

177th BOARD YEAR

LEGISLATIVE ITEMS RECEIVED FOR COMMITTEE REFERRAL

File No.	Rec/Ref:	To:	Title
177-O-074	11/15/22 11/15/22	LU	ORD: Approve Easement To The Village Of Lannon To Construct, Install, Operate, Maintain, Repair, And Replace Sanitary Sewer And Water Facilities On Waukesha County Property Known As The Bugline Recreation Trail
177-O-075	11/22/22 11/22/22	LU	ORD: Authorize The Execution Of Revolving Loan Fund Contribution Agreement Between Waukesha County And The Waukesha County Center For Growth
177-O-076	11/22/22 11/22/22	LU FI	ORD: Acceptance Of Ice Arena Operational Plan Relating To Original Construction Loans
177-O-077	11/29/22 11/29/22	PW	ORD: Modify Speed Zone On County Trunk Highway KE From The Intersection With County Trunk Highway K North To The Intersection With County Trunk Highway EF/VV
177-A-026	11/30/22	EX	APPT: Diane Knutson Appointment of Waukesha County Resident to the Bridges Library Board
177-A-027	11/30/22	EX	APPT: Robert Kraus Appointment of Waukesha County Resident to the Bridges Library Board
177-A-028	11/30/22	EX	APPT: Kevin Lahner Appointment of Waukesha City Representative to Waukesha County's Community Development Block Grant (CDBG) Board
177-O-078	11/22/22 11/22/22	JU	ORD: 8th Amendment To Lease Agreement With Verizon Wireless Personal Communications LP, D/B/A Verizon Wireless
177-O-079	11/22/22 11/22/22	JU	ORD: Seventh Amendment To Lease Agreement With New Cingular Wireless PCS, LLC
177-O-080	11/23/22 11/23/22	JU HR FI	ORD: Modify The 2023 District Attorney's Budget To Create A 0.50 FTE Senior Administrative Specialist Position And Transfer Personnel Appropriations To Interdepartmental To Fund A Pilot Project With Corporation Counsel For A Shared Financial Analyst
177-O-081	11/28/22 11/28/22	JU FI	ORD: Modify The 2022 Sheriff's Department Budget For Above Budget American Rescue Plan Act Grant And Interdepartmental Bailiff Services Revenue
177-O-082	11/30/22 11/30/22	JU FI	ORD: Authorize The Waukesha County Sheriff's Department To Amend The 2020-2024 Police Patrol Services Contract With The Town Of Delafield, Create An Additional 1.00 FTE Deputy Sheriff Position Funded By The Town Of Delafield Beginning January 1, 2023, And Amend The 2023 Sheriff's Department Budget Accordingly
177-O-083	11/29/22 11/29/22	HS FI	ORD: Modify The 2022 Department Of Health And Human Services Budget To Increase General Government Revenue And Appropriate Additional Expenditures For Children With Long-Term Support Needs - Third Party Administrator
177-O-084	11/28/22 11/28/22	HR FI	ORD: Authorize The Waukesha County Department Of Administration To Accept United States Department Of Treasury American Rescue Plan Act - Local Assistance And Tribal Consistency Fund Grant Funding
177-O-085	11/28/22 11/28/22	HR FI	ORD: Approve 2023 Salary Range Adjustments To The 2022 Non-Represented, Seasonal, And Temporary Salary Ranges, And Create New Pay Policies For Registered Nurses
177-O-086	11/18/22 11/18/22	CB	ORD: Approve Limited Compromise Agreement For Worker's Compensation Case Entitled Chantel Else VS. County Of Waukesha

1 APPROVE EASEMENT TO THE VILLAGE OF LANNON TO CONSTRUCT, INSTALL, OPERATE,
2 MAINTAIN, REPAIR, AND REPLACE SANITARY SEWER AND WATER FACILITIES ON WAUKESHA
3 COUNTY PROPERTY KNOWN AS THE BUGLINE RECREATION TRAIL
4

5 WHEREAS, the Village of Lannon has requested to construct, install, operate, maintain, repair
6 and replace an underground sanitary sewer and water main within Waukesha County property
7 known as the Bugline Recreation Trail; and
8

9 WHEREAS, the easement area is described as an area containing 57,017 square feet of land
10 located in part of the Southwest 1/4 of Section 17, Township 8 North, Range 20 East, Village of
11 Lannon, Waukesha County, Wisconsin; and
12

13 WHEREAS, it is deemed necessary to allow Village of Lannon to construct, install, operate,
14 maintain, repair and replace the sanitary sewer and water main on Waukesha County's land for
15 the purpose of the provision of sanitary sewer and water services to the Village residents and
16 businesses.
17

18 THE COUNTY BOARD OF SUPERVISORS OF THE COUNTY OF WAUKESHA ORDAINS that
19 Waukesha County's grant of a sanitary sewer and water main utility easement ("Utility
20 Easement") to the Village of Lannon, which will be recorded in the Office of the Register of
21 Deeds, is hereby approved.
22

23 BE IT FURTHER ORDAINED that the Director of Parks and Land Use may execute the Utility
24 Easement on behalf of Waukesha County substantially in the form attached hereto, together
25 with any other documents necessary to accomplish the intended transaction.

Document No.

**UTILITY EASEMENT
AGREEMENT**

Return to:
Village of Lannon
Attn: Brenda Klemmer
Village Clerk
20399 W. Main Street
Lannon, WI 53046

LANV0068979001
Parcel Number (Waukesha Co.)

For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, WAUKESHA COUNTY, a quasi-municipal corporation, hereinafter referred to as "Grantor", owner of land, hereby grants to THE VILLAGE OF LANNON, WI, a municipal corporation, hereinafter referred to as "Grantee", a permanent easement upon, within, beneath, over and across a part of Grantor's land hereinafter referred to as "easement area" for the purpose set forth below.

The easement area is described in Exhibit A and shown on Exhibit B.

1. Purpose: The purpose of this easement is to construct, install, operate, maintain, repair, replace and extend underground utility facilities, conduits or fixtures together with all necessary and appurtenant equipment under ground as deemed necessary by Grantee, for municipal sanitary sewer and municipal water distribution services. Trees, bushes, branches and roots may be trimmed or removed so as not to interfere with Grantee's use of the easement area. Prior to any such trimming, Grantee shall consult with Waukesha County Department of Parks and Land Use in order to minimize any potential negative impacts of the trimming upon trees and bushes. Except in the case of emergency, no trees or bushes may be removed within the easement area without prior approval of the Waukesha County Park System Manager, which approval shall not be unreasonably withheld provided that said removal is reasonably necessary for Grantee's full enjoyment of the rights granted herein. Grantee may not trim, cut down or remove trees outside the easement area without prior approval of the Waukesha County Department of Parks and Land Use.
2. Access: Grantee or its agents shall have the right to enter and use Grantor's land with full right of ingress and egress over and across the easement area for the purpose of exercising its rights in the easement area.
3. Buildings or Other Structures: Grantor agrees that no structures will be erected in the easement area or in such close proximity to Grantee's facilities as to create an impediment to the reasonable access by grantee to exercise its rights in the easement area.

4. Elevation: Grantor agrees that the elevation of the ground surface existing as of the date of the initial installation of Grantee's facilities within the easement area will not be altered by more than 4 inches without the written consent of Grantee.

5. Restoration: Grantee agrees to restore or cause to have restored Grantor's land, as nearly as is reasonably possible, to the condition existing prior to such entry by Grantee or its agents. This restoration, however, does not apply to any trees, bushes, branches or roots for which Grantee has obtained prior approval to remove which may interfere with Grantee's use of the easement area.

6. Exercise of Rights: It is agreed that if the complete exercise of the rights herein conveyed is gradual and not fully exercised until sometime in the future, that none of the rights herein granted shall be lost by delay or non-use.

7. Consistent Uses Allowed: The Grantor reserves the right to use the easement area for purposes which are not inconsistent with the purpose of this easement nor interfere with the Grantee's full enjoyment of the easement rights granted herein. Grantor reserves the right to grant easement rights to other persons or entities as the Grantor deems appropriate, provided the easement rights are not inconsistent with the purpose of this easement nor interfere with the Grantee's full enjoyment of the easement rights granted herein.

8. Continual Operation of Bugline Trail: The County grounds shall at all times remain open for public use. If the Grantee must perform work in any area that will in any way interfere with or detour the travelling public, Grantee will seek prior approval from Grantor, which approval shall not be unreasonably withheld, delayed or denied. Excepting, however, in cases of emergencies when access shall be immediate.

9. Indemnification and Hold Harmless: In consideration of the foregoing grant, it is understood that during the time said facilities are located on the premises of the Grantor pursuant to this grant, Grantee will indemnify, save, and hold harmless the Grantor, its successors and assigns, from any and all claims, liabilities, losses, costs, damages or expenses for injury or death of any person and any damages to property arising out of Grantee's exercise of any of its rights under this easement; excepting, however, 1) any claims, liabilities, losses, costs, damages or expenses arising out of the willful acts on the part of the Grantor, its successors and assigns, employees, agents and invitees; and 2) any environmental claims, liabilities, losses, costs, damages or expenses not caused by the construction or operation of said facilities. Notwithstanding the foregoing, Grantee as a municipal entity, nevertheless reserves all Wisconsin statutory protections and liability limits afforded to it as such.

10. Governing Law: This easement shall be construed and enforced in accordance with the laws of the State of Wisconsin.

11. Invalidity: If any term or condition of this easement, or the application of this easement to any person or circumstance, shall be deemed invalid or unenforceable, the remainder of this easement, or the application of the term or condition to persons or circumstances other than those to which it is held invalid or unenforceable, shall not be affected thereby, and each term and condition shall be valid and enforceable to the fullest extent permitted by law.

12. Entire Agreement: This easement sets forth the entire understanding of the parties and may not be changed except by a written document executed and acknowledged by all parties to this easement and duly recorded in the Office of the Register of Deeds of Waukesha County, Wisconsin.

13. Binding on Future Parties: This grant of easement shall be binding upon and inure to the benefit of the heirs, successors and assigns of all parties hereto.

14. [Omitted.]

15. Insurance: Grantee agrees to maintain commercial general liability insurance policy with a minimum of \$1,000,000 in coverage and to have Grantor named as an additional insured on a primary basis under such policy. Grantee shall require its contractors, subcontractors, agents and assigns entering Grantor's land to maintain statutory worker's compensation, commercial automobile liability, and commercial general liability insurance with Grantor, its boards, commission, agencies, officers, employees, and representatives as additional insured. Commercial general liability and commercial automobile liability shall be in the amount of not less than \$1,000,000 per occurrence.

IN WITNESS WHEREOF, the parties have caused this Agreement to be approved by their respective governing bodies and executed by an authorized representative as evidenced below.

SIGNATURE OF GRANTOR

Date: _____

WAUKESHA COUNTY

By: _____
Dale R. Shaver
Director
Waukesha County Department of Parks
and Land Use

ACKNOWLEDGMENT

STATE OF WISCONSIN
COUNTY OF WAUKESHA

This instrument was acknowledged before me on the _____ day of _____, 2022 by Dale R. Shaver, Director of the Waukesha County Department of Parks and Land Use, on behalf of Waukesha County.

Notary Public, State of Wisconsin
My commission expires: _____

[Additional Signatures on Next Page]

SIGNATURE OF GRANTEE

VILLAGE OF LANNON

By: _____
Print Name:
Title:

ACKNOWLEDGMENT

STATE OF WISCONSIN
COUNTY OF WAUKESHA

This instrument was acknowledged before me on the _____ day of _____, 2022 by _____, on behalf of the Village of Lannon.

Notary Public, State of Wisconsin
My commission expires: _____

This document was drafted by
Attorney Erik G. Weidig
Waukesha County Corporation Counsel Office
515 W. Moreland Blvd., Room AC-330
Waukesha, WI 53188

EXHIBIT A

Legal Description

Easement consists of the owner's interest in land contained within the following described tract located in part of the Southwest 1/4 of Section 17, Township 8 North, Range 20 East, Village of Lannon, Waukesha County, Wisconsin more fully described as follows:

Commencing at the West 1/4 corner of said Section 17;

Thence North 89°04'54" East, 2598.49 feet along the north line of said Southwest 1/4 to the Center 1/4 corner;

Thence South 27°17'54" West, 1471.36 feet to the Southeast corner of Lot 1, Green Acres of Lannon and being the Point of Beginning;

Thence South 07°00'52" East, 60.34 feet to the Northeast corner of Parcel 2, CSM 2704 located on the South line of Bugline Recreation Trail;

Thence South 89°03'59" West, 1018.49 feet along the said south line of Bugline Recreation Trail to the eastern West Main St right-of-way;

Thence North 40°48'22" East, 80.41 feet along said eastern right-of-way to the North line of said Bugline Recreation Trail;

Thence North 89°03'59" East, 175.67 feet along said North line;

Thence South 00°52'18" East, 15.14 feet;

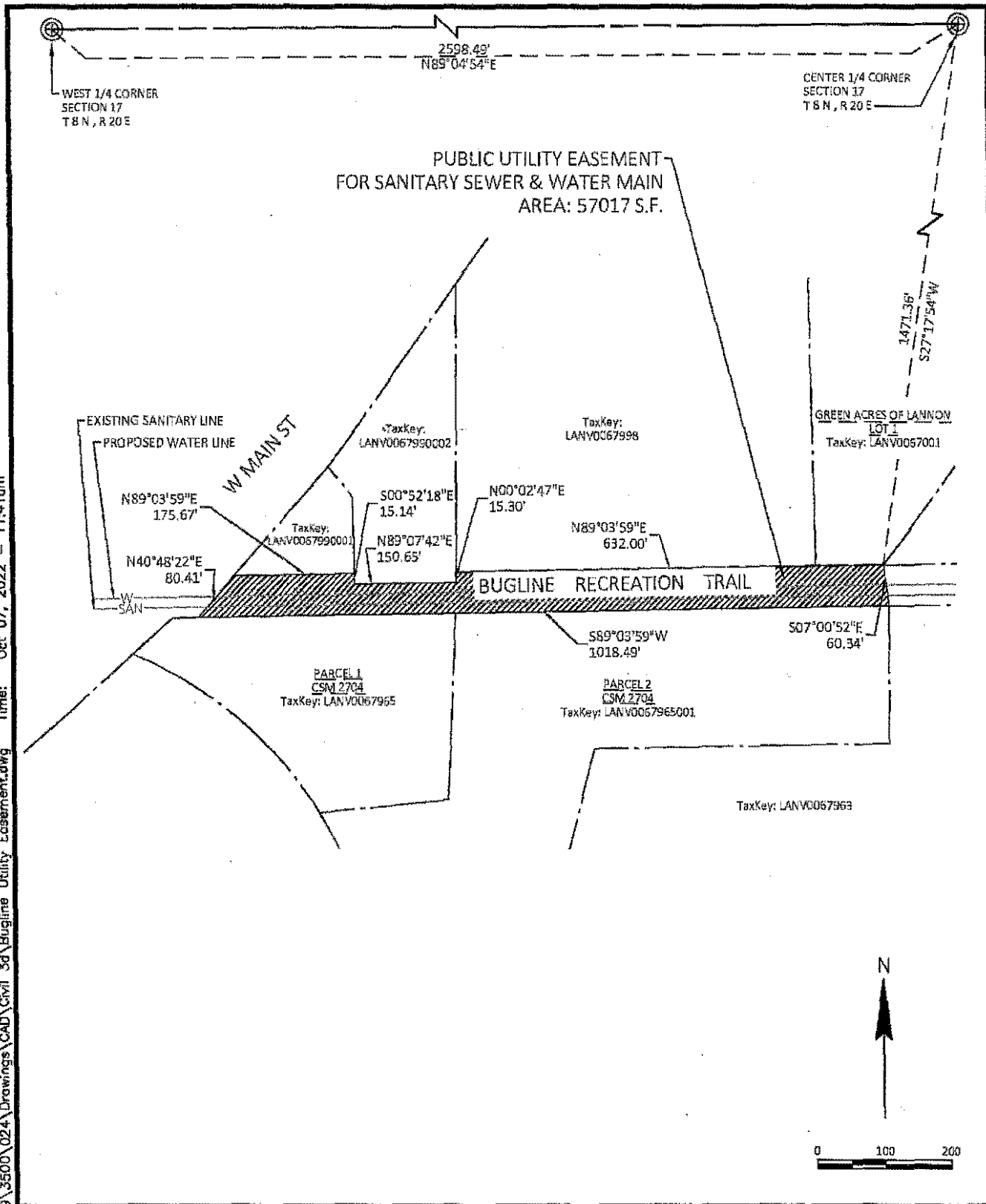
Thence North 89°07'42" East, 150.65 feet;

Thence North 00°02'47" East, 15.30 feet;

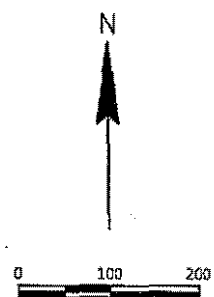
Thence North 89°03'59" East, 632.00 feet along said North line to the Point of Beginning.

The above-described easement contains 57,017 Square Feet, more or less.

Exhibit B



File: S:\MIL\3500\3500\024\Drawings\CAD\Civil 3d\Bugline Utility Easement.dwg Time: Oct 07, 2022 - 11:41am



PUBLIC UTILITY EASEMENT
VILLAGE OF LANNON
WAUKESHA COUNTY, WISCONSIN



EXHIBIT B

3500.024

1 AUTHORIZE THE EXECUTION OF REVOLVING LOAN FUND CONTRIBUTION AGREEMENT
2 BETWEEN WAUKESHA COUNTY AND THE WAUKESHA COUNTY CENTER FOR GROWTH

3
4 WHEREAS, the Waukesha County Center for Growth, Inc. (WCCG) was created in 2016 as a
5 countywide business-led economic development organization; and

6
7 WHEREAS, the WCCG serves as the central point of contact for businesses looking to grow in or
8 relocate to Waukesha County, obtain business consulting or access to capital for business and
9 job growth; and

10
11 WHEREAS, in 2019 the WCCG created the first revolving loan fund to provide access to loans as
12 gap financing to help small businesses expand and create new job opportunities and multi-
13 family housing projects to meet projected employment growth in Waukesha County; and

14
15 WHEREAS, the revolving loan fund known as the GROW Fund is administered by a certified
16 community development financial institution; and

17
18 WHEREAS, as authorized in the 2023 adopted budget, Waukesha County will contribute to the
19 GROW Fund to spur economic growth, grow tax base, and generate investment income that
20 can be used to lower the County's annual contribution for the operation of the WCCG; and

21
22 WHEREAS, the expansion of the GROW Fund is funded with \$3.0 million of American Rescue
23 Plan Act (ARPA) funds and \$1.5 million in professional baseball park district excess sales taxes
24 distributed to Waukesha County in accordance with 2019 Wisconsin Act 28, which allows the
25 use of these funds for economic development; and

26
27 WHEREAS, permissible uses of the ARPA funds include using calculated lost revenue to fund
28 general government services such as expanding a revolving loan fund; and

29
30 WHEREAS, a revolving loan fund contribution agreement between the WCCG and Waukesha
31 County will identify the parameters by which the contributed funds will be used including
32 provisions for the return of funding.

33
34 THE COUNTY BOARD OF SUPERVISORS OF THE COUNTY OF WAUKESHA ORDAINS
35 that the Waukesha County Department of Parks and Land Use, through its Director or his
36 designee, is hereby authorized to:

- 37
38 1. Execute on behalf of Waukesha County, the Revolving Loan Fund Contribution
39 Agreement Between Waukesha County and the Waukesha County Center for
40 Growth (the "Agreement") substantially in the form on file with the Department
41 of Parks and Land Use.
42 2. Execute appropriate amendments to the Agreement, from time to time which
43 are deemed reasonable and appropriate by the County Executive and the
44 Corporation Counsel.
45 3. Execute on behalf of Waukesha County, Agreement addendums to increase
46 funding contributions as approved by the Waukesha County Board.

**REVOLVING LOAN FUND CONTRIBUTION AGREEMENT BETWEEN
WAUKESHA COUNTY AND THE WAUKESHA COUNTY CENTER FOR GROWTH**

This AGREEMENT is made between Waukesha County ("County"), a Wisconsin Quasi-Municipal Corporation and the Waukesha County Center for Growth, Inc. ("WCCG"), a Wisconsin nonstock corporation, having its principal mailing address at 2717 N. Grandview Boulevard #300 Waukesha, WI 53188, as of the _____ day of _____, 202_ ("Effective Date"). The County and WCCG may each be referred to herein as a "Party" and collectively as the "Parties."

RECITALS

WHEREAS, the County and WCCG have created an economic development strategy to provide a central point of contact for businesses looking for workforce, financial and site selection assistance and connect businesses with organizations that have the resources to provide the assistance;

WHEREAS, as part of the economic development strategy, WCCG has established a community development loan fund ("CDLF"), referred to as the Generating Resources and Opportunity in Waukesha County Fund or GROW Fund (the "Fund") to support economic development in Waukesha County;

WHEREAS, the Fund is designed to assist businesses located in Waukesha County looking to expand operations, or which will locate in Waukesha County as a result of the loan. The Fund also assists developers with projects to make available housing to meet the projected workforce growth and talent attraction in Waukesha County;

WHEREAS, WCCG has retained the services of a certified community development financial institution ("CDFI") with experience in establishing, operating, managing, and servicing the revolving loans; and

WHEREAS, Waukesha County desires to contribute funds into the Fund to assist in business retention and attraction to grow the tax base and assist in the development of housing stock to meet the project workforce needs to ensure the economic vibrancy of the County.

NOW, THEREFORE, in consideration of the forgoing recitals and other good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, the County and WCCG hereby agree as follows:

A. WCCG's Obligations.

WCCG agrees to:

1. Contract with a CDFI with experience in establishing, operating, managing, and servicing revolving loans.
2. Collaborate with the CDFI to establish guidelines and standards for risk management of the Fund, including loan loss tolerance, reserves and risk ratings, lending parameters,

lending guidelines, application practices and underwriting standards, all of which shall be incorporated into a loan procedures manual, and ensure the Fund is operated and managed in conformance therewith. The County shall be provided with advance written notice of any material change to the established guidelines and standards prior to implementation of the change.

3. With the CDFI, create a revolving loan fund oversight committee ("**Oversight Committee**"), with designees from WCCG and the CDFI, representing broad community interests and have special expertise and knowledge of commercial lending, economic development processes and larger scale housing development lending. The Oversight Committee will monitor loan utilization rates, overall performance of the Fund and make recommendations for adjustments to the Fund lending guidelines.
4. Actively solicit grants and contributions from financial institutions, businesses, and other community advocates to be contributed to the Fund to leverage contributions made through this Agreement, generate prospective loan customers and collaborate with the CDFI to establish targets and guidelines for the Fund to meet its objective of supporting economic development in Waukesha County.
5. Ensure that all funds shall be held in an account at a suitable federally insured financial institution.
6. Ensure the Fund provides to WCCG a referral fee equal to a minimum of one percent (1%) of the average total monthly outstanding principal balance of Loans in the Fund, measured as of the last day of each calendar month.
7. Provide to the County an annual report of the performance of the Fund, including, but not limited to the Fund's current principal, interest and fees, loan activities ("**Financial Status Report**") and past due reports. The annual report shall be delivered by January 31st of each year for the previous year's performance.

