID CABLE
  - (3) 2.5 RRUS
- ASSOCIATED CABLES & HARDWARE

**SHEET INDEX:**

SHEET NUMBER	SHEET DESCRIPTION	REVISION
T-1	COVER SHEET & SITE PLAN	1
A-1.0	TOWER ELEVATION	1
A-1.1	ANTENNA PLANS & DETAIL	1
A-2	EQUIPMENT DETAILS	1
SP-1	SPECIFICATIONS	1
SP-2	SPECIFICATIONS	1

**CODE COMPLIANCE:**

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

- INTERNATIONAL BUILDING CODE
- INTERNATIONAL MECHANICAL CODE
- ANSI/TIA-222 STRUCTURAL STANDARD
- NFPA 780 - LIGHTNING PROTECTION CODE
- UNIFORM PLUMBING CODE
- NATIONAL ELECTRICAL CODE



**MASSIVE MIMO PROJECT**

**SITE CASCADE: KC71XC103**

APPLICANT:



6580 Sprint Parkway  
Overland Park, Kansas 66251

PLANS PREPARED FOR:



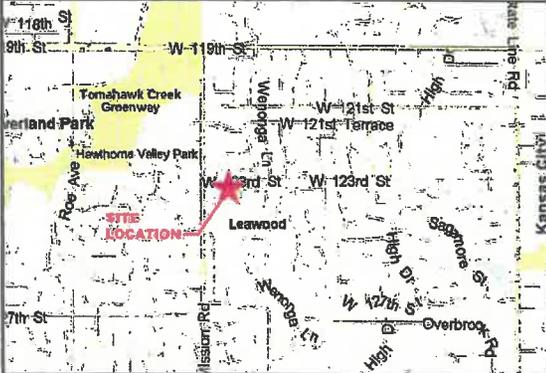
6100 Sprint Parkway  
Overland Park, Kansas 66251

PLANS PREPARED BY:

7171 West 95th Street, Suite 600  
Overland Park, Kansas 66212  
Phone: 913-438-7700  
Fax: 913-438-7777



**VICINITY MAP:**

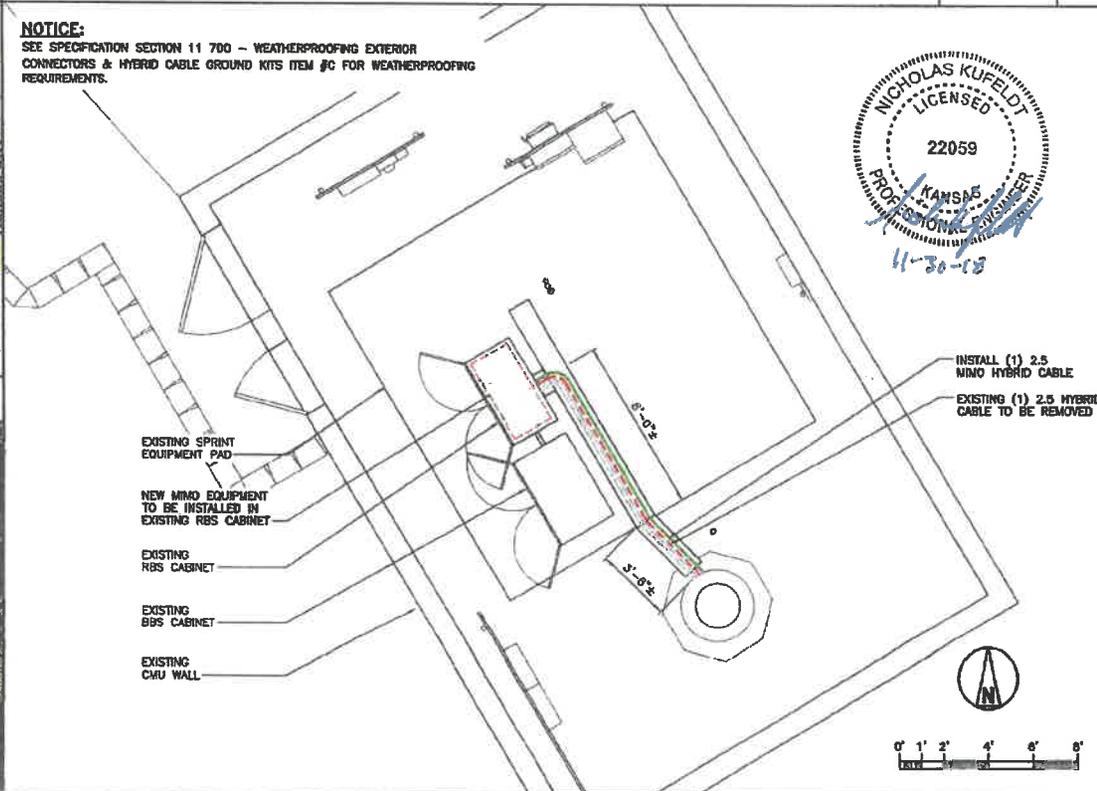


**OVERALL SITE PLAN:**

3/8" = 1'-0" 1

**NOTICE:**

SEE SPECIFICATION SECTION 11 700 - WEATHERPROOFING EXTERIOR CONNECTORS & HYBRID CABLE GROUND KITS ITEM #C FOR WEATHERPROOFING REQUIREMENTS.



**ENGINEERING LICENSE:**

NAME	EXPIRES	DISCIPLINE
NICHOLAS KUFELDT	2020	ELECTRICAL

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REVISION	DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW		06/20/18	MMH	A
REVISED FOR REVIEW		06/20/18	DDP	B
REVISED FOR REVIEW		07/24/18	MMH	C
ISSUED FOR CONSTRUCTION		10/23/18	MMH	D
REVISED PER CLIENTS COMMENTS		11/30/18	MMH	1

APPLICANT SITE NAME:  
**LEAWOOD SOUTH MAINTENANCE BUILDING**

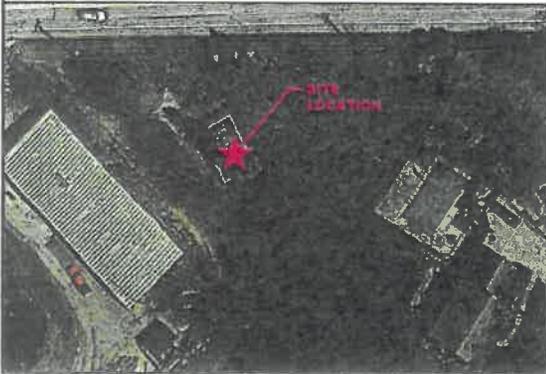
APPLICANT SITE CASCADE:  
**KC71XC103**

SITE ADDRESS:  
**3801 WEST 123RD STREET  
LEAWOOD, KANSAS  
66209**

SHEET DESCRIPTION:  
**COVER SHEET & SITE PLAN**

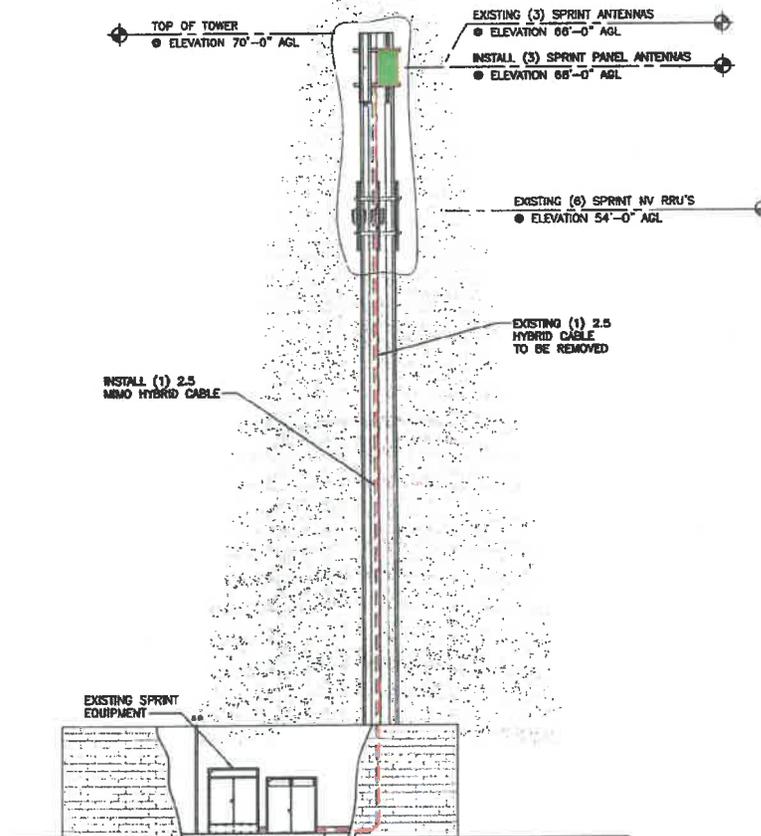
DRW INFORMATION:	SHEET NUMBER:
DRAWN BY: MMH	T-1
CHECKED BY: HEE	

**AERIAL MAP:**



STRUCTURE INFORMATION IS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. STRUCTURAL INTEGRITY OF SUPPORTING STRUCTURE, ANTENNA MOUNTS, AND FOUNDATION SHALL BE VERIFIED AS ACCEPTABLE BY ENGINEER CERTIFIED STRUCTURAL ANALYSIS, UTILIZING THE LOADING REPRESENTED WITHIN THESE DRAWINGS PRIOR TO THE EXECUTION OF EQUIPMENT CHANGES CONTAINED IN THESE DRAWINGS. CONTRACTOR SHALL OBTAIN ALL STRUCTURAL REPORTS AND FOLLOW ALL RECOMMENDATIONS.

ANTENNAS SHALL BE PAINTED TO MATCH REQUIREMENTS OF THE JURISDICTION



SITE ELEVATION

NO SCALE 1

APPLICANT:  
**Sprint**  
 6580 Sprint Parkway  
 Overland Park, Kansas 66251

PLANS PREPARED FOR:  
  
 6100 Sprint Parkway  
 Overland Park, Kansas 66251

PLANS PREPARED BY:  
  
 7171 West 95th Street, Suite 600  
 Overland Park, Kansas 66212  
 Phone: 913-438-7760  
 Fax: 913-438-7777

ENGINEERING LICENSE:  
 STATE OF KANSAS  
 PE CERTIFICATE OF AUTHORIZATION # P-8171  

ENGINEER	PE#	DISCIPLINE
ISAAC KEVIN N. YAMAMOTO	22105	CIVIL
ROBERT J. HARRIS	1548	CIVIL
NEIL NICHOLAS KUFELDT	22059	CIVIL
TIMOTHY TERRANCE M. BURPER	8230	ELECTRICAL
KEVIN M. WELTON D. KEPLING	17064	ELECTRICAL

 PLS. CHECK

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SUBMITTALS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	05/09/18	DKM	A
REVISION FOR REVIEW	05/22/18	DKP	B
REVISION FOR REVIEW	07/24/18	HJM	C
ISSUED FOR CONSTRUCTION	10/23/18	HJM	D
REVISION FOR CLIENTS COMMENTS	11/30/18	HJM	1

APPLICANT SITE NAME:  
**LEAWOOD SOUTH MAINTENANCE BUILDING**

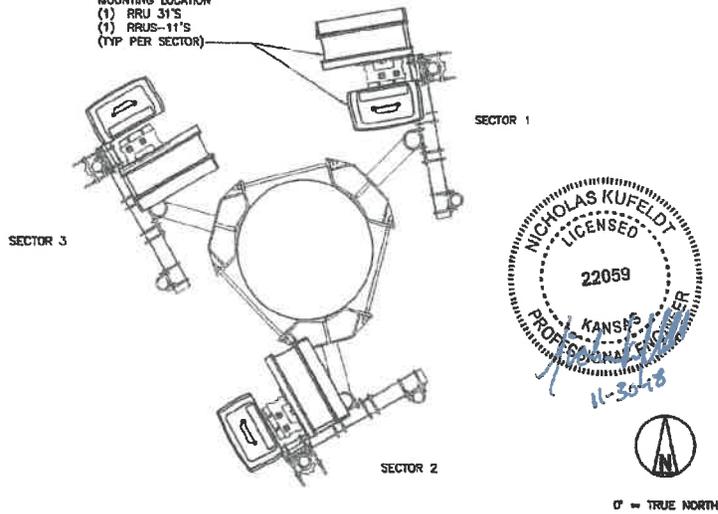
APPLICANT SITE CASCADE:  
**KC71XC103**

SITE ADDRESS:  
**3801 WEST 123RD STREET  
 LEAWOOD, KANSAS  
 66209**

SHEET DESCRIPTION:  
**TOWER ELEVATION**

DWG INFORMATION:  
 DRAWN BY: DKM  
 CHECKED BY: HE  
 SHEET NUMBER:  
**A-1.0**

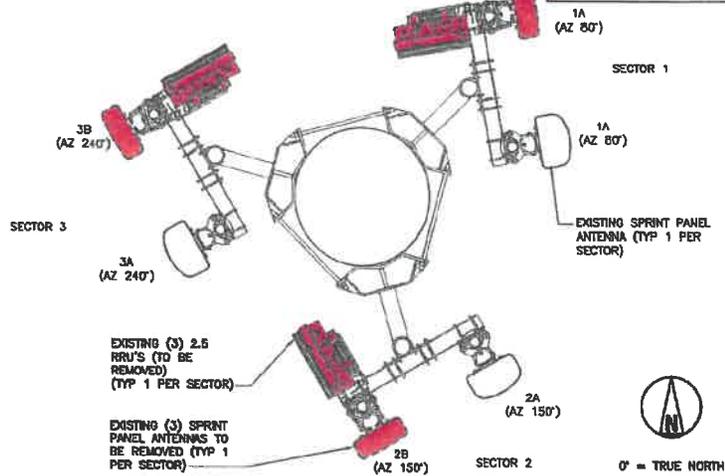
EXISTING MV EQUIPMENT MOUNTING LOCATION  
 (1) RRU 31'S  
 (1) RRU5-11'S  
 (TYP PER SECTOR)



EXISTING RRU EQUIPMENT PLAN @ 54'

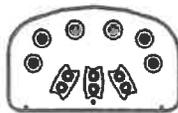
NO SCALE 1

**EQUIPMENT LEGEND:**  
 [White Box] EXISTING TO REMAIN  
 [Red Box] EXISTING TO BE REPLACED

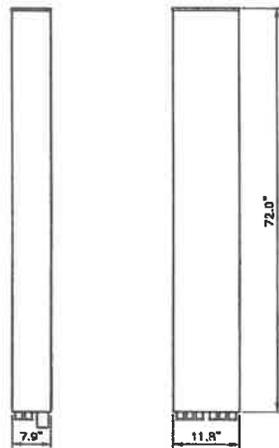


EXISTING ANTENNA & EQUIPMENT PLAN - 66'-0"

NO SCALE 1



PLAN VIEW



SIDE VIEW

FRONT VIEW

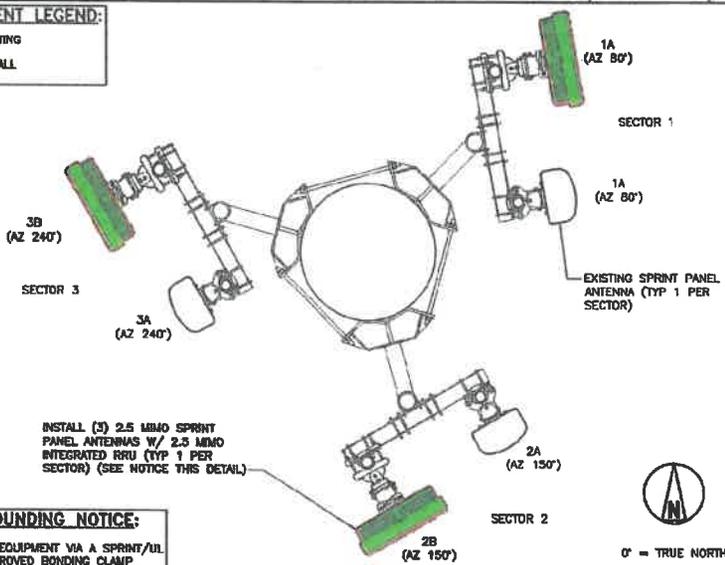
RFS APXV8ERR1B-C

RADOME MATERIAL: ASA  
 RADOME COLOR: LIGHT GRAY  
 DIMENSIONS, HxWxDn (mm): 72.0"x11.8"x7.9"  
 WEIGHT: 62 lbs  
 CONNECTORS: (6) 7-18 DIN FEMALE

EXISTING 800/1900 ANTENNA

NO SCALE 2

**EQUIPMENT LEGEND:**  
 [White Box] EXISTING  
 [Green Box] INSTALL



**GROUNDING NOTICE:**  
 GROUND EQUIPMENT VIA A SPRINT/UL APPROVED BONDING CLAMP

FINAL ANTENNA & EQUIPMENT PLAN - 66'-0"

NO SCALE 2

APPLICANT:  
**Sprint**  
 6680 Sprint Parkway  
 Overland Park, Kansas 66251

PLANS PREPARED FOR:  
  
 8100 Sprint Parkway  
 Overland Park, Kansas 66251

PLANS PREPARED BY:  
  
 7171 West 95th Street, Suite 600  
 Overland Park, Kansas 66212  
 Phone: 913-438-7700  
 Fax: 913-438-7777

ENGINEERING LICENSE:  
 STATE OF KANSAS  
 PE CERTIFICATE OF AUTHORIZATION # 6-871  
 ENGINEER: PER. DISCIPLINE:  
 IAN ROYAL WYMANE 2205 CIVIL  
 ROBERT L. ROYER 1096 CIVIL  
 NICHOLAS KUFELDT 2205 CIVIL  
 TROY WERNER 14 HELPER 9250 ELECTRICAL  
 FOR: SPILLTOWN, KANSAS 1984

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SUBMITTALS:

ISSUED FOR REVIEW	DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW		02/19/11	DM	A
REVISION FOR REVIEW		02/22/11	DM	B
REVISION FOR REVIEW		02/14/11	HH	C
ISSUED FOR CONSTRUCTION		10/23/11	HH	D
REVISION PER CLIENT'S COMMENT		11/09/11	HH	1

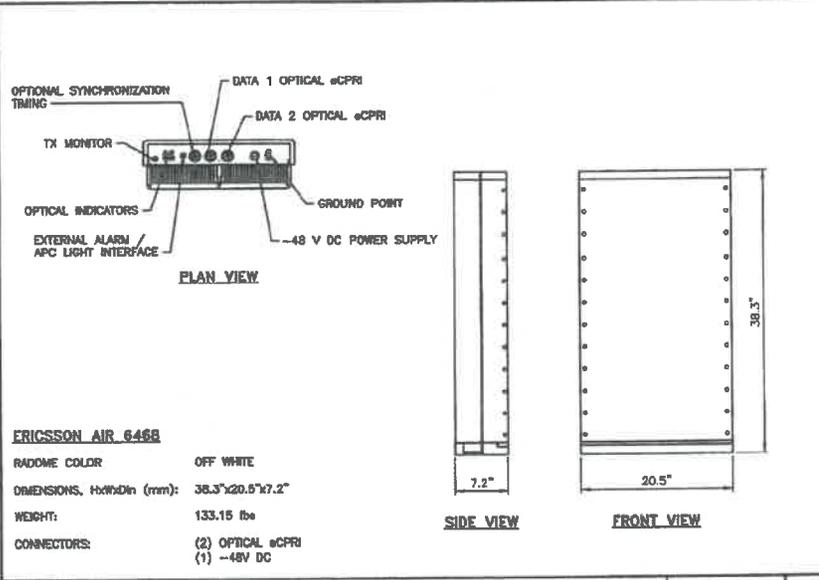
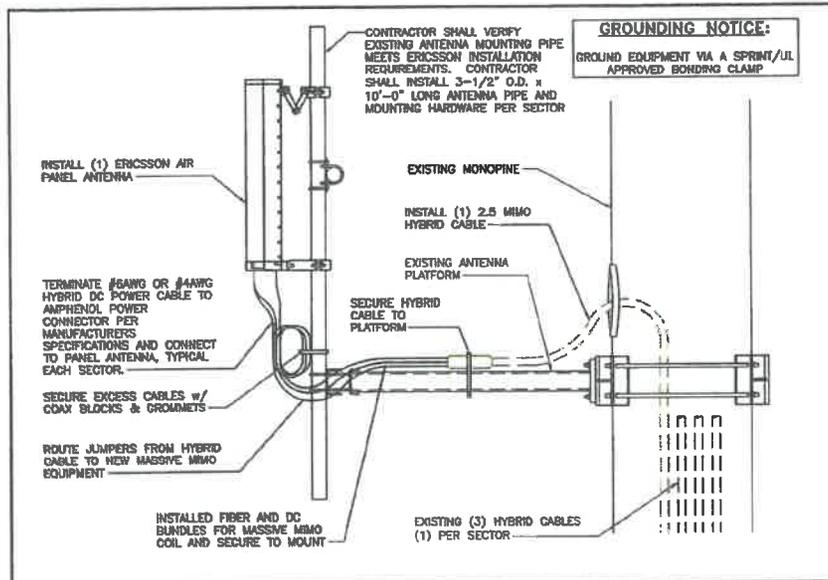
APPLICANT SITE NAME:  
**LEAWOOD SOUTH MAINTENANCE BUILDING**

APPLICANT SITE CASCADE:  
**KC71XC103**

SITE ADDRESS:  
**3801 WEST 123RD STREET  
 LEAWOOD, KANSAS  
 66209**

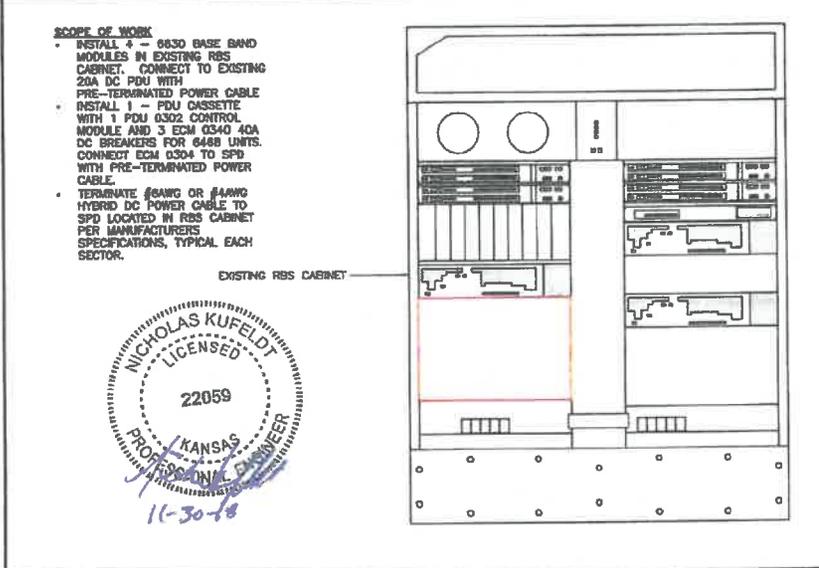
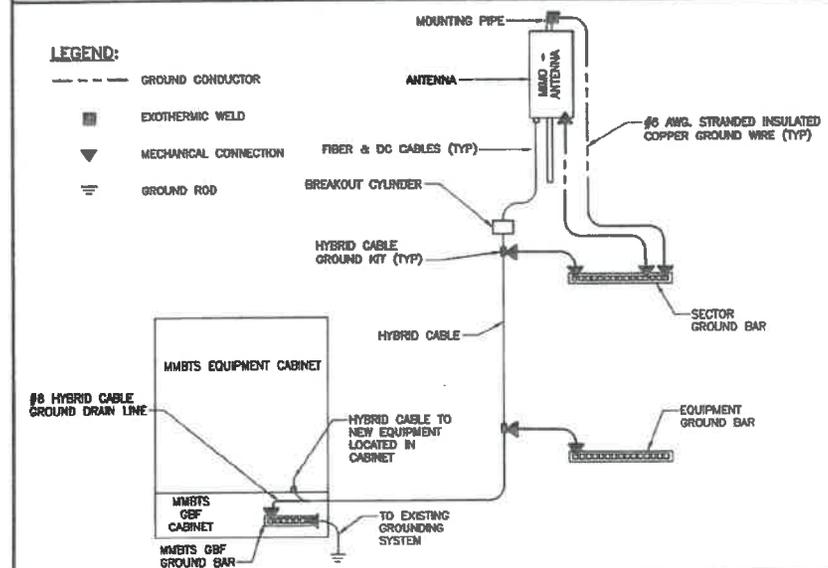
SHEET DESCRIPTION:  
**ANTENNA PLANS & DETAIL**

DWG INFORMATION: SHEET NUMBER:  
 DRAWN BY: DM  
 CHECKED BY: HE  
**A-1.1**



**ANTENNA & RRU MOUNTING DETAIL** NO SCALE 1

**2.5 ANTENNA W/ INTEGRATED RRU** NO SCALE 2



**GROUNDING RISER DIAGRAM (TYP)** NO SCALE 4

**EXISTING RBS CABINET MODIFICATIONS - DC LOW VOLTAGE** NO SCALE 3

APPLICANT:  
  
 6560 Sprint Parkway  
 Overland Park, Kansas 66251

PLANS PREPARED FOR:  
  
 6100 Sprint Parkway  
 Overland Park, Kansas 66251

PLANS PREPARED BY:  
  
 7171 West 95th Street, Suite 600  
 Overland Park, Kansas 66212  
 Phone: 913-438-7700  
 Fax: 913-438-7777

ENGINEERING LICENSE:  
 STATE OF KANSAS  
 PE CERTIFICATE OF AUTHORIZATION # 5-571

ENGINEER	FCP	DISCIPLINE
NAVY KEVIN M. VANMEETER	22059	CIVIL
MARK MICHAEL R. COOPER, D.D.	22058	CIVIL
TAM TERRANCE AL. BURFER	9260	ELECTRICAL
KEVIN L. NELSON	13954	ELECTRICAL

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SUBMITTALS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	05/19/16	DM	A
REQUIRED FOR REVIEW	05/22/16	SCP	B
REQUIRED FOR REVIEW	07/24/16	HJM	C
ISSUED FOR CONSTRUCTION	10/23/16	HJM	D
REVISED PER CLIENT COMMENTS	07/20/18	HJM	1

APPLICANT SITE NAME:  
**LEAWOOD SOUTH MAINTENANCE BUILDING**

APPLICANT SITE CASCADE:  
**KC71XC103**

SITE ADDRESS:  
**3801 WEST 123RD STREET  
 LEAWOOD, KANSAS  
 66209**

SHEET DESCRIPTION:  
**EQUIPMENT DETAILS**

DWG INFORMATION:

DRAWN BY:	DM	SHEET NUMBER:	A-2
CHECKED BY:	RES		



**CONTINUE FROM SP-1**

**WEATHERPROOFING EXTERIOR CONNECTORS AND HYBRID CABLE GROUND KITS:**

- A. ALL FIBER & COAX CONNECTORS AND GROUND KITS SHALL BE WEATHERPROOFED.
- B. ALL INSTALLATIONS MUST BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY BEST PRACTICES.
- C. THE APPROVED METHOD FOR WEATHERPROOFING IS THE 3M SLIM LOCK CLOSURE 716, OR SPRINT APPROVED EQUAL SUCH AS PRODUCTS BY AMPHENOL AND JMA.
- D. IN LIMITED QUANTITY AS NECESSARY THE FOLLOWING METHODS OF WEATHER PROOFING MAY ALSO BE USED:
  - 1. COLD SHRINK ENCOMPASS CONNECTOR IN COLD SHRINK TUBING AND PROVIDE A DOUBLE WRAP OF 2" ELECTRICAL TAPE EXTENDING 2" BEYOND TUBING. PROVIDE 3M COLD SHRINK GKS SERIES OR EQUAL.
  - 2. SELF-AMALGAMATING TAPE: CLEAN SURFACES. APPLY A DOUBLE WRAP OF SELF-AMALGAMATING TAPE 2" BEYOND CONNECTOR. APPLY A SECOND WRAP OF SELF-AMALGAMATING TAPE IN OPPOSITE DIRECTION. APPLY DOUBLE WRAP OF 2" WIDE ELECTRICAL TAPE EXTENDING 2" BEYOND THE SELF-AMALGAMATING TAPE.
  - 3. OPEN FLAME ON JOB SITE IS NOT ACCEPTABLE

**SECTION 11 800 - INSTALLATION OF MULTIMODAL BASE STATIONS (MMBS) AND RELATED EQUIPMENT**

**SUMMARY:**

- A. THIS SECTION SPECIFIES MMBS CABINETS, POWER CABINETS, AND INTERNAL EQUIPMENT INCLUDING BY NOT LIMITED TO RECTIFIERS, POWER DISTRIBUTION UNITS, BASE BAND UNITS, SURGE ARRESTORS, BATTERIES, AND SIMILAR EQUIPMENT FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CONTRACTOR (C/P).
  - B. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS MATERIALS AND PROVIDE ALL LABOR REQUIRED FOR INSTALLATION EQUIPMENT IN EXISTING CABINET OR NEW CABINET AS SHOWN ON DRAWINGS AND AS REQUIRE BY THE APPLICABLE INSTALLATION MOPS.
  - C. COMPLY WITH MANUFACTURERS INSTALLATION AND START-UP REQUIREMENTS
- DC CIRCUIT BREAKER LABELING**
- A. NEW DC CIRCUIT IS REQUIRED IN MMBS CABINET SHALL BE CLEARLY IDENTIFIED AS TO RRU BEING SERVICED

**SECTION 26 100 - BASIC ELECTRICAL REQUIREMENTS**

**SUMMARY:**  
THIS SECTION SPECIFIES BASIC ELECTRICAL REQUIREMENTS FOR SYSTEMS AND COMPONENTS.

**QUALITY ASSURANCE:**

- A. ALL EQUIPMENT FURNISHED UNDER DIVISION 26 SHALL CARRY UL LABELS AND LISTINGS WHERE SUCH LABELS AND LISTINGS ARE AVAILABLE IN THE INDUSTRY.
- B. MANUFACTURERS OF EQUIPMENT SHALL HAVE A MINIMUM OF THREE YEARS EXPERIENCE WITH THEIR EQUIPMENT INSTALLED AND OPERATING IN THE FIELD IN A USE SIMILAR TO THE PROPOSED USE FOR THIS PROJECT.
- C. **MATERIALS AND EQUIPMENT:** ALL MATERIALS AND EQUIPMENT SPECIFIED IN DIVISION 26 OF THE SAME TYPE SHALL BE OF THE SAME MANUFACTURER AND SHALL BE NEW, OF THE BEST QUALITY AND DESIGN, AND FREE FROM DEFECTS

**SUPPORTING DEVICES:**

- A. ALL EQUIPMENT FURNISHED UNDER DIVISION 26 SHALL CARRY UL LABELS AND LISTINGS WHERE SUCH LABELS AND LISTINGS ARE AVAILABLE IN THE INDUSTRY.
- B. MANUFACTURERS OF EQUIPMENT SHALL HAVE A MINIMUM OF THREE YEARS EXPERIENCE WITH THEIR EQUIPMENT INSTALLED AND OPERATING IN THE FIELD IN A USE SIMILAR TO THE PROPOSED USE FOR THIS PROJECT.
- C. **MATERIALS AND EQUIPMENT:** ALL MATERIALS AND EQUIPMENT SPECIFIED IN DIVISION 26 OF THE SAME TYPE SHALL BE OF THE SAME MANUFACTURER AND SHALL BE NEW, OF THE BEST QUALITY AND DESIGN, AND FREE FROM DEFECTS

**SUPPORTING DEVICES:**

- A. MANUFACTURED STRUCTURAL SUPPORT MATERIALS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY THE FOLLOWING:
  - 1. ALIED TUBE AND CONDUIT
  - 2. B-LINE SYSTEM
  - 3. SUNSTRUT DIVERSIFIED PRODUCTS
  - 4. THOMAS & BETTS
- B. FASTENERS: TYPES, MATERIALS, AND CONSTRUCTION FEATURES AS FOLLOWS:
  - 1. EXPANSION ANCHORS: CARBON STEEL WEDGE OR SLEEVE TYPE.
  - 2. POWER-DRIVEN THREADED STUDS: HEAT-TREATED STEEL, DESIGNED SPECIFICALLY FOR THE INTENDED SERVICE.
  - 3. FASTEN BY MEANS OF WOOD SCREWS ON WOOD.
  - 4. TOGGLE BOLTS ON HOLLOW MASONRY UNITS.
  - 5. CONCRETE INSERTS OR EXPANSION BOLTS ON CONCRETE OR SOLID MASONRY.
  - 6. MACHINE SCREWS, WELDED THREADED STUDS, OR SPRING-TENSION CLAMPS ON STEEL.
  - 7. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE SHALL NOT BE PERMITTED.
  - 8. DO NOT WELD CONDUIT, PIPE STRAPS, OR ITEMS OTHER THAN THREADED STUDS TO STEEL STRUCTURES.
  - 9. IN PARTITIONS OF LIGHT STEEL CONSTRUCTION, USE SHEET METAL SCREWS.

**SUPPORTING DEVICES:**

- A. INSTALL SUPPORTING DEVICES TO FASTEN ELECTRICAL COMPONENTS SECURELY AND PERMANENTLY IN ACCORDANCE WITH NEC.
- B. COORDINATE WITH THE BUILDING STRUCTURAL SYSTEM AND WITH OTHER TRADES.
- C. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTING HARDWARE SECURELY TO THE STRUCTURE IN ACCORDANCE WITH THE FOLLOWING:
  - D. ENSURE THAT THE LOAD APPLIED BY ANY FASTENER DOES NOT EXCEED 25 PERCENT OF THE PROOF TEST LOAD.
  - E. USE VIBRATION AND SHOCK-RESISTANT FASTENERS FOR ATTACHMENTS TO CONCRETE SLABS.

**ELECTRICAL IDENTIFICATION:**

- A. UPDATE AND PROVIDE TYPED CIRCUIT BREAKER SCHEDULES IN THE MOUNTING BRACKET, INSIDE DOORS OF AC PANEL BOARDS WITH ANY CHANGES MADE TO THE AC SYSTEM.
- B. BRANCH CIRCUITS FEEDING AVIATION OBSTRUCTION LIGHTING EQUIPMENT SHALL BE CLEARLY IDENTIFIED AS SUCH AT THE BRANCH CIRCUIT PANELBOARD.

**SECTION 26 200 - ELECTRICAL MATERIALS AND EQUIPMENT**

**CONDUIT:**

- A. RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL BE USED FOR EXTERIOR LOCATIONS ABOVE GROUND AND IN UNFINISHED INTERIOR LOCATIONS AND FOR ENCASED RUNS IN CONCRETE. RIGID CONDUIT AND FITTINGS SHALL BE STEEL, COATED WITH ZINC EXTERIOR AND INTERIOR BY THE HOT DIP GALVANIZING PROCESS. CONDUIT SHALL BE PRODUCED TO ANSI SPECIFICATIONS C80.1, FEDERAL SPECIFICATION WY-C-301 AND SHALL BE LISTED WITH THE UNDERWRITERS' LABORATORIES. FITTINGS SHALL BE THREADED - SET SCREW OR COMPRESSION FITTINGS WILL NOT BE ACCEPTABLE. RGS CONDUITS SHALL BE MANUFACTURED BY ALIED, REPUBLIC OR WHEATLAND.
- B. UNDERGROUND CONDUIT IN CONCRETE SHALL BE POLYVINYLCHLORIDE (PVC) SUITABLE FOR DIRECT BURIAL AS APPLICABLE. JOINTS SHALL BE BELLED, AND FLUSH SOLVENT WELDED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE CARLON ELECTRICAL PRODUCTS OR APPROVED EQUAL.
- C. TRANSITIONS BETWEEN PVC AND RIGID (RGS) SHALL BE MADE WITH PVC COATED METALLIC LONG SWEEP RADIUS ELBOWS.
- D. EMT OR RIGID GALVANIZED STEEL CONDUIT MAY BE USED IN FINISHED SPACES CONCEALED IN WALLS AND CEILINGS. EMT SHALL BE MILD STEEL, ELECTRICALLY WELDED, ELECTRO-GALVANIZED OR HOT-DIPPED GALVANIZED AND PRODUCED TO ANSI SPECIFICATION C80.3, FEDERAL SPECIFICATION WY-C-368, AND SHALL BE UL LISTED. EMT SHALL BE MANUFACTURED BY ALIED, REPUBLIC OR WHEATLAND, OR APPROVED EQUAL. FITTINGS SHALL BE METALLIC COMPRESSION. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE.
- E. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR FINAL CONNECTION TO EQUIPMENT. FITTINGS SHALL BE METALLIC CLAMP TYPE COMPRESSION FITTINGS, MAINTAINING THE INTEGRITY OF CONDUIT SYSTEM. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE. MAXIMUM LENGTH OF FLEXIBLE CONDUIT SHALL NOT EXCEED 6-FEET. LFMC SHALL BE PROTECTED AND SUPPORTED AS REQUIRE BY NEC. MANUFACTURERS OF FLEXIBLE CONDUITS SHALL BE CAROL, ANACONDA METAL HOSE OR UNIVERSAL METAL HOSE, OR APPROVED EQUAL.
- F. MINIMUM SIZE CONDUIT SHALL BE 3/4 INCH (21MM).

**HUBS AND BOXES:**

- A. AT ENTRANCES TO CABINETS OR OTHER EQUIPMENT NOT HAVING INTEGRAL THREADED HUBS PROVIDE METALLIC THREADED HUBS OF THE SIZE AND CONFIGURATION REQUIRED. HUB SHALL INCLUDE LOCKWIT AND NEOPRENE O-RING SEAL. PROVIDE IMPACT RESISTANT 105 DEGREE C PLASTIC BUSHINGS TO PROTECT CABLE INSULATION.
- B. CABLE TERMINATION FITTINGS FOR CONDUIT
  - 1. CABLE TERMINATORS FOR RGS CONDUITS SHALL BE TYPE CRC BY G-Z/GEDNEY OR EQUAL BY ROK TEC.
  - 2. CABLE TERMINATORS FOR LFMC SHALL BE ETCO - GL2075; OR MADE FOR THE PURPOSE PRODUCTS BY ROATED.
- C. EXTERIOR PULL BOXES AND PULL BOXES IN INTERIOR INDUSTRIAL AREAS SHALL BE PLATED CAST ALLOY, HEAVY DUTY, WEATHERPROOF, DUST PROOF, WITH GASKET, PLATED IRON ALLOY COVER AND STAINLESS STEEL COVER SCREWS, CROUSE-HINDS WAS SERIES OR EQUAL.
- D. CONDUIT OUTLET BODIES SHALL BE PLATED CAST ALLOY WITH SIMILAR GASKETED COVERS. OUTLET BODIES SHALL BE OF OTHER CONFIGURATION AND SIZE SUITABLE FOR THE APPLICATION. PROVIDE CROUSE-HINDS FORM B OR EQUAL.
- E. MANUFACTURER FOR BOXES AND COVERS SHALL BE HOFFMAN, SQUARE "D", CROUSE-HINDS, COOPER, ADALET, APPLETON, G-Z GEDNEY, RACO, OR APPROVED EQUAL.

**SUPPLEMENTAL GROUNDING SYSTEM**

- A. FURNISH AND INSTALL A SUPPLEMENTAL GROUNDING SYSTEM TO THE EXTENT INDICATED ON THE DRAWINGS. SUPPORT SYSTEM WITH NON-MAGNETIC STAINLESS STEEL CLIPS WITH RUBBER GROMMETS. GROUNDING CONNECTORS SHALL BE TINNED COPPER WIRE, SIZES AS INDICATED ON THE DRAWINGS. PROVIDE STRANDED OR SOLID BARE OR INSULATED CONDUCTORS EXCEPT AS OTHERWISE NOTED.
- B. SUPPLEMENTAL GROUNDING SYSTEM: ALL CONNECTIONS TO BE MADE WITH CAD WELDS, EXCEPT AT EQUIPMENT USE LUGS OR OTHER AVAILABLE GROUNDING MEANS AS REQUIRED BY MANUFACTURER; AT GROUND BARS USE TWO HOLE SPACES WITH NO OX.
- C. STOLEN GROUND-BARS: IN THE EVENT OF STOLEN GROUND BARS, CONTACT SPRINT CM FOR REPLACEMENT INSTRUCTION USING THREADED ROD KITS.

**EXISTING STRUCTURE:**

- A. EXISTING EXPOSED WIRING AND ALL EXPOSED OUTLETS, RECEPTACLES, SWITCHES, DEVICES, BOXES, AND OTHER EQUIPMENT THAT ARE NOT TO BE UTILIZED IN THE COMPLETED PROJECT SHALL BE REMOVED OR DE-ENERGIZED AND CAPPED IN THE WALL, CEILING, OR FLOOR SO THAT THEY ARE CONCEALED AND SAFE. WALL, CEILING, OR FLOOR SHALL BE PATCHED TO MATCH THE ADJACENT CONSTRUCTION.

**CONDUIT AND CONDUCTOR INSTALLATION:**

- A. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE. MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FINISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE FIRMLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKWIT ON OUTSIDE AND INSIDE.
- B. CONDUCTORS SHALL BE PULLED IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE.



APPLICANT:  
  
 6580 Sprint Parkway  
 Overland Park, Kansas 66251

PLANS PREPARED FOR:  
  
 6100 Sprint Parkway  
 Overland Park, Kansas 66251

PLANS PREPARED BY:  
  
 7171 West 85th Street, Suite 600  
 Overland Park, Kansas 66212  
 Phone: 913-438-7700  
 Fax: 913-438-7777

ENGINEERING LICENSE:  
 STATE OF KANSAS  
 THE CERTIFICATE OF AUTHORIZATION # F-574

ENGINEER	FE#	DISCIPLINE
BOB KEVIN M. VANMELE	22105	CIVIL
MARK MICHAEL E. KUFELDT	22059	CIVIL
TRIS TERRANCE M. BURTON	8250	ELECTRICAL
KEVIN J. BRETHERTON	13884	ELECTRICAL

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**SUBMITTALS:**

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	05/19/18	BLM	A
RECEIVED FOR REVIEW	05/22/18	DCP	B
RECEIVED FOR REVIEW	07/24/18	BLM	C
ISSUED FOR CONSTRUCTION	10/25/18	BLM	D
REVIEW FOR CLIENT COMMENTS	11/20/18	BLM	1

APPLICANT SITE NAME:  
**LEAWOOD SOUTH MAINTENANCE BUILDING**

APPLICANT SITE CASCADE:  
**KC71XC103**

SITE ADDRESS:  
**3801 WEST 123RD STREET  
 LEAWOOD, KANSAS  
 66209**

SHEET DESCRIPTION:  
**SPECIFICATIONS**

DWG INFORMATION:	SHEET NUMBER:
DRAWN BY: BLM	SP-2
CHECKED BY: HEE	



**ERICSSON**  
Site No: KC71XC103  
Leawood, Kansas 66209

Disclaimer: This photo simulation is a depiction of a future installation. The actual construction may vary slightly in size, layout, color and texture from this simulation.

Proposed 2.5 MIMO Sprint antennas with integrated RRU's to replace existing Sprint panel antennas and 2.5 RRU's (Typ 1 per sector, 3 sectors total)

**PROPOSED VIEW LOOKING SOUTHEAST FROM 123RD STREET**





**ERICSSON**  
Site No: KG71XC103  
Leawood, Kansas 66209

Disclaimer: This photo simulation is a depiction of a future installation. The actual construction may vary slightly in size, layout, color and spacing from this simulation.

Proposed 2.5 MIMO Sprint antennas with integrated RRU's to replace existing Sprint panel antennas and 2.5 RRU's (Typ 1 per sector, 3 sectors total)

**PROPOSED VIEW LOOKING EAST FROM MISSION ROAD**





# AIR 6468 B41

AIR 6468, an Advanced Antenna System(AAS) with 64 transmitters and 64 receivers, improves LTE TDD spectral efficiency.

Enhanced bitrate per user achieved through interference suppression by applying beamforming capabilities in the downlink and the uplink.

Capacity increased by scheduling users in the cell on different layers supporting both Single User MIMO(SU-MIMO) and

Multi User MIMO(MU-MIMO).

Application coverage is improved through beamforming in both the vertical and horizontal dimensions.

To support cost efficient site deployments, the AIR 6468 includes Layer 1 beamforming enabling enhanced Common Public Radio Interface(eCPRI) to be used between the AIR 6468 and Baseband 5216 or Baseband 6630



The increasing capacity demands in operator's networks create needs for new spectrum efficient solutions. An Advanced Antenna System(AAS) such as AIR 6468 together with the Massive MIMO and Multi-User MIMO software features enables **greater spectral efficiency**.

The AIR 6468 has in total 64 Transmitters(T) and 64 Receivers(R) connected to an array of dual polarized antenna elements.

**Capacity gains** of up to 3 to 5 times compared with 8T8R configurations can be expected in favorable traffic scenarios.

Beamforming algorithms allow for better control of the transmitted energy in traffic channels for downlink(DL). Usage of large numbers of antenna branches improves the radio environment for single users, improves SINR, and allow for **higher DL speeds per user** with Single User MIMO(SU-MIMO).

When users are sufficiently separated in the cell, beamforming capabilities enable the same time- frequency resources to be reused among the different users thereby **increasing capacity** in high load scenarios with Multi User MIMO(MU-MIMO).

In the uplink(UL), up to 64 receiver branches coupled with baseband functionality for receiver diversity, interference rejection(Interference Rejection Combining, IRC) provides significant **uplink performance improvements** over conventional two, four and eight receiver branch capabilities. Correspondingly, this also adds user specific receiver-side beamforming functionality.

Normally the users' angular distribution in the cell is a key parameter in determining an AAS performance capability. Hence performances gains are very much scenario and traffic load dependent.

The AIR 6468 will support **different cell or broadcast beam shapes**, to meet different user distribution scenarios. The flexibility to steer the transmitted energy for control signaling in both azimuth and elevation will enable **improved efficiency** in various deployments scenarios including Macro, Hotspot and High-rise.

The **front haul transport** is made more **efficient** by implementing Layer 1 beamforming in the AIR 6468. Using the enhanced Common Public Radio Interface(eCPRI) between the Baseband and the AAS enables affordable 10 Gbps Small Form-factor Pluggable optical fiber transceivers(SFPs) to interconnect. This allows for a more **cost-efficient deployment** offering the flexibility needed in real-life site environments.

The design of AIR 6468 enables fast roll out with minimal site impact, improved application coverage and capacity boost for both existing and new bands compared to using more traditional radio and antenna systems.