B. County's Obligations.

The County agrees to:

1. Make a one-time contribution in the amount of Four Million Five Hundred Thousand and 00/100 Dollars (\$4,500,000.00) to the Fund in fiscal year 2023 for the purposes of assisting in business retention and attraction to grow the tax base and make available housing to meet the projected workforce growth and talent attraction needs to ensure the economic vibrancy of Waukesha County ("**County Contribution**").
2. Funds will be contributed into the Fund at 0% cost of funds.
3. The County may, but shall not be required to, make additional contributions to the Fund. Any additional funds contributed by the County shall be set forth in an addendum to this Agreement, and such funds shall be subject to the provisions of this Agreement.

C. Term.

This Agreement is effective as of the Effective Date and continues until terminated in accordance with Section E below (the "**Term**").

D. Fund Performance.

The loan procedures manual developed by the CDFI and adopted by the Oversight Committee will set forth revolving loan performance measures. These measures may include, but not be limited to, a private investment to loan ratio and jobs created / retained per dollars lent or in the case of workforce sector housing projects the number of income qualifying units. WCCG shall deploy a minimum of 75% of the funds in a 12-month period. If the deployment falls below 75%, WCCG shall submit to the County, a strategy to increase deployment above 75%.

E. Termination.

1. **Termination Rights.** Either Party may terminate this Agreement (i) upon ninety (90) days' prior written notice to the other Party without cause; (ii) at any time by written notice by either Party if: (A) the other Party materially breaches any provision of this Agreement and the non-breaching Party reasonably determines the breach cannot be cured, or, if the non-breaching Party reasonably determines that the breach can be cured, but it has not been cured by the breaching Party within thirty (30) days after the breaching Party's receipt of written notice of such breach by the non-breaching Party; (B) either Party: (1) becomes insolvent, (2) is generally unable to pay, or fails to pay, its debts as they become due, (3) files, or has filed against it, a petition for voluntary or involuntary bankruptcy or pursuant to any other insolvency law, (4) makes or seeks to make a general assignment for the benefit of its creditors, or (5) applies for, or consents to, the appointment of a trustee, receiver or custodian for a substantial part of its property or business; or (iii) at any time by written notice by the County if WCCG ceases its existence as a nonprofit organization, requiring it to transfer all remaining assets to another tax-exempt organization or to the County.
2. **Post-Termination Obligations.** Upon termination of this Agreement, each Party shall stop soliciting or obtaining additional capital for the Fund from any source, and the CDFI shall not originate any new Fund loans; provided that the termination of this Agreement shall not release either Party from any obligation incurred prior to the termination date. Notwithstanding termination of this Agreement, the CDFI shall continue to fulfill all other portfolio servicing obligations to the Fund hereunder until all outstanding amounts due under all loans in the Fund have been paid in full or until a suitable replacement for the CDFI can be found and reasonably transitioned into the portfolio servicing obligations.
3. **Reserves.** Upon termination of this Agreement, the Oversight Committee shall work with the CDFI to establish reserves as deemed reasonably necessary to satisfy any contingent liabilities and the costs and expenses associated with operating and winding up the Fund, including without limitation, the payment of fees and distributions to the CDFI and WCCG.
4. **Final Distribution.** To the extent of available funds, the Fund shall distribute any remaining assets in the following order of priority: (i) to any creditors to discharge debt obligations of the Fund; (ii) to any providers of restricted funds; and (iii) to the County to return the County Contribution.

F. Indemnification.

WCCG (as “**Indemnifying Party**”) shall defend, indemnify, and hold harmless the County and its boards, officers, and employees (collectively, the “**Indemnified Party**”) from and against any and all losses, damages, judgments, claims, penalties, fines, and costs resulting from any (i) material breach of this Agreement; or (ii) negligent act or omission or willful misconduct of the Indemnifying Party in the performance of this Agreement; provided that, the obligation to indemnify under this Section shall not extend to claims arising from the negligence or willful misconduct of the Indemnified Party.

G. Confidentiality.

The Parties hereto agree that any confidential and/or proprietary information provided by one Party (the “**Disclosing Party**”) to the other Party (the “**Receiving Party**”) pursuant to this Agreement (“**Confidential Information**”) shall be kept strictly confidential by the Receiving Party and may not be disclosed to any third-party or publicly without the prior written consent of the Disclosing Party. Notwithstanding the foregoing, the Parties acknowledge that each is or may be subject to the Wisconsin Public Records Law (Wis. Stat. Secs. 19.31-19.39) and any successor statutes and regulations, and any Confidential Information received or maintained by the Parties may constitute public records subject to disclosure, and in such a case disclosure shall not be dependent upon prior written consent however prior notice of intent to disclose the records shall be provided to the Disclosing Party to allow the Disclosing Party an opportunity to seek a protective order. The Receiving Party agrees not to use Confidential Information for any purpose whatsoever except in performance of its obligations under this Agreement or as expressly permitted by this Agreement. The Receiving Party shall be responsible for any use or disclosure of Confidential Information by any of its employees and/or agents and shall ensure that such employees and agents are subject to confidentiality obligations at least as restrictive as those set forth in this Section G. Upon termination of this Agreement, the Receiving Party shall at the direction of the Disclosing Party return or destroy all Confidential Information received by the Receiving Party, subject to any records retention policy or obligation of the Receiving Party.

H. Miscellaneous.

1. Entire Agreement. This Agreement contains the entire agreement among the Parties relating to its subject matters and there are no other terms, conditions, promises, undertakings, statements, warranties, or representations, express or implied, concerning such subject matters. This Agreement cancels and supersedes all previous agreements and understandings, if any, written or verbal, among the Parties relating to this Agreement’s subject matters.
2. Amendment. This Agreement may not be materially changed, amended, modified, released, or discharged, in whole or in part, except by an instrument in writing referred to as an amendment to this Agreement and signed by all Parties.

3. Captions. The captions or headings in this Agreement are for convenience only and in no way define, limit, or describe the scope or intent of the provisions of this Agreement.
4. Governing Law. This Agreement is entered into and shall be construed in accordance with the internal laws of the State of Wisconsin.
5. Severability. If any provision of this Agreement is finally determined by a court of competent jurisdiction to be invalid or unenforceable, this Agreement shall be construed as if the invalid or unenforceable provision had been deleted from the Agreement and the balance of the Agreement shall continue in full force and effect.
6. Waiver. A Party's failure at any time to require performance or observance by any Party of any term or condition of this Agreement, waiver of any succeeding breach of a term or condition, waiver of a term or condition itself, or any combination of the foregoing, shall not affect the full right of that Party to require such performance or observance at any subsequent time.
7. Notices. Any notices required or permitted under this Agreement shall be in writing and shall be considered given upon delivery, if personally delivered or e-mailed with evidence thereof, or one (1) business day after deposit with a nationally recognized commercial courier, or two (2) business days after deposit in the United States Postal Service, certified or registered mail, postage prepaid, in all cases addressed as follows:

If to Waukesha County Center for Growth, Inc.:

Executive Director
2717 N. Grandview Boulevard, Suite 300
Waukesha, WI 53188
nryf@waukeshagrowth.org

If to Waukesha County:

Department of Parks and Land Use Director
515 W. Moreland Blvd, Room 260
Waukesha, WI 53188
dshaver@waukeshacounty.gov

8. No Assignment. No Party to this Agreement may assign its interest in this Agreement to any other entity or individual without the express written consent of the other Party.
9. Relationship of Parties. Nothing in this Agreement creates or shall be construed to create a joint venture or partnership between the Parties. Neither Party shall have any express or implied right or authority to assume or create any obligations on behalf of or in the name of the other Party or to bind the other Party to any contract, agreement, or undertaking with any third party.

10. No Third-Party Beneficiaries. This Agreement is for the sole benefit of the Parties and nothing in this Agreement, express or implied, shall give or be construed to give to any person or entity, other than the Parties, any legal or equitable rights under this Agreement.
11. Authority. Each person signing this Agreement on behalf of a Party has, and hereby certifies that he or she has, authority to sign it on behalf of that Party.
12. Further Assurances. County and WCCG agree to and will cooperate fully with each other in the performance of this Agreement, and will execute such additional agreements, documents or instruments as may reasonably be required to carry out its intent.

WHEREFORE, WCCG and County have entered into this Agreement as of the Effective Date.

Waukesha County Center for Growth, Inc. Waukesha County

By: _____
Nicole Ryf
Executive Director

By: _____
Dale R. Shaver
Parks and Land Use Director

ACCEPTANCE OF ICE ARENA OPERATIONAL PLAN
RELATING TO ORIGINAL CONSTRUCTION LOANS

1
2
3
4
5 WHEREAS, Enrolled Ordinance 142-178, Allocate Monies for the Construction of the Waukesha
6 County Ice Arena Project in 1988, and Enrolled Ordinance 149-134, Appropriate Additional
7 Funds for the Construction of the Naga-Waukee Ice Arena Project in 1995, allowed for the
8 construction of Eble Ice Arena and Naga-Waukee Ice Arena; and
9

10 WHEREAS, the previous ordinances authorized loans from the General Fund and Golf Course
11 Funds to cover building costs; and
12

13 WHEREAS, Golf Course Fund balance was used for the Naga-Waukee Ice Arena construction
14 since a significant fund balance was accumulated for the construction of an additional golf
15 course by the County and was no longer proceeding; and
16

17 WHEREAS, Enrolled Ordinance 158-60 in 2003 delayed debt interest payments until the end of
18 the current loan term; and
19

20 WHEREAS, Enrolled Ordinance 162-33 in 2007 delayed principal payments to allow user fee rate
21 charges to be maintained at a competitive level and continue to avoid direct taxpayer subsidy
22 for ice arena operations until no later than the year 2013 or the year in which projections
23 indicate that at least five years of principal payments can be made without exhausting Ice
24 Arena cash reserves, whichever is sooner; and
25

26 WHEREAS, Enrolled Ordinance 167-33 in 2012 delayed principal payments until 2020. Enrolled
27 Ordinance 175-20 delayed principal payments until 2022 and required the Department of Parks
28 and Land Use to present an Ice Arena operational plan to the Waukesha County Board of
29 Supervisors, no later than December 2022, which includes a plan for the resolution of Ice Arena
30 debt; and
31

32 WHEREAS, audited financial statements for year-end 2021 show outstanding loan balances of
33 \$1,639,984 owed to the General Fund and \$461,609 owed to the Golf Course Fund; and
34

35 WHEREAS, Waukesha County Ice Arenas have generated sufficient user revenues so as to not
36 require tax levy contribution for annual operations and non-capital maintenance; and
37

38 WHEREAS, the Department of Parks and Land Use, through consultant services completed a
39 detailed ice arena facility assessment in 2022; and
40

41 WHEREAS, projected routine maintenance and repair can continue to be funded through annual
42 budgets without requiring tax levy contribution; and
43

44 WHEREAS, capital expenditures, with typical lifecycles of 25-35 years, cannot be funded through
45 ice arena fund balance due to the rate of fund balance accumulation; and

46
47 WHEREAS, the original pro-forma for the construction of the second ice arena projected a
48 positive cash flow to cover annual operating cost and maintenance, but not generate sufficient
49 fund balance for capital project repair and maintenance.

50
51 THE COUNTY BOARD OF SUPERVISORS OF THE COUNTY OF WAUKESHA ORDAINS
52 that the Ice Arena operational plan, including the resolution of the Ice Arena debt be accepted
53 with the following provisions:

- 54
55 1. Defer the General Fund loan until use levels and revenue recovery declines, which
56 would prompt a discussion to preserve or sell the Naga-Waukees Ice Arena. The
57 potential sale of the property would be used to repay the General Fund loan. Any
58 additional equity from a potential sale could be distributed to the Ice Arena Fund
59 balance.
- 60 2. The loan from the Golf Fund is waived as the funds loaned were for the
61 construction of an additional golf course, no longer being pursued.
- 62 3. The annual budget will continue to allocate funds for routine maintenance and
63 repair without requiring the use of tax levy.
- 64 4. Capital project funding will be proposed as necessary using funds from the
65 Waukesha County Parkland Management and Land Acquisition Funds (Tarmann
66 Fund) placing a priority on the maintenance of existing high use facilities versus
67 the expansion of park system land holdings.

FISCAL NOTE

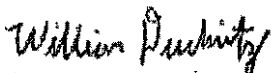
ACCEPTANCE OF ICE ARENA OPERATIONAL PLAN RELATING TO ORIGINAL CONSTRUCTION
LOANS

This ordinance accepts the Ice Arena operational plan and provisions regarding the resolution of General Fund and Golf Course Fund debt incurred by the Ice Arena Fund. The debt includes \$1,639,984 of General Fund obligations and \$461,609 of Golf Course Fund obligations. Per approval of this ordinance, the \$461,609 of Golf Course Fund debt owed by the Ice Arena Fund is waived and will no longer be recognized as a liability. The debt owed to the General Fund is deferred indefinitely, but not waived, to allow the possibility of recouping some or all of the debt if the Naga-Waukee Ice Arena is ever sold.

The plan also calls for the continuation of funding for routine maintenance, repair, and replacement of equipment through the operating budget, at approximately \$75,000 per year, which department management anticipates can be covered with operating revenues. Department management has also identified about \$2.2 million of near-term capital project needs for the facilities (current estimates, subject to change), which cannot be supported by current Ice Arena Fund balance levels. This plan assumes that these capital projects (which will be subject to future County Board approval) will be funded with Waukesha County Parkland Management and Land Acquisition funds (Tarmann Fund)

Previously, during 2016, the County Board approved enrolled ordinance 170-87 to allow the department to use Tarmann Fund balance for Parks and Land Use (PLU) capital projects, provided that a balance of \$4.0 million remained. Department management is recommending prioritizing Tarmann Fund balance for the maintenance of existing facilities (i.e., ice arenas) over the acquisition of new parkland. As of December 31, 2021, Tarmann Fund balance totaled \$4,078,097, and it is anticipated that this plan will decrease fund balance levels below \$4.0 million. (Though, the fund balance can be partially replenished each year through landfill siting fees collected in excess of amounts budgeted in other PLU program areas.)

Department management anticipates that Tarmann Fund balance will be sufficient to cover the near-term capital project needs. Longer-term infrastructure projects and unplanned system repairs could cause capital needs to exceed this funding source. This may require consideration of other funding sources through the capital plan, if Tarmann Funds are not available, similar to how other major park projects are funded.



William Duckwitz
Budget Manager
11/18/2022
AK

1 MODIFY SPEED ZONE ON COUNTY TRUNK HIGHWAY KE FROM THE INTERSECTION WITH COUNTY
2 TRUNK HIGHWAY K NORTH TO THE INTERSECTION WITH COUNTY TRUNK HIGHWAY EF/VV
3

4 WHEREAS, Wisconsin Statutes §349.11 permits local authorities to modify speed restrictions
5 within certain statutory guidelines; and
6

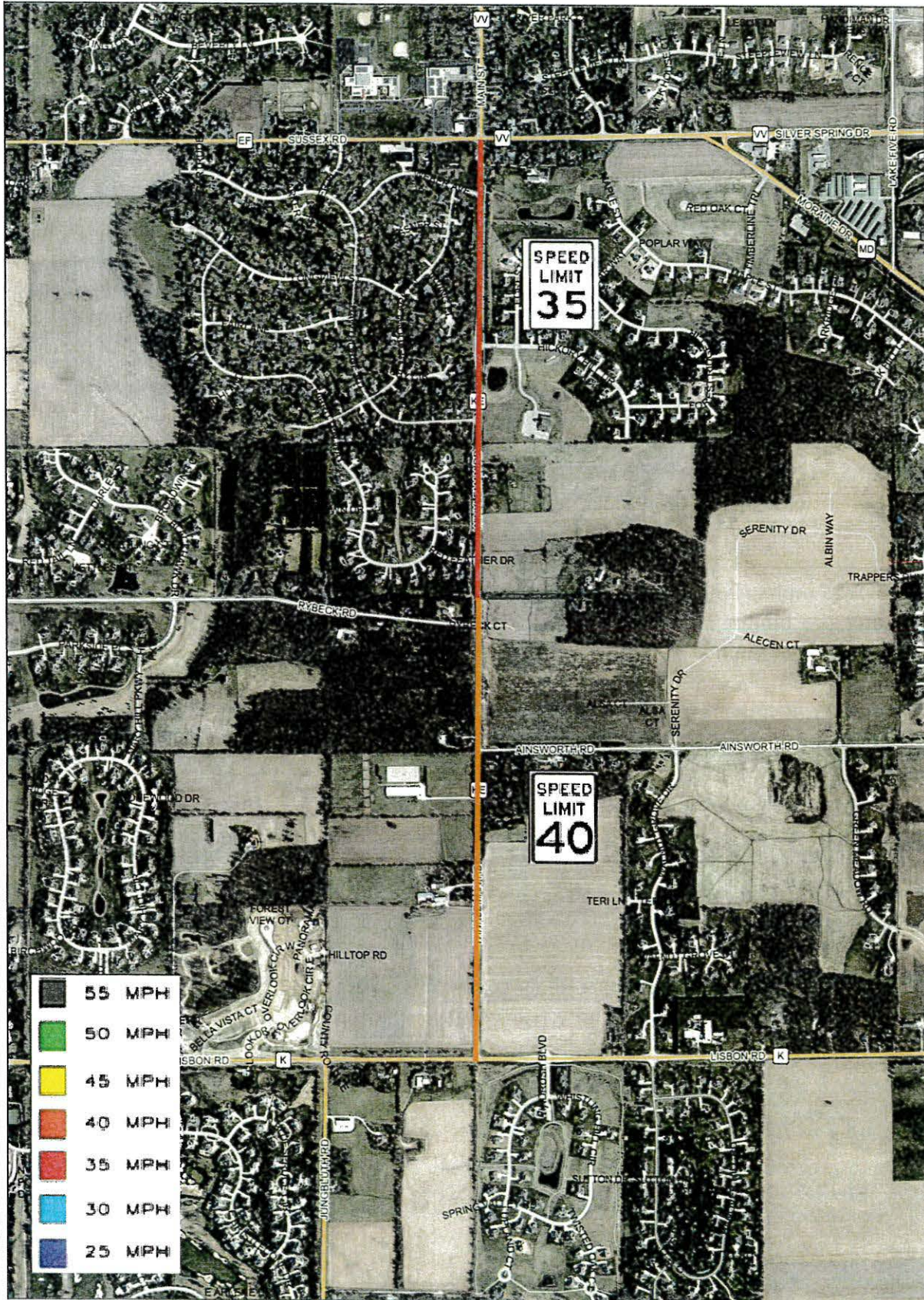
7 WHEREAS, in response to public inquiries and a review of vehicle speeds and collisions along
8 this segment of highway, the Waukesha County Department of Public Works finds it
9 appropriate, pursuant to Wisconsin Statutes §349.11(1)(a) and (3)(c), to modify the speed limit
10 fixed by Wisconsin Statutes §346.57(4)(g) for highways within a semiurban district to 40 mph in
11 both directions of County Trunk Highway KE between its intersection with County Trunk
12 Highway K in the Village of Hartland and a point three thousand nine hundred (3,900) feet
13 north of the centerline of County Trunk Highway K in the Village of Merton; and.
14

15 WHEREAS, in response to public inquiries and a review of vehicle speeds and collisions along
16 this segment of highway, the Waukesha County Department of Public Works finds it
17 appropriate, pursuant to Wisconsin Statutes §349.11(1)(a) and (3)(c), to modify the speed limit
18 fixed by Wisconsin Statutes §346.57(4)(e) for highways within the corporate limits of a city or
19 village to 35 mph in both directions of County Trunk Highway KE between a point three
20 thousand nine hundred (3,900) feet north of the centerline of County Trunk Highway K and its
21 intersection with County Trunk Highway EF/VV all within the Village of Merton.
22

23 THE COUNTY BOARD OF SUPERVISORS OF THE COUNTY OF WAUKESHA ORDAINS
24 that the speed zone along both directions of County Trunk Highway KE is modified to be forty
25 (40) miles per hour between its intersection with County Trunk Highway K in the Village of
26 Hartland and a point three thousand nine hundred (3,900) feet north of the centerline of
27 County Trunk Highway K in the Village of Merton and modified to be thirty-five (35) miles per
28 hour between a point three thousand nine hundred (3,900) feet north of the centerline of
29 County Trunk Highway K and its intersection with County Trunk Highway EF/VV all within the
30 Village of Merton.
31

32 BE IT FURTHER ORDAINED that this ordinance rescinds all previous speed restrictions for the
33 above-described portion of the County Trunk Highway System.

CTH KE SPEED LIMITS



Black	55 MPH
Green	50 MPH
Yellow	45 MPH
Orange	40 MPH
Red	35 MPH
Light Blue	30 MPH
Dark Blue	25 MPH

0 800.00 Feet

The information and depictions herein are for informational purposes and Waukesha County specifically disclaims accuracy in this reproduction and specifically admonishes and advises that if specific and precise accuracy is required, the same should be determined by procurement of certified maps, surveys, plats, Flood Insurance Studies, or other official means. Waukesha County will not be responsible for any damages which result from third party use of the information and depictions herein, or for use which ignores this warning.

Notes:



Printed: 11/21/2022



WAUKESHA COUNTY
OFFICE OF THE COUNTY EXECUTIVE

MEMO:

DATE: November 30, 2022
TO: Chairman Paul Decker
FROM: Paul Farrow
RE: Appointment of Waukesha County Resident to the Bridges Library Board

I am pleased to submit to the County Board for your consideration, the appointment of Ms. Diane Knutson to the Bridges Library Board. Ms. Knutson is a resident of Waukesha County and currently works as a data coordinator for the State of Wisconsin, Department of Children and Families and serves on the Oconomowoc Public Library Board of Trustees. Ms. Knutson's term will expire in December of 2025.

PF:kb

cc: Meg Wartman
Karol Kennedy



WAUKESHA COUNTY
OFFICE OF THE COUNTY EXECUTIVE

MEMO:

DATE: November 30, 2022
TO: Chairman Paul Decker
FROM: Paul Farrow
RE: Appointment of Waukesha County Resident to the Bridges Library Board

I am pleased to submit to the County Board for your consideration, the appointment of Mr. Robert Kraus to the Bridges Library Board. Mr. Kraus is a current Village of Butler Board Member, is a long-standing advocate for library access and services since his childhood in Milwaukee, where he was a frequent patron of the Oklahoma Public Library, now known at the Zablocki Library. Robert's passion for books has taken him into a behind-the-scenes role within the book publishing industry, working on reprint management and first-run production of children's books, adult training materials, and higher education titles over the course of his 20+year career. Seeing the library continue to engage the community and evolve as reading and related resources change is a primary interest in his role on the board Mr. Kraus' term will expire in December of 2025.