AIR 6468 B41

## TECHNICAL SPECIFICATIONS AIR 646B B41

<b>PRODUCT NUMBER:</b>	KRD 901 075/11		
<b>ADVANCED ANTENNA SYSTEM</b>			
Operating frequency band:	3GPP Band 41, 2496 – 2690 MHz (full band)		
Instantaneous bandwidth:	80 MHz		
Architecture:	64T64R connected to an array of dual polarized antenna elements.		
Carrier capacity per sector:	Up to 3x20 MHz LTE (TDD)		
<b>Modulation:</b>	Downlink	Up to 256 QAM.	
	Uplink	Up to 64 QAM.	
<b>Multi-antenna beamforming functionality*:</b>	Downlink SU-MIMO	Up to 16 layers per carrier.	
	Downlink MU-MIMO		
	Uplink SU-MIMO	Up to 16 layers per carrier.	
	Uplink MU-MIMO		
	Cell shaping	Pre-defined cell or broadcast beam shapes; Macro, Hotspot and High-rise.	
	Digital downtilt	Continuously adjustable for macro scenario, fixed for Hotspot and High-rise scenario.	
<b>Spatial characteristics broadcast beam</b>			
<b>Scenario**:</b>	<b>Macro</b>	<b>Hotspot</b>	<b>High-rise</b>
EIRP max***:	2x 64.5 dBm	2x 59.5 dBm	2x 64 dBm
Beam Parallelity:	≤ - 10 dB	≤ - 10 dB	≤ - 10 dB
<b>Horizontal Pattern</b>			
Azimuth Beamwidth:	65° ± 5°	65° ± 5°	20° ± 2°
Front-to-Back Ratio, Total Power ±30°:	≥ 25 dB	≥ 25 dB	≥ 25 dB
Beam Pointing Direction:	0° ± 5°	0° ± 5°	0° ± 2°
<b>Vertical Pattern</b>			
Elevation Beamwidth:	10° ± 1°	30° ± 3°	30° ± 3°
First Upper Side Lobe Suppression:	≥ 16 dB	≥ 12 dB	≥ 12 dB
Beam Pointing Error:	≤ 1°	≤ 3°	≤ 3°
Digital Downtilt:	Continuously - 8° to + 8°	Fixed 3°	Fixed 3°
<b>Spatial characteristics traffic beams</b>			
EIRP max**:	2x 71.5 dBm		
<b>Mechanical specifications</b>			
Weight:	60.4 kg excluding installation kit.		
Size (H x W x D):	972.5 mm x 520 mm x 182.5 mm excluding smaller protrusions.		
<b>Operational specifications</b>			
Wind Load Maximum:	580 N @ 42 m/s wind speed.		
Wind Load (Frontal/ Lateral/ Rear):	580 N / 204 N / 580 N @ 42 m/s wind speed excluding installation kit.		
Survival Wind Speed****:	67 m/s		
Operating Temperature Range:	- 40° to + 55° C		
IP Classification:	IP65		
<b>Main interfaces</b>			
Baseband:	Two eCPRI interfaces using 10G SFP+ ports with link capacity 10.3 Gb/s. One 10.3 Gb/s eCPRI interface is sufficient for up to 60 MHz carrier bandwidth and 16 layers.		
Power Supply:	- 48 V DC nominal on a 2-wire connection. Recommended fuse rating is 40 A.		
Mounting:	Optional mechanical tilt and swivel installation kit for wall and pole mounting.		
Handling:	Eyelet for lifting and hoisting.		

\* Actual software support aligned with the user equipment(UE) echo system. Please refer to the Ericsson radio access network(RAN) software roadmap and feature descriptions.

\*\* Additional scenarios, cells or broadcast beam shapes possible with future software releases.

\*\*\* Two simultaneous orthogonal beams.

# TECHNICAL SPECIFICATIONS AIR 6468 B41

## Connection interfaces

Grounding Point:	2x M6 bolt to support an M6 dual cable lug.
- 48 V DC Power Supply:	2-wire TVS connector
Data 1 Optical eCPRI:	LC (on SFP) with support for FullAXS.
Data 2 Optical eCPRI:	LC (on SFP) with support for FullAXS.
Optional Synchronization Timing (AUX):	LC (on SFP) with support for FullAXS.
External Alarm/APC Light Interface:	Mini-DIN connector, 14 pin
Optical Indicators:	LEDs
TX Monitor:	SMA connector

## BASEBAND CONFIGURATION

Number of baseband units depending on configuration.

## ACCESSORIES

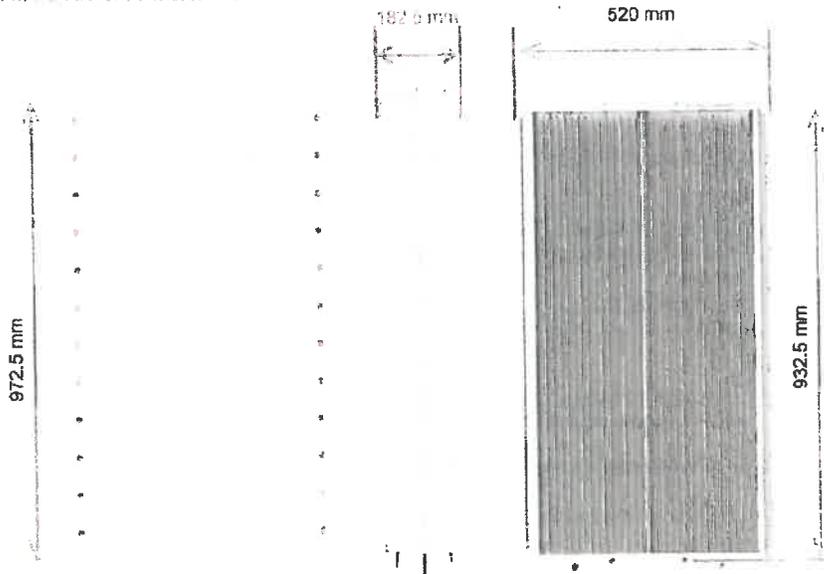
Installation accessories are available from the Ericsson Radio Site System portfolio.

\*\*\*\* As a result of more stringent legal regulations and judgments regarding product liability, we are obliged to point out certain risks that may arise when products are used under extraordinary operating conditions. The mechanical design is based on environmental conditions which are equal to or exceeding class 4.1 as specified in ETS 300 019-1-4 and thereby respects the static mechanical load imposed on an AIR unit by wind at maximum velocity. Wind loads in this datasheet are calculated with reference to wind pressure. For more accurate and site specific results, terrain information needs to be considered and calculate according to EN 1991-1-4 or GB 50009. Pole clamps and mounting accessories as specified by Ericsson in the Customer Product Information documentation must be used. Extraordinary operating conditions, such as heavy icing or exceptional dynamic stress (e.g. strain caused by oscillating support structures), may result in the breakage of an AIR unit or its installation kit and even cause the unit to fail to the ground. These facts must be considered during the site planning process.

TX monitor  
Optical indicators  
External alarm / APC light interface  
Optional synchronization timing  
Data 1 optical eCPRI  
Data 2 optical eCPRI  
- 48 V DC power supply  
Grounding point



AIR 6468 B41 interfaces



AIR 6468 B41 size and vertical bracket spacing



## TOWER ANALYSIS REPORT

*Sprint*

*KC71XC103, Leawood South Maint. Bldg*

*SSC # KS-0386-C*

*October 19, 2018*

*SSC Inc.*

*7171 West 95<sup>th</sup> St., Suite 600, Overland Park, KS 66212  
Ph: (913) 438-7700 Fax: (913) 438-7777*

**serve solve communicate**

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## **GENERAL TOWER INFORMATION**

<b>Date:</b>	October 19, 2018
<b>Site Name:</b>	Leawood South Maint. Bldg
<b>Site Location:</b>	Leawood, Johnson County, KS
<b>Site Code:</b>	KC71XC103
<b>Proposed Carrier:</b>	Sprint
<b>Tower Height:</b>	70'
<b>Tower Type:</b>	Monopine
<b>Tower Manufacturer:</b>	Sabre
<b>Design Standard:</b>	IBC 2012, TIA-222-G
<b>Structural Classification:</b>	II
<b>Wind Loading:</b>	115 mph ult., 89 mph nom. w/o ice
<b>Wind and Ice Loading:</b>	40 mph w/ 1.00" ice
<b>Serviceability Criteria:</b>	60 mph w/o ice
<b>Exposure Category:</b>	C
<b>Topographic Category:</b>	1
<b>Seismic Criteria:</b>	Ss = 0.13
<b>SSC Project Number:</b>	KS-0386-C

## **Introduction**

Selective Site Consultants, Inc. (SSC) has performed a rigorous structural analysis for the referenced existing communication tower. The purpose of this analysis is to determine the overall stability and structural adequacy of the existing structure to accommodate the proposed changed condition in accordance with TIA-222-G.

## **Source of Data**

Our analysis is based on information provided in the table below.

<b>Document</b>	<b>Remarks</b>	<b>Date</b>
Tower Geometry	Sabre (Job #09-01227)	02/02/2009
Existing Loading	SSC Project #KS-0386-A	03/26/2014
Foundation Information	Sabre (Job #09-01227)	02/02/2009
Geotechnical Reference	Terracon (Project # 02085366)	01/05/2009
Proposed Loading	Sprint RFDS	03/30/2018

This analysis assumes the monopole is fabricated from A572 Gr. 65 ksi steel and the base plate is fabricated from Gr. 50 ksi steel. Anchor Bolts are assumed as A615 Gr. 75 ksi. All other steel assumed to be 36 ksi.

A comprehensive structural analysis was performed utilizing tnxTower Version 8.0.2.1 software. The calculations were performed in accordance with TIA-222-G 'Structural Standard for Antenna Supporting Structures and Antennas'. The tower was analyzed for TIA-222-G specified load combinations, with the specified loads, as reproduced in General Tower Information of this report. Structural Classification, Exposure Category, and Topographic Category are also listed General Tower Information of this report. Topographic Category and the height of topographic features were estimated from USGS Quadrangle maps. This analysis considers wind from all specified directions. See the Appendix B for structural calculations.

### Antenna and Transmission Line Loading

Our understanding of the antenna and transmission line loading conditions is shown below.

Antenna Status	Qty	Antenna Vender	Antenna Type	CL Elev. Ant./Mount	Mount	Azimuth	Feed Line
Existing	3	Sabre	Tree Pole Branch	72.5'/72.5'	Pole	N/A	N/A
	3	Sabre	Tree Pole Branch	67.5'/67.5'			
Existing (Sprint)	1	Unknown	Motorola Canopy 14" Dish	70'/66'	(3) T-Arms	Unknown	(1) Cat5 Cable
Existing (Sprint)	3	RFS	APXVERR18-C w/ (9) RETs	66'/66'		Sector	(1) MIMO Hybrid
Proposed (Sprint)	3	Ericsson	AIR 6468				
Existing	3	Sabre	Tree Pole Branch	62.5'/62.5'	Pole	N/A	N/A
	3	Sabre	Tree Pole Branch	57.5'/57.5'			
Existing (Sprint)	3	Ericsson	RRU 11	55'/55'	(3) T-Arms	Sector	(3) Hybrid Cable
Existing (Sprint)	3	Ericsson	RRU 31				
Existing	3	Sabre	Tree Pole Branch	52.5'/52.5'	Pole	N/A	N/A
	3	Sabre	Tree Pole Branch	47.5'/47.5'			
	3	Sabre	Tree Pole Branch	42.5'/42.5'			
	3	Sabre	Tree Pole Branch	37.5'/37.5'			
	3	Sabre	Tree Pole Branch	32.5'/32.5'			
	3	Sabre	Tree Pole Branch	27.5'/27.5'			
	3	Sabre	Tree Pole Branch	22.5'/22.5'			
	3	Sabre	Tree Pole Branch	17.5'/17.5'			

**Note:**

1. All feed lines are assumed to be inside of the pole.

## **Structural Analysis of Tower Results**

The analysis of the existing tower with the proposed loadings installed indicates no member overstressing according to the TIA-222-G Structural Standard. Results of the analysis are shown in the following table and calculations may be found in Appendix B:

<b>Tower Section</b>	<b>Max % Allowable Stress</b>
Pole Steel (69' - 50.75')	27.3
Pole Steel (50.75' - 0')	70.3
Base Plate	31.7
Anchor Bolts	86.9

## **Foundation Analysis Results**

Reactions corresponding to the proposed factored loading were investigated and compared to the foundation design factored loading. Reactions are duplicated in the following table:

<b>Reaction</b>	<b>Sabre Design Factored Load</b>	<b>Max proposed Factored loading</b>	<b>% design value</b>
Moment, kip-ft	1117	1000	92
Shear, kips	25.8	22.1	87
Axial, kips	22.5	14.7	67

The reactions corresponding to the proposed factored loading are less than the original factored design reactions. Assuming the original foundations were properly installed for the geotechnical conditions referenced above, the existing foundation can be considered adequate for the proposed loading condition.

## **Recommendations**

It is our conclusion that the tower as analyzed **does comply** with TIA-222-G standards under the proposed loading condition.

If the proposed loading conditions are different or change from those analyzed, this report shall be deemed obsolete and further investigation will be required.

If you have any questions or comments, please do not hesitate to call.

Sincerely,

*Albert Schmidt*

Albert Schmidt P.E.

# **APPENDIX A**

## **General Conditions**

Please note that SSC makes no warranties, expressed or implied in connection with this report and disclaims any liability arising from original design, material, fabrication and erection deficiencies for this tower.

It is the responsibility of the Client to ensure that information provided by the Client to SSC and used in this analysis is correct. This information is assumed correct unless notified otherwise by the Client.

This analysis assumes the tower steel is in its original state with no deterioration due to improper erection procedures or field modifications and does not consider fabrication quality. The recommendations, conclusions, and opinions contained in this report pertain only to the analysis of the tower structure and the load carrying capacity of its members.

This analysis assumes any suggested modifications are installed as recommended and is not intended to address temporary conditions of the tower as modifications are being performed. It is strongly recommended that the Installer of any tower modification thoroughly assess installation procedures and how temporary conditions present while modifications are being performed influence tower members. Installer is responsible for sequence of operation and any required temporary bracing or strengthening of tower during modification operations. SSC is not responsible for the conclusions, opinion, or recommendations made by others based on the information we supply.

# **APPENDIX B**

## **Structural Calculations and Diagrams**

### **Existing Tower with Proposed Loading**

69.0 ft

**DESIGNED APPURTENANCE LOADING**

TYPE	ELEVATION	TYPE	ELEVATION
Top Branches	72.5	RRUS 31 B25	55
Top Branches	72.5	RRUS 31 B25	55
Top Branches	72.5	RRUS 31 B25	55
Motorola Canopy 14" Dish	70	Branches (9' Max)	52.5
Trn Branches	67.5	Branches (9' Max)	52.5
Top Branches	67.5	Branches (9' Max)	52.5
Top Branches	67.5	Branches (9' Max)	47.5
T-Arm Mount	66	Branches (9' Max)	47.5
T-Arm Mount	66	Branches (9' Max)	47.5
T-Arm Mount	66	Branches (9' Max)	42.5
APXVERR18-C	66	Branches (9' Max)	42.5
APXVERR18-C	66	Branches (9' Max)	42.5
APXVERR18-C	66	Branches (9' Max)	37.5
AIR 6468 B41	66	Branches (9' Max)	37.5
AIR 6468 B41	66	Branches (9' Max)	37.5
AIR 6468 B41	66	Branches (9' Max)	32.5
Branches (9' Max)	62.5	Branches (9' Max)	32.5
Branches (9' Max)	62.5	Branches (9' Max)	32.5
Branches (9' Max)	62.5	Branches (9' Max)	27.5
Branches (9' Max)	57.5	Branches (9' Max)	27.5
Branches (9' Max)	57.5	Branches (9' Max)	27.5
Branches (9' Max)	57.5	Branches (10' Max)	22.5
T-Arm Mount	55	Branches (10' Max)	22.5
T-Arm Mount	55	Branches (10' Max)	22.5
T-Arm Mount	55	Branches (10' Max)	17.5
RRU-11	55	Branches (10' Max)	17.5
RRU-11	55	Branches (10' Max)	17.5
RRU-11	55	Branches (10' Max)	17.5

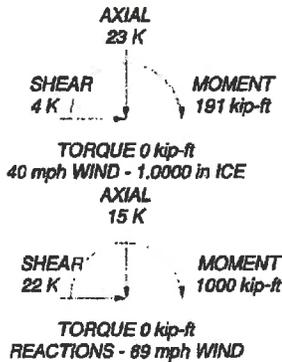
**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-85	65 ksi	80 ksi			

**TOWER DESIGN NOTES**

1. Tower is located in Johnson County, Kansas.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 89 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 70.3%

ALL REACTIONS  
ARE FACTORED



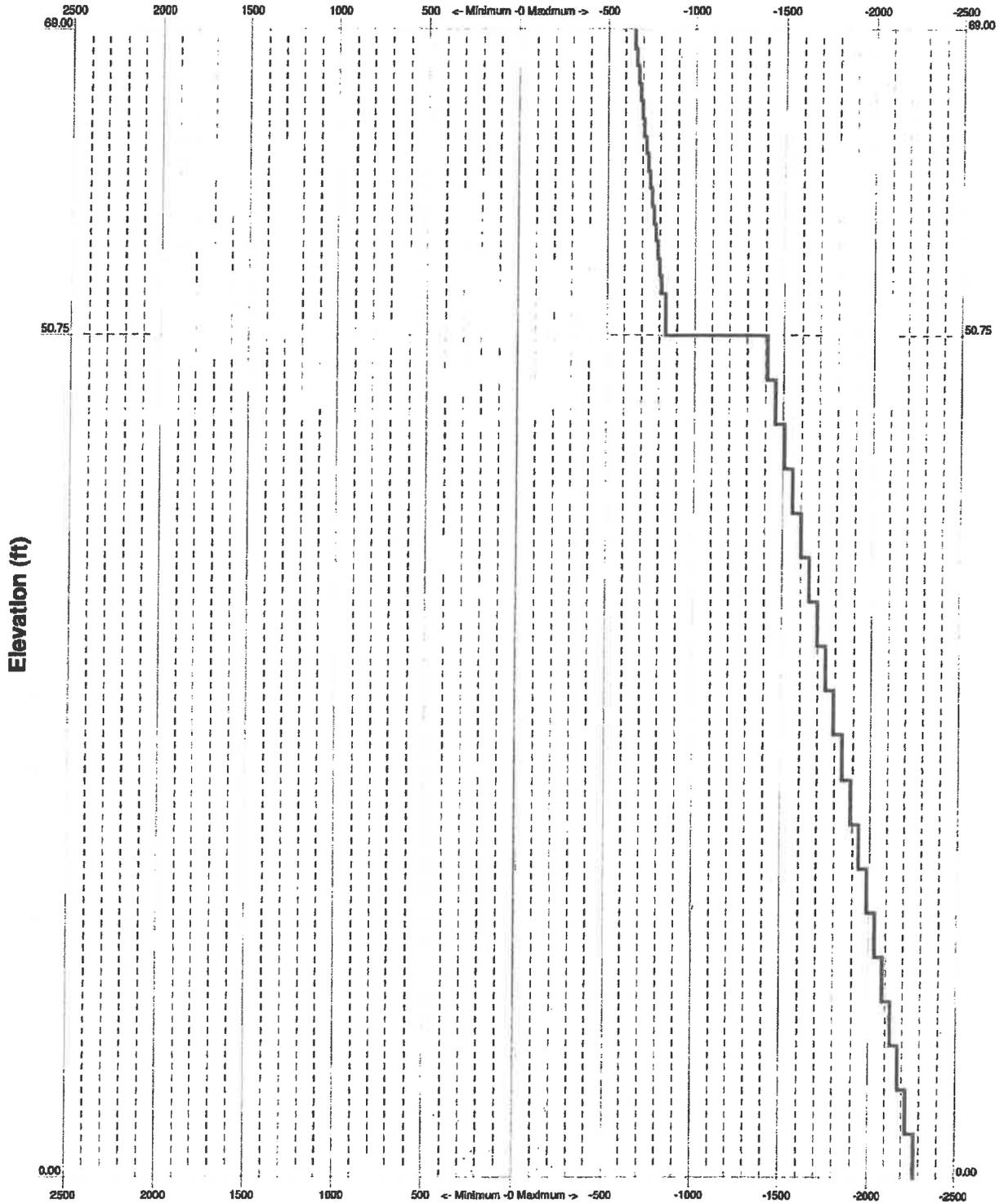
0.0 ft

Section	1	2
Length (ft)	18.25	63.25
Number of Sides	18	18
Thickness (in)	0.1875	0.3125
Socket Length (ft)	2.50	18.1882
Top Dia (in)	14.7500	31.1400
Bot Dia (in)	18.1800	4.8
Grade	A572-85	
Weight (K)	0.7	5.2

<b>SSC</b>		Job: <b>SSC # KS-0386-C</b>	
7171 West 95th Street, Suite 600 Overland Park, KS 66212			
Phone: (913) 438-7700		Project: <b>KC71XC103, Leawood South Maint. Bldg</b>	
FAX: (913) 438-7777		Client: Sprint	Drawn by: ARS
		Code: TIA-222-G	Date: 10/19/18
		Path: C:\Tower\Annot\KVS-0386\KS-0386-01TMO.dwg	Scale: N
			Dwg No.

TIA-222-G - 89 mph/40 mph 1.0000 in Ice Exposure C

Leg Capacity ——— Leg Compression (K)



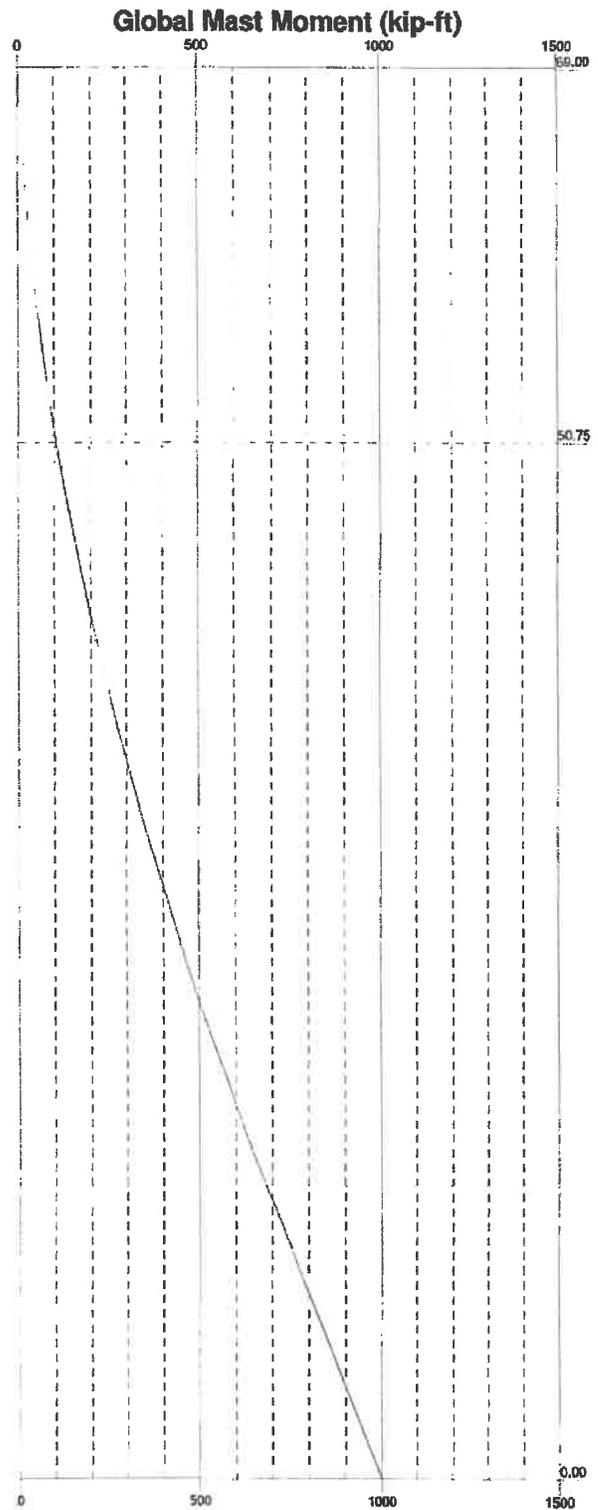
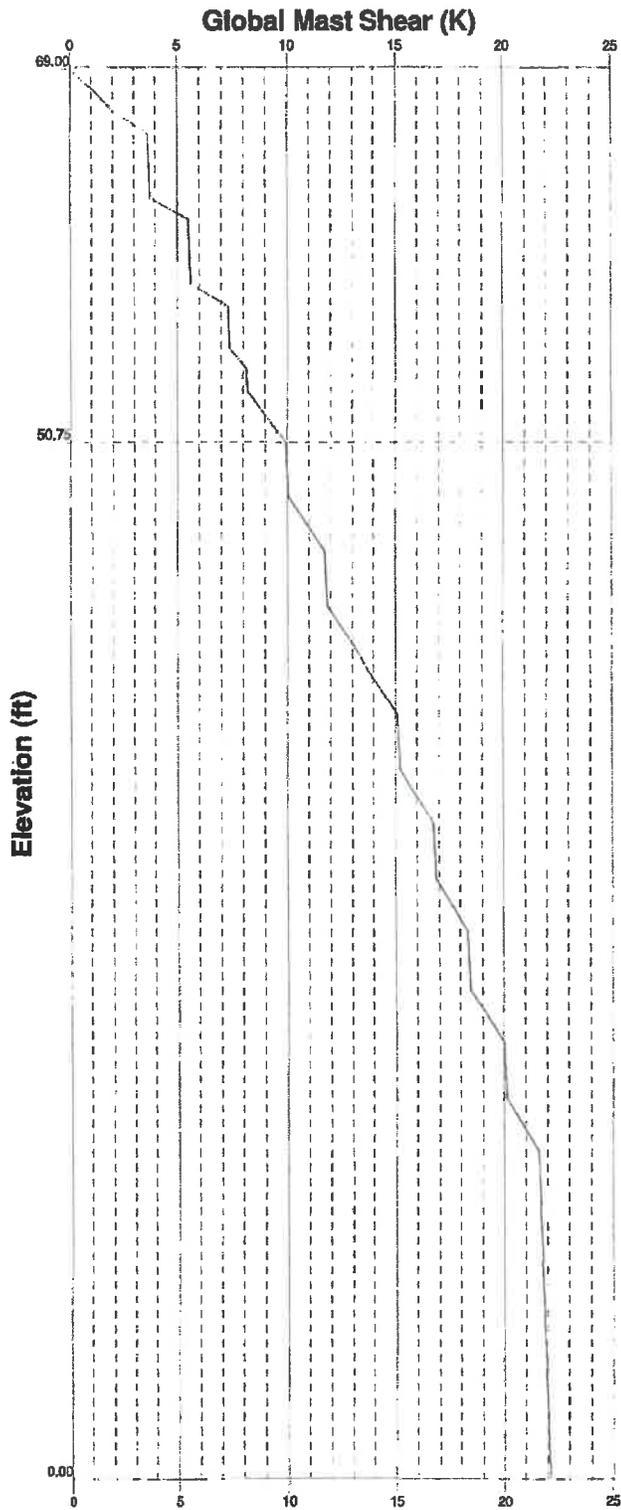
<b>SSC</b>		<b>Job: SSC # KS-0386-C</b>	
7171 West 95th Street, Suite 600		Project: <b>KC71XC103, Leawood South Maint. Bldg</b>	
Overland Park, KS 66212		Client: <b>Sprint</b>	Drawn by: <b>ARS</b>
Phone: (913) 438-7700		Code: <b>TIA-222-G</b>	Date: <b>10/19/18</b>
FAX: (913) 438-7777		Path: <b>OnTower Anal-MKS-0386-KS-0386-GTTRK Anal-MKS-0386-C.dwg</b>	App'd: _____
			Scale: <b>N</b>
			Dwg No. _____

Vx

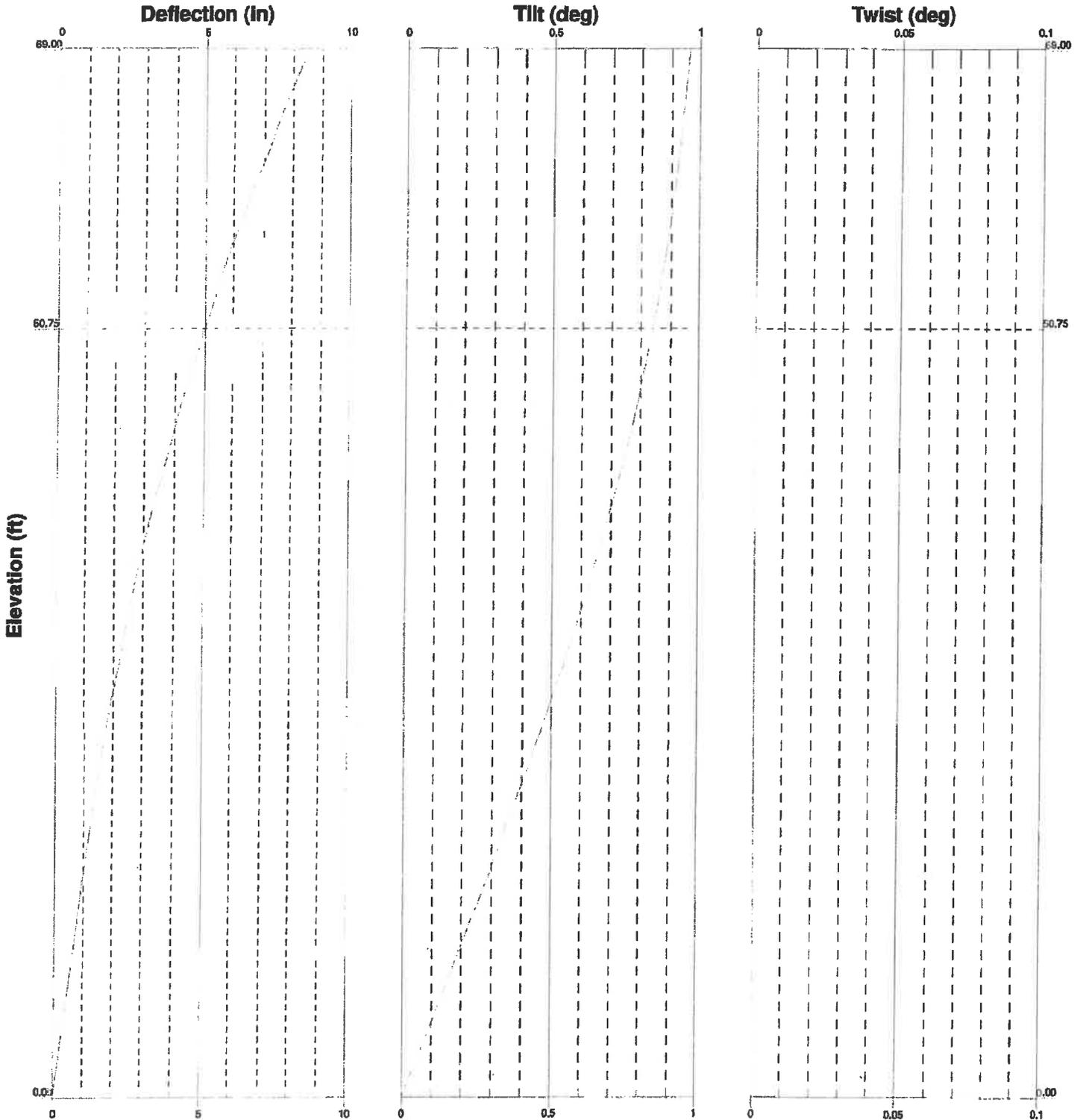
Vz

Mx

Mz



<p><b>SSC</b> 7171 West 95th Street, Suite 600 Overland Park, KS 66212 Phone: (913) 438-7700 FAX: (913) 438-7777</p>		<p>Job: <b>SSC # KS-0386-C</b></p>	
		<p>Project: <b>KC71XC103, Leawood South Maint. Bldg</b></p>	
Client: <b>Sprint</b>	Drawn by: <b>ARS</b>	App'd:	
Code: <b>TIA-222-G</b>	Date: <b>10/19/18</b>	Scale: <b>N</b>	
Path: <b>C:\Tower Analysis\KS-0386\KS-0386-01\TX Analysis\KS-0386-C.dwg</b>		Dwg No.	

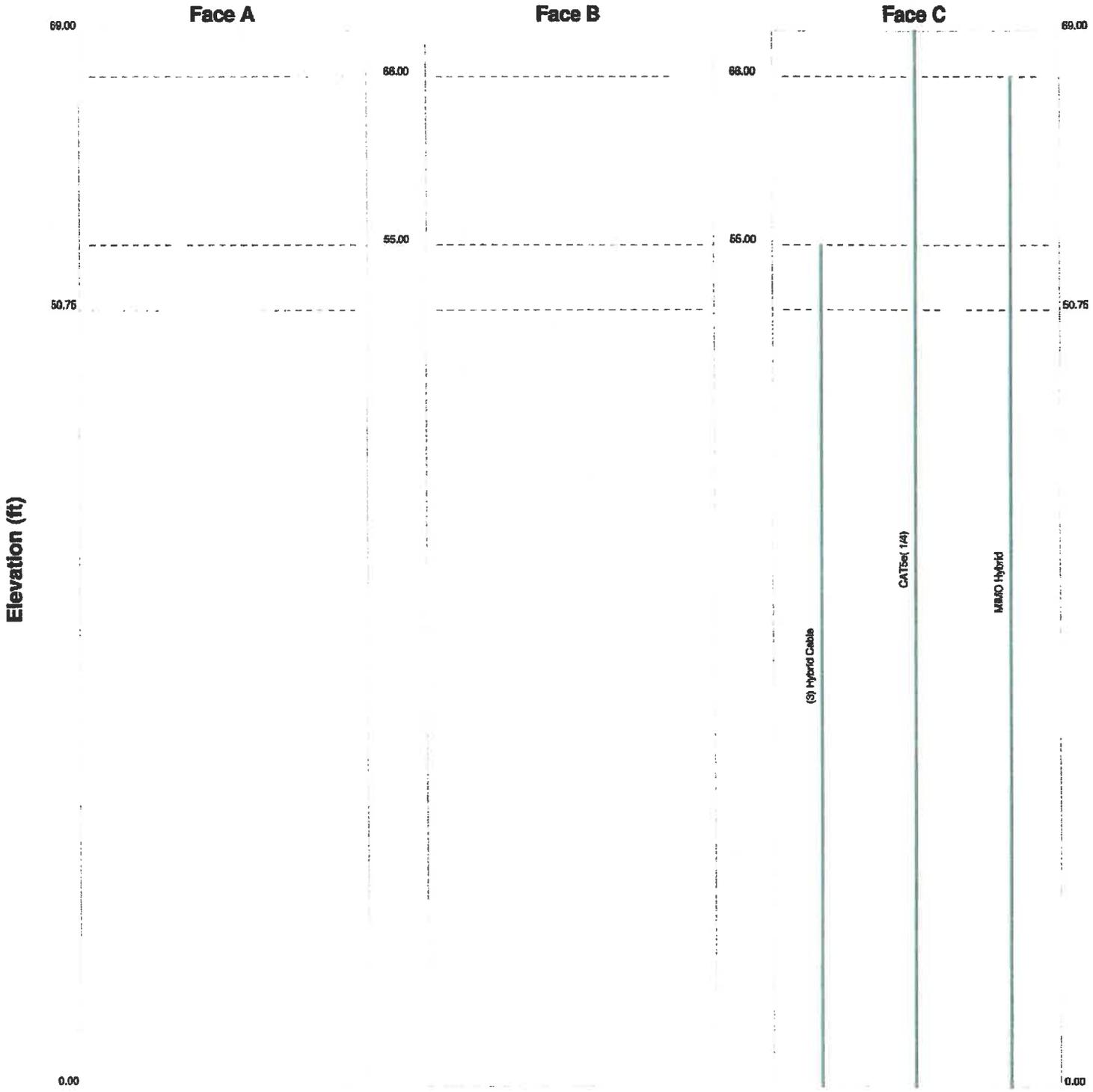


<b>SSC</b>		Job: <b>SSC # KS-0386-C</b>	
7171 West 95th Street, Suite 600		Project: <b>KC71XC103, Leawood South Maint. Bldg</b>	
Overland Park, KS 66212		Client: <b>Sprint</b>	Drawn by: <b>ARS</b>
Phone: (913) 438-7700		Code: <b>TIA-222-G</b>	Date: <b>10/19/18</b>
FAX: (913) 438-7777		Path: <small>C:\Tower Analysis\KS-0386\KS-0386-CRTRX Analysis\KS-0386-C.dwg</small>	Scale: <b>N</b>
			Dwg No.

# Feed Line Distribution Chart

0' - 69'

— Round   
 — Flat   
 — App In Face   
 — App Out Face   
 — Truss Leg



<b>SSC</b>		<b>Job: SSC # KS-0386-C</b>	
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Overland Park, KS 66212		Client: <b>Sprint</b>	Drawn by: <b>ARS</b>
Phone: (913) 438-7700		Code: <b>TIA-222-G</b>	Date: <b>10/19/18</b>
FAX: (913) 438-7777		Path: <b>OSTower App: IWK5-0286KD-0386-CITNK App: IWK5-0386-C.dwg</b>	App'd: _____
			Scale: <b>N</b>
			Dwg No. _____



<b>tnxTower</b>  <b>SSC</b> 7171 West 95th Street, Suite 600 Overland Park, KS 66212 Phone: (913) 438-7700 FAX: (913) 438-7777	SSC # KS-0386-C		Page 2 of 14
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	Client Sprint		Designed by ARS

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	69.00-50.75	18.25	2.50	18	14.7500	19.1800	0.1875	0.7500	A572-65 (65 ksi)
L2	50.75-0.00	53.25		18	18.1982	31.1400	0.3125	1.2500	A572-65 (65 ksi)

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w/t
L1	14.9486	8.6665	232.1953	5.1697	7.4930	30.9883	464.6962	4.3341	2.2660	12.085
	19.4470	11.3029	515.1006	6.7423	9.7434	52.8664	1030.8790	5.6525	3.0457	16.244
L2	19.0477	17.7403	716.9827	6.3494	9.2447	77.5564	1434.9087	8.8719	2.6529	8.489
	31.5722	30.5770	3671.2107	10.9438	15.8191	232.0743	7347.2521	15.2914	4.9306	15.778

Tower Elevation ft	Gusset Area (per face) ft <sup>2</sup>	Gusset Thickness in	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 69.00-50.75				1	1	1.05			
L2 50.75-0.00				1	1	1.05			

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C <sub>A</sub> A <sub>A</sub> ft <sup>2</sup> /ft	Weight plf
Hybrid Cable	C	No	Inside Pole	55.00 - 0.00	3	No Ice	1.04
						1/2" Ice	1.04
						1" Ice	1.04
CAT5e( 1/4)	C	No	Inside Pole	69.00 - 0.00	1	No Ice	0.04
						1/2" Ice	0.04
						1" Ice	0.04
MIMO Hybrid	C	No	Inside Pole	66.00 - 0.00	1	No Ice	1.04
						1/2" Ice	1.04
						1" Ice	1.04

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>P</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	69.00-50.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.03
L2	50.75-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.21

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### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	69.00-50.75	A	2.121	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.03
L2	50.75-0.00	A	1.941	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.21

### Feed Line Center of Pressure

Section	Elevation ft	CP <sub>x</sub> in	CP <sub>z</sub> in	CP <sub>x</sub> Ice in	CP <sub>z</sub> Ice in
L1	69.00-50.75	0.0000	0.0000	0.0000	0.0000
L2	50.75-0.00	0.0000	0.0000	0.0000	0.0000

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
---------------	----------------------	-------------	-------------------------	--------------------------	-----------------------

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight K	
Top Branches	A	From Leg	0.00	0.0000	72.50	No Ice	8.33	8.33	0.08
			0.00			1/2" Ice	9.00	9.00	0.09
			0.00			1" Ice	9.67	9.67	0.10
Top Branches	B	From Leg	0.00	0.0000	72.50	No Ice	8.33	8.33	0.08
			0.00			1/2" Ice	9.00	9.00	0.09
			0.00			1" Ice	9.67	9.67	0.10
Top Branches	C	From Leg	0.00	0.0000	72.50	No Ice	8.33	8.33	0.08
			0.00			1/2" Ice	9.00	9.00	0.09
			0.00			1" Ice	9.67	9.67	0.10
Top Branches	A	From Leg	0.00	0.0000	67.50	No Ice	8.33	8.33	0.17
			0.00			1/2" Ice	9.00	9.00	0.18

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	<b>Project</b>	KC71XC103, Leawood South Maint. Bldg	<b>Date</b> 14:59:27 10/19/18
	<b>Client</b>	Sprint	<b>Designed by</b> ARS

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>1</sub> Front	C <sub>A</sub> A <sub>2</sub> Side	Weight	
			Horz	Lateral						ft
Top Branches	B	From Leg	0.00		0.0000	67.50	1" Ice	9.67	9.67	0.19
			0.00				No Ice	8.33	8.33	0.17
			0.00				1/2" Ice	9.00	9.00	0.18
Top Branches	C	From Leg	0.00		0.0000	67.50	1" Ice	9.67	9.67	0.19
			0.00				No Ice	8.33	8.33	0.17
			0.00				1/2" Ice	9.00	9.00	0.18
Branches (9' Max)	A	From Leg	0.00		0.0000	62.50	1" Ice	9.67	9.67	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	B	From Leg	0.00		0.0000	62.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	C	From Leg	0.00		0.0000	62.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	A	From Leg	0.00		0.0000	57.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	B	From Leg	0.00		0.0000	57.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	C	From Leg	0.00		0.0000	57.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	A	From Leg	0.00		0.0000	52.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	B	From Leg	0.00		0.0000	52.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	C	From Leg	0.00		0.0000	52.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	A	From Leg	0.00		0.0000	47.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	B	From Leg	0.00		0.0000	47.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	C	From Leg	0.00		0.0000	47.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	A	From Leg	0.00		0.0000	42.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	B	From Leg	0.00		0.0000	42.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	C	From Leg	0.00		0.0000	42.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	A	From Leg	0.00		0.0000	37.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	B	From Leg	0.00		0.0000	37.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18



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	Client Sprint		Designed by ARS

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral					
T-Arm Mount	C	From Leg	2.00	0.0000	55.00	No Ice	6.67	3.02	0.00
			0.00			1/2" Ice	8.82	4.20	0.00
			0.00			1" Ice	10.97	5.38	0.00
**									
**									
**									
*SNV* APXVERR18-C	A	From Leg	2.00	0.0000	66.00	No Ice	8.02	5.28	0.06
			0.00			1/2" Ice	8.48	5.74	0.11
			0.00			1" Ice	8.94	6.20	0.16
APXVERR18-C	B	From Leg	2.00	0.0000	66.00	No Ice	8.02	5.28	0.06
			0.00			1/2" Ice	8.48	5.74	0.11
			0.00			1" Ice	8.94	6.20	0.16
APXVERR18-C	C	From Leg	2.00	0.0000	66.00	No Ice	8.02	5.28	0.06
			0.00			1/2" Ice	8.48	5.74	0.11
			0.00			1" Ice	8.94	6.20	0.16
**									
RRU-11	A	From Leg	2.00	0.0000	55.00	No Ice	1.64	1.26	0.04
			0.00			1/2" Ice	1.80	1.41	0.06
			0.00			1" Ice	1.97	1.57	0.08
RRU-11	B	From Leg	2.00	0.0000	55.00	No Ice	1.64	1.26	0.04
			0.00			1/2" Ice	1.80	1.41	0.06
			0.00			1" Ice	1.97	1.57	0.08
RRU-11	C	From Leg	2.00	0.0000	55.00	No Ice	1.64	1.26	0.04
			0.00			1/2" Ice	1.80	1.41	0.06
			0.00			1" Ice	1.97	1.57	0.08
**									
RRUS 31 B25	A	From Leg	2.00	0.0000	55.00	No Ice	1.62	1.28	0.06
			0.00			1/2" Ice	1.78	1.43	0.07
			0.00			1" Ice	1.95	1.58	0.09
RRUS 31 B25	B	From Leg	2.00	0.0000	55.00	No Ice	1.62	1.28	0.06
			0.00			1/2" Ice	1.78	1.43	0.07
			0.00			1" Ice	1.95	1.58	0.09
RRUS 31 B25	C	From Leg	2.00	0.0000	55.00	No Ice	1.62	1.28	0.06
			0.00			1/2" Ice	1.78	1.43	0.07
			0.00			1" Ice	1.95	1.58	0.09
**									
*Sprint 2.5* AIR 6468 B41	A	From Leg	2.00	0.0000	66.00	No Ice	6.54	2.54	0.13
			0.00			1/2" Ice	6.87	2.79	0.17
			0.00			1" Ice	7.21	3.04	0.22
AIR 6468 B41	B	From Leg	2.00	0.0000	66.00	No Ice	6.54	2.54	0.13
			0.00			1/2" Ice	6.87	2.79	0.17
			0.00			1" Ice	7.21	3.04	0.22
AIR 6468 B41	C	From Leg	2.00	0.0000	66.00	No Ice	6.54	2.54	0.13
			0.00			1/2" Ice	6.87	2.79	0.17
			0.00			1" Ice	7.21	3.04	0.22

## Dishes

**tnxTower**

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Overland Park, KS 66212  
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**Project**  
KC71XC103, Leawood South Maint. Bldg

**Date**  
14:59:27 10/19/18

**Client**  
Sprint

**Designed by**  
ARS

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft <sup>2</sup>	Weight K
Motorola Canopy 14" Dish	A	Paraboloid w/Radome	From Leg	2.00 0.00 0.00	0.0000		70.00	1.17	No Ice 1.07 1/2" Ice 1.23 1" Ice 1.39	0.01 0.01 0.02

## Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service

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Comb. No.	Description
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

### Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	69 - 50.75	Pole	Max Tension	26	0.00	0.00	0.00
			Max. Compression	26	-7.21	0.00	0.12
			Max. Mx	8	-3.36	-81.95	-0.08
			Max. My	14	-3.36	0.00	-82.28
			Max. Vy	8	8.20	-81.95	-0.08
			Max. Vx	14	8.22	0.00	-82.28
L2	50.75 - 0	Pole	Max. Torque	10			0.06
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.14	0.00	0.12
			Max. Mx	8	-14.64	-998.96	-0.40
			Max. My	14	-14.64	0.00	-1000.39
			Max. Vy	8	22.15	-998.96	-0.40
			Max. Vx	14	22.17	0.00	-1000.39
			Max. Torque	10			0.06

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	23.14	0.00	4.23
	Max. H <sub>x</sub>	21	11.01	22.13	-0.01
	Max. H <sub>z</sub>	2	14.68	0.00	22.14
	Max. M <sub>x</sub>	2	999.89	0.00	22.14
	Max. M <sub>z</sub>	8	998.96	-22.13	-0.01
	Max. Torsion	10	0.06	-19.17	-11.07
	Min. Vert	7	11.01	-19.16	11.06
	Min. H <sub>x</sub>	8	14.68	-22.13	-0.01
	Min. H <sub>z</sub>	14	14.68	0.00	-22.15
	Min. M <sub>x</sub>	14	-1000.39	0.00	-22.15
	Min. M <sub>z</sub>	20	-998.96	22.13	-0.01
	Min. Torsion	18	-0.06	19.17	-11.07