PF:kb

cc: Meg Wartman
Karol Kennedy

Referred on: 11/30/22

File Number: 177-A-027

Referred to: EX



WAUKESHA COUNTY
OFFICE OF THE COUNTY EXECUTIVE

MEMO:

DATE: November 30, 2022
TO: Chairman Paul Decker
FROM: Paul Farrow
RE: Appointment of Waukesha City Representative to Waukesha County's
Community Development Block Grant (CDBG) Board

I am pleased to submit to the County Board for your consideration the appointment of Kevin Lahner to the Community Development Block Grant (CDBG) Board. He will replace Tom McNerny, as a City of Waukesha representative on the Board.

Mr. Lahner is the City Administrator for the City of Waukesha and is very familiar with the grant process and many of the non-profit organizations that provide community services in Waukesha County. Mr. Lahner's involvement in and connections to the community make him a great candidate for service on the CDBG Board.

Thank you for your swift consideration.

cc: Meg Wartman
Kristin Silva

1 8TH AMENDMENT TO LEASE AGREEMENT WITH VERIZON WIRELESS PERSONAL
2 COMMUNICATIONS LP, D/B/A VERIZON WIRELESS
3

4 WHEREAS, Waukesha County owns a tower (the "Tower") located at the N46 W33480 CTH
5 R, Nashotah, Waukesha County, State of Wisconsin (the "Site"); and
6

7 WHEREAS, Verizon Wireless Personal Communications LP, d/b/a Verizon Wireless, ("Verizon")
8 currently leases space on the Tower and at the Site for operation of a cellular
9 communications facility and subleases space to Voice Stream PCS II Corporation d/b/a T-
10 Mobile ("T-Mobile") pursuant to a Lease Agreement dated February 14, 1997, as amended;
11 and
12

13 WHEREAS, Verizon and T-Mobile desire to replace, modify or relocate various equipment,
14 antennas and/or feedlines on the Tower in order to update aged equipment; and
15

16 WHEREAS, the County is willing to permit the upgrades, and otherwise amend the Lease
17 with Verizon without requiring an increase in rent.
18

19 THE COUNTY BOARD OF SUPERVISORS OF THE COUNTY OF WAUKESHA ORDAINS that the Eighth
20 Amendment to Lease Agreement between the County and Verizon for use of the Tower and
21 surrounding lands is hereby approved.
22

23 BE IT FURTHER ORDAINED that the Director of Emergency Preparedness or his designee is
24 authorized to execute the Eighth Amendment to Lease Agreement and any other
25 documents necessary to effectuate the intent thereof.

EIGHTH AMENDMENT TO LEASE AGREEMENT

THIS EIGHTH AMENDMENT TO LEASE AGREEMENT (the “Eighth Amendment”) is made this ____ day of _____, _____, between Waukesha County, a Wisconsin municipal corporation (“Lessor”) and Cellco Partnership d/b/a Verizon Wireless, successor in interest to Verizon Wireless Personal Communications LP d/b/a Verizon Wireless, successor in interest to PrimeCo Personal Communications Limited Partnership (“Lessee”).

WHEREAS, there is now in full force and effect a Lease Agreement between Lessor and Lessee dated February 14, 1997, as amended by the Amendment To Lease Agreement dated October 12, 2001 (the “First Amendment”), the Second Amendment To Lease Agreement dated November 18, 2010, the Third Amendment to Site Lease Agreement dated July 10, 2015, the Fourth Amendment to Lease Agreement dated November 11, 2016, the Fifth Amendment to Lease Agreement dated April 18, 2017, the Sixth Amendment to Lease Agreement dated September 28, 2018, and the Seventh Amendment to Lease Agreement dated August 2, 2021 (collectively, and together with this Eighth Amendment, the “Lease”) that provides for the location, installation and operation of Lessee’s communications equipment at the real property and on the tower (“Tower”) owned by Lessor and located at N46 W33480 C.T.H.R., Nashotah, Wisconsin (the “Property”); and

WHEREAS, Section 4 of the Lease permits Lessee, with the consent of Lessor, to sublet all or any portion of the Site (as defined in the Lease). Such consent may be conditioned upon an agreement to allow Lessor to share in expected revenues from the sublet; and

WHEREAS, with the First Amendment, Lessor consented to Lessee’s collocation or site license agreements (“SLAs”) with New Cingular Wireless PSC, LLC (d/b/a AT&T Mobility Corporation) and Voice Stream PCS II Corporation (“Voice Stream” d/b/a “T-Mobile”) at the Site on the terms set forth in the First Amendment; and

WHEREAS, pursuant to Section 5 of the Lease, Lessee is requesting Lessor’s approval to allow Lessee and T-Mobile to make certain equipment modifications to the Tower; and

WHEREAS, Lessor and Lessee wish to amend the Lease to authorize these equipment modifications on the Tower on the terms and conditions set forth herein and to address additional matters in the Lease.

NOW THEREFORE, for good and valuable consideration including the mutual covenants and agreements hereinafter set forth, Lessor and Lessee agree as follows:

1. The recitals set forth above are incorporated herein by reference.
2. Approval of Equipment Modifications. Pursuant to Section 5 of the Lease, Lessor hereby approves the installation and operation by Lessee and T-Mobile of the modified equipment on the Tower as shown by the drawings and specifications attached hereto as Exhibits 8-A and Exhibit 8-B respectively and incorporated by reference. Said approval is contingent

upon Lessee receiving all necessary permits and approvals from the appropriate governing bodies. A copy of any SLA amendment by and between Lessee and T-Mobile necessitated by this Eighth Amendment shall be provided to the Lessor for its records following full execution of the documents.

3. Tower Structural Modifications. Lessee and T-Mobile shall be solely responsible for all costs and expenses to complete the Tower structural modifications. The Tower structural modifications shall become the property of Lessor and shall be considered part of the Tower immediately upon completion of the modifications. Following the installation of the additional equipment pursuant to Paragraph 2 above, and any structural modifications required hereby, a structural engineering study shall validate that the tower is not overstressed for a Class III tower as defined by ANSI/TIA-222-G.

4. Other than as specifically amended herein, all other terms and conditions of the Lease shall remain in full force and effect. Where there is conflict between the terms of the Lease and this Eighth Amendment, the terms of this Eighth Amendment shall control. Unless otherwise indicated or introduced in this Eighth Amendment, all defined terms referenced in this Eighth Amendment shall have the same meaning as those found in the Lease.

(Signatures continue on next page)

IN WITNESS WHEREOF, the parties hereto have executed in duplicate this Eighth Amendment effective as of the day and year first above written.

LESSOR:

WAUKESHA COUNTY, a Wisconsin municipal corporation

By: _____

Name: _____


Title: _____

Date: _____

LESSEE:

Cellco Partnership

d/b/a Verizon Wireless

By:  _____

Name: Dena Ranieri _____

Title: Sr. Manager - Real Estate _____

Date: Apr 21, 2022 _____

Exhibit 8-A

SHEET INDEX


NO.	DESCRIPTION
T-1	TITLE SHEET
A-1	SITE PLAN
A-2	EXISTING & PROPOSED ENLARGED EQUIPMENT LAYOUT
A-3	ELEVATION & DETAILS
A-4	EXISTING & PROPOSED ANTENNA PLANS
A-5	ANTENNA & CABLE SCHEDULE
A-6	CONFIGURATION DIAGRAM
A-7	RFDS DIAGRAM & NEW EQUIPMENT SPECIFICATIONS
A-8	NEW EQUIPMENT SPECIFICATIONS
A-9	NEW EQUIPMENT SPECIFICATIONS
A-10	NEW EQUIPMENT SPECIFICATIONS
A-11	NEW EQUIPMENT SPECIFICATIONS
EG-1	PROPOSED SITE GROUNDING DIAGRAM

SCOPE OF WORK

- SCOPE OF WORK CONSISTS OF:
1. REMOVE EXISTING T-ARM MOUNTS AND REPLACE W/(3) NEW 'PV-SFA12-3-12-126' SECTOR FRAME
 2. REPLACEMENT OF (6) EXISTING ANTENNAS W/(6) NEW ANTENNAS
 3. REPLACEMENT OF (6) EXISTING RF MODULES W/(6) NEW RF MODULES (3) AHFIG & (3) AHLOA W/NEW RF JUMPERS
 4. INSTALLATION OF (1) AIRSCALE AMIA W/(2) ASIK & (4) ABIL AND (1) AIRSCALE AMIA W/(1) ASIA, (1) ASIB, (2) ABIA, & (3) ABIC
 5. REMOVAL OF (2) EXISTING COVP - (1) ON GROUND & (1) ON TOWER
 6. INSTALLATION OF (2) NEW HCS 2.0 TOWER FIBER JUNCTION BOXES ON GROUND
 7. REMOVAL OF (1) EXISTING SSC CABINET
 8. INSTALLATION OF (1) NEW HP LARGE SITE SUPPORT CABINET 3 & (1) NEW BATTERY CABINET
 9. REMOVAL OF (1) HIGH CAPACITY HCS 1.0 HYBRID TRUNK LINE
 10. INSTALLATION OF (2) NEW HCS 2.0 TRUNK LINES, (2) NEW TOWER BREAKOUT BOXES & (1) NEW VOLTAGE BOOSTER W/(2) AMPLIFIERS


DRIVING DIRECTIONS

SCAN QR CODE FOR LINK TO SITE LOCATION MAP AND DRIVING DIRECTIONS



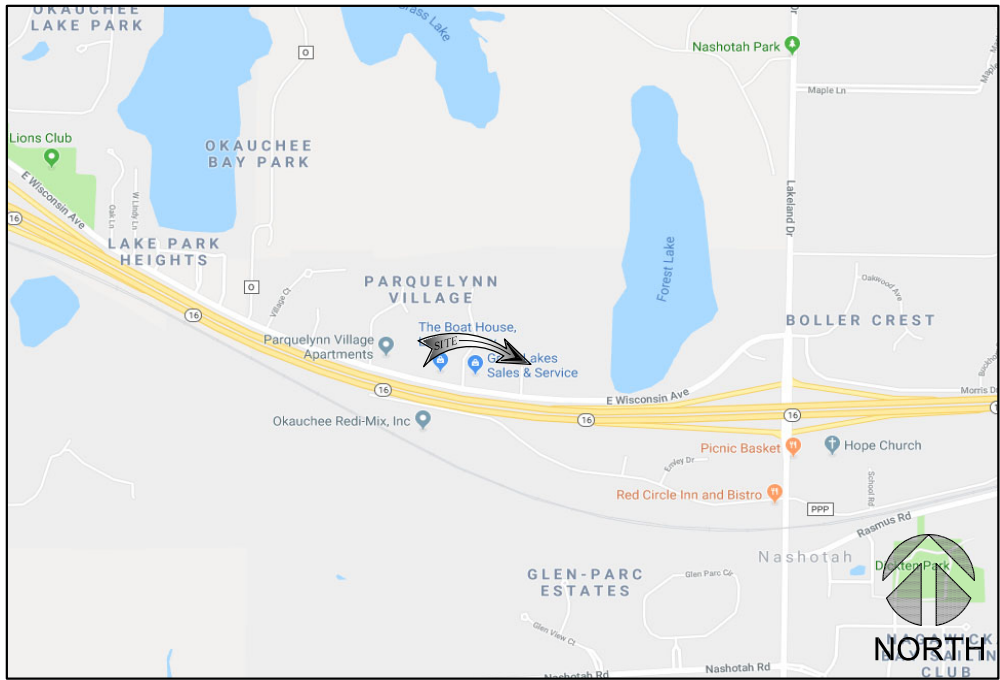
PROFESSIONAL LICENSURE

I CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF THE GOVERNMENT LOCAL BUILDING CODE.

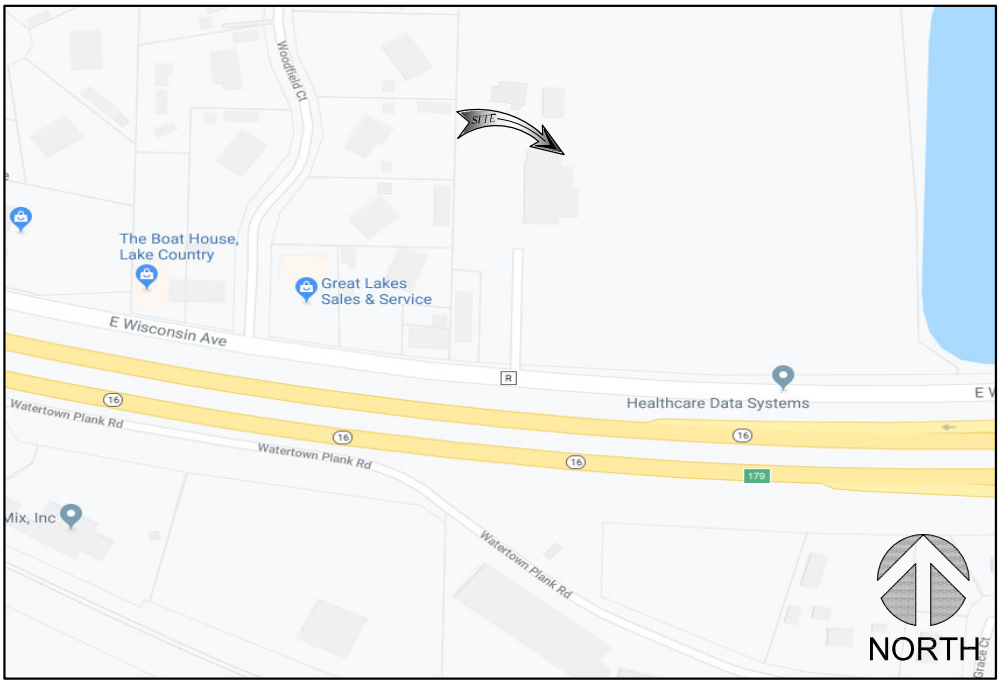


EXPIRES: 07/31/2022 SIGNED: 8/31/2020

REGIONAL MAP



VICINITY MAP



ANCHOR PROJECT

SITE NUMBER
ML12123D

SITE NAME
WAUKESHA CITY LATTICE TOWER

SITE ADDRESS
N46 W33480 CITY HWY R
NASHOTAH, WI 53058

GC SHALL VERIFY ALL EXISTING PLANS, DIMENSIONS & CONDITIONS ON JOB SITE. GC SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER OF RECORD OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

GC SHALL CONTACT THE A&E FIRM PRIOR TO BIDWALK AND CONSTRUCTION START TO CONFIRM THAT DRAWINGS ARE THE MOST RECENT SET.

APPROVALS

T-MOBILE OPS _____

R.F. OPS _____

R.F. ENGINEER _____

SITE ACQUISITION _____

CONSTRUCTION _____

SITE OWNER _____

PROJECT INFORMATION

LATITUDE: N 43.10366632° (NAD 83)	APPLICANT: T-MOBILE 1400 OPUS PLACE, 7TH FLOOR DOWNERS GROVE, IL 60515 (773) 444-5400	ALL WORK AND METATERIALS SHALL BE PERFORMED AND 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 THE LATEST EDITION OF THE FOLLOWING CODES. CODES: • WISCONSIN ADMINISTRATIVE BUILDING CODE • WISCONSIN ADMINISTRATIVE ELECTRIC CODE
LONGITUDE: W 88.41186510° (NAD 83)	PHONE: (773) 444-5400	
SITE TYPE: LATTICE TOWER	ENGINEERING CONTACT: WESTCHESTER SERVICES L.L.C. 604 FOX GLEN BARRINGTON, IL 60010 PHONE: (847) 277-0070 FAX: (847) 277-0080	
JURISDICTION: TOWN OF NASHOTAH		
COUNTY: WAUKESHA COUNTY		



WESTCHESTER SERVICES LLC
604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847-277-0070
FAX: 847-277-0080
AE@westchesterservices.com

JOHN M. BANKS ARCHITECT
604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847-277-0070
FAX: 847-277-0080
jbanks@westchesterservices.com

CHECKED BY:	RJA		
APPROVED BY:	JMB		
REV.	DATE	BY	DESCRIPTION
A	08/29/19	NA	PRELIMINARY CD
B	06/02/20	DWM	PRELIMINARY CD
C	06/08/20	LJ	PRELIMINARY CD
D	06/24/20	LJ	PRELIMINARY CD
E	07/31/20	DWM	PRELIMINARY CD
O	08/21/20	DWM	PERMIT/CONSTRUCTION
1	08/31/20	DWM	PERMIT/CONSTRUCTION

ML12123D
WAUKESHA CITY
LATTICE TOWER
N46 W33480 CITY HWY R
NASHOTAH, WI 53058

SHEET TITLE
TITLE SHEET

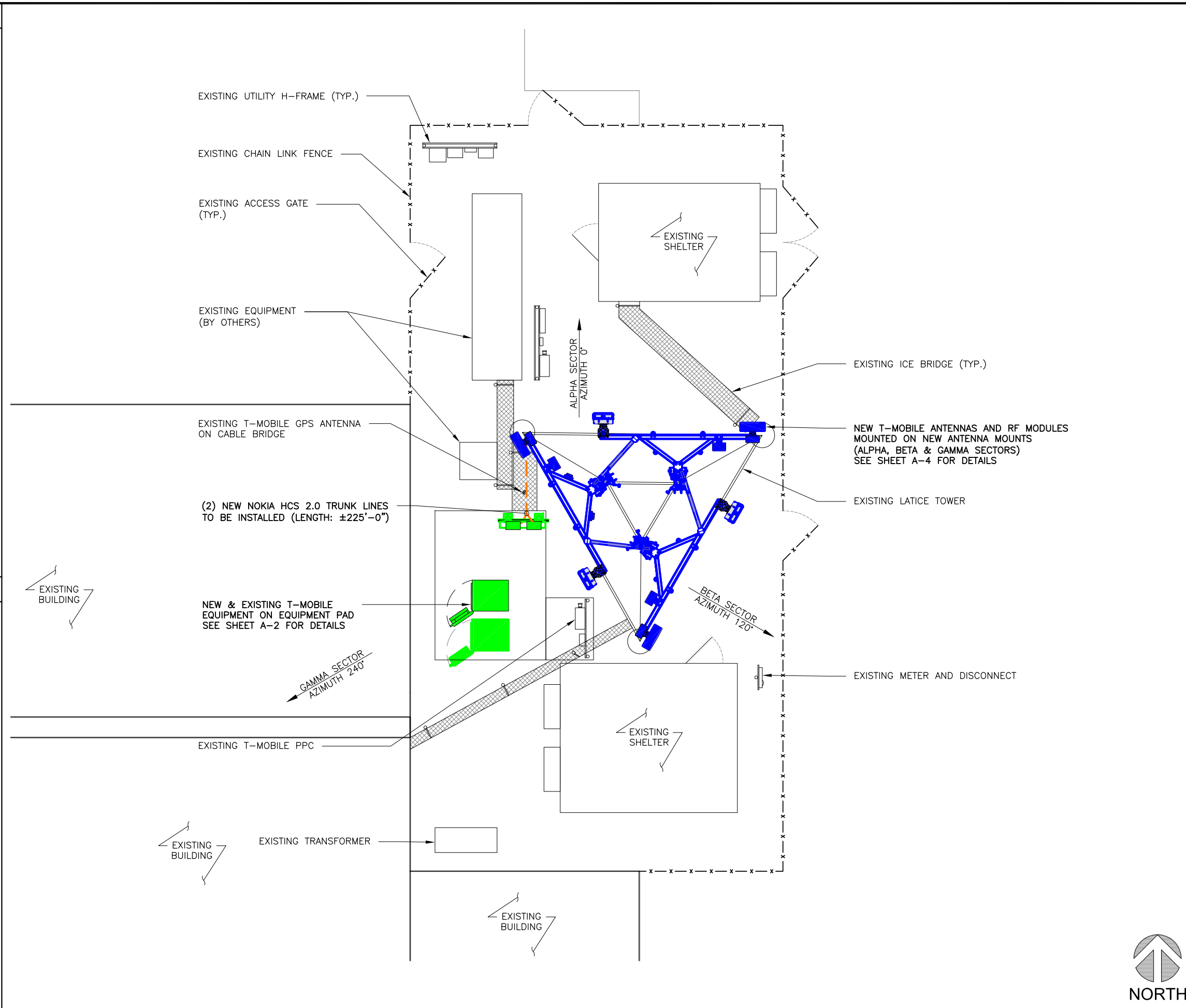
SHEET NUMBER
T-1

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AGL	ABOVE GRADE LEVEL
AMSL	ABOVE MEAN SEA LEVEL
APPROX	APPROXIMATE
AWG	AMERICAN WIRE GAUGE
BBU	BATTERY BACKUP UNIT
BLDG	BUILDING
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CND	CONDUIT
DWG	DRAWING
FT	FOOT(FEET)
ECB	EQUIPMENT GROUND BAR
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ELEV	ELEVATION
EQUIP	EQUIPMENT
E	EXISTING
EXT	EXTERIOR
FND	FOUNDATION
GA	GAUGE
GALV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
HCS	HYBRID CABLE SOLUTION
LTE	LONG TERM EVOLUTION
MAX	MAXIMUM
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
NTS	NOT TO SCALE
O.C.	ON CENTER
OE/OT	OVERHEAD ELECTRIC/TELCO
RFDS	RF DATA SHEET
RGS	RIGID GALVANIZED STEEL
IN	INCH(ES)
INT	INTERIOR
LB(#)	POUND(S)
RRH	REMOTE RADIO HEAD
SF	SQUARE FOOT
SSC	SITE SUPPORT CABINET
STL	STEEL
TBD	TO BE DETERMINED
TYP	TYPICAL
UE/UT	UNDERGROUND ELECTRIC/TELCO
UNO	UNLESS NOTED OTHERWISE
VIF	VERIFY IN FIELD
W/	WITH
XFMR	TRANSFORMER PLATE

SYMBOLS

	CENTERLINE
	REVISION
	WORK POINT
	UTILITY POLE
	BRICK
	COMPRESSED STONE
	CONCRETE
	EARTH
	GRAVEL
	MASONRY
	STEEL
	CENTERLINE
	PROPERTY LINE
	LEASE LINE
	EASEMENT LINE
	CHAIN LINK FENCE
	WOOD FENCE
	BELOW GRADE ELECTRIC
	BELOW GRADE TELEPHONE
	OVERHEAD ELECTRIC/TELEPHONE
	SECTION REFERENCE



SITE PLAN

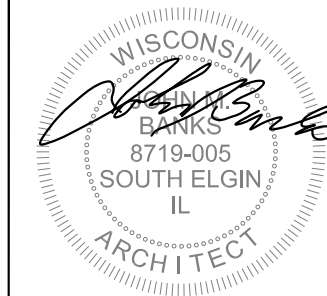
SCALE: 1/8" = 1'-0" 1



WESTCHESTER SERVICES LLC
 604 FOX GLEN
 BARRINGTON, IL 60010
 TELEPHONE: 847-277-0070
 FAX: 847-277-0080
 AE@westchesterservices.com

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 FAX: 847-277-0080
 jbanks@westchesterservices.com

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APPROVED BY:	JMB		
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EXPIRES: 07/31/2022 SIGNED: 8/31/2020

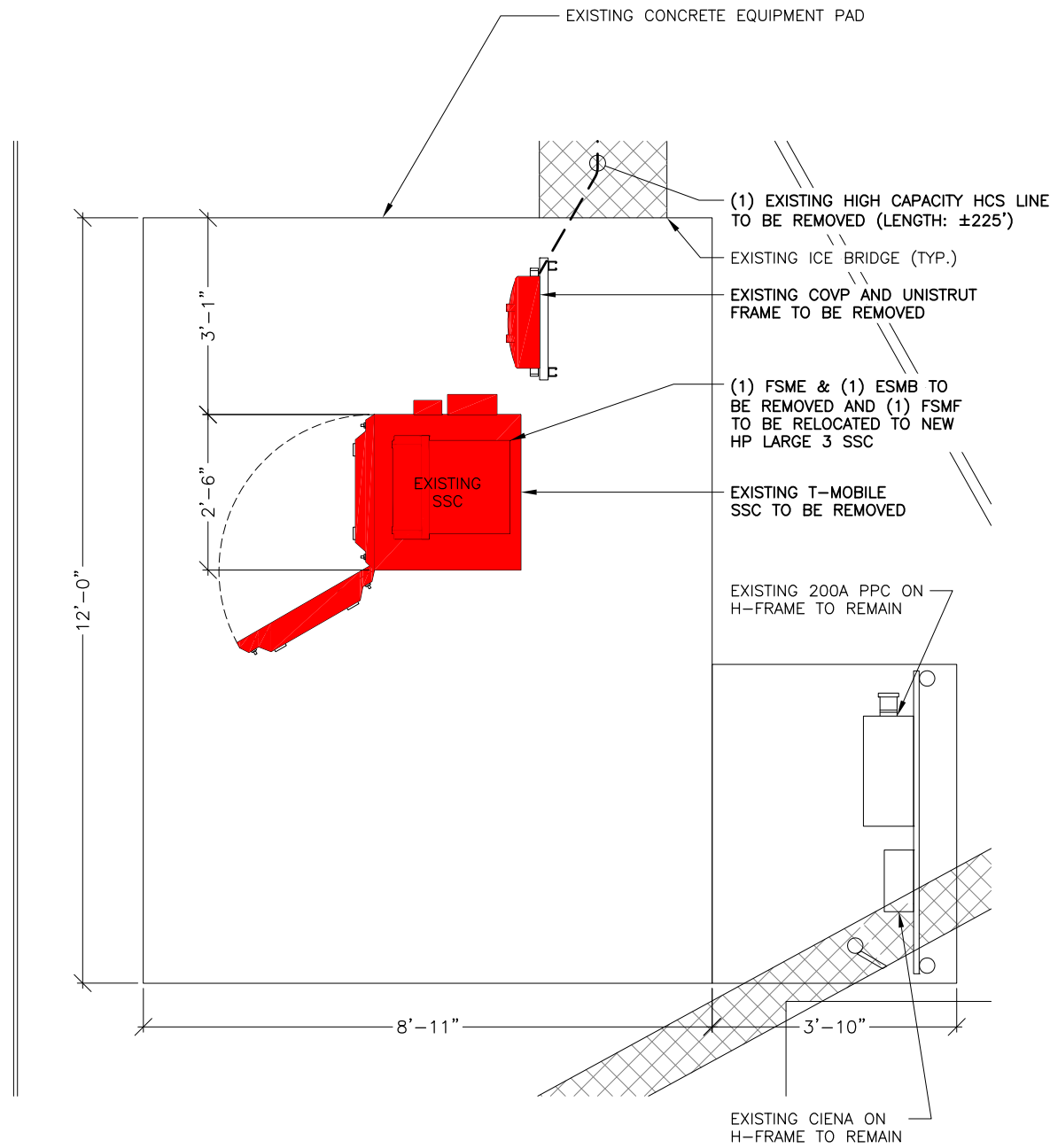
ML12123D
 WAUKESHA CITY
 LATTICE TOWER
 N46 W33480 CITY HWY R
 NASHOTAH, WI 53058



SHEET TITLE
SITE PLAN

SHEET NUMBER
A-1

LEGEND	
	SSC TO BE REMOVED
	BBU TO BE REMOVED
	COVP TO BE REMOVED

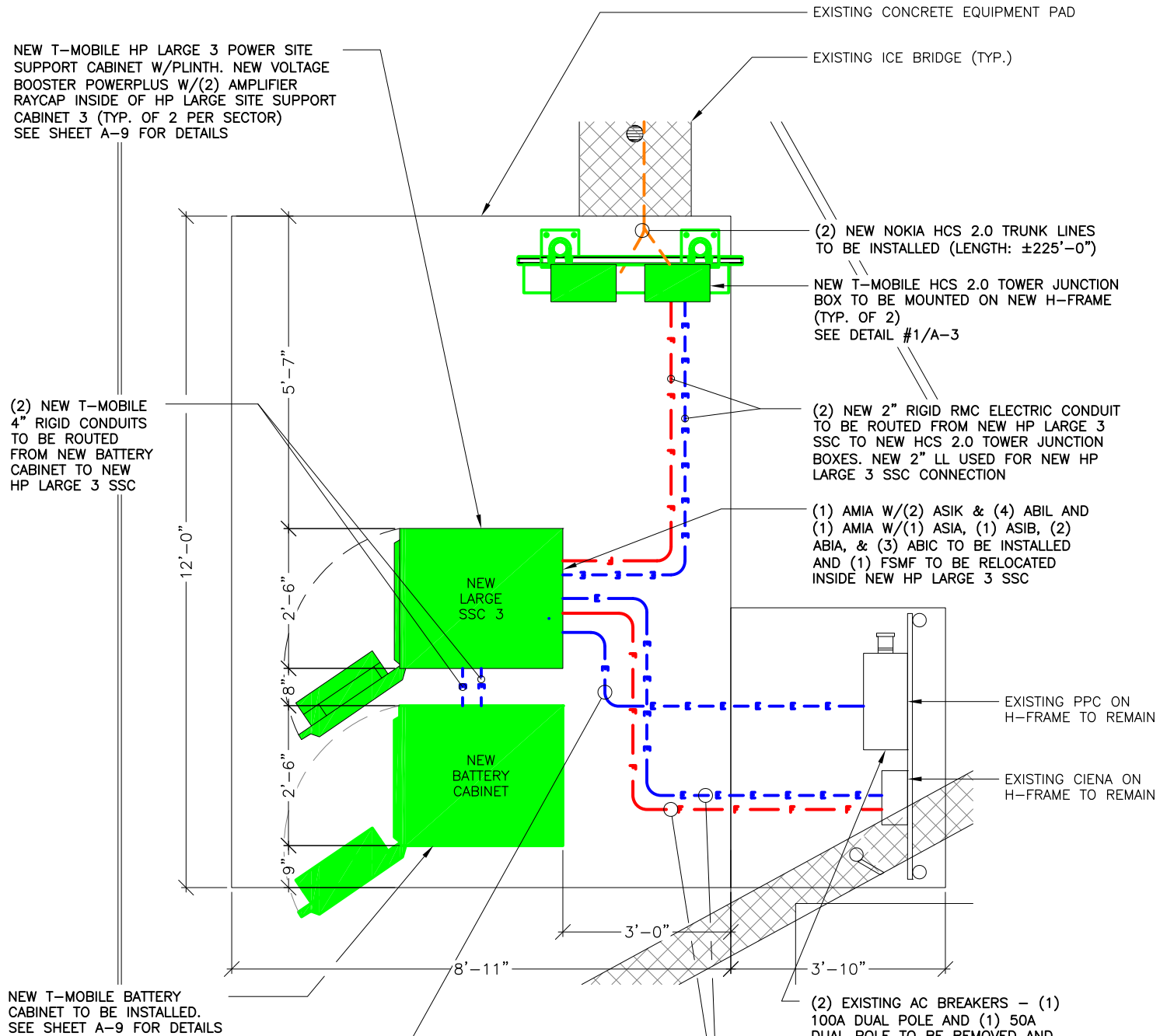


EXISTING EQUIPMENT PLAN

SCALE: 3/8" = 1'-0" 1

LEGEND	
	NEW HP LARGE SSC 3
	NEW BATTERY CABINET
	NEW HCS 2.0 TOWER JB

CABLE LEGEND	
	EXISTING HCS LINES
	NEW HYBRID JUMPER CABLES
	ELECTRICAL CONDUIT
	FIBER CONDUIT



NEW EQUIPMENT PLAN

SCALE: 3/8" = 1'-0" 2



WESTCHESTER SERVICES LLC
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 AE@westchesterservices.com

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 BARRINGTON, IL 60010
 TELEPHONE: 847-277-0070
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 jbanks@westchesterservices.com

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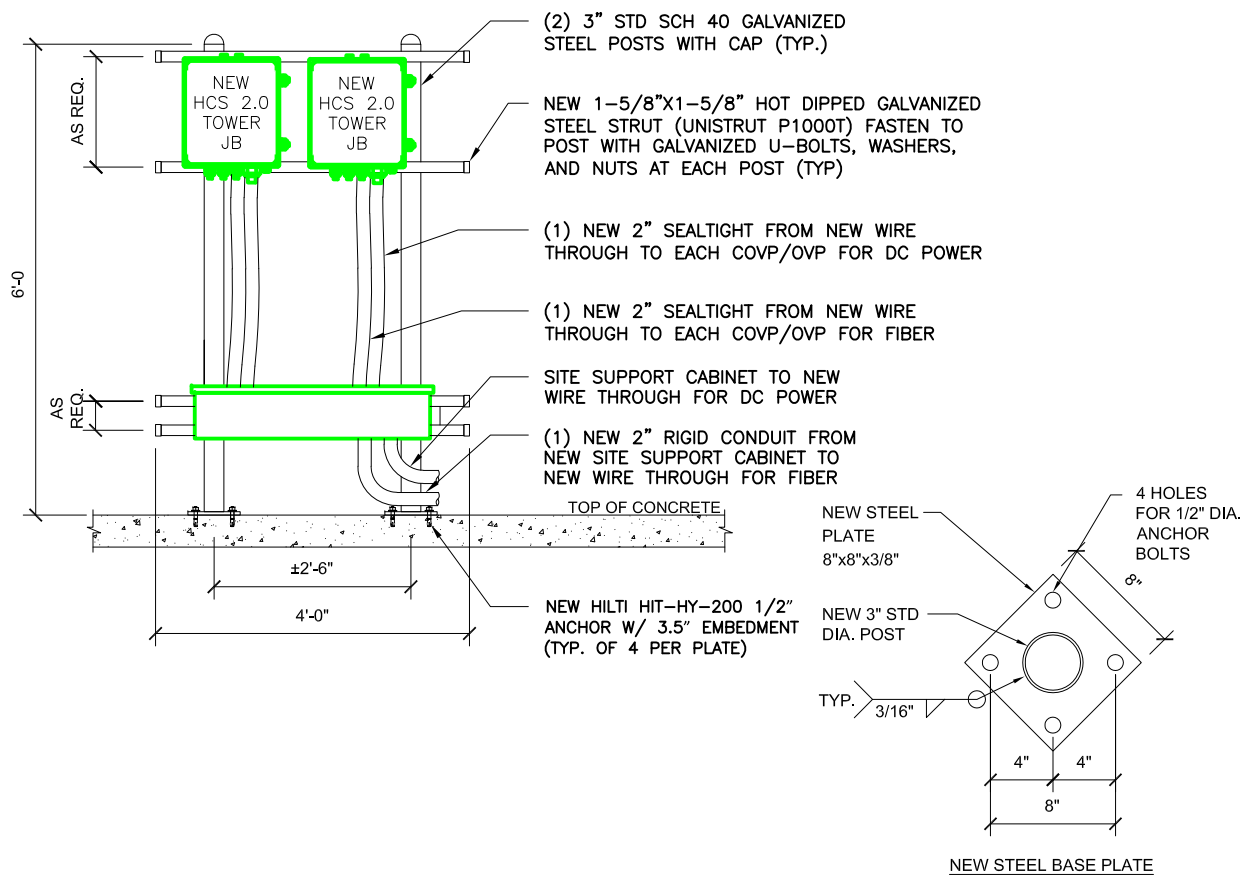
EXPIRES: 07/31/2022 SIGNED: 8/31/2020

ML12123D
 WAUKESHA CITY
 LATTICE TOWER
 N46 W33480 CITY HWY R
 NASHOTAH, WI 53058

SHEET TITLE
 EXISTING & PROPOSED
 ENLARGED EQUIPMENT
 LAYOUT

SHEET NUMBER

A-2



H-FRAME DETAIL SCALE: N.T.S. 1

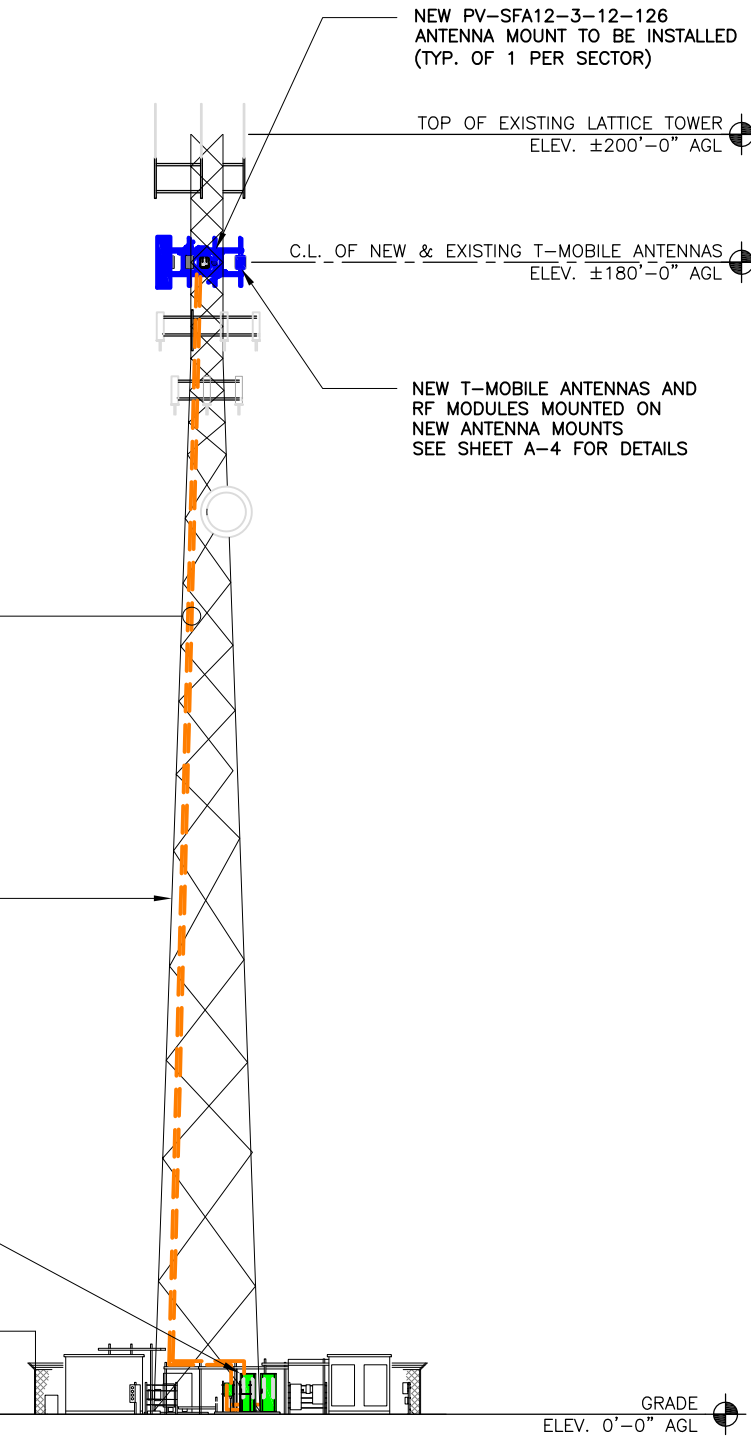
SPECIAL NOTES:

- G.C. TO VERIFY ALL HEIGHTS AND AZIMUTHS IN FIELD PRIOR TO CONSTRUCTION. G.C. SHALL NOTIFY T-MOBILE AND ENGINEER OF DISCREPANCIES IMMEDIATELY.
- STRUCTURAL/DESIGN & ANALYSIS SHALL BE PERFORMED & APPROVED BY TOWER OWNER AND MANUFACTURER (STRUCTURAL ANALYSIS BY WESTCHESTER SERVICES L.L.C.)
- CONTRACTOR TO THOROUGHLY REVIEW THE TOWER STRUCTURAL ANALYSIS FOR INFORMATION PERTAINING TO TOWER UPGRADES, MOUNTING TYPES, ANTENNA HEIGHTS, AND CABLE ROUTING, ANY OTHER DISCREPANCIES BETWEEN THE DRAWINGS, STRUCTURAL ANALYSIS, AND TOWER PLANS SHOULD BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER PRIOR TO BIDDING AND INSTALLATION.

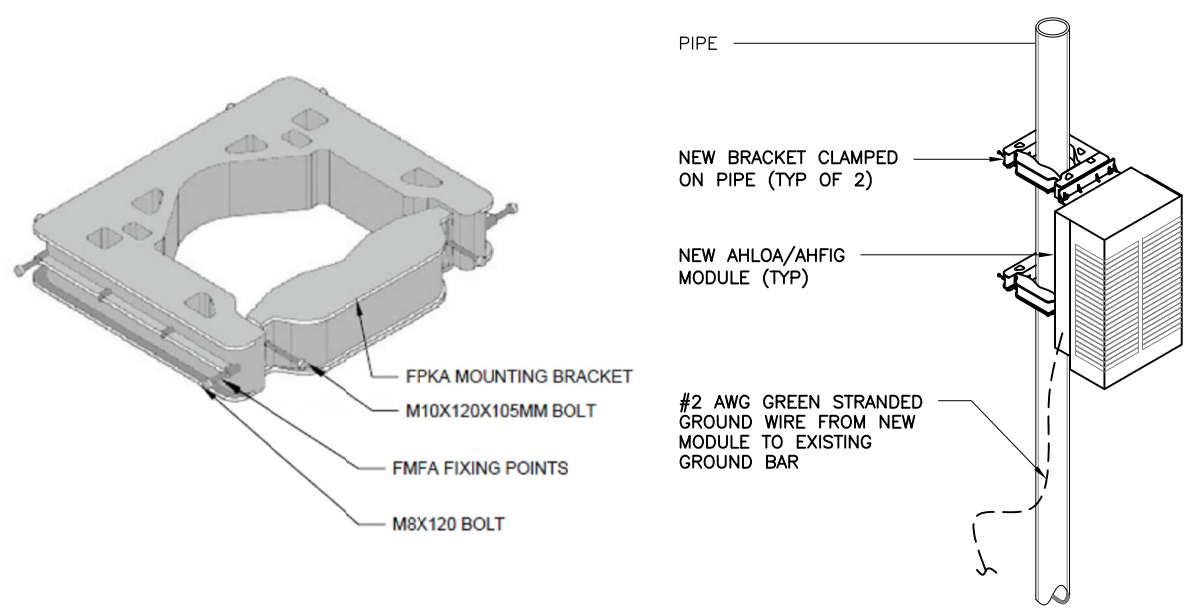
(2) NEW NOKIA HCS 2.0 TRUNK TO BE INSTALLED (LENGTH: ±225'-0")

EXISTING LATTICE TOWER

NEW & EXISTING T-MOBILE EQUIPMENT ON EQUIPMENT PAD SEE SHEET A-2 FOR DETAILS



TOWER ELEVATION SCALE: NTS 3



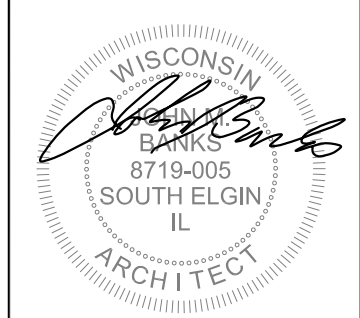
TYPICAL AHLOA/AHFIG UNIT MOUNTING DETAIL SCALE: N.T.S. 2



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CHECKED BY:	RJA		
APPROVED BY:	JMB		
REV.	DATE	BY	DESCRIPTION
A	08/29/19	NA	PRELIMINARY CD
B	06/02/20	DWM	PRELIMINARY CD
C	06/08/20	LJ	PRELIMINARY CD
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1	08/31/20	DWM	PERMIT/CONSTRUCTION



EXPIRES: 07/31/2022 SIGNED: 8/31/2020

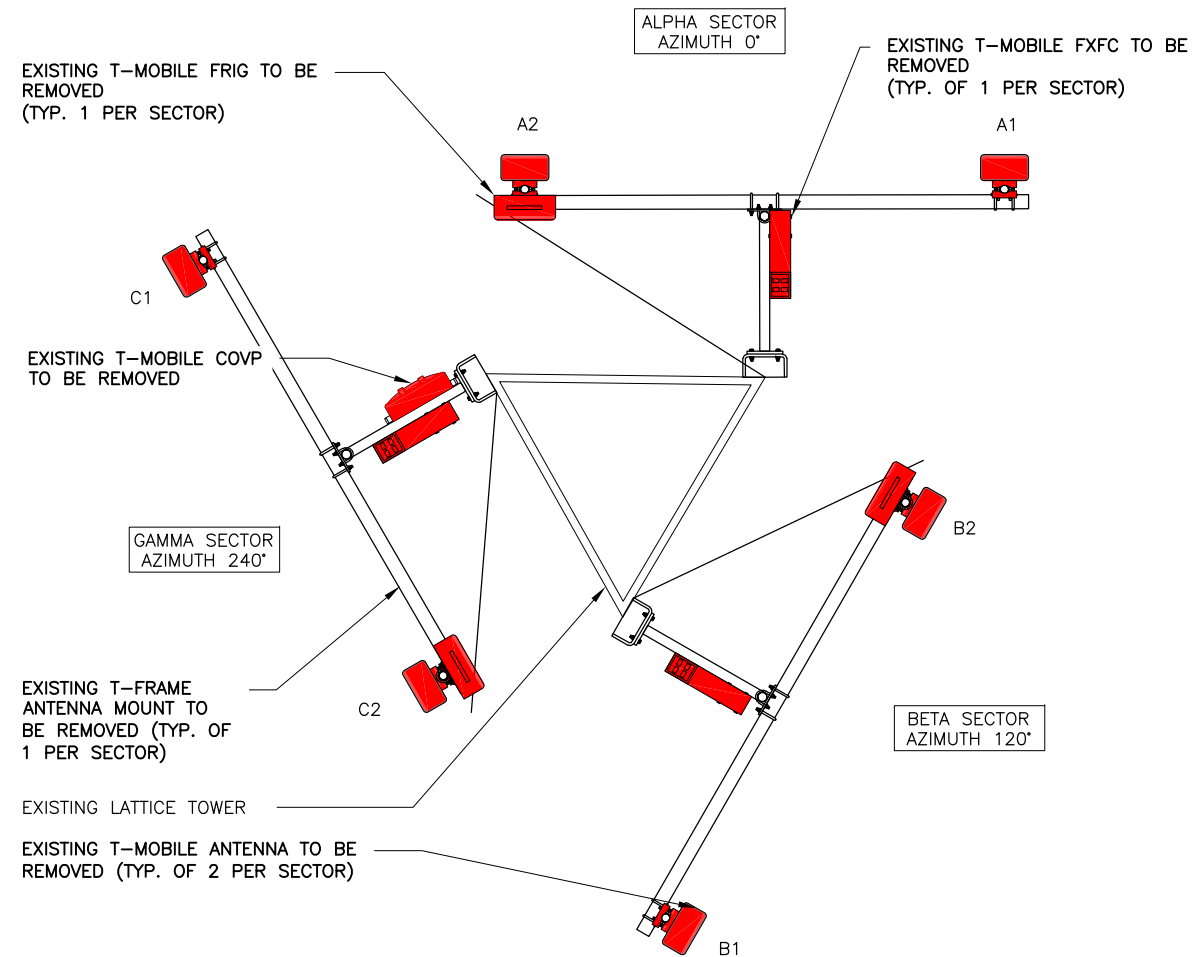
ML12123D
 WAUKESHA CITY LATTICE TOWER
 N46 W33480 CITY HWY R
 NASHOTAH, WI 53058