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	12.23	0.00	0.00	-0.02	0.00	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	14.68	0.00	-22.14	-999.89	0.00	0.00
0.9 Dead+1.6 Wind 0 deg - No Ice	11.01	0.00	-22.14	-995.65	0.00	0.00

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Load Combination	Vertical	Shear <sub>x</sub>	Shear <sub>y</sub>	Overturing Moment, M <sub>x</sub>	Overturing Moment, M <sub>y</sub>	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.6 Wind 30 deg - No Ice	14.68	11.07	-19.17	-865.68	-499.70	-0.04
0.9 Dead+1.6 Wind 30 deg - No Ice	11.01	11.07	-19.17	-862.01	-497.59	-0.03
1.2 Dead+1.6 Wind 60 deg - No Ice	14.68	19.16	-11.06	-499.37	-865.11	-0.05
0.9 Dead+1.6 Wind 60 deg - No Ice	11.01	19.16	-11.06	-497.25	-861.45	-0.05
1.2 Dead+1.6 Wind 90 deg - No Ice	14.68	22.13	0.01	0.40	-998.96	-0.06
0.9 Dead+1.6 Wind 90 deg - No Ice	11.01	22.13	0.01	0.41	-994.73	-0.06
1.2 Dead+1.6 Wind 120 deg - No Ice	14.68	19.17	11.07	500.14	-865.60	-0.06
0.9 Dead+1.6 Wind 120 deg - No Ice	11.01	19.17	11.07	498.03	-861.93	-0.06
1.2 Dead+1.6 Wind 150 deg - No Ice	14.68	11.07	19.18	866.41	-500.14	-0.04
0.9 Dead+1.6 Wind 150 deg - No Ice	11.01	11.07	19.18	862.74	-498.02	-0.04
1.2 Dead+1.6 Wind 180 deg - No Ice	14.68	0.00	22.15	1000.39	0.00	0.00
0.9 Dead+1.6 Wind 180 deg - No Ice	11.01	0.00	22.15	996.16	0.00	0.00
1.2 Dead+1.6 Wind 210 deg - No Ice	14.68	-11.07	19.18	866.41	500.14	0.04
0.9 Dead+1.6 Wind 210 deg - No Ice	11.01	-11.07	19.18	862.74	498.02	0.04
1.2 Dead+1.6 Wind 240 deg - No Ice	14.68	-19.17	11.07	500.14	865.60	0.06
0.9 Dead+1.6 Wind 240 deg - No Ice	11.01	-19.17	11.07	498.03	861.93	0.06
1.2 Dead+1.6 Wind 270 deg - No Ice	14.68	-22.13	0.01	0.40	998.96	0.06
0.9 Dead+1.6 Wind 270 deg - No Ice	11.01	-22.13	0.01	0.41	994.73	0.06
1.2 Dead+1.6 Wind 300 deg - No Ice	14.68	-19.16	-11.06	-499.37	865.11	0.05
0.9 Dead+1.6 Wind 300 deg - No Ice	11.01	-19.16	-11.06	-497.25	861.45	0.05
1.2 Dead+1.6 Wind 330 deg - No Ice	14.68	-11.07	-19.17	-865.68	499.70	0.04
0.9 Dead+1.6 Wind 330 deg - No Ice	11.01	-11.07	-19.17	-862.01	497.59	0.03
1.2 Dead+1.0 Ice+1.0 Temp	23.14	0.00	0.00	-0.12	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	23.14	0.00	-4.23	-190.93	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	23.14	2.12	-3.67	-165.31	-95.35	-0.01
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	23.14	3.67	-2.12	-95.40	-165.07	-0.01
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	23.14	4.23	0.00	-0.04	-190.61	-0.01
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	23.14	3.67	2.12	95.32	-165.17	-0.01
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	23.14	2.12	3.67	165.22	-95.44	-0.01
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	23.14	0.00	4.24	190.79	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	23.14	-2.12	3.67	165.22	95.44	0.01

Load Combination	Vertical	Shear <sub>x</sub>	Shear <sub>y</sub>	Overturning Moment, M <sub>x</sub>	Overturning Moment, M <sub>y</sub>	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	23.14	-3.67	2.12	95.32	165.17	0.01
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	23.14	-4.23	0.00	-0.04	190.61	0.01
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	23.14	-3.67	-2.12	-95.40	165.07	0.01
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	23.14	-2.12	-3.67	-165.31	95.35	0.01
Dead+Wind 0 deg - Service	12.23	0.00	-5.63	-253.58	0.00	0.00
Dead+Wind 30 deg - Service	12.23	2.81	-4.87	-219.55	-126.72	-0.01
Dead+Wind 60 deg - Service	12.23	4.87	-2.81	-126.65	-219.39	-0.01
Dead+Wind 90 deg - Service	12.23	5.62	0.00	0.09	-253.33	-0.01
Dead+Wind 120 deg - Service	12.23	4.87	2.81	126.82	-219.51	-0.02
Dead+Wind 150 deg - Service	12.23	2.81	4.87	219.71	-126.83	-0.01
Dead+Wind 180 deg - Service	12.23	0.00	5.63	253.69	0.00	0.00
Dead+Wind 210 deg - Service	12.23	-2.81	4.87	219.71	126.83	0.01
Dead+Wind 240 deg - Service	12.23	-4.87	2.81	126.82	219.51	0.02
Dead+Wind 270 deg - Service	12.23	-5.62	0.00	0.09	253.33	0.01
Dead+Wind 300 deg - Service	12.23	-4.87	-2.81	-126.65	219.39	0.01
Dead+Wind 330 deg - Service	12.23	-2.81	-4.87	-219.55	126.72	0.01

**Solution Summary**

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-12.23	0.00	0.00	12.23	0.00	0.000%
2	0.00	-14.68	-22.14	0.00	14.68	22.14	0.000%
3	0.00	-11.01	-22.14	0.00	11.01	22.14	0.000%
4	11.07	-14.68	-19.17	-11.07	14.68	19.17	0.000%
5	11.07	-11.01	-19.17	-11.07	11.01	19.17	0.000%
6	19.16	-14.68	-11.06	-19.16	14.68	11.06	0.000%
7	19.16	-11.01	-11.06	-19.16	11.01	11.06	0.000%
8	22.13	-14.68	0.01	-22.13	14.68	-0.01	0.000%
9	22.13	-11.01	0.01	-22.13	11.01	-0.01	0.000%
10	19.17	-14.68	11.07	-19.17	14.68	-11.07	0.000%
11	19.17	-11.01	11.07	-19.17	11.01	-11.07	0.000%
12	11.07	-14.68	19.18	-11.07	14.68	-19.18	0.000%
13	11.07	-11.01	19.18	-11.07	11.01	-19.18	0.000%
14	0.00	-14.68	22.15	0.00	14.68	-22.15	0.000%
15	0.00	-11.01	22.15	0.00	11.01	-22.15	0.000%
16	-11.07	-14.68	19.18	11.07	14.68	-19.18	0.000%
17	-11.07	-11.01	19.18	11.07	11.01	-19.18	0.000%
18	-19.17	-14.68	11.07	19.17	14.68	-11.07	0.000%
19	-19.17	-11.01	11.07	19.17	11.01	-11.07	0.000%
20	-22.13	-14.68	0.01	22.13	14.68	-0.01	0.000%
21	-22.13	-11.01	0.01	22.13	11.01	-0.01	0.000%
22	-19.16	-14.68	-11.06	19.16	14.68	11.06	0.000%
23	-19.16	-11.01	-11.06	19.16	11.01	11.06	0.000%
24	-11.07	-14.68	-19.17	11.07	14.68	19.17	0.000%
25	-11.07	-11.01	-19.17	11.07	11.01	19.17	0.000%
26	0.00	-23.14	0.00	0.00	23.14	0.00	0.000%
27	0.00	-23.14	-4.23	0.00	23.14	4.23	0.000%
28	2.12	-23.14	-3.67	-2.12	23.14	3.67	0.000%
29	3.67	-23.14	-2.12	-3.67	23.14	2.12	0.000%
30	4.23	-23.14	0.00	-4.23	23.14	-0.00	0.000%
31	3.67	-23.14	2.12	-3.67	23.14	-2.12	0.000%
32	2.12	-23.14	3.67	-2.12	23.14	-3.67	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
33	0.00	-23.14	4.24	0.00	23.14	-4.24	0.000%
34	-2.12	-23.14	3.67	2.12	23.14	-3.67	0.000%
35	-3.67	-23.14	2.12	3.67	23.14	-2.12	0.000%
36	-4.23	-23.14	0.00	4.23	23.14	-0.00	0.000%
37	-3.67	-23.14	-2.12	3.67	23.14	2.12	0.000%
38	-2.12	-23.14	-3.67	2.12	23.14	3.67	0.000%
39	0.00	-12.23	-5.63	0.00	12.23	5.63	0.000%
40	2.81	-12.23	-4.87	-2.81	12.23	4.87	0.000%
41	4.87	-12.23	-2.81	-4.87	12.23	2.81	0.000%
42	5.62	-12.23	0.00	-5.62	12.23	-0.00	0.000%
43	4.87	-12.23	2.81	-4.87	12.23	-2.81	0.000%
44	2.81	-12.23	4.87	-2.81	12.23	-4.87	0.000%
45	0.00	-12.23	5.63	0.00	12.23	-5.63	0.000%
46	-2.81	-12.23	4.87	2.81	12.23	-4.87	0.000%
47	-4.87	-12.23	2.81	4.87	12.23	-2.81	0.000%
48	-5.62	-12.23	0.00	5.62	12.23	-0.00	0.000%
49	-4.87	-12.23	-2.81	4.87	12.23	2.81	0.000%
50	-2.81	-12.23	-4.87	2.81	12.23	4.87	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	4	0.0000001	0.0000857
3	Yes	4	0.0000001	0.0000001
4	Yes	5	0.0000001	0.0002871
5	Yes	4	0.0000001	0.00082136
6	Yes	5	0.0000001	0.0002895
7	Yes	4	0.0000001	0.00082810
8	Yes	4	0.0000001	0.0001752
9	Yes	4	0.0000001	0.0001039
10	Yes	5	0.0000001	0.0002864
11	Yes	4	0.0000001	0.00081967
12	Yes	5	0.0000001	0.0002904
13	Yes	4	0.0000001	0.00083073
14	Yes	4	0.0000001	0.0000858
15	Yes	4	0.0000001	0.0000001
16	Yes	5	0.0000001	0.0002904
17	Yes	4	0.0000001	0.00083073
18	Yes	5	0.0000001	0.0002864
19	Yes	4	0.0000001	0.00081967
20	Yes	4	0.0000001	0.0001752
21	Yes	4	0.0000001	0.0001039
22	Yes	5	0.0000001	0.0002895
23	Yes	4	0.0000001	0.00082810
24	Yes	5	0.0000001	0.0002871
25	Yes	4	0.0000001	0.00082136
26	Yes	4	0.0000001	0.0000001
27	Yes	4	0.0000001	0.00024520
28	Yes	4	0.0000001	0.00028380
29	Yes	4	0.0000001	0.00028377
30	Yes	4	0.0000001	0.00024452
31	Yes	4	0.0000001	0.00028295
32	Yes	4	0.0000001	0.00028366
33	Yes	4	0.0000001	0.00024464

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34	Yes	4	0.0000001	0.00028366
35	Yes	4	0.0000001	0.00028295
36	Yes	4	0.0000001	0.00024452
37	Yes	4	0.0000001	0.00028377
38	Yes	4	0.0000001	0.00028380
39	Yes	4	0.0000001	0.00000001
40	Yes	4	0.0000001	0.00004426
41	Yes	4	0.0000001	0.00004545
42	Yes	4	0.0000001	0.00000001
43	Yes	4	0.0000001	0.00004393
44	Yes	4	0.0000001	0.00004558
45	Yes	4	0.0000001	0.00000001
46	Yes	4	0.0000001	0.00004558
47	Yes	4	0.0000001	0.00004393
48	Yes	4	0.0000001	0.00000001
49	Yes	4	0.0000001	0.00004545
50	Yes	4	0.0000001	0.00004426

**Maximum Tower Deflections - Service Wind**

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	69 - 50.75	8.489	44	0.9655	0.0004
L2	53.25 - 0	5.416	44	0.8655	0.0002

**Critical Deflections and Radius of Curvature - Service Wind**

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
72.50	Top Branches	44	8.489	0.9655	0.0004	9313
70.00	Motorola Canopy 14" Dish	44	8.489	0.9655	0.0004	9313
67.50	Top Branches	44	8.180	0.9576	0.0004	9313
66.00	T-Arm Mount	44	7.873	0.9497	0.0004	9313
62.50	Branches (9' Max)	44	7.163	0.9303	0.0003	7164
57.50	Branches (9' Max)	44	6.188	0.8985	0.0002	4050
55.00	T-Arm Mount	44	5.726	0.8799	0.0002	3398
52.50	Branches (9' Max)	44	5.287	0.8589	0.0002	3132
47.50	Branches (9' Max)	44	4.481	0.8091	0.0001	3314
42.50	Branches (9' Max)	44	3.767	0.7497	0.0001	3703
37.50	Branches (9' Max)	44	3.133	0.6817	0.0000	4197
32.50	Branches (9' Max)	44	2.571	0.6062	0.0000	4843
27.50	Branches (9' Max)	44	2.070	0.5240	0.0000	5723
22.50	Branches (10' Max)	44	1.622	0.4363	0.0000	6995
17.50	Branches (10' Max)	44	1.217	0.3441	0.0000	8993

**Maximum Tower Deflections - Design Wind**

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	69 - 50.75	33.481	14	3.8105	0.0018
L2	53.25 - 0	21.362	14	3.4154	0.0007

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
72.50	Top Branches	14	33.481	3.8105	0.0018	2376
70.00	Motorola Canopy 14" Dish	14	33.481	3.8105	0.0018	2376
67.50	Top Branches	14	32.265	3.7795	0.0017	2376
66.00	T-Arm Mount	14	31.052	3.7481	0.0016	2376
62.50	Branches (9' Max)	14	28.253	3.6714	0.0013	1828
57.50	Branches (9' Max)	14	24.407	3.5459	0.0010	1033
55.00	T-Arm Mount	14	22.585	3.4724	0.0008	866
52.50	Branches (9' Max)	14	20.853	3.3894	0.0007	798
47.50	Branches (9' Max)	14	17.676	3.1928	0.0004	843
42.50	Branches (9' Max)	14	14.857	2.9584	0.0003	942
37.50	Branches (9' Max)	14	12.358	2.6900	0.0001	1067
32.50	Branches (9' Max)	14	10.140	2.3918	0.0000	1230
27.50	Branches (9' Max)	14	8.166	2.0677	0.0000	1453
22.50	Branches (10' Max)	14	6.400	1.7216	0.0000	1776
17.50	Branches (10' Max)	14	4.802	1.3577	0.0000	2283

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	$L_u$ ft	$KI/r$	A $in^2$	$P_z$ K	$\phi P_n$ K	Ratio $\frac{P_z}{\phi P_n}$
L1	69 - 50.75 (1)	TP19.18x14.75x0.1875	18.25	0.00	0.0	10.9418	-3.36	812.92	0.004
L2	50.75 - 0 (2)	TP31.14x18.1982x0.3125	53.25	0.00	0.0	30.5770	-14.64	2271.72	0.006

### Pole Bending Design Data

Section No.	Elevation ft	Size	$M_{ux}$ kip-ft	$\phi M_{ux}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	$M_{uy}$ kip-ft	$\phi M_{uy}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	69 - 50.75 (1)	TP19.18x14.75x0.1875	82.28	306.63	0.268	0.00	306.63	0.000
L2	50.75 - 0 (2)	TP31.14x18.1982x0.3125	1000.40	1436.83	0.696	0.00	1436.83	0.000

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### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual	$\phi V_n$	Ratio	Actual	$\phi T_n$	Ratio
			$V_n$ K	K	$\frac{V_n}{\phi V_n}$	$T_n$ kip-ft	$\frac{T_n}{\phi T_n}$	
L1	69 - 50.75 (1)	TP19.18x14.75x0.1875	8.22	406.46	0.020	0.04	614.95	0.000
L2	50.75 - 0 (2)	TP31.14x18.1982x0.3125	22.17	1135.86	0.020	0.04	2881.57	0.000

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$\frac{P_n}{\phi P_n}$	$\frac{M_{ux}}{\phi M_{ux}}$	$\frac{M_{uy}}{\phi M_{uy}}$	$\frac{V_n}{\phi V_n}$	$\frac{T_n}{\phi T_n}$			
L1	69 - 50.75 (1)	0.004	0.268	0.000	0.020	0.000	0.273	1.000	4.8.2 ✓
L2	50.75 - 0 (2)	0.006	0.696	0.000	0.020	0.000	0.703 ✓	1.000	4.8.2 ✓

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail
L1	69 - 50.75	Pole	TP19.18x14.75x0.1875	1	-3.36	812.92	27.3	Pass
L2	50.75 - 0	Pole	TP31.14x18.1982x0.3125	2	-14.64	2271.72	70.3	Pass
Summary								
Pole (L2)							70.3	Pass
RATING =							<b>70.3</b>	<b>Pass</b>

## Stiffened or Unstiffened, UngROUTed, Circular Base Plate - Any Rod Material

**TIA Rev G** Assumption: Clear space between bottom of leveling nut and top of concrete not exceeding (1)\*(Rod Diameter)

### Site Data

BU#:	
Site Name:	
App #:	
Pole Manufacturer:	<i>Other</i>

### Anchor Rod Data

Qty:	6	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	37	in

### Plate Data

Diam:	43	in
Thick:	3	in
Grade:	50	ksi
Single-Rod B-eff:	13.97	in

### Stiffener Data (Welding at both sides)

Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

### Pole Data

Diam:	31.14	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

### Reactions

Mu:	1000	ft-kips
Axial, Pu:	14.7	kips
Shear, Vu:	22.1	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

If No stiffeners, Criteria: **AISC LRFD** <- Only Applicable to Unstiffened Cases

### Anchor Rod Results

Max Rod (Cu+ Vu/rf):	226.0 Kips
Allowable Axial, $\Phi^*Fu^*Anet$ :	260.0 Kips
Anchor Rod Stress Ratio:	86.9% <span style="color: green;">Pass</span>

Rigid
AISC LRFD
$\phi^*Tn$

### Base Plate Results

Base Plate Stress:	14.3 ksi
Allowable Plate Stress:	45.0 ksi
Base Plate Stress Ratio:	31.7% <span style="color: green;">Pass</span>

### Flexural Check

Rigid
AISC LRFD
$\phi^*Fy$
Y.L. Length:
19.98

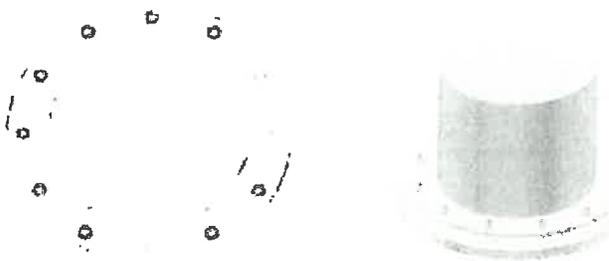
n/a

### Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, $fb/Fb+(fv/Fv)^2$ :	n/a
Plate Tension+Shear, $ft/Ft+(fv/Fv)^2$ :	n/a
Plate Comp. (AISC Bracket):	n/a

### Pole Results

Pole Punching Shear Check: n/a



\* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

\*\* Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes



## **TOWER ANALYSIS REPORT**

*Sprint*

**KC71XC103, Leawood South Maint. Bldg**

**SSC # KS-0386-C**

**October 19, 2018**

**SSC Inc.**

2171 West 95th St., Suite 600, Overland Park, KS 66212

Ph: (913) 438-7700 Fax: (913) 438-7777

**serve solve communicate**

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## **GENERAL TOWER INFORMATION**

<b>Date:</b>	October 19, 2018
<b>Site Name:</b>	Leawood South Maint. Bldg
<b>Site Location:</b>	Leawood, Johnson County, KS
<b>Site Code:</b>	KC71XC103
<b>Proposed Carrier:</b>	Sprint
<b>Tower Height:</b>	70'
<b>Tower Type:</b>	Monopine
<b>Tower Manufacturer:</b>	Sabre
<b>Design Standard:</b>	IBC 2012, TIA-222-G
<b>Structural Classification:</b>	II
<b>Wind Loading:</b>	115 mph ult., 89 mph nom. w/o ice
<b>Wind and Ice Loading:</b>	40 mph w/ 1.00" ice
<b>Serviceability Criteria:</b>	60 mph w/o ice
<b>Exposure Category:</b>	C
<b>Topographic Category:</b>	1
<b>Seismic Criteria:</b>	Ss = 0.13
<b>SSC Project Number:</b>	KS-0386-C

## **Introduction**

Selective Site Consultants, Inc. (SSC) has performed a rigorous structural analysis for the referenced existing communication tower. The purpose of this analysis is to determine the overall stability and structural adequacy of the existing structure to accommodate the proposed changed condition in accordance with TIA-222-G.

## **Source of Data**

Our analysis is based on information provided in the table below.

<b>Document</b>	<b>Remarks</b>	<b>Date</b>
Tower Geometry	Sabre (Job #09-01227)	02/02/2009
Existing Loading	SSC Project #KS-0386-A	03/26/2014
Foundation Information	Sabre (Job #09-01227)	02/02/2009
Geotechnical Reference	Terracon (Project # 02085366)	01/05/2009
Proposed Loading	Sprint RFDS	03/30/2018

This analysis assumes the monopole is fabricated from A572 Gr. 65 ksi steel and the base plate is fabricated from Gr. 50 ksi steel. Anchor Bolts are assumed as A615 Gr. 75 ksi. All other steel assumed to be 36 ksi.

A comprehensive structural analysis was performed utilizing tnxTower Version 8.0.2.1 software. The calculations were performed in accordance with TIA-222-G 'Structural Standard for Antenna Supporting Structures and Antennas'. The tower was analyzed for TIA-222-G specified load combinations, with the specified loads, as reproduced in General Tower Information of this report. Structural Classification, Exposure Category, and Topographic Category are also listed General Tower Information of this report. Topographic Category and the height of topographic features were estimated from USGS Quadrangle maps. This analysis considers wind from all specified directions. See the Appendix B for structural calculations.

**Sprint**  
**KC71XC103, Leawood South Maint. Bldg**  
**SSC # KS-0386-C, page 4**

### Antenna and Transmission Line Loading

Our understanding of the antenna and transmission line loading conditions is shown below.