SHEET TITLE
ELEVATION & DETAILS

SHEET NUMBER
A-3

LEGEND	
	ANTENNA TO BE REMOVED
	FRIG TO BE REMOVED
	FXFB TO BE REMOVED
	COVP TO BE REMOVED

CABLE LEGEND	
	EXISTING HCS LINES
	NEW HYBRID JUMPER CABLES

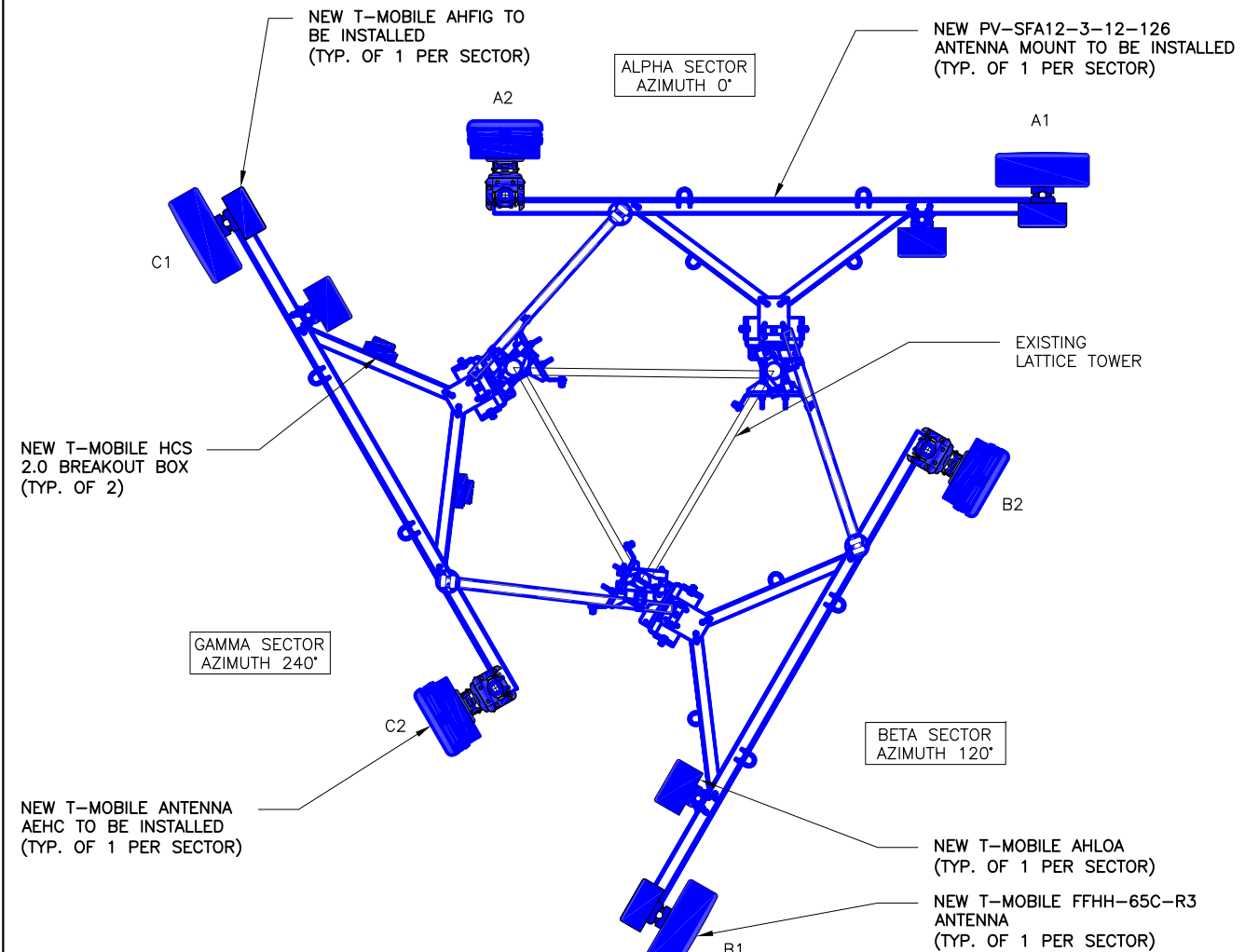


EXISTING T-MOBILE ANTENNA CONFIGURATION

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

LEGEND	
	NEW AEHC
	NEW ANTENNA
	NEW AHFIG
	NEW AHLOA
	NEW HCS 2.0

CABLE LEGEND	
	EXISTING HCS LINES
	NEW HYBRID JUMPER CABLES



NEW T-MOBILE ANTENNA CONFIGURATION

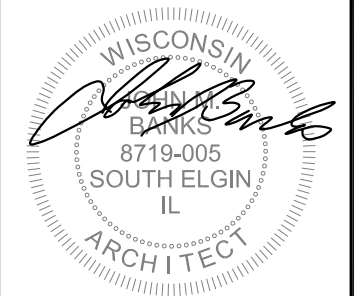
SCALE: 1/4"=1'-0" 2



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ML12123D
 WAUKESHA CITY LATTICE TOWER
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 NASHOTAH, WI 53058

SHEET TITLE
EXISTING & PROPOSED ANTENNA PLANS

SHEET NUMBER
A-4



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PROPOSED AND EXISTING ANTENNA AND CABLE SCHEDULE

SECTOR	POS.	AZIMUTH	RAD CENTER	TECHNOLOGY	MECHANICAL TILT	ELECTRICAL TILT	ANTENNA	RRU TYPE	HYBRID JUMPERS LENGTH	COVP	HCS TRUNK LENGTH	RF JUMPER LENGTH
ALPHA	A1	0°	180°-0"	L600, N600, U1900, L2100, L1900, G1900	0	0	(1) NEW COMMSCOPE – FFHH-65C-R3 (OCTO)	(1) NEW AHLOA (1) NEW AHFIG	(2) 15' HCS 2.0	(2) NEW HCS 2.0 TOWER JUNCTION BOXES	(2) NEW HCS 2.0 TRUNK LINES (225')	≤15'-0"
ALPHA	A2	0°	180°-0"	L2500, N2500	0	0	(1) NEW AEHC (ACTIVE ANTENNA – MASSIVE MIMO)	-	(1) 15' HCS 2.0			≤15'-0"
BETA	B1	120°	180°-0"	L600, N600, U1900, L2100, L1900, G1900	0	0	(1) NEW COMMSCOPE – FFHH-65C-R3 (OCTO)	(1) NEW AHLOA (1) NEW AHFIG	(2) 15' HCS 2.0			≤15'-0"
BETA	B2	120°	180°-0"	L2500, N2500	0	0	(1) NEW AEHC (ACTIVE ANTENNA – MASSIVE MIMO)	-	(1) 15' HCS 2.0			≤15'-0"
GAMMA	C1	240°	180°-0"	L600, N600, U1900, L2100, L1900, G1900	0	0	(1) NEW COMMSCOPE – FFHH-65C-R3 (OCTO)	(1) NEW AHLOA (1) NEW AHFIG	(2) 15' HCS 2.0			≤15'-0"
GAMMA	C2	240°	180°-0"	L2500, N2500	0	0	(1) NEW AEHC (ACTIVE ANTENNA – MASSIVE MIMO)	-	(1) 15' HCS 2.0			≤15'-0"

(*) SHARED WITH ALL SECTORS

IMPORTANT NOTE: PLEASE REFER TO LATEST RFDS SHEET FOR NSN CONFIGURATION. GC TO CAP ALL UNUSED PORTS.

LENGTH OF CENTER ANTENNA TO GROUND OVP FRAME
 ALPHA: 200' – GC TO VALIDATE ON SCOPE WALK
 BETA: 200' – GC TO VALIDATE ON SCOPE WALK
 GAMMA: 200' – GC TO VALIDATE ON SCOPE WALK

ANTENNA AND CABLE SCHEDULE

1

Initial Fiber Splitter Information

SFC4 – Fiber Splitter

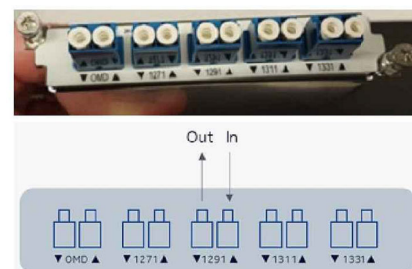
- One AAHF with utilizes two SFC4s for LTE (3x20MHz)
 - Three sector AAHF site will have 6 total SFC4
- Dimensions (HxWxD): TBD
 - 19" Rack Mounting Bracket: 0.5U height
 - holds four SFC4
 - 6 SFC4 will occupy two brackets (1U total)
 - Blind plate used for unoccupied slots in the mounting bracket



- Weight: TBD
- Indoor rated – needs to be in environmentally controlled area (i.e. Site Support Cabinet)

Interfaces –

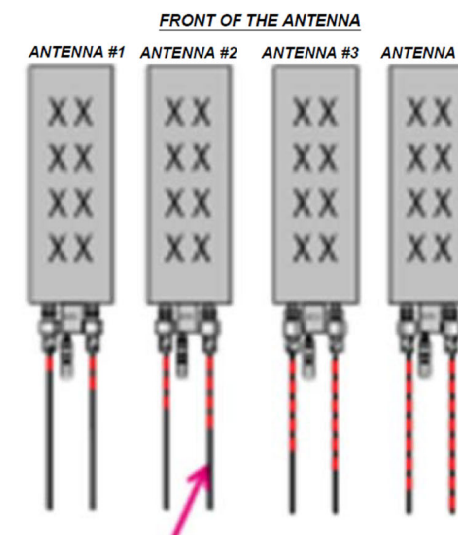
- One OMD – Combined signal connecting to HCS going up to radio
- Four individual wavelength ports (1271, 1291, 1311, 1331) going to baseband units
- No SFP needed on SFC4 side since connectors already in place



Coax Color Coding

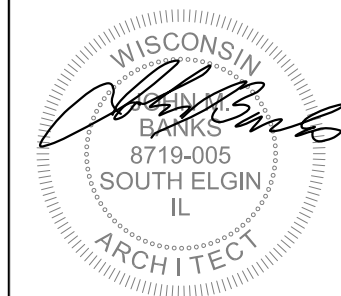
- Antennas will be labeled (back of antenna view) Right to left 1 - X ports
- Coax/Jumper lines will be identified by sector color and by number of bands around the coax/jumper

SECTOR A	RED
SECTOR B	GREEN
SECTOR C	BLUE
SECTOR D	YELLOW
SECTOR E	WHITE
SECTOR F	PURPLE
LMU	BROWN + SECTOR COLOR BANDS (1 & 2)
FIBER ID	GRAY
UNUSED COAX	PINK
MICROWAVE	ORANGE
DWE T-1'S + GPS DOWNLINK CABLE	ID W/LABEL MAKER



EXAMPLE: COAX WITH FOUR BANDS OF RED TAPE WILL REPRESENT ALPHA SECTOR AND THE 4TH PORT OF ANTENNA

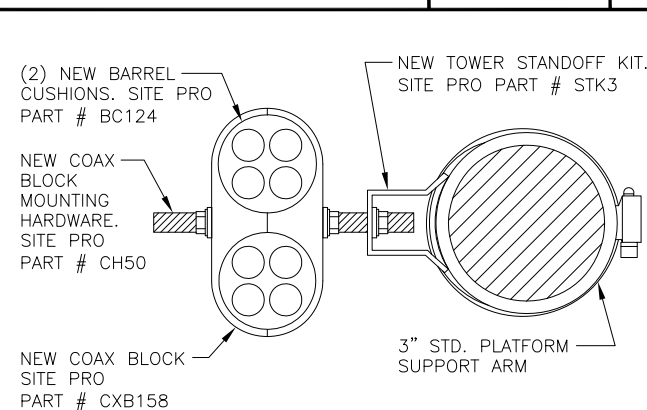
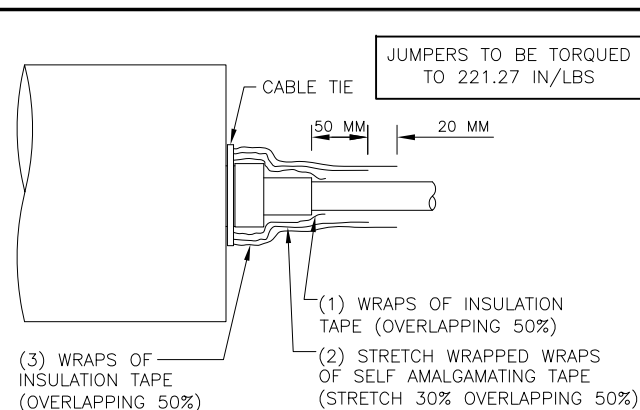
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EXPIRES: 07/31/2022 SIGNED: 8/31/2020

SFC4 - FIBER SPLITTER

SCALE: N.T.S. 2



RF JUMPER CONNECTION DETAIL

SCALE: N.T.S. 3

RF JUMPER MOUNTING DETAIL

SCALE: N.T.S. 4

TAGGING COLOR AND NOTES

COLOR CODING NOTES:

- color GSM
- color UMTS 1900
- color UMTS AWS
- color LTE
- color FIBER CABLE

METALLIC TAG NOTES:

- TWO METALLIC TAGS SHALL BE ATTACHED AT EACH END OF EVERY CABLE LONGER THAN (3) THREE FEET
- CABLE LESS THAN (3) THREE FEET WILL HAVE TWO METALLIC TAGS ATTACHED AT THE CENTER OF THE CABLE.
- TAGS WILL BE FASTENED WITH STAINLESS STEEL ZIP TIES APPROPRIATE FOR CABLE DIAMETER.
- STANDARDIZED METALLIC TAG KIT WILL BE ASSEMBLED WITH TAGS ALREADY ENGRAVED TO ACCOMMODATE ALL CONFIGURATIONS.



ANTENNA AND COAXIAL CABLE SCHEDULE

- ALL ANTENNAS SHALL BE FURNISHED WITH DOWNTILT BRACKETS. CONTRACTOR SHALL COORDINATE REQUIRED MECHANICAL DOWNTILT FOR EACH ANTENNA WITH RF ENGINEER. ANTENNA DOWNTILT SHALL BE SET AND VERIFIED BY A SMART LEVEL.
- CONTRACTOR SHALL INSTALL COLOR CODE RINGS ON EACH OF THE HYBRID CABLES AND JUMPER CABLES WITH UV RESISTANT TAPE. ALL CABLE SHALL BE MARKED AT TOP AND BOTTOM WITH 2" COLOR TAPE OR STENCIL TAG. COLOR TAPE MAY BE OBTAINED FROM GRAYBAR ELECTRONICS.

ML12123D
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SHEET TITLE
ANTENNA & CABLE SCHEDULE

SHEET NUMBER

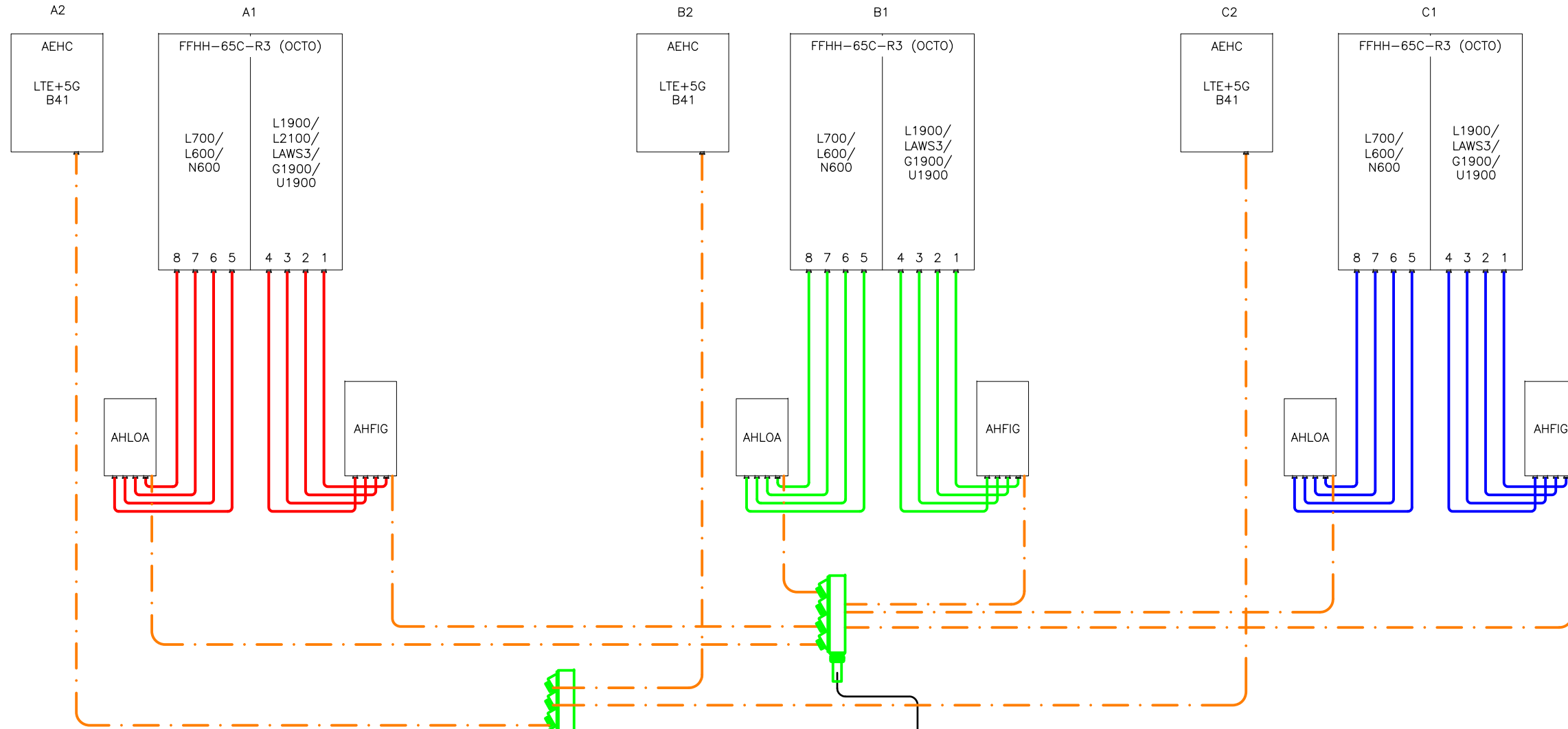
A-5

SCALE: N.T.S. 5

ALPHA SECTOR

BETA SECTOR

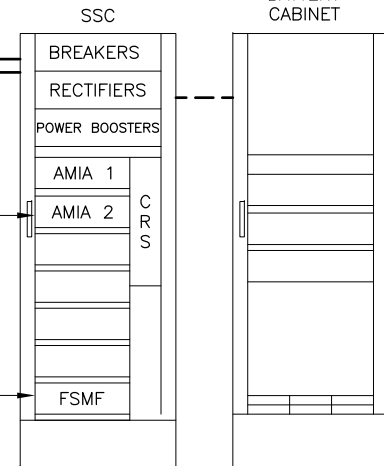
GAMMA SECTOR



LEGEND	
COAX CABLE	—
RET CABLING	—
RF CABLING ALPHA	—
RF CABLING BETA	—
RF CABLING GAMMA	—
RF CABLING DELTA	—
HYBRID CABLE (POWER AND FIBER)	—
MAIN POWER AND FIBER	—
FIBER AND POWER JUMPER	—

- (1) AIRSCALE AMIA W/
(2) ASIK & (4) ABIL
- (1) AIRSCALE AMIA W/
(1) ASIA, (1) ASIB, (2) ABIA, & (3) ABIC
- (2) AIR SCALE AMIA'S

(1) RELOCATED FSMF



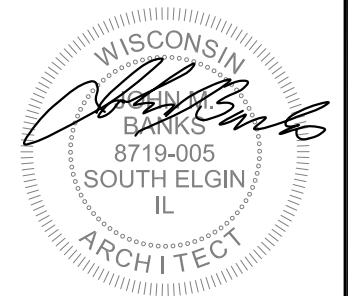
ANTENNA LOCATION
EQUIPMENT LOCATION



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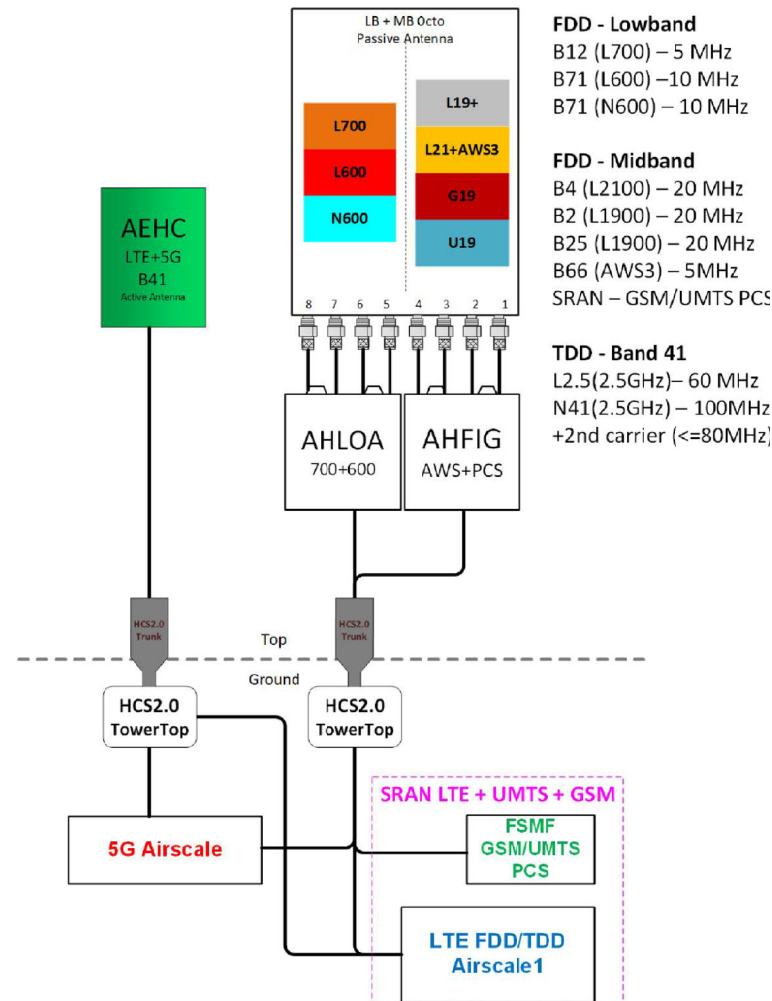
ML12123D
 WAUKESHA CITY
 LATTICE TOWER
 N46 W33480 CITY HWY R
 NASHOTAH, WI 53058

SHEET TITLE
 CONFIGURATION DIAGRAM

SHEET NUMBER
A-6

Configuration 56791EZ_SR

* For 5G and LTE Airscale BB dimensioning refer to Fiber Port matrices.
(Alpha, Beta & Gamma)

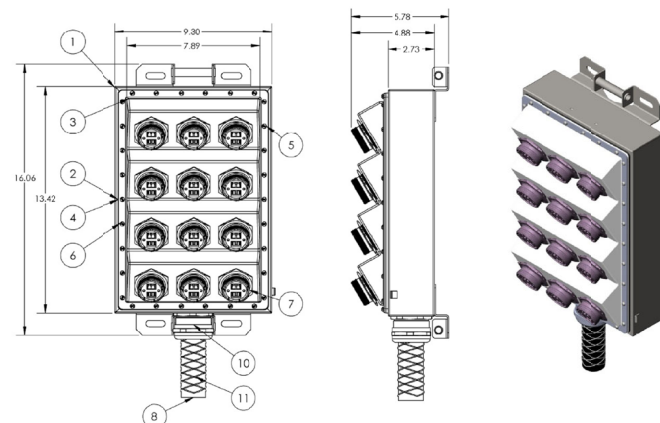


- FDD - Lowband**
B12 (L700) – 5 MHz
B71 (L600) – 10 MHz
B71 (N600) – 10 MHz
- FDD - Midband**
B4 (L2100) – 20 MHz
B2 (L1900) – 20 MHz
B25 (L1900) – 20 MHz
B66 (AWS3) – 5MHz
SRAN – GSM/UMTS PCS
- TDD - Band 41**
L2.5(2.5GHz) – 60 MHz
N41(2.5GHz) – 100MHz
+2nd carrier (<=80MHz)

RFDS DIAGRAM

SCALE: N.T.S.

1



NOTE:
1. TOTAL VOLUME IS Max 480.6 CUBIC INCH.

ITEM NO.	PART NUMBER	DESCRIPTION	AC-DISTO8-6IP-SHIR/GTY.
1	AC-DISTO8-24IP-DC	IP SHEETMETAL BCX	1
2	AC-GKT05-FB-HICAP	GASKET EPDM	1
3	AC-FB-FRONT-4STEP-3CON	HYBRID MODULE INCLINE MOUNT THERMO SHELL	1
4	AC-STR05-HICAP	METAL O-RING	1
5	Regular LW 0.125	WASHER	30
6	3CMR806058	TAMPARED PROOF #6-31 SCREW	30
7	CF-170850-101-104-WJLC	JAM NUT RECEPTACLE	12
8	ASUR325TYF02	HYBRID CABLE HI-CAP	1
9	600M428	LOCKNUT FOR CABLE GLAND	1
10	4220342	CABLE GLAND	1
11	HO8T GRIP	CABLE HOIST GRP	1

HCS 2.0 BREAKOUT BOX

SCALE: N.T.S.

3

FFHH-65C-R3



8-port sector antenna, 4x 617-806 and 4x 1695-2360 MHz, 65° HPBW, 3x RET, 600 MHz-Ready Antenna Technology

Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage
Total Input Power, maximum	900 W @ 50 °C

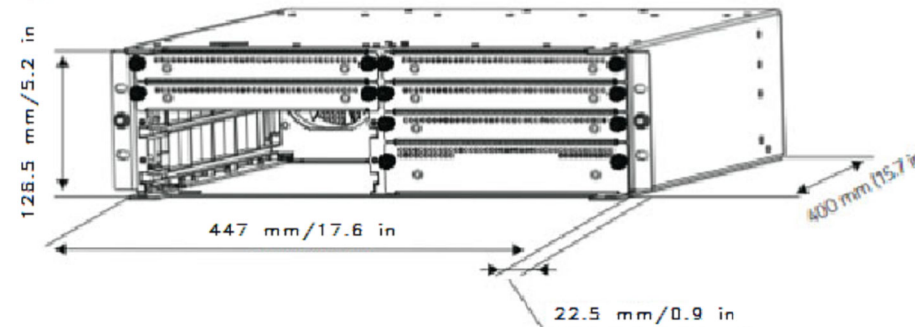
Dimensions

Length	2437.0 mm 95.9 in
Width	640.0 mm 25.2 in
Depth	235.0 mm 9.3 in
Net Weight, without mounting kit	57.9 kg 127.6 lb

NEW ANTENNA (COMMSCOPE - FFHH-65C-R3)

SCALE: N.T.S.

2



Nokia AirScale SM Indoor Technical Datasheet

AirScale SM indoor general specification

Capacity	Per Capacity plug-in unit in LTE16A: 8 LTE cells (FDD)
Multi-RAT capable platform	
Minimum configuration	1 Common PIU (transport and control), 1 Capacity PIU (baseband processing)
Maximum configuration	2 Common PIU, 6 Capacity PIU
Installation options	19 inch standard rack, pole and wall (with mounting plinth), inside Outdoor Enclosure

AirScale SM indoor mechanical specifications

Dimensions	(3U) H 128 mm x W 447 mm x D 400 mm (H 5.04"xW17.60"xD15.75")
Installation Depth	400mm + cooling air space 50mm (1.97")
Weight	Minimum (Common PIU + Capacity PIU): 10.1kg (22.27 lbs) Maximum (2 Common PIU + 6 Capacity PIU): 23.5kg (51.81 lbs)
Ingress protection	IP20
Operational Temperature Range	-5°C to 55°C

AirScale SM indoor electrical specifications

Supply Voltage / Voltage Range	Nominal: -48V DC / -40.5V to -57V
Power consumption	1 Common PIU & 1 Capacity PIU: typ 210W 1 Common PIU & 3 Capacity PIU: typ 420W 2 Common PIU & 6 Capacity PIU: typ 840W



Minimum configuration (1x BTS)



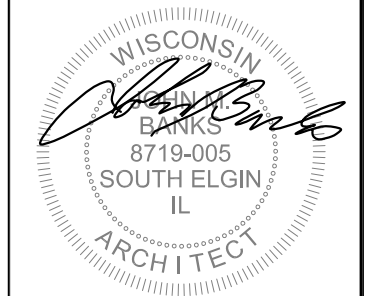
Minimum configuration (2x BTS, 1 BTS per half subrack)



Maximum AirScale SM Indoor configuration (FL16A: 1 BTS per half subrack)



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SHEET TITLE
RFDS DIAGRAM
& NEW EQUIPMENT
SPECIFICATIONS

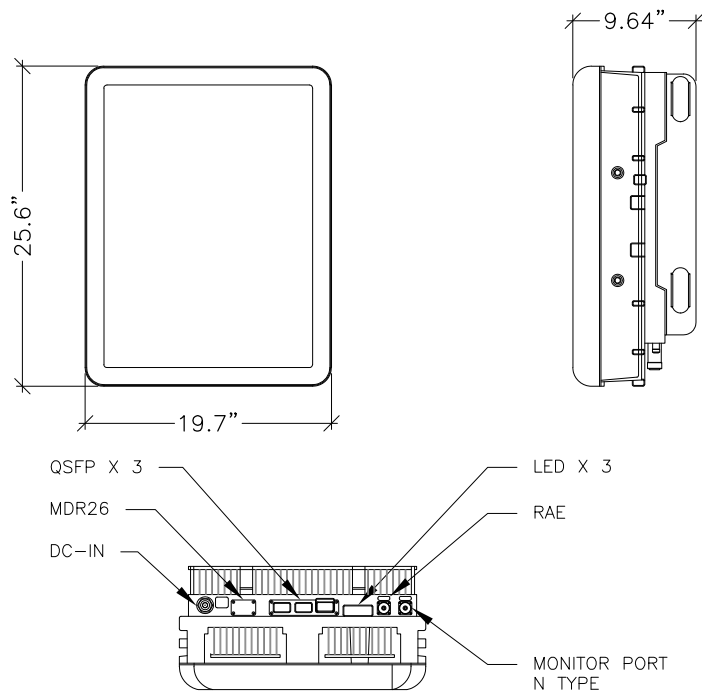
SHEET NUMBER

A-7

AIRSCALE SM INDOOR AMIA

SCALE: N.T.S.

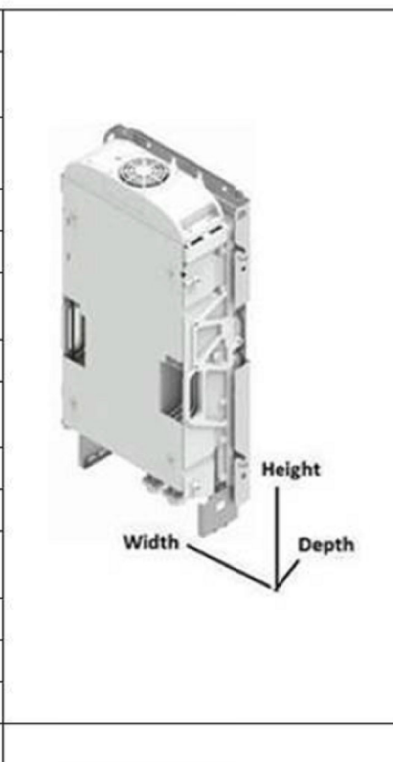
4



NOKIA - AIRSCALE MAA 64T64R 128AE B41 120W AAHC
 WEIGHT (FULLY EQUIPPED): 103.6 LBS
 SIZE (HXWXD): 25.6"x19.7"x9.64" IN.

PRODUCT DESCRIPTION

Band	B25 + B66
Instantaneous BW (DL/UL)	65MHz on Band 25, 80MHz on Band 66
Supported Modulation schemes	up to 64QAM (UL) and up to 256QAM (DL)
Supported bandwidths	LTE 1.4,3,5,10,15,20 MHz
No. of ports	4T4R
Output Power	80 W for Band 25 and 40 W for Band 66 (Total Power is 480W)
DC connector	Terminal block
Optical Fiber connector	2 x 9.8Gbps CPRI, R2CT IP seal
RF Connector	4.3-10+
AISG	AISG on all ports, DC on ANT1 and ANT3
Dimensions (H x W x D) in	27.3 x 12.1 x 5.2
Weight lbs	70.5 without cover
HW/SW Availability	Available now - SRAN19A
5G NR Support	YES
NB-IoT Support	YES (in band, guardband, standalone)



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NEW ANTENNA (NOKIA - AEHC)

SCALE: N.T.S.

1

AHFIG RADIO DETAIL

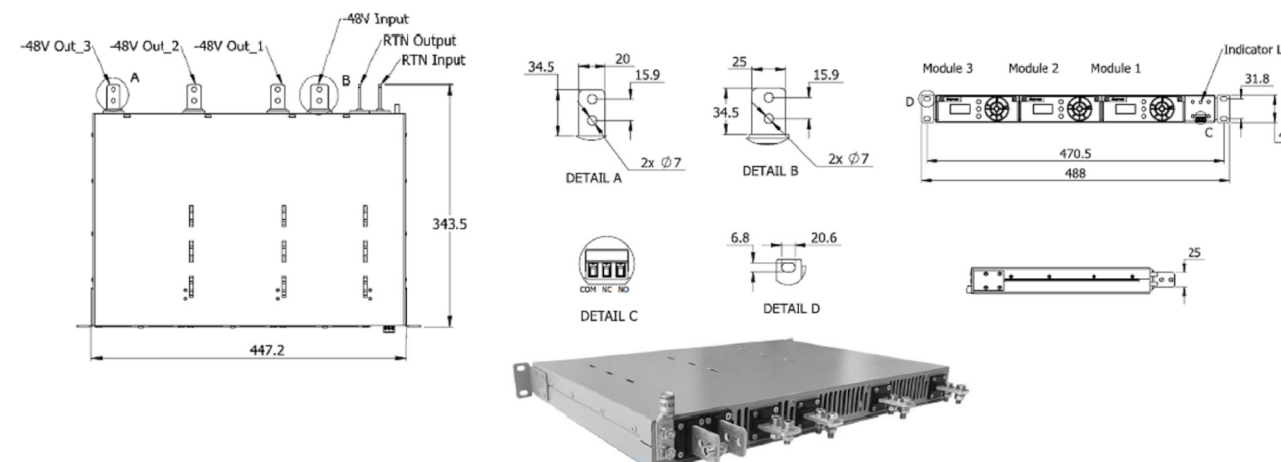
SCALE: N.T.S.

2

AIRSCALE DUAL RRH 4T4R B12/71 240W AHLOA	
SUPPORTED FREQUENCY BANDS	3GPP BAND 12/71
FREQUENCIES	BAND 12 ADJUSTED: RX 698 - 715 MHz, TX 728 - 745 MHz BAND 71: RX 663 MHz - 698 MHz, TX 617 MHz - 652 MHz
NUMBER OF TX/RX PATHS/PIPES	4 PIPES; 2T2R, 2T4R, 4T4R FOR BOTH BANDS
INSTANTANEOUS BANDWIDTH IBW	16 MHz FOR B12 AND 35MHz FOR B71 1 MHz BELOW B12 NB IOT FUTURE USE
OCCUPIED BANDWIDTH OBW	52 MHz TOTAL ACROSS BANDS
OUTPUT POWER	60W PER TX SHARED BETWEEN BANDS
SUPPLY VOLTAGE/RANGE	DC-48 V / -36 V TO -60 V
TYPICAL POWER CONSUMPTION	664W [ETSI BUSY HOUR LOAD AT 4TX@60W (BOTH BANDS ACTIVE)] 395W [ETSI BUSY HOUR LOAD AT 4TX@30W (ONE BAND ACTIVE)]
ANTENNA PORTS	4 PORTS; 4.3-10+
OPTICAL PORTS	2x CPRI 9.8 Gbps
ALD CONTROL INTERFACES	AISG3.0 FROM ANT1,2,3,4 & RET (DC ON ANT1 & ANT3)
OTHER INTERFACES	EXTERNAL ALARM MDR-26 SERIAL CONNECTOR (4 INPUTS, 1 OUTPUT) DC CIRCULAR POWER CONNECTOR
PHYSICAL	560MM/22.04INCHESx308MM/12.126INCHESx189MM/7.44INCHES, 38KG/ 83.7 LBS WITHOUT COVER AND BRACKETS
OPERATING TEMPERATURE RANGE	-40°C TO 55°C (WITH NO SOLAR LOAD)
SURGE PROTECTION	CLASS II 5A
INSTALLATION OPTIONS	VERTICAL & HORIZONTAL BOOK MOUNT, POLE & WALL MOUNT



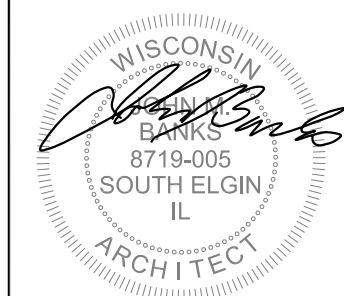
AIRSCALE DUAL RRH 4T4R B12/71 240W AHLOA



www.raycap.com

Information contained in this document is subject to change at any time without notice.

G02-01-400 190130



EXPIRES: 07/31/2022 SIGNED: 8/31/2020

ML12123D
 WAUKESHA CITY
 LATTICE TOWER
 N46 W33480 CITY HWY R
 NASHOTAH, WI 53058

SHEET TITLE
 NEW EQUIPMENT
 SPECIFICATIONS

SHEET NUMBER
A-8

AHLOA RADIO DETAIL

SCALE: N.T.S.

3

NEW VOLTAGE BOOSTER POWERPLUS DETAIL

SCALE: N.T.S.

4



HP-Large 3 Power Cabinet

Product Features

- Compact design for equipment, power and battery:
- 30RU supports 3 radios and transport equipment
- 600A @ -48V power system
- Slimline high efficiency rectifier
- ORION Touch screen Controller
- Rear Access Hatch

Direct air cooling solution, 6000W capacity, 5°C delta T
Easy slide-in filter replacement for Merv-13 or Gore filter Mates with:

- New 2 string Slim Battery cabinet
- Large-2 battery cabinet
- V2 Equipment and battery cabinet

Designed to GR-487 specification

Specifications

Model HP-Large 3 Power Cabinet

1. General

Construction	Aluminum enclosure
Dimensions (W x H x D)	30 x 72 x 35 in. (766 x 1829 x 889 mm) Depth with Door: 41 in. (1067 mm)
Weight	~551 lbs (~270kg) (without customer equipment or batteries)
Internal rack dimension	Total Equipment space, 30RU: Horizontal rack: 19" x 27RU Vertical rack: 19" x 3RU
	Power System space: 23" x 12RU
Mounting options	Pad-mount, plinth option
Finish	Polyester Powder Paint (Tan)
Safety	UL Listed, IEC / EN 60950

2. Environment

Operating temperature	-40°C to +50°C (-40°F to +122°F) with solar load. IP 55
Protection class	designed to GR-487
Acoustics	5°C delta T: 70 dBA @ 600W, 65dBA @5000W heat load
Humidity (relative)	95%, non-condensing (Max.)



3. Thermal management

Cooling Equipment: Direct Air Cooling 6000W, 5°C delta T
(6) centrifugal redundant fans
(3) Merv-13 or optional GORE filters front door
(3) Merv-13 filters rear hatch

Heating Equipment: Forced air heating (2) 1000W AC heaters

4. Equipment

Cable Entry: Knock-out plate on each upper side wall
Additional knockouts each side
(1) 3" conduit hole with hole plug

Door latch: 3 point latching, 5/16 nut driver tool, pad-locking capability

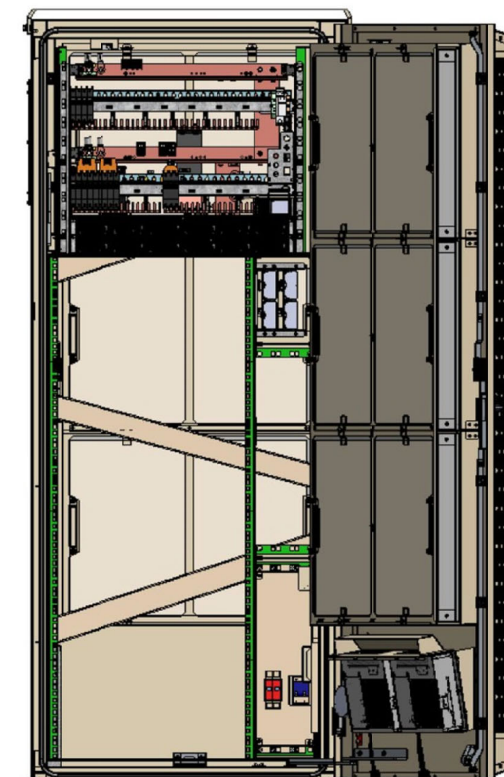
Primary ground: 10 double-hole 1/2"-20 threaded holes on 5/8" center ground bar

Lifting Ears: 4 Lifting Tabs

Standard equipment: AC Load Center: 240V dual feed / (1) 200A + (1)100A
208V single feed / (1) 200A
AC Surge Protection for each breaker feed
GFCI Receptacle 120V
(6 form-C) Alarm Termination block
(1) Thermal Probe
605A/ 54V (336kW) redundant Power System with DIN rail distribution:
12 rectifier positions (qty 3x55A DPR3000 rectifiers included)
52 poles for load (qty 1x150A, 3x10A load circuit breakers included) 16
poles for battery (qty 2x200A battery circuit breakers included) (2)
SB350 generator connector
LVD over-ride switch
(2) SB175 Battery connections
(2) SB350 Battery connections

Front Door: (6) DC powered centrifugal fans with (3) MERV-13 filters, (GORE option)
Clogged Filter alarm pressure switch
Door intrusion alarm
(2) 1000W AC powered heaters
LED interior cabinet light

Rear Hatch: Exhaust vent with (3) MERV-13 filters



T-Mobile
stick together®

LCC
TELECOM SERVICES

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APPROVED BY:	JMB		
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DELTA HP-LARGE 3 POWER CABINET

SCALE: N.T.S.

1



Large Battery 2 Cabinet

Site Support Enclosure

Product Feature

- Corrosion resistant aluminum construction
- Power coated high gloss finish
- Direct air cooling solution with optional Gore filter
- Supports four strings of -48V VRLA batteries up to 210Ah
- Includes 2AWG battery cables with disconnects
- Individual termination bars per string allows connectivity to multiple power cabinets
- Designed to meet GR-487

Specification

General

Construction	Aluminum enclosure
Dimensions (W x H x D)	30 x 72 x 35 in. (766 x 1829x 889mm), Depth with door: 41 in. (1045mm)
Weight	509 lbs (231kg) (without batteries)
Internal rack dimension	4 battery trays to support up to 210Ah batteries
Mounting options	Pad-mount, plinth option
Finish	Polyester Power Paint (Tan)
Safety	UL Listed, IEC / EN 60950

Environment

Operating temperature	-40C to +50C (-40F to +122F) with solar load.
Protection class	IP 55 designed to GR-487
Acoustics	Equipment: 65 dBA
Humidity (relative)	95%, non-condensing (Max.)

Thermal management

Cooling: Direct Air Cooling (4) Axial Fans, G3 filter

Heating: Forced air heating (2) 1000W AC heaters

Equipment

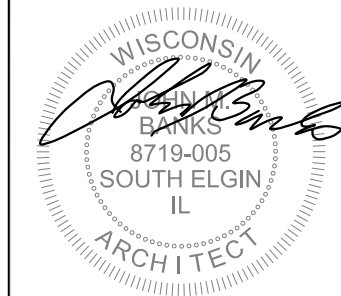
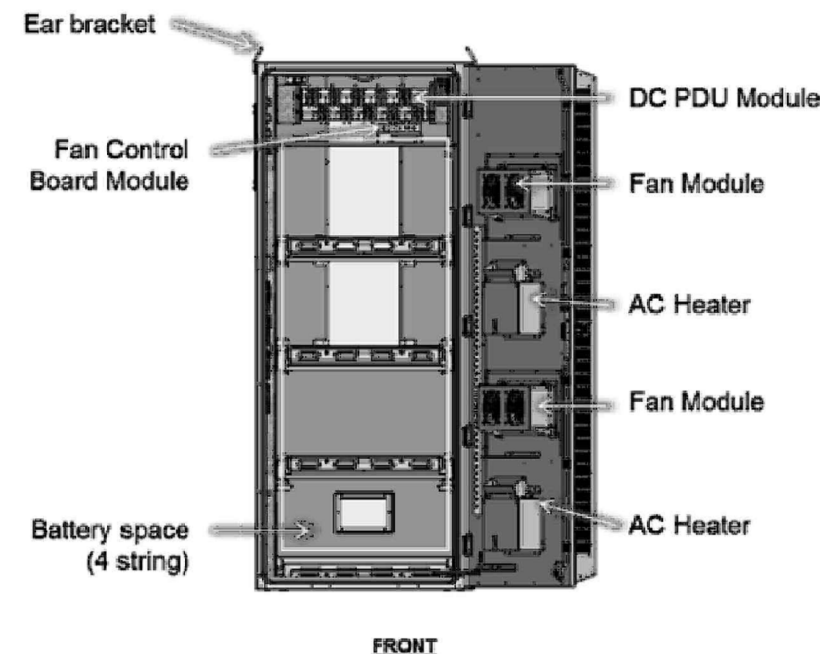
Cable Entry: Knock-out plate on each upper side wall
Additional knockouts each side

Door latch: 3 point latching, 5/16 Nut driver tool, pad-locking capability

Lifting Ears: 4 eye bolts

Standard equipment

AC Load Center
AC Surge protection
Configurable trays for (4) strings of up to 210Ah batteries
(contact factory for details)
2AWG battery cables with disconnects included
Individual termination bars per string
(2) 1000W AC powered heaters
Door intrusion switch
LED interior cabinet light
Fan Control Board with pre-wired alarm signal, RJ45 output



EXPIRES: 07/31/2022 SIGNED: 8/31/2020

ML12123D
WAUKESHA CITY
LATTICE TOWER
N46 W33480 CITY HWY R
NASHOTAH, WI 53058

SHEET TITLE
NEW EQUIPMENT
SPECIFICATIONS

SHEET NUMBER

A-9

DELTA BATTERY CABINET

SCALE: N.T.S.