Antenna Status	Qty	Antenna Vender	Antenna Type	CL Elev. Ant./Mount	Mount	Azimuth	Feed Line
Existing	3	Sabre	Tree Pole Branch	72.5'/72.5'	Pole	N/A	N/A
	3	Sabre	Tree Pole Branch	67.5'/67.5'			
Existing (Sprint)	1	Unknown	Motorola Canopy 14" Dish	70'/66'	(3) T-Arms	Unknown	(1) Cat5 Cable
Existing (Sprint)	3	RFS	APXVERR18-C w/ (9) RETs	66'/66'		Sectored	(1) MIMO Hybrid
Proposed (Sprint)	3	Ericsson	AIR 6468				
Existing	3	Sabre	Tree Pole Branch	62.5'/62.5'	Pole	N/A	N/A
	3	Sabre	Tree Pole Branch	57.5'/57.5'			
Existing (Sprint)	3	Ericsson	RRU 11	55'/55'	(3) T-Arms	Sectored	(3) Hybrid Cable
Existing (Sprint)	3	Ericsson	RRU 31				
Existing	3	Sabre	Tree Pole Branch	52.5'/52.5'	Pole	N/A	N/A
	3	Sabre	Tree Pole Branch	47.5'/47.5'			
	3	Sabre	Tree Pole Branch	42.5'/42.5'			
	3	Sabre	Tree Pole Branch	37.5'/37.5'			
	3	Sabre	Tree Pole Branch	32.5'/32.5'			
	3	Sabre	Tree Pole Branch	27.5'/27.5'			
	3	Sabre	Tree Pole Branch	22.5'/22.5'			
	3	Sabre	Tree Pole Branch	17.5'/17.5'			

Note:

1. All feed lines are assumed to be inside of the pole.

## **Structural Analysis of Tower Results**

The analysis of the existing tower with the proposed loadings installed indicates no member overstressing according to the TIA-222-G Structural Standard. Results of the analysis are shown in the following table and calculations may be found in Appendix B:

<b>Tower Section</b>	<b>Max % Allowable Stress</b>
Pole Steel (69' - 50.75')	27.3
Pole Steel (50.75' - 0')	70.3
Base Plate	31.7
Anchor Bolts	86.9

## **Foundation Analysis Results**

Reactions corresponding to the proposed factored loading were investigated and compared to the foundation design factored loading. Reactions are duplicated in the following table:

<b>Reaction</b>	<b>Sabre Design Factored Load</b>	<b>Max proposed Factored loading</b>	<b>% design value</b>
Moment, kip-ft	1117	1000	92
Shear, kips	25.8	22.1	87
Axial, kips	22.5	14.7	67

The reactions corresponding to the proposed factored loading are less than the original factored design reactions. Assuming the original foundations were properly installed for the geotechnical conditions referenced above, the existing foundation can be considered adequate for the proposed loading condition.

## **Recommendations**

It is our conclusion that the tower as analyzed **does comply** with TIA-222-G standards under the proposed loading condition.

If the proposed loading conditions are different or change from those analyzed, this report shall be deemed obsolete and further investigation will be required.

If you have any questions or comments, please do not hesitate to call.

Sincerely,

*Albert Schmidt*

Albert Schmidt P.E.

# **APPENDIX A**

## **General Conditions**

Please note that SSC makes no warranties, expressed or implied in connection with this report and disclaims any liability arising from original design, material, fabrication and erection deficiencies for this tower.

It is the responsibility of the Client to ensure that information provided by the Client to SSC and used in this analysis is correct. This information is assumed correct unless notified otherwise by the Client.

This analysis assumes the tower steel is in its original state with no deterioration due to improper erection procedures or field modifications and does not consider fabrication quality. The recommendations, conclusions, and opinions contained in this report pertain only to the analysis of the tower structure and the load carrying capacity of its members.

This analysis assumes any suggested modifications are installed as recommended and is not intended to address temporary conditions of the tower as modifications are being performed. It is strongly recommended that the Installer of any tower modification thoroughly assess installation procedures and how temporary conditions present while modifications are being performed influence tower members. Installer is responsible for sequence of operation and any required temporary bracing or strengthening of tower during modification operations. SSC is not responsible for the conclusions, opinion, or recommendations made by others based on the information we supply.

# **APPENDIX B**

## **Structural Calculations and Diagrams Existing Tower with Proposed Loading**

Section	1	2
Length (ft)	18.25	53.25
Number of Sides	18	18
Thickness (in)	0.1875	0.3125
Socket Length (ft)	2.50	18.1882
Top Dia (in)	14.7500	31.1400
Bot Dia (in)	18.1800	4.5
Grade	AS72-65	AS72-65
Weight (K)	0.7	5.2

59.0 ft

50.8 ft

0.0 ft

**DESIGNED APPURTENANCE LOADING**

TYPE	ELEVATION	TYPE	ELEVATION
Top Branches	72.5	RRUS 31 B25	55
Top Branches	72.5	RRUS 31 B25	55
Top Branches	72.5	RRUS 31 B25	55
Motorola Canopy 14' Dish	70	Branches (9' Max)	52.5
Top Branches	67.5	Branches (9' Max)	52.5
Top Branches	67.5	Branches (9' Max)	52.5
Top Branches	67.5	Branches (9' Max)	47.5
T-Arm Mount	66	Branches (9' Max)	47.5
T-Arm Mount	66	Branches (9' Max)	47.5
T-Arm Mount	66	Branches (9' Max)	42.5
APXVERR18-C	66	Branches (9' Max)	42.5
APXVERR18-C	66	Branches (9' Max)	42.5
APXVERR18-C	66	Branches (9' Max)	37.5
AIR 6468 B41	66	Branches (9' Max)	37.5
AIR 6468 B41	66	Branches (9' Max)	37.5
AIR 6468 B41	66	Branches (9' Max)	32.5
Branches (9' Max)	62.5	Branches (9' Max)	32.5
Branches (9' Max)	62.5	Branches (9' Max)	32.5
Branches (9' Max)	62.5	Branches (9' Max)	27.5
Branches (9' Max)	57.5	Branches (9' Max)	27.5
Branches (9' Max)	57.5	Branches (9' Max)	27.5
Branches (9' Max)	57.5	Branches (10' Max)	22.5
T-Arm Mount	55	Branches (10' Max)	22.5
T-Arm Mount	55	Branches (10' Max)	22.5
T-Arm Mount	55	Branches (10' Max)	17.5
RRU-11	55	Branches (10' Max)	17.5
RRU-11	55	Branches (10' Max)	17.5
RRU-11	55	Branches (10' Max)	17.5

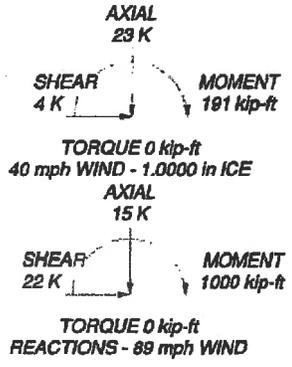
**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
AS72-65	65 ksi	80 ksi			

**TOWER DESIGN NOTES**

1. Tower is located in Johnson County, Kansas.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 69 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 70.3%

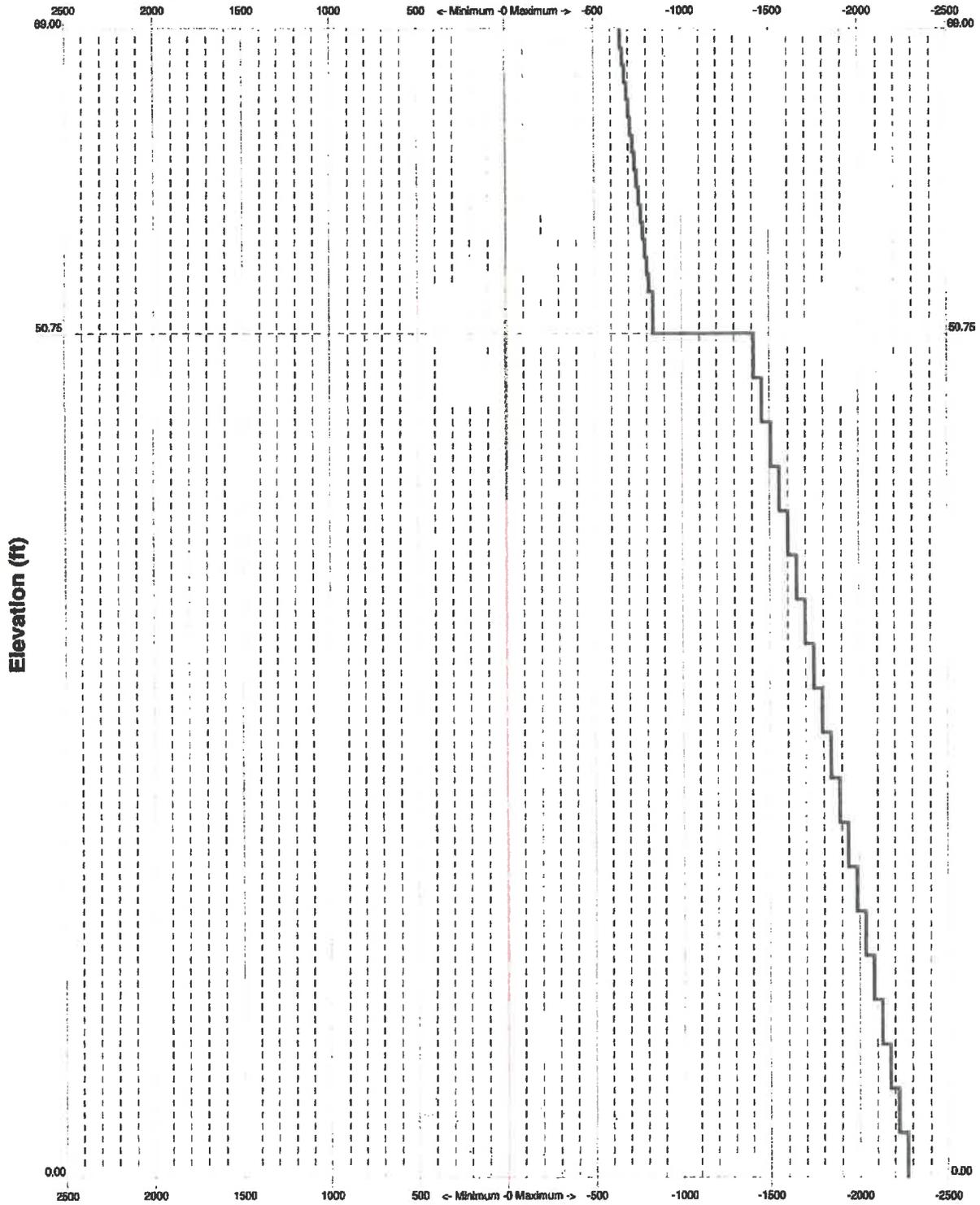
ALL REACTIONS ARE FACTORED



<b>SSC</b>		Job: <b>SSC # KS-0386-C</b>	
7171 West 95th Street, Suite 600		Project: <b>KC71XC103, Leawood South Maint. Bldg</b>	
Overland Park, KS 66212		Client: <b>Sprint</b>	Drawn by: <b>ARS</b>
Phone: (913) 438-7700		Code: <b>TIA-222-G</b>	Date: <b>10/19/18</b>
FAX: (913) 438-7777		Path: <b>C:\Tower Anal\KCB-0386\KCB-0386-CTM01.dwg</b>	Scale: <b>N</b>
		Dwg No.	

TIA-222-G - 89 mph/40 mph 1.000 in Ice Exposure C

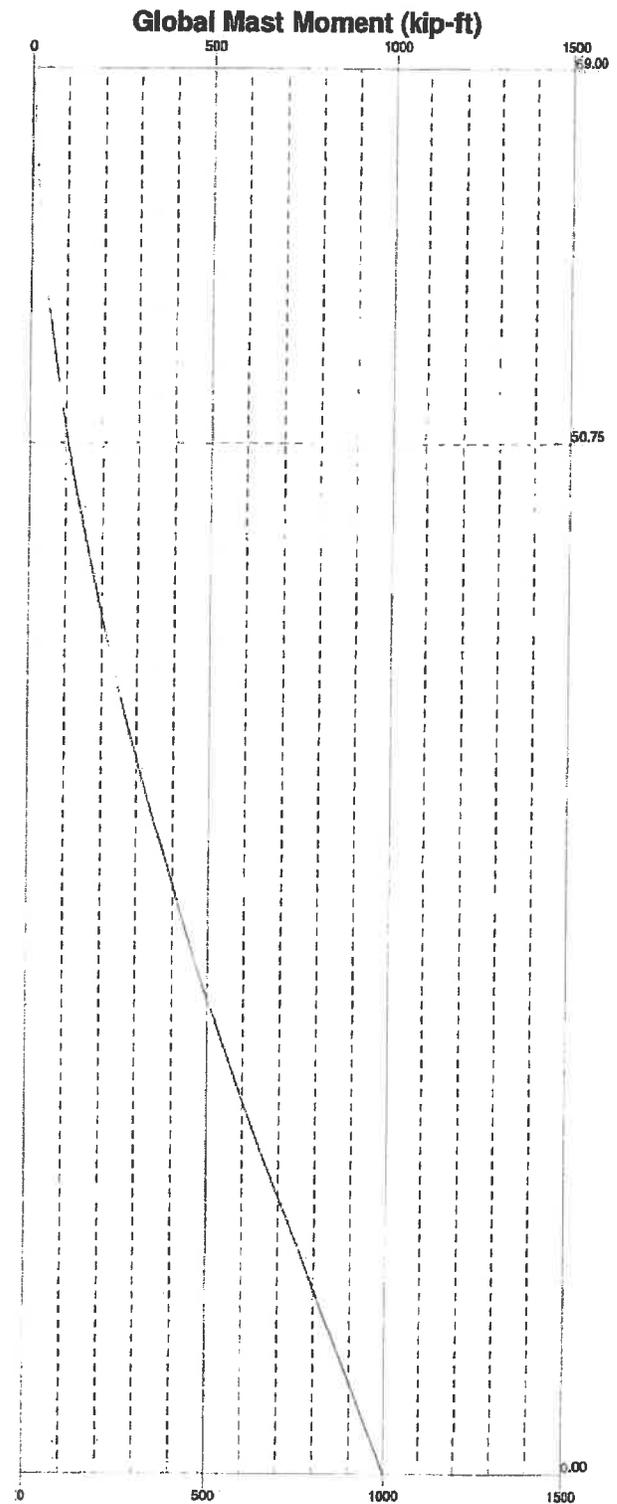
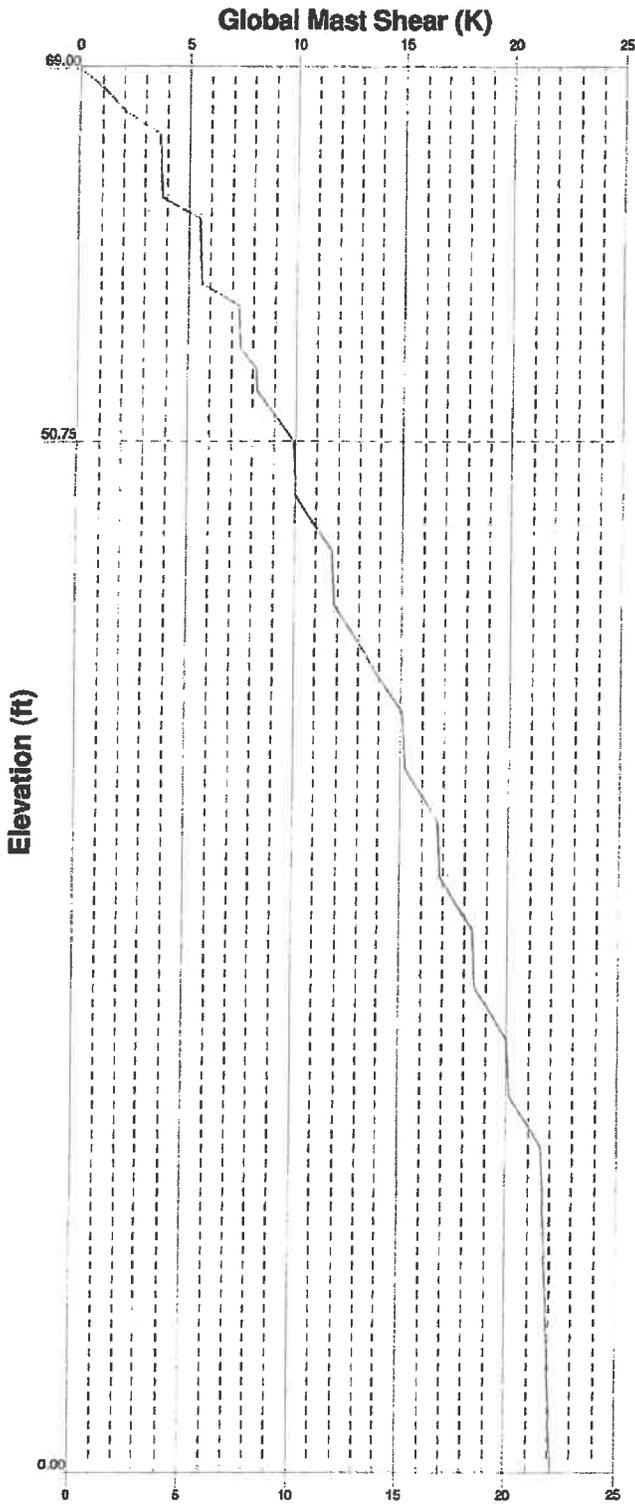
Leg Capacity ——— Leg Compression (K)



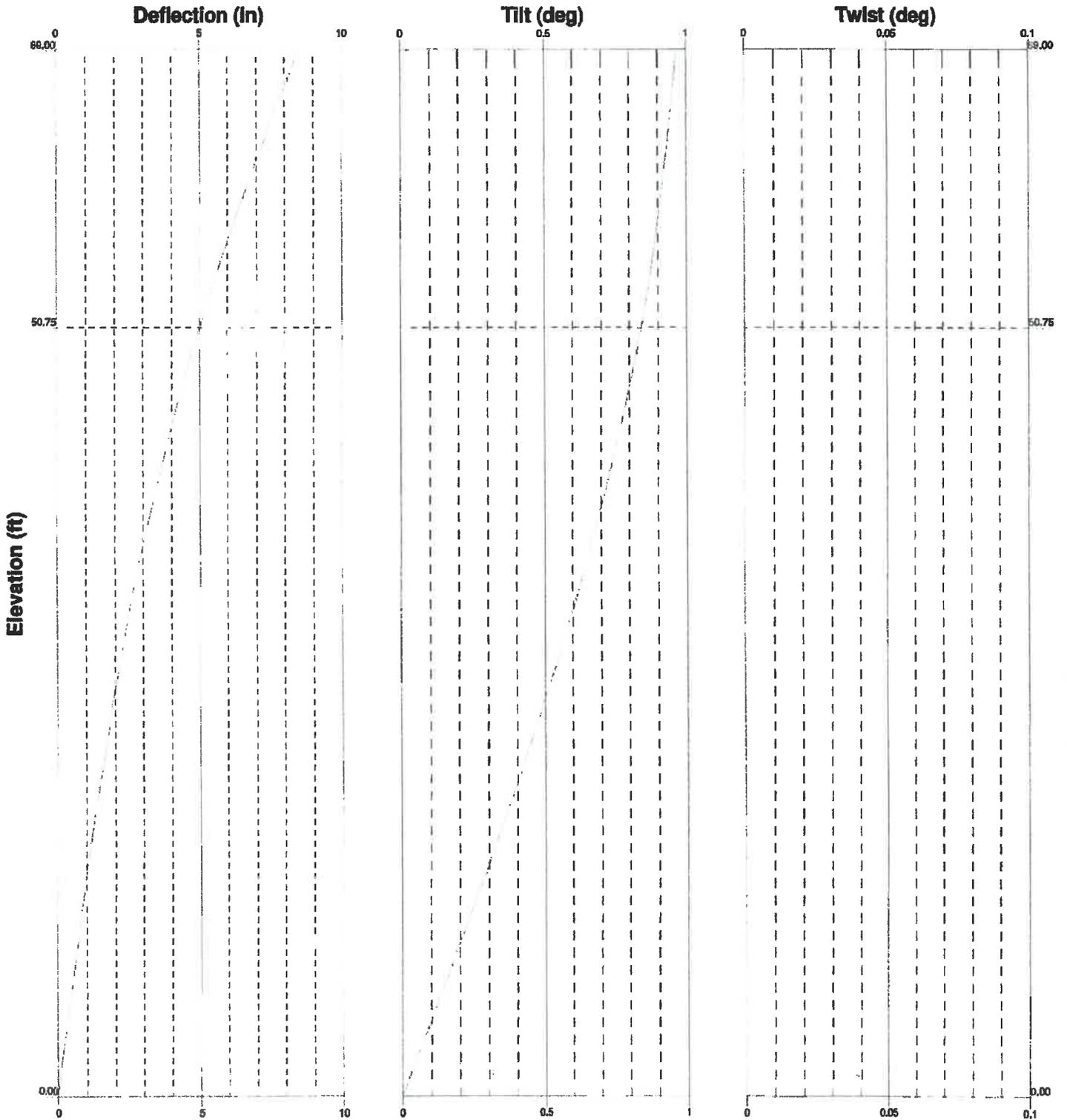
<b>SSC</b>		Job: <b>SSC # KS-0386-C</b>	
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Phone: (913) 438-7700		Code: <b>TIA-222-G</b>	Date: <b>10/19/18</b>
FAX: (913) 438-7777		Path: <b>C:\Tower Files\SSC-0386\KS-0386-C\TIA-222-G.dwg</b>	Scale: <b>N</b>
			Dwg No.:

Vx Vz

Mx Mz



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Phone: (913) 438-7700		Code: <b>TIA-222-G</b>	Date: <b>10/19/18</b>
FAX: (913) 438-7777		Path: <b>D:\Tower Anal\BKS-0386\KS-0386-CITN\Ana\10\KS-0386-Q.e</b>	App'd:
			Scale: <b>N</b>
			Dwg No.

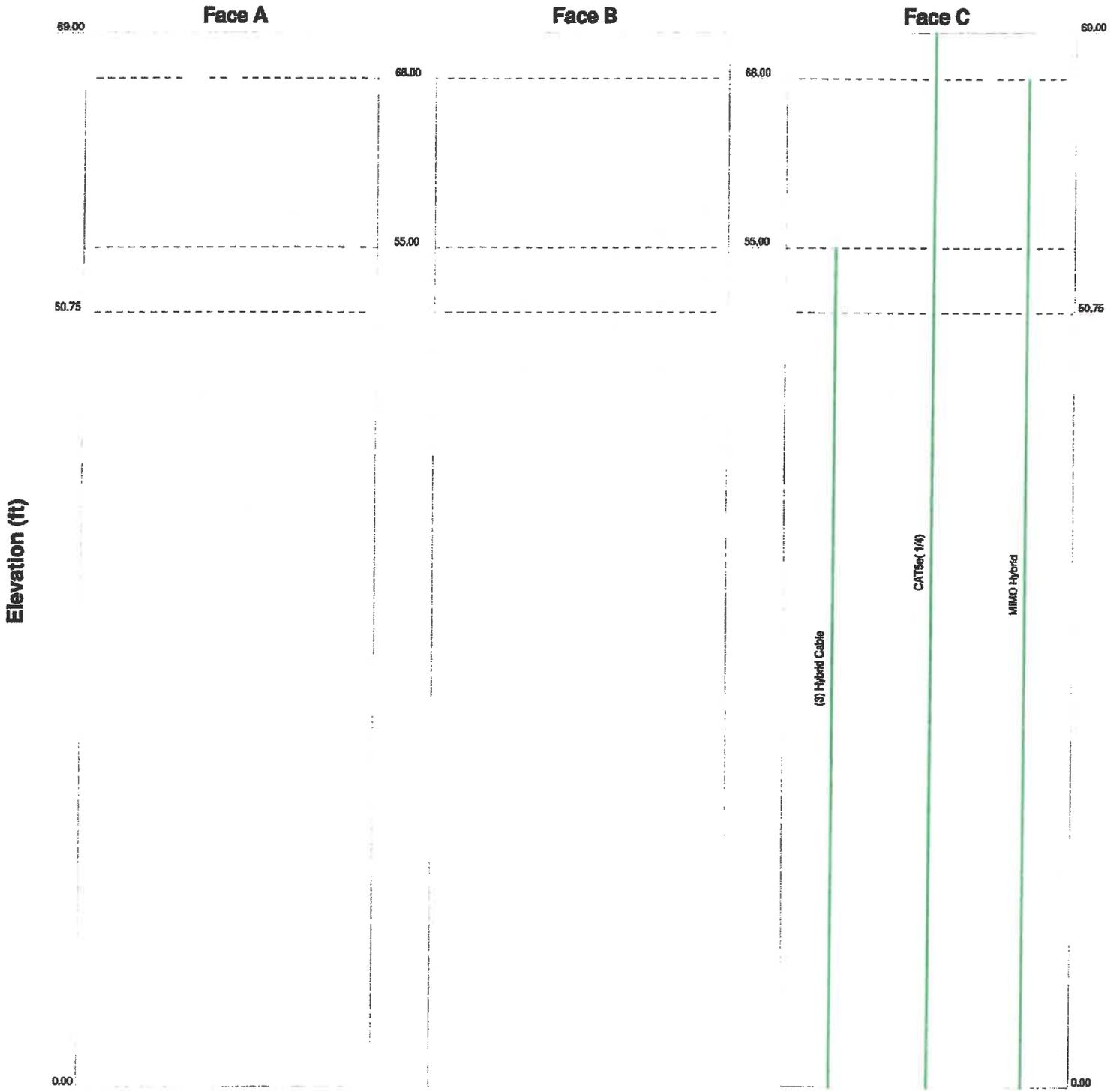


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Phone: (913) 438-7700		Code: <b>TIA-222-G</b>	Date: <b>10/19/18</b>
FAX: (913) 438-7777		Path:	Scale: <b>N</b>
		Dwg No.	