2

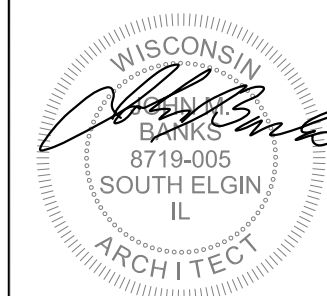
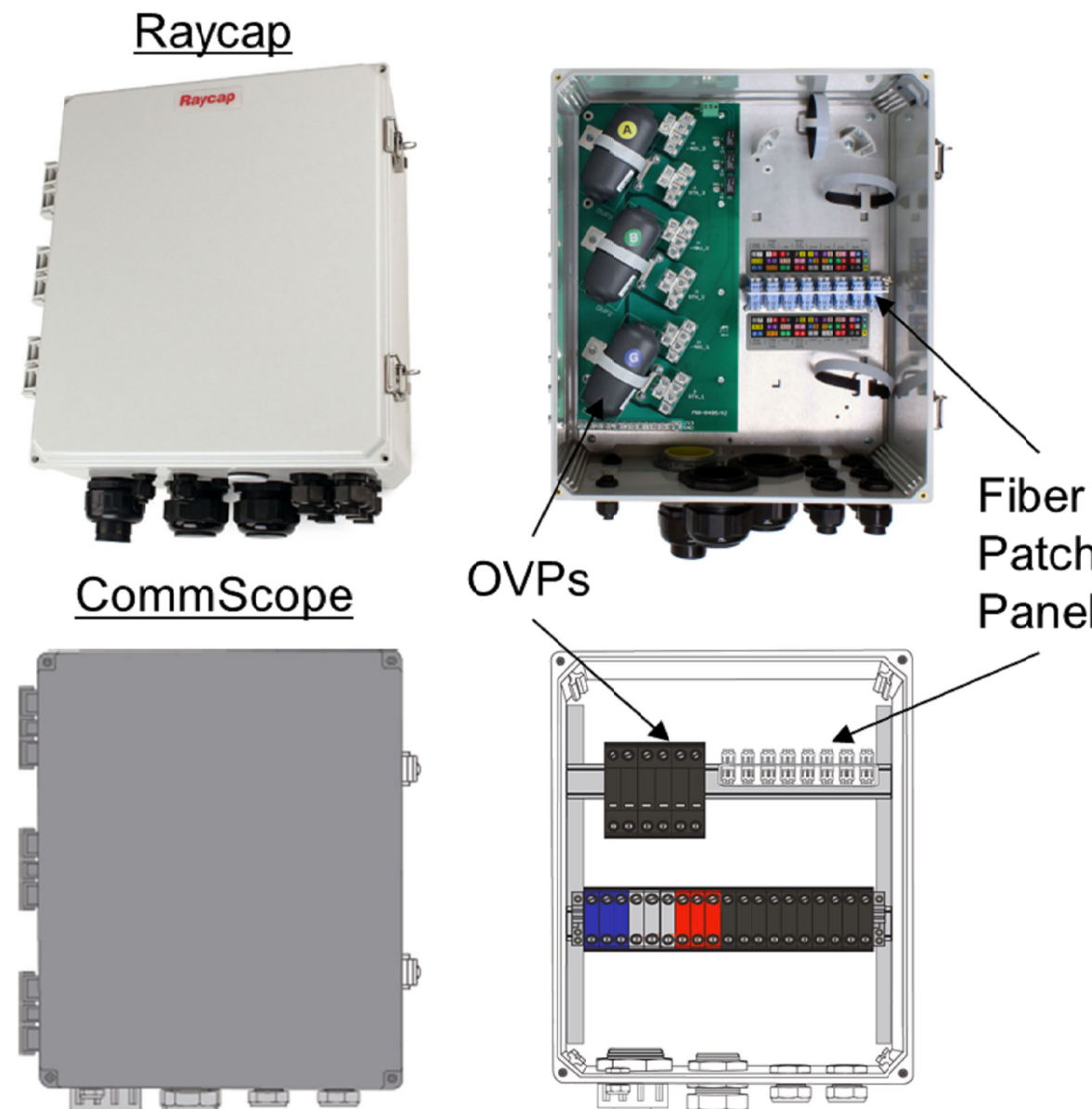


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O	08/21/20	DWM	PERMIT/CONSTRUCTION
1	08/31/20	DWM	PERMIT/CONSTRUCTION

Characteristics	CommScope	Raycap
Dimensions	14"x16"x8"	14"x16"x8"
Weight	23.5 lb	21.9 lb
OVP, IEC 61643-1	24"	Class I SPD (3)
UL Rating		1449, 4 th Ed.
OVP Monitoring	Dry contact	Dry contact
Fiber Patch Panel	24 LC pairs	24 LC pairs
Environmental Rating	IP67	IP66
Operating Temperature	-40 °C to +75 °C	-40 °C to +80 °C



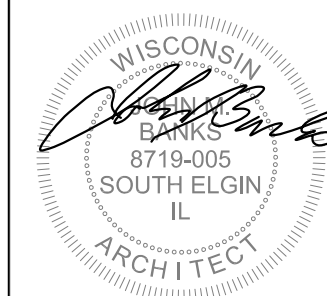
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ML12123D
 WAUKESHA CITY
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 N46 W33480 CITY HWY R
 NASHOTAH, WI 53058

SHEET TITLE
 NEW EQUIPMENT
 SPECIFICATIONS

SHEET NUMBER
 A-10

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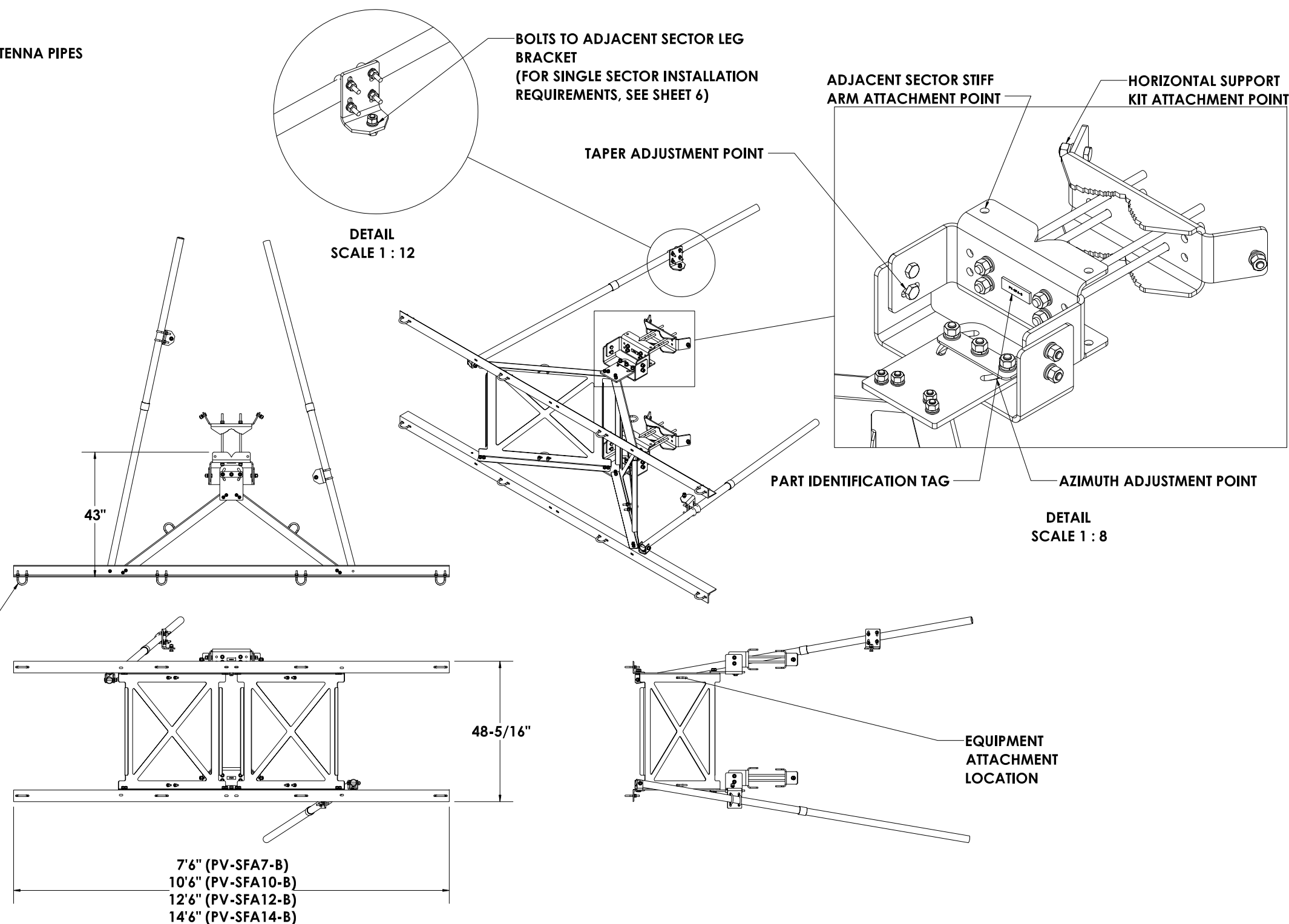
ML12123D
 WAUKESHA CITY
 LATTICE TOWER
 N46 W33480 CITY HWY R
 NASHOTAH, WI 53058

SHEET TITLE
 NEW EQUIPMENT
 SPECIFICATIONS

SHEET NUMBER
A-11

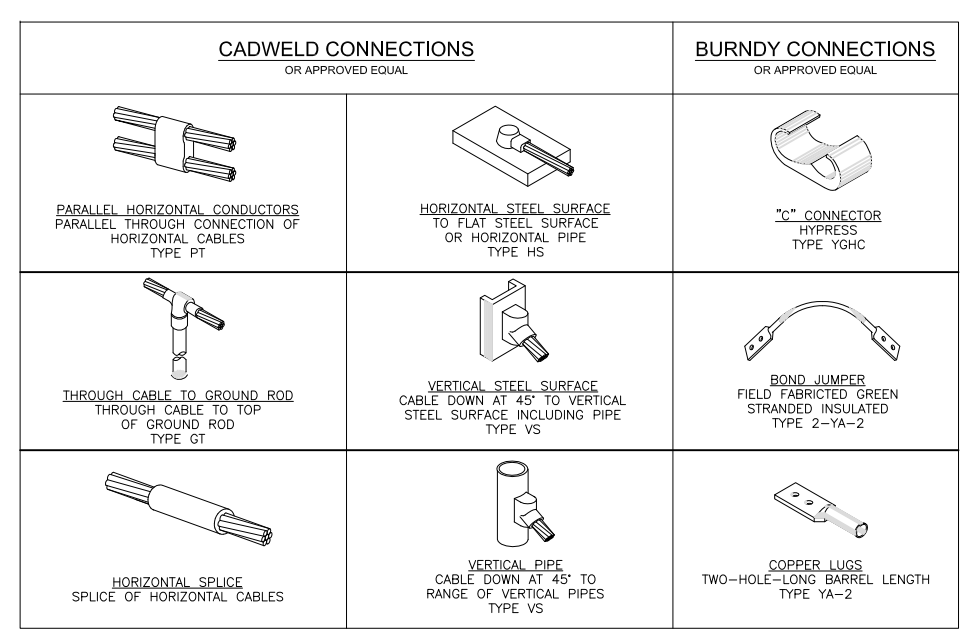
FRAME DETAILS:

NOTE: FRAME EPA DOES NOT INCLUDE ANTENNA PIPES



COMPATIBLE ANTENNA PIPE:

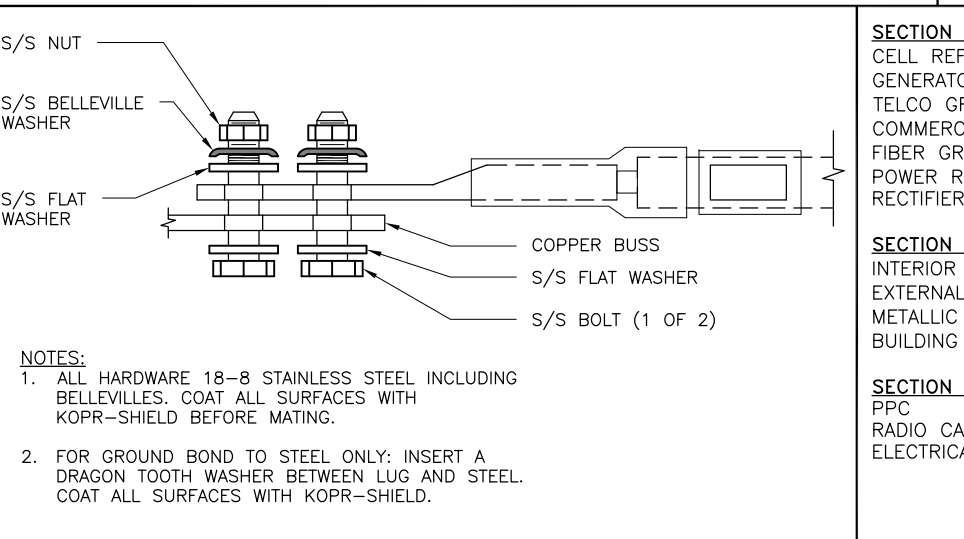
- \varnothing 2-3/8"
 - \varnothing 2-7/8"
 - \varnothing 3-1/2"
- U-BOLTS SUPPLIED FOR 2 3/8"



CADWELD DETAILS 1

- GROUNDING NOTES:**
- UNDERGROUND AND OVERHEAD UTILITY LENGTHS TO BE DETERMINED FROM SITE PLAN.
 - SEE ELECTRICAL SPECIFICATIONS SECTION 16000 FOR ALL ELECTRICAL AND GROUNDING INSTALLATION REQUIREMENTS.
 - FOR ORIENTATION OF SITE LAYOUT SEE SITE PLAN, DRAWING.
 - UDA CABINET FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR.
 - GROUND KITS PROVIDED BY OWNER SHALL BE RETROFITTED TO ACCOMMODATE 2 HOLE LUG CONNECTION AND APPROPRIATE LENGTH.
 - CONTRACTOR RESPONSIBLE TO PROVIDE OWNER CERTIFICATION OF RESISTIVITY TESTING.
 - GROUND RODS T BE INSTALLED AT 10' CENTERS.
 - ALL GROUND LEADS TO BE SLEEVED IN 3/4" Ø SCHEDULE 40 PVC CONDUIT AND SEALED W/SILICON.
 - GROUND BARS SUPPLIED BY OWNER AND INSTALLED BY CONTRACTOR.
 - ALL BENDS IN GROUNDING SYSTEM MUST BE SMOOTH AND WELL ROUNDED AND MAINTAIN BENDING RADIUS.
 - SEE SITE PLAN FOR COAXIAL ROUTING THIS SHEET IS INTENDED FOR GROUNDING CLARITY NLY AND IS SCHEMATIC IN DETAIL.
 - GROUND KITS SHALL BE INSTALLED BETWEEN 8"-18" OF ALL CONNECTORS.
 - TOWER FOUNDATION DESIGN BY OWNER, INSTALLED BY CONTRACTOR.
 - ADDITIONAL GROUND KITS TO BE PLACED AT 100' WHEN ANTENNA CENTERLINE IS 200' OR ABOVE.
 - ALL CONDUITS TO BE SEALED W/SILICONE TO PROVIDE A WATER TIGHT SEAL.

GROUNDING NOTES 2

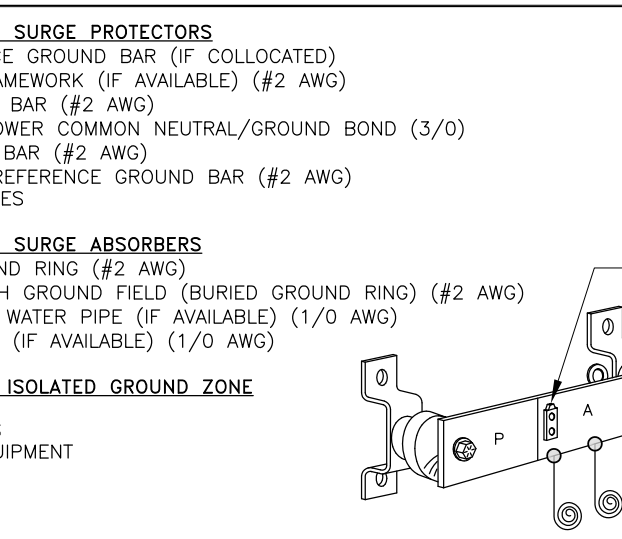


STANDARD LUG CONNECTION OF GROUND LEADS TO GROUND BAR DETAIL SCALE: N.T.S. 4

KEY NOTES:

- #2 SOLID, TINNED BARE COPPER GROUND WIRE FROM ICE BRIDGE TO ICE BRIDGE POST
- #2 SOLID, TINNED BARE COPPER GROUND WIRE, BOND ICE BRIDGE POST W/VS TYPE CADWELD (1 PER POST REQUIRED)
- #2 SOLID, TINNED BARE COPPER GROUND WIRE FROM GROUND BAR TO GROUND RING (2 REQUIRED)
- #2 SOLID, TINNED BARE COPPER GROUND WIRE FROM NEW POST TO GROUND RING
- NEW GROUND BAR
- 5A MASTER GROUND BAR
- 5B SECTOR GROUND BAR
- 5C MASTER GROUND BAR ON TOWER
- #6 AWG GREEN STRANDED GROUND CU WIRE FROM MODULES TO PLINTH
- #2 AWG SOLID TINNED BARE GROUND CU WIRE FROM STEEL CUBE/UNISTRUT RACK W/MODULES TO GROUND RING.
- #2 AWG SOLID TINNED BARE GROUND WIRE FROM MODULES PLINTH TO GROUND RING
- #2 AWG SOLID, TINNED BARE COPPER GROUND WIRE FROM NEW ANTENNA PIPE TO SECTOR GROUND BAR
- #2 AWG GREEN STRANDED GROUND CU WIRE FROM MODULE PLINTH TO SECTOR GROUND BAR
- #2 AWG GREEN STRANDED GROUND CU WIRE FROM NEW TOP COVP/BREAKOUT BOX TO NEW SECTOR GROUND BAR
- #2 AWG GREEN STRANDED GROUND CU WIRE FROM TMA/DIPLEXER TO MASTER GROUND
- #2 AWG GREEN STRANDED CU GROUND WIRE FROM NEW COVP/OVP TO GROUND BAR
- #2 AWG SOLID TINNED BARE GORUND CU WIRE FROM SSC TO GROUND BAR
- #2 AWG GREEN STRANDED GROUND CU WIRE FROM SSC TO SSC PLINTH
- #2 AWG SOLID TINNED BARE GROUND CU WIRE FROM BATTERY CABINET TO GROUND BAR
- #2 AWG GREEN STRANDED GROUND CU WIRE FROM NEW BATTERY CABINET TO BATTERY CABINET PLINTH
- #6 AWG GREEN STRANDED CU GROUND WIRE FROM NEW SYSTEM MODULE/AMOB PLINTH TO NEW SYSTEM MODULE/AMOB
- #2 AWG GREEN STRANDED CU GROUND WIRE FROM SYSTEM MODULE/AMOB'S PLINTH TO GROUND BAR
- #2 AWG SOLID, TINNED BARE CU GROUND WIRE FROM UNISTRUT TO GROUND RING

TYPICAL GROUNDING DIAGRAM

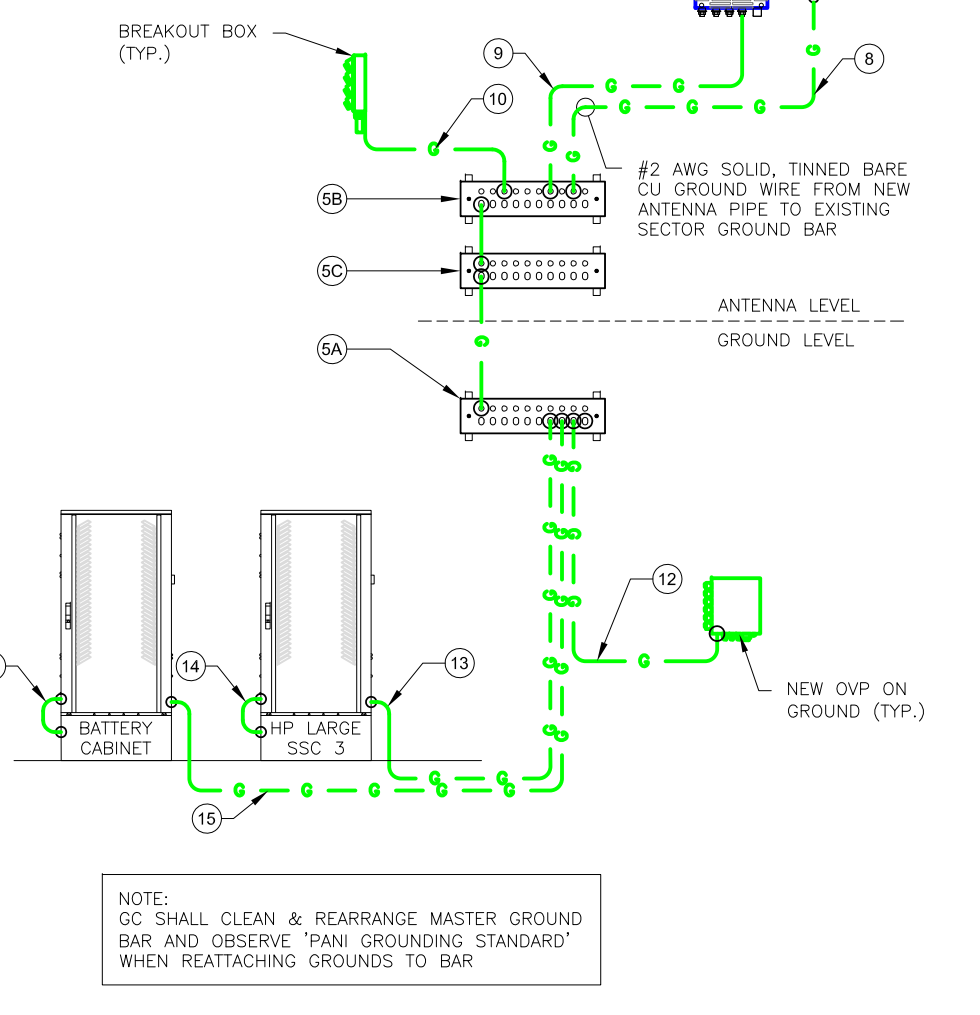


GROUNDING - PANI GROUNDING STANDARD DETAIL SCALE: N.T.S. 5

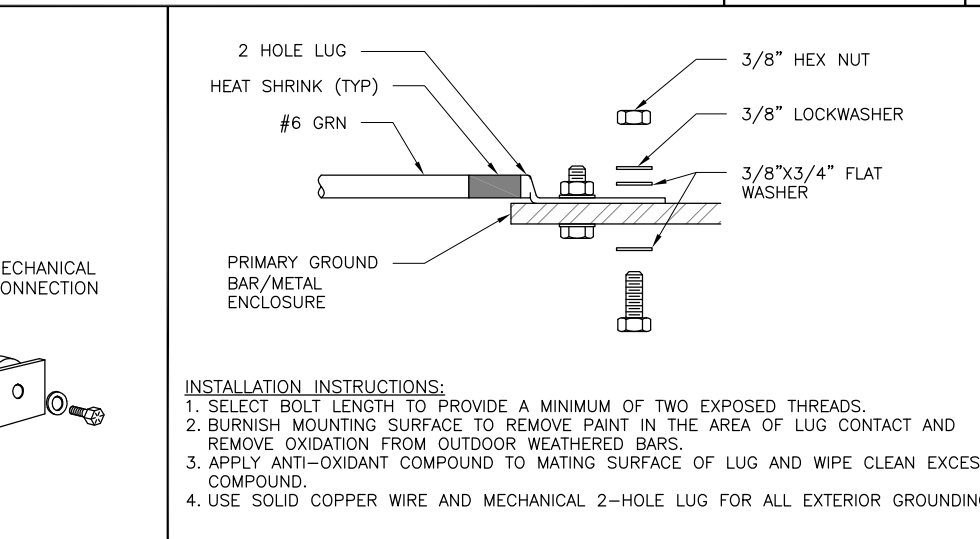
SYMBOLS LEGEND:

GROUND BAR	
EXOTHERMIC WELD CONNECTION	
MECHANICAL CONNECTION	
BOND DIRECTLY TO TOWER	

NOTE:
EXISTING GROUNDING NOT SHOWN IN THIS DIAGRAM. GC TO VERIFY EXISTING EQUIPMENT GROUNDING IN FIELD.