# Feed Line Distribution Chart

0' - 69'

— Round    — Flat    — App In Face    — App Out Face    — Truss Leg



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Phone: (913) 438-7700		Code: <b>TIA-222-G</b>	Date: <b>10/19/18</b>
FAX: (913) 438-7777		Path: <b>C:\Tower App\KS-0386\KS-0386-CIT\KS-0386-C.dwg</b>	App'd: _____
			Scale: <b>N</b>
			Dwg No. _____



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	<b>Project</b> KC71XC103, Leawood South Maint. Bldg		<b>Date</b> 14:59:27 10/19/18
	<b>Client</b> Sprint		<b>Designed by</b> ARS

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	69.00-50.75	18.25	2.50	18	14.7500	19.1800	0.1875	0.7500	A572-65 (65 ksi)
L2	50.75-0.00	53.25		18	18.1982	31.1400	0.3125	1.2500	A572-65 (65 ksi)

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w/t
L1	14.9486	8.6665	232.1953	5.1697	7.4930	30.9883	464.6962	4.3341	2.2660	12.085
	19.4470	11.3029	515.1006	6.7423	9.7434	52.8664	1030.8790	5.6525	3.0457	16.244
L2	19.0477	17.7403	716.9827	6.3494	9.2447	77.5564	1434.9087	8.8719	2.6529	8.489
	31.5722	30.5770	3671.2107	10.9438	15.8191	232.0743	7347.2521	15.2914	4.9306	15.778

Tower Elevation ft	Gusset Area ft <sup>2</sup> (per face)	Gusset Thickness in	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 69.00-50.75				1	1	1.05			
L2 50.75-0.00				1	1	1.05			

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Lev	Allow Shield	Component Type	Placement ft	Total Number	C <sub>A</sub> A <sub>A</sub> ft <sup>2</sup> /ft	Weight pl'
Hybrid Cable	C	No	Inside Pole	55.00 - 0.00	3	No Ice	1.04
						1/2" Ice	1.04
						1" Ice	1.04
CAT5e( 1/4)	C	No	Inside Pole	69.00 - 0.00	1	No Ice	0.04
						1/2" Ice	0.04
						1" Ice	0.04
MIMO Hybrid	C	No	Inside Pole	66.00 - 0.00	1	No Ice	1.04
						1/2" Ice	1.04
						1" Ice	1.04

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	69.00-50.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.03
L2	50.75-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.21

<b>inxTower</b>  <b>SSC</b> 7171 West 95th Street, Suite 600 Overland Park, KS 66212 Phone: (913) 438-7700 FAX: (913) 438-7777	SSC # KS-0386-C		Page 3 of 14
	Project KC71XC103, Leawood South Maint. Bldg		Date 14:59:27 10/19/18
	Client Sprint		Designed by ARS

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>N</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	69.00-50.75	A	2.121	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.03
L2	50.75-0.00	A	1.941	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.21

### Feed Line Center of Pressure

Section	Elevation ft	CP <sub>x</sub> in	CP <sub>z</sub> in	CP <sub>x</sub> Ice in	CP <sub>z</sub> Ice in
L1	69.00-50.75	0.0000	0.0000	0.0000	0.0000
L2	50.75-0.00	0.0000	0.0000	0.0000	0.0000

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
---------------	----------------------	-------------	-------------------------	--------------------------	-----------------------

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight K	
Top Branches	A	From Leg	0.00	0.0000	72.50	No Ice	8.33	8.33	0.08
			0.00			1/2" Ice	9.00	9.00	0.09
			0.00			1" Ice	9.67	9.67	0.10
Top Branches	B	From Leg	0.00	0.0000	72.50	No Ice	8.33	8.33	0.08
			0.00			1/2" Ice	9.00	9.00	0.09
			0.00			1" Ice	9.67	9.67	0.10
Top Branches	C	From Leg	0.00	0.0000	72.50	No Ice	8.33	8.33	0.08
			0.00			1/2" Ice	9.00	9.00	0.09
			0.00			1" Ice	9.67	9.67	0.10
Top Branches	A	From Leg	0.00	0.0000	67.50	No Ice	8.33	8.33	0.17
			0.00			1/2" Ice	9.00	9.00	0.18

**tnxTower**

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**SSC # KS-0386-C**

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**Project**  
 KC71XC103, Leawood South Maint. Bldg

**Date**  
 14:59:27 10/19/18

**Client**  
 Sprint

**Designed by**  
 ARS

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
Top Branches	B	From Leg	0.00		0.0000	67.50	1" Ice	9.67	9.67	0.19
			0.00				No Ice	8.33	8.33	0.17
			0.00				1/2" Ice	9.00	9.00	0.18
Top Branches	C	From Leg	0.00		0.0000	67.50	1" Ice	9.67	9.67	0.19
			0.00				No Ice	8.33	8.33	0.17
			0.00				1/2" Ice	9.00	9.00	0.18
Branches (9' Max)	A	From Leg	0.00		0.0000	62.50	1" Ice	9.67	9.67	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	B	From Leg	0.00		0.0000	62.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	C	From Leg	0.00		0.0000	62.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	A	From Leg	0.00		0.0000	57.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	B	From Leg	0.00		0.0000	57.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	C	From Leg	0.00		0.0000	57.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	A	From Leg	0.00		0.0000	52.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	B	From Leg	0.00		0.0000	52.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	C	From Leg	0.00		0.0000	52.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	A	From Leg	0.00		0.0000	47.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	B	From Leg	0.00		0.0000	47.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	C	From Leg	0.00		0.0000	47.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	A	From Leg	0.00		0.0000	42.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	B	From Leg	0.00		0.0000	42.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	C	From Leg	0.00		0.0000	42.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	A	From Leg	0.00		0.0000	37.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18
Branches (9' Max)	B	From Leg	0.00		0.0000	37.50	1" Ice	19.33	19.33	0.19
			0.00				No Ice	16.67	16.67	0.17
			0.00				1/2" Ice	18.00	18.00	0.18

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
Branches (9' Max)	C	From Leg	0.00	0.0000	37.50	1" Ice 19.33 No Ice 16.67	19.33 16.67	0.19 0.17
Branches (9' Max)	A	From Leg	0.00	0.0000	32.50	1" Ice 19.33 No Ice 16.67	19.33 16.67	0.19 0.17
Branches (9' Max)	B	From Leg	0.00	0.0000	32.50	1" Ice 19.33 No Ice 16.67	19.33 16.67	0.19 0.17
Branches (9' Max)	C	From Leg	0.00	0.0000	32.50	1" Ice 19.33 No Ice 16.67	19.33 16.67	0.19 0.17
Branches (9' Max)	A	From Leg	0.00	0.0000	27.50	1" Ice 19.33 No Ice 16.67	19.33 16.67	0.19 0.17
Branches (9' Max)	B	From Leg	0.00	0.0000	27.50	1" Ice 19.33 No Ice 16.67	19.33 16.67	0.19 0.17
Branches (9' Max)	C	From Leg	0.00	0.0000	27.50	1" Ice 19.33 No Ice 16.67	19.33 16.67	0.19 0.17
Branches (10' Max)	A	From Leg	0.00	0.0000	22.50	1" Ice 23.47 No Ice 18.53	23.47 18.53	0.23 0.19
Branches (10' Max)	B	From Leg	0.00	0.0000	22.50	1" Ice 23.47 No Ice 18.53	23.47 18.53	0.23 0.19
Branches (10' Max)	C	From Leg	0.00	0.0000	22.50	1" Ice 23.47 No Ice 18.53	23.47 18.53	0.23 0.19
Branches (10' Max)	A	From Leg	0.00	0.0000	17.50	1" Ice 23.47 No Ice 18.53	23.47 18.53	0.23 0.19
Branches (10' Max)	B	From Leg	0.00	0.0000	17.50	1" Ice 23.47 No Ice 18.53	23.47 18.53	0.23 0.19
Branches (10' Max)	C	From Leg	0.00	0.0000	17.50	1" Ice 23.47 No Ice 18.53	23.47 18.53	0.23 0.19
***								
T-Arm Mount	A	From Leg	2.00	0.0000	66.00	1" Ice 10.97 1/2" Ice 8.82 No Ice 6.67	5.38 4.20 3.02	0.00 0.00 0.00
T-Arm Mount	B	From Leg	2.00	0.0000	66.00	1" Ice 10.97 1/2" Ice 8.82 No Ice 6.67	5.38 4.20 3.02	0.00 0.00 0.00
T-Arm Mount	C	From Leg	2.00	0.0000	66.00	1" Ice 10.97 1/2" Ice 8.82 No Ice 6.67	5.38 4.20 3.02	0.00 0.00 0.00
***								
T-Arm Mount	A	From Leg	2.00	0.0000	55.00	1" Ice 10.97 1/2" Ice 8.82 No Ice 6.67	5.38 4.20 3.02	0.00 0.00 0.00
T-Arm Mount	B	From Leg	2.00	0.0000	55.00	1" Ice 10.97 1/2" Ice 8.82 No Ice 6.67	5.38 4.20 3.02	0.00 0.00 0.00

<b>tnxTower</b>  <b>SSC</b> 7171 West 95th Street, Suite 600 Overland Park, KS 66212 Phone: (913) 438-7700 FAX: (913) 438-7777	<b>SSC # KS-0386-C</b>		<b>Page</b> 6 of 14
	<b>Project</b> KC71XC103, Leawood South Maint. Bldg		<b>Date</b> 14:59:27 10/19/18
	<b>Client</b> Sprint		<b>Designed by</b> ARS

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
T-Arm Mount	C	From Leg	2.00	0.0000	55.00	No Ice	6.67	3.02	0.00
			0.00			1/2" Ice	8.82	4.20	0.00
			0.00			1" Ice	10.97	5.38	0.00
*SNV*									
APXVERR18-C	A	From Leg	2.00	0.0000	66.00	No Ice	8.02	5.28	0.06
			0.00			1/2" Ice	8.48	5.74	0.11
			0.00			1" Ice	8.94	6.20	0.16
APXVERR18-C	B	From Leg	2.00	0.0000	66.00	No Ice	8.02	5.28	0.06
			0.00			1/2" Ice	8.48	5.74	0.11
			0.00			1" Ice	8.94	6.20	0.16
APXVERR18-C	C	From Leg	2.00	0.0000	66.00	No Ice	8.02	5.28	0.06
			0.00			1/2" Ice	8.48	5.74	0.11
			0.00			1" Ice	8.94	6.20	0.16
**									
RRU-11	A	From Leg	2.00	0.0000	55.00	No Ice	1.64	1.26	0.04
			0.00			1/2" Ice	1.80	1.41	0.06
			0.00			1" Ice	1.97	1.57	0.08
RRU-11	B	From Leg	2.00	0.0000	55.00	No Ice	1.64	1.26	0.04
			0.00			1/2" Ice	1.80	1.41	0.06
			0.00			1" Ice	1.97	1.57	0.08
RRU-11	C	From Leg	2.00	0.0000	55.00	No Ice	1.64	1.26	0.04
			0.00			1/2" Ice	1.80	1.41	0.06
			0.00			1" Ice	1.97	1.57	0.08
**									
RRUS 31 B25	A	From Leg	2.00	0.0000	55.00	No Ice	1.62	1.28	0.06
			0.00			1/2" Ice	1.78	1.43	0.07
			0.00			1" Ice	1.95	1.58	0.09
RRUS 31 B25	B	From Leg	2.00	0.0000	55.00	No Ice	1.62	1.28	0.06
			0.00			1/2" Ice	1.78	1.43	0.07
			0.00			1" Ice	1.95	1.58	0.09
RRUS 31 B25	C	From Leg	2.00	0.0000	55.00	No Ice	1.62	1.28	0.06
			0.00			1/2" Ice	1.78	1.43	0.07
			0.00			1" Ice	1.95	1.58	0.09
*Sprint 2.5*									
AIR 6468 B41	A	From Leg	2.00	0.0000	66.00	No Ice	6.54	2.54	0.13
			0.00			1/2" Ice	6.87	2.79	0.17
			0.00			1" Ice	7.21	3.04	0.22
AIR 6468 B41	B	From Leg	2.00	0.0000	66.00	No Ice	6.54	2.54	0.13
			0.00			1/2" Ice	6.87	2.79	0.17
			0.00			1" Ice	7.21	3.04	0.22
AIR 6468 B41	C	From Leg	2.00	0.0000	66.00	No Ice	6.54	2.54	0.13
			0.00			1/2" Ice	6.87	2.79	0.17
			0.00			1" Ice	7.21	3.04	0.22

**Dishes**

**tnxTower**

**SSC**  
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**Project**  
KC71XC103, Leawood South Maint. Bldg

**Date**  
14:59:27 10/19/18

**Client**  
Sprint

**Designed by**  
ARS

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft <sup>2</sup>	Weight K	
Motorola Canopy 14" Dish	A	Paraboloid w/Radome	From Leg	2.00 0.00 0.00	0.0000		70.00	1.17	No Ice 1/2" Ice 1" Ice	1.07 1.23 1.39	0.01 0.01 0.02

### Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service

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	Project KC71XC103, Leawood South Maint. Bldg	Date 14:59:27 10/19/18
	Client Sprint	Designed by ARS

Comb. No.	Description
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

### Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	69 - 50.75	Pole	Max Tension	26	0.00	0.00	0.00
			Max. Compression	26	-7.21	0.00	0.12
			Max. Mx	8	-3.36	-81.95	-0.08
			Max. My	14	-3.36	0.00	-82.28
			Max. Vy	8	8.20	-81.95	-0.08
			Max. Vx	14	8.22	0.00	-82.28
L2	50.75 - 0	Pole	Max. Torque	10			0.06
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.14	0.00	0.12
			Max. Mx	8	-14.64	-998.96	-0.40
			Max. My	14	-14.64	0.00	-1000.39
			Max. Vy	8	22.15	-998.96	-0.40
			Max. Vx	14	22.17	0.00	-1000.39
Max. Torque	10			0.06			

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	23.14	0.00	4.23
	Max. H <sub>x</sub>	21	11.01	22.13	-0.01
	Max. H <sub>z</sub>	2	14.68	0.00	22.14
	Max. M <sub>x</sub>	2	999.89	0.00	22.14
	Max. M <sub>z</sub>	8	998.96	-22.13	-0.01
	Max. Torsion	10	0.06	-19.17	-11.07
	Min. Vert	7	11.01	-19.16	11.06
	Min. H <sub>x</sub>	8	14.68	-22.13	-0.01
	Min. H <sub>z</sub>	14	14.68	0.00	-22.15
	Min. M <sub>x</sub>	14	-1000.39	0.00	-22.15
	Min. M <sub>z</sub>	20	-998.96	22.13	-0.01
	Min. Torsion	18	-0.06	19.17	-11.07

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	12.23	0.00	0.00	-0.02	0.00	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	14.68	0.00	-22.14	-999.89	0.00	0.00
0.9 Dead+1.6 Wind 0 deg - No Ice	11.01	0.00	-22.14	-995.65	0.00	0.00

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	<b>Project</b> KC71XC103, Leawood South Maint. Bldg	<b>Date</b> 14:59:27 10/19/18	
	<b>Client</b> Sprint	<b>Designed by</b> ARS	

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>y</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>y</sub> kip-ft	Torque kip-ft
1.2 Dead+1.6 Wind 30 deg - No Ice	14.68	11.07	-19.17	-865.68	-499.70	-0.04
0.9 Dead+1.6 Wind 30 deg - No Ice	11.01	11.07	-19.17	-862.01	-497.59	-0.03
1.2 Dead+1.6 Wind 60 deg - No Ice	14.68	19.16	-11.06	-499.37	-865.11	-0.05
0.9 Dead+1.6 Wind 60 deg - No Ice	11.01	19.16	-11.06	-497.25	-861.45	-0.05
1.2 Dead+1.6 Wind 90 deg - No Ice	14.68	22.13	0.01	0.40	-998.96	-0.06
0.9 Dead+1.6 Wind 90 deg - No Ice	11.01	22.13	0.01	0.41	-994.73	-0.06
1.2 Dead+1.6 Wind 120 deg - No Ice	14.68	19.17	11.07	500.14	-865.60	-0.06
0.9 Dead+1.6 Wind 120 deg - No Ice	11.01	19.17	11.07	498.03	-861.93	-0.06
1.2 Dead+1.6 Wind 150 deg - No Ice	14.68	11.07	19.18	866.41	-500.14	-0.04
0.9 Dead+1.6 Wind 150 deg - No Ice	11.01	11.07	19.18	862.74	-498.02	-0.04
1.2 Dead+1.6 Wind 180 deg - No Ice	14.68	0.00	22.15	1000.39	0.00	0.00
0.9 Dead+1.6 Wind 180 deg - No Ice	11.01	0.00	22.15	996.16	0.00	0.00
1.2 Dead+1.6 Wind 210 deg - No Ice	14.68	-11.07	19.18	866.41	500.14	0.04
0.9 Dead+1.6 Wind 210 deg - No Ice	11.01	-11.07	19.18	862.74	498.02	0.04
1.2 Dead+1.6 Wind 240 deg - No Ice	14.68	-19.17	11.07	500.14	865.60	0.06
0.9 Dead+1.6 Wind 240 deg - No Ice	11.01	-19.17	11.07	498.03	861.93	0.06
1.2 Dead+1.6 Wind 270 deg - No Ice	14.68	-22.13	0.01	0.40	998.96	0.06
0.9 Dead+1.6 Wind 270 deg - No Ice	11.01	-22.13	0.01	0.41	994.73	0.06
1.2 Dead+1.6 Wind 300 deg - No Ice	14.68	-19.16	-11.06	-499.37	865.11	0.05
0.9 Dead+1.6 Wind 300 deg - No Ice	11.01	-19.16	-11.06	-497.25	861.45	0.05
1.2 Dead+1.6 Wind 330 deg - No Ice	14.68	-11.07	-19.17	-865.68	499.70	0.04
0.9 Dead+1.6 Wind 330 deg - No Ice	11.01	-11.07	-19.17	-862.01	497.59	0.03
1.2 Dead+1.0 Ice+1.0 Temp	23.14	0.00	0.00	-0.12	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	23.14	0.00	-4.23	-190.93	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	23.14	2.12	-3.67	-165.31	-95.35	-0.01
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	23.14	3.67	-2.12	-95.40	-165.07	-0.01
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	23.14	4.23	0.00	-0.04	-190.61	-0.01
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	23.14	3.67	2.12	95.32	-165.17	-0.01
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	23.14	2.12	3.67	165.22	-95.44	-0.01
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	23.14	0.00	4.24	190.79	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	23.14	-2.12	3.67	165.22	95.44	0.01

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	<b>Client</b> Sprint		<b>Designed by</b> ARS

Load Combination	Vertical	Shear <sub>x</sub>	Shear <sub>y</sub>	Overturing Moment, M <sub>x</sub>	Overturing Moment, M <sub>y</sub>	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	23.14	-3.67	2.12	95.32	165.17	0.01
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	23.14	-4.23	0.00	-0.04	190.61	0.01
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	23.14	-3.67	-2.12	-95.40	165.07	0.01
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	23.14	-2.12	-3.67	-165.31	95.35	0.01
Dead+Wind 0 deg - Service	12.23	0.00	-5.63	-253.58	0.00	0.00
Dead+Wind 30 deg - Service	12.23	2.81	-4.87	-219.55	-126.72	-0.01
Dead+Wind 60 deg - Service	12.23	4.87	-2.81	-126.65	-219.39	-0.01
Dead+Wind 90 deg - Service	12.23	5.62	0.00	0.09	-253.33	-0.01
Dead+Wind 120 deg - Service	12.23	4.87	2.81	126.82	-219.51	-0.02
Dead+Wind 150 deg - Service	12.23	2.81	4.87	219.71	-126.83	-0.01
Dead+Wind 180 deg - Service	12.23	0.00	5.63	253.69	0.00	0.00
Dead+Wind 210 deg - Service	12.23	-2.81	4.87	219.71	126.83	0.01
Dead+Wind 240 deg - Service	12.23	-4.87	2.81	126.82	219.51	0.02
Dead+Wind 270 deg - Service	12.23	-5.62	0.00	0.09	253.33	0.01
Dead+Wind 300 deg - Service	12.23	-4.87	-2.81	-126.65	219.39	0.01
Dead+Wind 330 deg - Service	12.23	-2.81	-4.87	-219.55	126.72	0.01

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-12.23	0.00	0.00	12.23	0.00	0.000%
2	0.00	-14.68	-22.14	0.00	14.68	22.14	0.000%
3	0.00	-11.01	-22.14	0.00	11.01	22.14	0.000%
4	11.07	-14.68	-19.17	-11.07	14.68	19.17	0.000%
5	11.07	-11.01	-19.17	-11.07	11.01	19.17	0.000%
6	19.16	-14.68	-11.06	-19.16	14.68	11.06	0.000%
7	19.16	-11.01	-11.06	-19.16	11.01	11.06	0.000%
8	22.13	-14.68	0.01	-22.13	14.68	-0.01	0.000%
9	22.13	-11.01	0.01	-22.13	11.01	-0.01	0.000%
10	19.17	-14.68	11.07	-19.17	14.68	-11.07	0.000%
11	19.17	-11.01	11.07	-19.17	11.01	-11.07	0.000%
12	11.07	-14.68	19.18	-11.07	14.68	-19.18	0.000%
13	11.07	-11.01	19.18	-11.07	11.01	-19.18	0.000%
14	0.00	-14.68	22.15	0.00	14.68	-22.15	0.000%
15	0.00	-11.01	22.15	0.00	11.01	-22.15	0.000%
16	-11.07	-14.68	19.18	11.07	14.68	-19.18	0.000%
17	-11.07	-11.01	19.18	11.07	11.01	-19.18	0.000%
18	-19.17	-14.68	11.07	19.17	14.68	-11.07	0.000%
19	-19.17	-11.01	11.07	19.17	11.01	-11.07	0.000%
20	-22.13	-14.68	0.01	22.13	14.68	-0.01	0.000%
21	-22.13	-11.01	0.01	22.13	11.01	-0.01	0.000%
22	-19.16	-14.68	-11.06	19.16	14.68	11.06	0.000%
23	-19.16	-11.01	-11.06	19.16	11.01	11.06	0.000%
24	-11.07	-14.68	-19.17	11.07	14.68	19.17	0.000%
25	-11.07	-11.01	-19.17	11.07	11.01	19.17	0.000%
26	0.00	-23.14	0.00	0.00	23.14	0.00	0.000%
27	0.00	-23.14	-4.23	0.00	23.14	4.23	0.000%
28	2.12	-23.14	-3.67	-2.12	23.14	3.67	0.000%
29	3.67	-23.14	-2.12	-3.67	23.14	2.12	0.000%
30	4.23	-23.14	0.00	-4.23	23.14	-0.00	0.000%
31	3.67	-23.14	2.12	-3.67	23.14	-2.12	0.000%
32	2.12	-23.14	3.67	-2.12	23.14	-3.67	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
33	0.00	-23.14	4.24	0.00	23.14	-4.24	0.000%
34	-2.12	-23.14	3.67	2.12	23.14	-3.67	0.000%
35	-3.67	-23.14	2.12	3.67	23.14	-2.12	0.000%
36	-4.23	-23.14	0.00	4.23	23.14	-0.00	0.000%
37	-3.67	-23.14	-2.12	3.67	23.14	2.12	0.000%
38	-2.12	-23.14	-3.67	2.12	23.14	3.67	0.000%
39	0.00	-12.23	-5.63	0.00	12.23	5.63	0.000%
40	2.81	-12.23	-4.87	-2.81	12.23	4.87	0.000%
41	4.87	-12.23	-2.81	-4.87	12.23	2.81	0.000%
42	5.62	-12.23	0.00	-5.62	12.23	-0.00	0.000%
43	4.87	-12.23	2.81	-4.87	12.23	-2.81	0.000%
44	2.81	-12.23	4.87	-2.81	12.23	-4.87	0.000%
45	0.00	-12.23	5.63	0.00	12.23	-5.63	0.000%
46	-2.81	-12.23	4.87	2.81	12.23	-4.87	0.000%
47	-4.87	-12.23	2.81	4.87	12.23	-2.81	0.000%
48	-5.62	-12.23	0.00	5.62	12.23	-0.00	0.000%
49	-4.87	-12.23	-2.81	4.87	12.23	2.81	0.000%
50	-2.81	-12.23	-4.87	2.81	12.23	4.87	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	4	0.0000001	0.00000857
3	Yes	4	0.0000001	0.0000001
4	Yes	5	0.0000001	0.00002871
5	Yes	4	0.0000001	0.00082136
6	Yes	5	0.0000001	0.00002895
7	Yes	4	0.0000001	0.00082810
8	Yes	4	0.0000001	0.00001752
9	Yes	4	0.0000001	0.00001039
10	Yes	5	0.0000001	0.00002864
11	Yes	4	0.0000001	0.00081967
12	Yes	5	0.0000001	0.00002904
13	Yes	4	0.0000001	0.00083073
14	Yes	4	0.0000001	0.00000858
15	Yes	4	0.0000001	0.0000001
16	Yes	5	0.0000001	0.00002904
17	Yes	4	0.0000001	0.00083073
18	Yes	5	0.0000001	0.00002864
19	Yes	4	0.0000001	0.00081967
20	Yes	4	0.0000001	0.00001752
21	Yes	4	0.0000001	0.00001039
22	Yes	5	0.0000001	0.00002895
23	Yes	4	0.0000001	0.00082810
24	Yes	5	0.0000001	0.00002871
25	Yes	4	0.0000001	0.00082136
26	Yes	4	0.0000001	0.0000001
27	Yes	4	0.0000001	0.00024520
28	Yes	4	0.0000001	0.00028380
29	Yes	4	0.0000001	0.00028377
30	Yes	4	0.0000001	0.00024452
31	Yes	4	0.0000001	0.00028295
32	Yes	4	0.0000001	0.00028366
33	Yes	4	0.0000001	0.00024464

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34	Yes	4	0.0000001	0.00028366
35	Yes	4	0.0000001	0.00028295
36	Yes	4	0.0000001	0.00024452
37	Yes	4	0.0000001	0.00028377
38	Yes	4	0.0000001	0.00028380
39	Yes	4	0.0000001	0.0000001
40	Yes	4	0.0000001	0.00004426
41	Yes	4	0.0000001	0.00004545
42	Yes	4	0.0000001	0.0000001
43	Yes	4	0.0000001	0.00004393
44	Yes	4	0.0000001	0.00004558
45	Yes	4	0.0000001	0.0000001
46	Yes	4	0.0000001	0.00004558
47	Yes	4	0.0000001	0.00004393
48	Yes	4	0.0000001	0.0000001
49	Yes	4	0.0000001	0.00004545
50	Yes	4	0.0000001	0.00004426

**Maximum Tower Deflections - Service Wind**

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	69 - 50.75	8.489	44	0.9655	0.0004
L2	53.25 - 0	5.416	44	0.8655	0.0002

**Critical Deflections and Radius of Curvature - Service Wind**

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
72.50	Top Branches	44	8.489	0.9655	0.0004	9313
70.00	Motorola Canopy 14" Dish	44	8.489	0.9655	0.0004	9313
67.50	Top Branches	44	8.180	0.9576	0.0004	9313
66.00	T-Arm Mount	44	7.873	0.9497	0.0004	9313
62.50	Branches (9' Max)	44	7.163	0.9303	0.0003	7164
57.50	Branches (9' Max)	44	6.188	0.8985	0.0002	4050
55.00	T-Arm Mount	44	5.726	0.8799	0.0002	3398
52.50	Branches (9' Max)	44	5.287	0.8589	0.0002	3132
47.50	Branches (9' Max)	44	4.481	0.8091	0.0001	3314
42.50	Branches (9' Max)	44	3.767	0.7497	0.0001	3703
37.50	Branches (9' Max)	44	3.133	0.6817	0.0000	4197
32.50	Branches (9' Max)	44	2.571	0.6062	0.0000	4843
27.50	Branches (9' Max)	44	2.070	0.5240	0.0000	5723
22.50	Branches (10' Max)	44	1.622	0.4363	0.0000	6995
17.50	Branches (10' Max)	44	1.217	0.3441	0.0000	8993

**Maximum Tower Deflections - Design Wind**

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	69 - 50.75	33.481	14	3.8105	0.0018
L2	53.25 - 0	21.362	14	3.4154	0.0007

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
72.50	Top Branches	14	33.481	3.8105	0.0018	2376
70.00	Motorola Canopy 14" Dish	14	33.481	3.8105	0.0018	2376
67.50	Top Branches	14	32.265	3.7795	0.0017	2376
66.00	T-Arm Mount	14	31.052	3.7481	0.0016	2376
62.50	Branches (9' Max)	14	28.253	3.6714	0.0013	1828
57.50	Branches (9' Max)	14	24.407	3.5459	0.0010	1033
55.00	T-Arm Mount	14	22.585	3.4724	0.0008	866
52.50	Branches (9' Max)	14	20.853	3.3894	0.0007	798
47.50	Branches (9' Max)	14	17.676	3.1928	0.0004	843
42.50	Branches (9' Max)	14	14.857	2.9584	0.0003	942
37.50	Branches (9' Max)	14	12.358	2.6900	0.0001	1067
32.50	Branches (9' Max)	14	10.140	2.3918	0.0000	1230
27.50	Branches (9' Max)	14	8.166	2.0677	0.0000	1453
22.50	Branches (10' Max)	14	6.400	1.7216	0.0000	1776
17.50	Branches (10' Max)	14	4.802	1.3577	0.0000	2283

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>w</sub> ft	KU/r	A in <sup>2</sup>	P <sub>v</sub> K	φP <sub>n</sub> K	Ratio P <sub>v</sub> / φP <sub>n</sub>
L1	69 - 50.75 (1)	TP19.18x14.75x0.1875	18.25	0.00	0.0	10.9418	-3.36	812.92	0.004
L2	50.75 - 0 (2)	TP31.14x18.1982x0.3125	53.25	0.00	0.0	30.5770	-14.64	2271.72	0.006

### Pole Bending Design Data

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>ux</sub> kip-ft	Ratio M <sub>ux</sub> / φM <sub>ux</sub>	M <sub>uy</sub> kip-ft	φM <sub>uy</sub> kip-ft	Ratio M <sub>uy</sub> / φM <sub>uy</sub>
L1	69 - 50.75 (1)	TP19.18x14.75x0.1875	82.28	306.63	0.268	0.00	306.63	0.000
L2	50.75 - 0 (2)	TP31.14x18.1982x0.3125	1000.40	1436.83	0.696	0.00	1436.83	0.000

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### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $V_u$ $\phi V_n$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $T_u$ $\phi T_n$
L1	69 - 50.75 (1)	TP19.18x14.75x0.1875	8.22	406.46	0.020	0.04	614.95	0.000
L2	50.75 - 0 (2)	TP31.14x18.1982x0.3125	22.17	1135.86	0.020	0.04	2881.57	0.000

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio $P_u$ $\phi P_n$	Ratio $M_{ux}$ $\phi M_{nx}$	Ratio $M_{uy}$ $\phi M_{ny}$	Ratio $V_u$ $\phi V_n$	Ratio $T_u$ $\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	69 - 50.75 (1)	0.004	0.268	0.000	0.020	0.000	0.273	1.000	4.8.2 ✓
L2	50.75 - 0 (2)	0.006	0.696	0.000	0.020	0.000	0.703	1.000	4.8.2 ✓

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail
L1	69 - 50.75	Pole	TP19.18x14.75x0.1875	1	-3.36	812.92	27.3	Pass
L2	50.75 - 0	Pole	TP31.14x18.1982x0.3125	2	-14.64	2271.72	70.3	Pass
Summary								
Pole (L2)							70.3	Pass
RATING =							70.3	Pass

## Stiffened or Unstiffened, UngROUTed, Circular Base Plate - Any Rod Material

**TIA Rev G** Assumption: Clear space between bottom of leveling nut and top of concrete not exceeding (1)\*(Rod Diameter)

### Site Data

BU#:	
Site Name:	
App #:	
Pole Manufacturer:	Other

### Anchor Rod Data

Qty:	6	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	37	in

### Plate Data

Diam:	43	in
Thick:	3	in
Grade:	50	ksi
Single-Rod B-eff:	13.97	in

### Stiffener Data (Welding at both sides)

Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

### Pole Data

Diam:	31.14	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

### Reactions

Mu:	1000	ft-kips
Axial, Pu:	14.7	kips
Shear, Vu:	22.1	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

If No stiffeners, Criteria: **AISC LRFD** <-Only Applicable to Unstiffened Cases

### Anchor Rod Results

Max Rod (Cu+ Vu/r): 226.0 Kips  
 Allowable Axial,  $\Phi \cdot Fu \cdot Anet$ : 260.0 Kips  
 Anchor Rod Stress Ratio: 86.9% Pass

Rigid
AISC LRFD
$\phi \cdot Tn$

### Base Plate Results

Base Plate Stress: 14.3 ksi  
 Allowable Plate Stress: 45.0 ksi  
 Base Plate Stress Ratio: 31.7% Pass

### Flexural Check

Rigid
AISC LRFD
$\phi \cdot Fy$
Y.L. Length:
19.98

n/a

### Stiffener Results

Horizontal Weld : n/a  
 Vertical Weld: n/a  
 Plate Flex+Shear,  $f_b/F_b + (f_v/F_v)^2$ : n/a  
 Plate Tension+Shear,  $f_t/F_t + (f_v/F_v)^2$ : n/a  
 Plate Comp. (AISC Bracket): n/a

### Pole Results

Pole Punching Shear Check: n/a



\* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

\*\* Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes



# Nov. 2018 Monthly Report

AREA	CALLS	CODE 1	NON-EMERGENCY
North Zone	753	3:31	5:52
Center Zone	781	3:41	4:27
South Zone	680	2:48	6:04

## CALLS FOR SERVICE

Traffic Stops	923
Traffic Complaint Areas investigated	45
Medical Calls	126
Alarms	134
Arrests (Adult/Juvenile)	75/3
Accidents (Total/Injury)	66/8
Open Doors	83
Suspicious Activity calls	41
Check the Welfare	23
9-1-1 Calls Received	776 (568 wireless)
Administrative Calls Received	4,805

CRIME REPORT	This month	Last month	A year ago
Burglaries	10	6	7
Thefts from buildings	3	3	12
Drug possession violations (municipal)	7	5	3
Thefts from vehicles	24	2	15
Agg. assault/batteries	1	2	1
Crim. Damage to Property/Vandalism	4	4	5
DUI	7	8	11
Shoplifting	9	13	8
Stolen Autos	5	1	3

## HIGHLIGHTS



### CPA Class 'Graduates'

After 10 weeks of learning, the 2018 Citizens Police Academy held its last class on Nov. 13.

Mayor Peggy Dunn was on hand to assist Chief Troy Rettig in presenting certificates to our most successful session ever. A full class of 33 residents ranging in age from 17 to 77 attended the program, learning about all of the units that make up the Leawood Police Department as well as touring the Johnson County Crime Lab and Adult Detention Center that assist our agency.

"What a great opportunity you have provided to our community. I have wanted to take this course before, but my schedule would not allow it. It was well worth the wait. I encourage everyone I know to look in their city for opportunities. I'm well informed and have so much more respect for those that work hard to keep us safe. Thank you!" wrote one participant.

## Frequent crash locations

INTERSECTION	Nov.	2018
I-435 & State Line Road	3	47
103rd Street & State Line	4	20
135th & State Line Road	0	18
135th Street & Mission Road	3	15
133rd Street & State Line	0	14
135th Street & Roe Avenue	0	11
Town Center Dr. & Roe Avenue	1	9
112/Nall & 119 & State Line Rd.	1/0	8

## Couturier earns CPM

On Friday, Nov. 16, Sgt. Jordan Couturier graduated from the University of Kansas' Law Enforcement Leadership Academy. This 300-hour professional development program included topics such as strategic planning, work cultures, budgeting, coaching and mentoring, project management and community relations. The coursework also resulted in Sgt. Couturier earning certification as a Certified Public Manager. He is the third PD supervisor to earn this nationally accredited title. Sgt. Couturier is one of the department's three Patrol supervisors and is also spearheading the new Peer Support Team.



## Last 5 Month's Statistics for Leawood Police

Part I Crimes specified by the KBI:	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18
Agg. Assault/Battery:	2	0	3	2	1
Arson:	0	0	0	0	0
Burglary:	5	7	5	6	10
Homicide:	0	0	0	0	0
Rape:	0	0	0	0	0
Robbery:	0	0	1	1	0
Stolen Auto:	7	4	1	1	5
Theft:	35	72	29	26	41
All Other Larceny:	3	5	4	3	5
Pocket Picking:	0	0	0	1	0
Purse Snatching:	0	0	0	0	0
Shoplifting:	7	13	7	13	9
Theft from Building:	3	6	5	3	3
Theft from CoinOperated Machine:	0	0	0	0	0
Theft from Motor Vehicle:	22	46	13	2	24
Theft of Motor Vehicle Parts/Accessories:	0	2	0	4	0
<b>Sub-Total:</b>	<b>49</b>	<b>83</b>	<b>39</b>	<b>36</b>	<b>57</b>

	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18
Adult Arrests	88	108	95	83	75
Juvenile Arrests	3	2	8	3	3
Citations/Citation Charges	593/785	631/829	776/1024	884/1143	520/684
Warnings/Warning Charges	347/560	311/527	382/617	451/710	382/533
Damage over \$1,000 Accident	39	45	54	38	53
Damage under \$1,000 Accident	10	11	5	4	5
Injury Accident	5	12	11	8	8
Field Interview Contacts	11	26	16	16	11



7.P.

# November 2018 Report

## Fire Loss

Fire related incidents for the month in Leawood: 4  
 Fire Loss: \$103,500

## Monthly Activity Hours

(Non-training - can include response, public education, public services, maintenance, etc)

Staff Activity Hours: 1,133

## Monthly Training Hours

Training Hours: 975

## Monthly Calls for Service

Fire Responses	7
EMS Responses	178
HazMat Responses	10
Tech Rescue Responses	1
Other Calls for Service	84
Total Calls This Month	280
YTD Total Calls	3,061

## Monthly Highlights

- 6 Car Seat Installations
- 19 Public Relations / Education Events
- 35 CPR / First Aid students
- 5 Residential Smoke Alarm Assists
- City Blood Drive at Station 33
- 1 HOA Meeting hosted

## Incident Response Times

Emergency service performance standards are measured by 90-percentile performance to demonstrate credibility and reliability in service delivery. Percentile metrics demonstrate a better representation of response times than averages. Instead of displaying what the Department does half of the time, the Department observes what it does the majority of the time. Travel and total response times only include emergency responses within the City of Leawood.

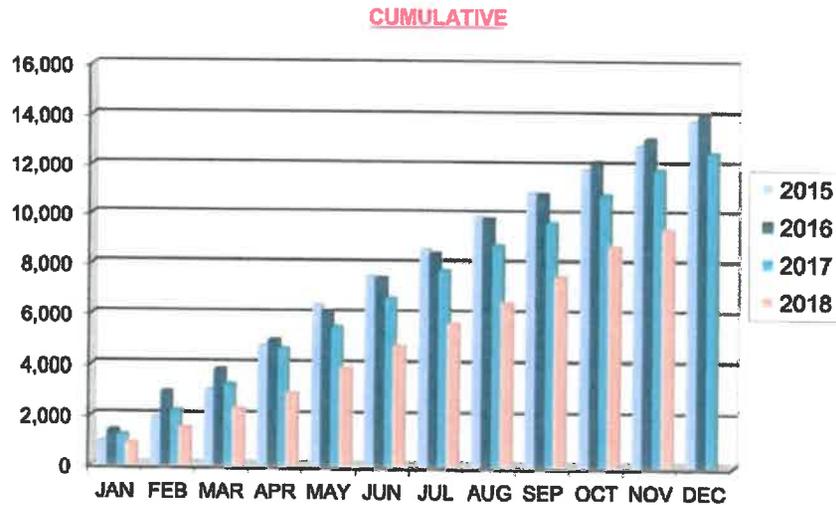
### Summary of Monthly LFD Baseline Performance at the 90<sup>th</sup> Percentile

LFD - Baseline Performance 90 <sup>th</sup> Percentile		All Calls	Fire	EMS	Tech Rescue	HazMat
<b>Alarm Handling</b>	Call Pick-Up to Dispatch	1:06	0:45	1:05	0:28	1:15
<b>Turnout Time</b>	Dispatch to 1st Unit Enroute	1:29	2:22	1:28	0:27	1:24
<b>Travel Time 1st Unit</b>	Enroute to Arrival Time 1st Unit on Scene Emergency Responses Only	5:49	4:26	5:49	N/A	N/A
<b>Total Response Time - 1st Unit</b>	Enroute to Arrival 1st Unit on Scene Emergency Responses Only	7:37	6:00	7:58	N/A	N/A
<b>Total Response Time - ERF</b>	Enroute to Arrival Effective Response Force Emergency Responses Only	11:20	11:31	11:20	N/A	N/A

# LEAWOOD MUNICIPAL COURT CASELOAD

7.Q.

	<u>CUMULATIVE</u>				<u>MONTHLY</u>			
	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>
<b>JAN</b>	977	1,430	1,246	890	977	1,430	1,246	890
<b>FEB</b>	1,918	2,959	2,201	1,537	941	1,529	955	647
<b>MAR</b>	3,013	3,813	3,253	2,280	1,095	854	1052	743
<b>APR</b>	4,735	4,964	4,615	2,907	1,722	1,151	912	627
<b>MAY</b>	6,383	6,111	5,483	3,900	1,648	1,147	1,318	993
<b>JUN</b>	7,518	7,449	6,652	4,713	1,135	1,338	1,169	813
<b>JUL</b>	8,613	8,446	7,783	5,607	1,095	997	1,131	894
<b>AUG</b>	9,916	9,845	8,778	6,470	1,303	1,399	995	863
<b>SEP</b>	10,880	10,821	9,677	7,527	964	976	899	1,057
<b>OCT</b>	11,854	12,167	10,792	8,728	974	1,346	1,115	1,201
<b>NOV</b>	12,817	13,094	11,812	9,420	963	927	1,020	692
<b>DEC</b>	13,789	14,009	12,523		972	915	711	
	<b>13,789</b>	<b>14,009</b>	<b>12,523</b>	<b>9,420</b>				
	<b>14,400</b>	<b>14,400</b>	<b>14,400</b>	<b>14,000</b>				



# LEAWOOD MUNICIPAL COURT

## RECEIPTS PROCESSED

### CUMULATIVE

### MONTHLY

	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>
JAN	\$ 140,191.50	\$ 152,402.00	\$ 135,897.50	\$ 124,209.00
FEB	\$ 296,643.00	\$ 319,887.25	\$ 271,140.75	\$ 226,773.06
MAR	\$ 422,076.50	\$ 469,496.20	\$ 417,435.75	\$ 328,422.81
APR	\$ 553,252.80	\$ 602,688.20	\$ 539,966.25	\$ 430,749.06
MAY	\$ 708,499.80	\$ 727,709.75	\$ 667,316.25	\$ 532,916.01
JUN	\$ 847,198.05	\$ 881,876.05	\$ 803,020.75	\$ 632,601.01
JUL	\$ 963,140.55	\$ 1,016,515.55	\$ 937,496.25	\$ 740,497.51
AUG	\$1,106,732.96	\$ 1,172,883.80	\$ 1,065,718.25	\$ 853,735.81
SEP	\$1,229,314.46	\$ 1,298,998.30	\$ 1,171,882.50	\$ 939,594.81
OCT	\$1,365,192.71	\$ 1,473,387.55	\$ 1,293,663.50	\$ 1,078,242.81
NOV	\$1,468,749.96	\$ 1,630,461.55	\$ 1,413,905.25	\$ 1,195,940.31
DEC	\$1,590,496.71	\$ 1,744,850.80	\$ 1,518,103.44	\$ 1,195,940.31

	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>
JAN	\$ 140,191.50	\$ 152,402.00	\$ 135,897.50	\$ 124,209.00
FEB	\$ 156,451.50	\$ 167,485.25	\$ 135,243.25	\$ 102,564.06
MAR	\$ 125,433.50	\$ 149,608.95	\$ 146,295.00	\$ 101,649.75
APR	\$ 131,176.30	\$ 133,192.00	\$ 122,530.50	\$ 102,326.25
MAY	\$ 155,247.00	\$ 125,021.55	\$ 127,350.00	\$ 102,166.95
JUN	\$ 138,698.25	\$ 154,166.30	\$ 135,704.50	\$ 99,885.00
JUL	\$ 115,942.50	\$ 134,639.50	\$ 134,475.50	\$ 107,896.50
AUG	\$ 143,592.41	\$ 156,368.25	\$ 128,222.00	\$ 113,238.30
SEP	\$ 122,581.50	\$ 126,114.50	\$ 105,964.25	\$ 85,859.00
OCT	\$ 135,878.25	\$ 174,389.25	\$ 121,981.00	\$ 138,648.00
NOV	\$ 103,557.25	\$ 157,074.00	\$ 120,241.75	\$ 117,697.50
DEC	\$ 121,746.75	\$ 114,389.25	\$ 104,198.19	

\$ 1,590,496.71	\$ 1,744,850.80	\$ 1,518,103.44	\$ 1,195,940.31
\$ 1,500,000.00	\$ 1,500,000.00	\$ 1,500,000.00	1,500,000.00

### CUMULATIVE