MECHANICAL GROUND CONNECTION SCALE: N.T.S. 6



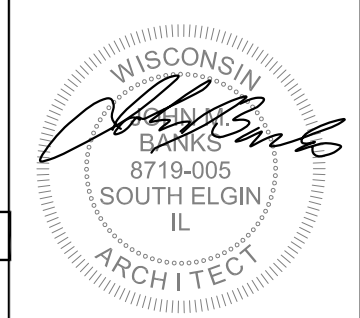
MECHANICAL GROUND CONNECTION SCALE: N.T.S. 6



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ML12123D
WAUKESHA CITY
LATTICE TOWER
N46 W33480 CITY HWY R
NASHOTAH, WI 53058

SHEET TITLE
PROPOSED SITE GROUNDING DIAGRAM

SHEET NUMBER
EG-1

Exhibit 8-B



Structural Analysis Report

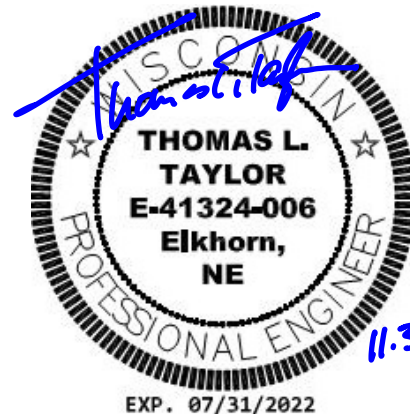
Prepared for:

KGI

805 Las Cimas Parkway
Building Three, Suite 370
Austin, TX 78746

ATTN: Mr. Wes Smith

Structure : 200 ft Self Supported Tower
Site ID : Waukesha Sheriffs
Proposed Carrier : T-Mobile
Site Name : Nashotah
KGI Site Number : 28227
Site Location : N46, W33 480 Wisconsin Avenue
Nashotah, WI
43.1037, -88.4120
County : Waukesha
Date : November 27, 2020
Max Usage : 102%
Result : Pass



Prepared By:
Jung Hyun Hong, E.I.T
Structural Engineer

A handwritten signature in black ink, appearing to read 'JH'.



Table of Contents

Introduction	1
Supporting Documents	1
Analysis	1
Conclusion.....	1
Existing and Reserved Equipment.....	2
Equipment to be Removed.....	2
Proposed Equipment	3
Structure Usages.....	3
Foundations	3
Deflection, Twist, and Sway.....	4
Standard Conditions	5
Calculations	Attached



Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 200 ft self supported tower to reflect the change in loading by T-Mobile.

Supporting Documents

Tower Drawings	PiRod Drawing #202293-B, dated January 18, 2001 HighTower Mapping, dated June 14, 2010
Foundation Drawing	PiRod Drawing #202293-B, dated January 18, 2001 G2 Foundation Investigations Project #142241, dated July 17, 2014 G2 Foundation Investigations Project #142241R1, dated November 5, 2014
Geotechnical Report	G2 Project #142241R1, dated November 5, 2014
Modifications	PiRod Assembly of Tie-Rod Drawing #150843, dated May 21, 2001 AWS Job #03029 R3 MOD, dated May 3, 2013 Fullerton Site ID: W11094/ML12123D, dated July 23, 2015 Edge Project #14734, dated August 23, 2017
Post Modifications	KGI Post Modification Inspection Site #28227, dated May 3, 2019
Mount Analysis	Westchester Site #ML12123D, dated August 31, 2020

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	93 mph (3-Second Gust) Vasd / 120 mph (3-Second Gust) Vult
Basic Wind Speed w/ Ice:	40 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / Wisconsin Commercial Building Code
Structure Class:	III
Exposure Category:	C
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	$S_s = 0.09, S_1 = 0.05$
Site Class:	D - Stiff Soil

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact Semaan Engineering Solutions at 402-289-1888.



Existing and Reserved Equipment

This loading **is** included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
200.0	210.0	1	20 ft Dipole	Leg	(1) 1 5/8"	Waukesha County
198.0	208.0	1	20 ft Dipole	(1) 3 ft Standoff	(1) 3/8"	
195.5	203.0	3	PD-10017-1 Omni	(3) 6 ft Sidearms	(2) 1 1/4"	
	195.5	1	12"x12"x6" Junction Box		(1) 7/8" (2) 1/2"	
185.0	185.0	2	FibeAir 1500 HP / RFU-HP	Pipe	-	
184.0	184.0	1	DA6-W57BC	Pipe	(2) CAT5	
180.0	-	-	-	-	(5) 1 5/8" Stacked 2/3 (1) 1 5/8" Hybrid	T-Mobile
164.0	164.0	3	Amplink 1900e-F	(3) Sector Frames	(12) 1 5/8" Stacked 3/3 and 2/2/2 (4) DC Power (2) Fiber	AT&T
		3	ATM192012B-0			
		6	DBXLH-8585A-R2M			
		2	DC6-48-60-18-8			
		3	RRUS 11			
		3	RRUS 12			
		3	RRUS 32			
		3	RRUS A2			
153.5	153.5	6	SBNHH-1D65C	(3) HD Sector Frames	(12) 1 5/8" Stacked 3/3 and 3/3 (3) 1.56" Hybrid	Verizon
		12	BXA-70080/8CF			
		6	CBC721-DF-21-DCB			
		3	RC3DC-3315-PF-48			
		6	RRH 3JR52709AA 2X60			
		6	RRH4x30-4T4R-B13			
		3	RRH4x30-4T4R-B25			
12	RRUS A2 Modules					
144.0	144.0	1	6 ft HP Dish	Pipe	(1) EW90	Waukesha County
15.0	15.0	1	GPS	Leg	(1) CAT5	Verizon

Equipment to be Removed

This loading **is not** included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
180.0	180.0	6	TMBXX-6517-A2M	(3) 10 ft Sector Frames	(1) 1 5/8"	T-Mobile
		1	RNSDC-7771-PF-48			
		3	FRIG RRU			
		2	FXFB RRU			



Proposed Equipment

This loading is included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
180.0	180.0	3	AEHC AirScale MAA 64T64R 192AE B41 320W	(3) PV-SFA12-3-12-126 Sector Frames w/ (2) Stiff Arms	(1) 1.584" Hybrid	T-Mobile
		3	FFHH-65C-R3			
		2	HICAP Hybrid Breakout Box			
		3	RRH 4T4R B12/71 240W AHLOA			
		3	RRH 4T4R B25/66 480W AHFIG			

Install proposed coax anywhere on tower.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	90%	Pass
Diagonals	102%	Pass
Horizontals	71%	Pass
Anchor Bolts	71%	Pass
Leg Bolts	82%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips)	6,617.2	80%
Axial (Kips)	402.2	50%
Total Shear (Kips)	58.4	32%
Reinf. Conc. Foundation Capacity	N/A	69%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.



Deflection, Twist and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
184.0	DA6-W57BC	Waukesha County	0.751	0.273	0.536
180.0	AEHC AirScale MAA 64T64R 192AE B41 320W	T-Mobile	0.709	0.216	0.525
	FFHH-65C-R3				
	HICAP Hybrid Breakout Box				
	RRH 4T4R B12/71 240W AHLOA				
RRH 4T4R B25/66 480W AHFIG					
144.0	6 ft HP Dish	Waukesha County	0.372	0.013	0.391

*Deflection, Twist and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G



Standard Conditions

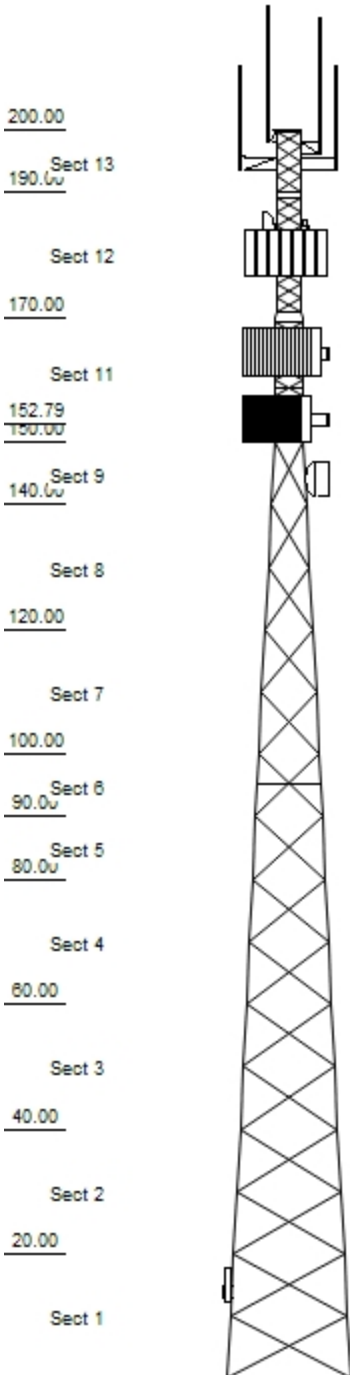
All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of Semaan Engineering Solutions, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to Semaan Engineering Solutions Holdings and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and Semaan Engineering Solutions, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Semaan Engineering Solutions Holdings is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



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Loads: 93 mph no ice
 40 mph w / 3/4" radial ice
 Site Class: D Ss: 0.09 S1: 0.05
 60 mph Serviceability

200.00
 190.00 Sect 13
 170.00 Sect 12
 152.79 150.00 Sect 11
 140.00 Sect 9
 120.00 Sect 8
 100.00 Sect 7
 90.00 Sect 6
 80.00 Sect 5
 60.00 Sect 4
 40.00 Sect 3
 20.00 Sect 2
 Sect 1

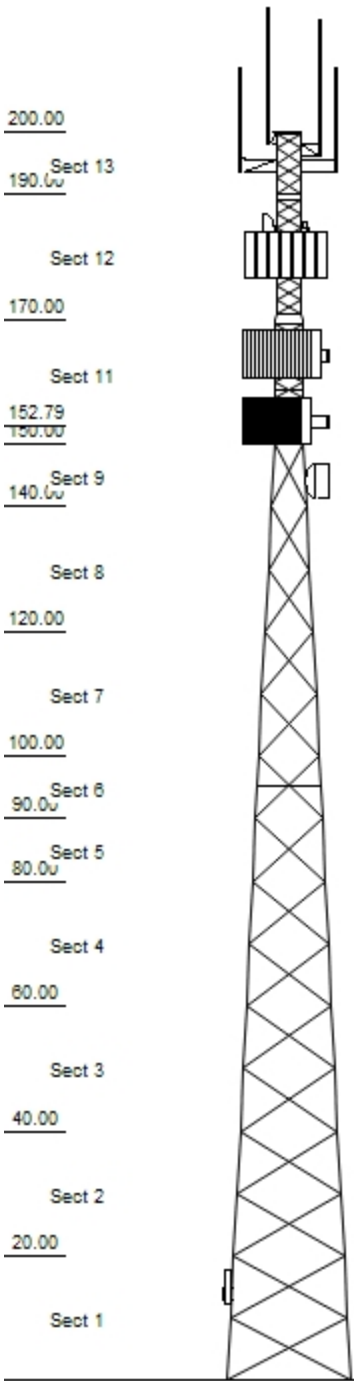
Uplift 355.09 k Moment 6,617.22 kMoment Ice 1,521.62 k-ft
 Vert 402.22 k Tot Down 60.53 k Tot Down Ice 148.05 k
 Horiz 38.33 k Tot Shear 58.42 k Tot Shear Ice 13.52 k

Job Information			
Tower : Waukesha Sheriffs	Location : Nashotah, WI	Base Width : 20.00 ft	
Code : ANSI/TIA-222-G	Shape : Triangle	Top Width : 4.00 ft	
Client : KGI			

Sections Properties				
Section	Leg Members	Diagonal Members	Horizontal Members	
1	12B 50 ksi	12"BD 2.25"	SAE 36 ksi 3.5X3.5X0.3125	
2	12B 50 ksi	12"BD 2"	SAE 36 ksi 3.5X3.5X0.3125	
3	12B 50 ksi	12"BD 2"	SAE 36 ksi 3X3X0.3125	
4	12B 50 ksi	12"BD 1.75"	SAE 36 ksi 3X3X0.3125	
5 - 6	12B 50 ksi	12"BD 1.75"	SAE 36 ksi 3X3X0.1875	
7	12B 50 ksi	12"BD 1.5"	SAE 36 ksi 3X3X0.1875	
8 - 9	12B 50 ksi	12"BD 1.25"	SAE 36 ksi 2.5X2.5X0.1875	
10 - 11	SOL 50 ksi	2" SOLID	MOD 36 ksi 7/8"SR+L1.5x1/8	SOL 50 ksi 7/8" SOLID
12 - 13	SOL 50 ksi	1 1/2" SOLID	SOL 50 ksi 3/4" SOLID	SOL 50 ksi 7/8" SOLID

Discrete Appurtenance				
Elev (ft)	Type	Qty	Description	
200.00	Whip	1	20 ft Dipole	
200.00		1	Large Beacon	
199.00		1	LIGHT ROD W/EXT	
198.00	Whip	1	20 ft Dipole	
198.00	Straight Arm	1	3 ft Standoff	
195.50	Whip	3	PD-10017-1 Omni	
195.50	Straight Arm	3	6 ft Sidearm	
195.50	Panel	1	12"x12"x6" Junction Box	
185.00	Panel	2	FibeAir 1500 HP / RFU-HP	
184.00	Dish	1	DA6-W57BC	
180.00	Panel	2	HICAP Hybrid Breakout Box	
180.00	Panel	3	RRH 4T4R B12/71 240W AHLOA	
180.00	Panel	3	RRH 4T4R B25/66 480W AHFIG	
180.00	Panel	3	FFHH-65C-R3	
180.00	Panel	3	AEHC AirScale MAA 64T64R 192AE	
180.00	Mounting Frame	3	PV-SFA12-3-12-126 w/ (2) Stiff	
164.00	Panel	3	RRUS A2	
164.00	Panel	3	RRUS 32	
164.00	Panel	3	RRUS 12	
164.00	Panel	3	RRUS 11	
164.00	Panel	2	DC6-48-60-18-8	
164.00	Panel	3	Amplink 1900e-F	
164.00	Panel	6	SBNHH-1D65C	
164.00	Panel	6	DBXLH-8585A-R2M	
164.00	Mounting Frame	3	Sector Frames	
164.00	Panel	3	ATM192012B-0	
153.50	Panel	3	RC3DC-3315-PF-48	
153.50	Panel	6	CBC721-DF-21-DCB	
153.50	Panel	3	RRH4x30-4T4R-B25	
153.50	Panel	6	RRH4x30-4T4R-B13	
153.50	Panel	6	RRH 3JR52709AA 2X60	
153.50	Panel	12	BXA-70080/8CF	
153.50	Mounting Frame	3	HD Sector Frames	
153.50	Panel	12	RRUS A2 Modules	
144.00	Dish	1	6 ft HP Dish	
100.50		3	Small Beacon	
15.00	Panel	1	GPS antenna	

Linear Appurtenance				
Elev (ft)		Qty	Description	
From	To			
0.000	200.00	2	1 5/8" Coax	
0.000	200.00	1	0.4" S.O.	
0.000	198.00	1	3/8" Coax	
0.000	195.50	1	7/8" Coax	
0.000	195.50	2	1/2" Coax	
0.000	195.50	2	1 1/4" Coax	
0.000	184.00	2	CAT5	



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Job Information			
Tower : Waukesha Sheriffs	Location : Nashotah, WI		
Code : ANSI/TIA-222-G	Shape : Triangle	Base Width : 20.00 ft	
Client : KGI		Top Width : 4.00 ft	
0.000	180.00	1	1.584" Hybrid Cable
0.000	180.00	1	1.584" Hybrid Cable
0.000	180.00	5	1 5/8" Coax
0.000	164.00	2	Fiber
0.000	164.00	4	DC Power
0.000	164.00	12	1 5/8" Coax
0.000	153.50	1	W/G Ladder
0.000	153.50	3	1.56" Hybrid Cable
0.000	153.50	6	1 5/8" Coax
0.000	153.50	6	1 5/8" Coax
0.000	144.00	1	EW90
100.000	140.00	6	1 1/4" Round Bar
60.000	80.000	6	1 1/4" Round Bar
0.000	40.000	6	1 1/2" Round Bar
0.000	15.000	1	CAT5

Uplift 355.09 k Moment 6,617.22 k Moment Ice 1,521.62 k-ft
 Vert 402.22 k Tot Down 60.53 k Tot Down Ice 148.05 k
 Horiz 38.33 k Tot Shear 58.42 k Tot Shear Ice 13.52 k

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Analysis Parameters

Location:	Waukesha County, WI		
Code:	ANSI/TIA-222-G	Height (ft):	200
Shape:	Triangle	Base Elevation (ft):	0.00
Tower Manufacturer:	PIROD	Bottom Face Width (ft):	20.00
Tower Type:	Self Support	Top Face Width (ft):	4.00

Ice & Wind Parameters

Structure Class:	II	Design Windspeed Without Ice:	93 mph
Exposure Category:	C	Design Windspeed With Ice:	40 mph
Topographic Category:	1	Operational Windspeed:	60 mph
Crest Height:	0.0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method: Equivalent Modal Analysis & Equivalent Lateral Force Methods

Site Class: D - Stiff Soil

Period Based on Rayleigh Method (sec): 1.26

T_L (sec):	12	p:	1.3	C_s :	0.030
S_s :	0.086	S_1 :	0.046	$C_{s, Max}$:	0.030
F_a :	1.600	F_v :	2.400	$C_{s, Min}$:	0.030
S_{ds} :	0.092	S_{d1} :	0.074		

Load Cases

1.2D + 1.6W Normal	93 mph Normal to Face with No Ice
1.2D + 1.6W 60 deg	93 mph 60 degree with No Ice
1.2D + 1.6W 90 deg	93 mph 90 degree with No Ice
0.9D + 1.6W Normal	93 mph Normal to Face with No Ice (Reduced DL)
0.9D + 1.6W 60 deg	93 mph 60 deg with No Ice (Reduced DL)
0.9D + 1.6W 90 deg	93 mph 90 deg with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi Normal	40 mph Normal with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 60 deg	40 mph 60 degree with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 90 deg	40 mph 90 degree with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E Normal	Seismic Normal
(1.2 + 0.2Sds) * DL + E 60 deg	Seismic 60 degree
(1.2 + 0.2Sds) * DL + E 90 deg	Seismic 90 degree
(0.9 - 0.2Sds) * DL + E Normal	Seismic (Reduced DL) Normal
(0.9 - 0.2Sds) * DL + E 60 deg	Seismic (Reduced DL) 60 degree
(0.9 - 0.2Sds) * DL + E 90 deg	Seismic (Reduced DL) 90 degree
1.0D + 1.0W Service Normal	Serviceability - 60 mph Wind Normal
1.0D + 1.0W Service 60 deg	Serviceability - 60 mph Wind 60 degree
1.0D + 1.0W Service 90 deg	Serviceability - 60 mph Wind 90 degree

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Tower Loading**Discrete Appurtenance Properties** 1.2D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K _a	Orient. Factor	Vert. Ecc.(ft)	M _u (lb-ft)	Q _z (psf)	F _a (WL) (lb)	P _a (DL) (lb)
200.0	20 ft Dipole	1	34	6.0	20.0	0.0	0.0	1.00	1.00	10.0	2272.2	27.85	227	49
200.0	Large Beacon	1	50	2.4	0.0	0.0	0.0	1.00	1.00	0.5	45.0	27.58	90	72
199.0	LIGHT ROD W/EXT	1	65	4.0	0.0	0.0	0.0	1.00	1.00	6.5	980.2	27.72	151	94
198.0	20 ft Dipole	1	34	6.0	20.0	0.0	0.0	1.00	1.00	10.0	2267.7	27.79	227	49
198.0	3 ft Standoff	1	40	2.6	3.0	0.0	0.0	1.00	1.00	0.0	0.0	27.50	98	58
195.5	12"x12"x6"	1	15	1.2	0.6	6.1	2.8	1.00	1.00	0.0	0.0	27.43	45	22
195.5	6 ft Sidearm	3	70	5.2	5.7	0.0	0.0	1.00	0.67	0.0	0.0	27.43	386	302
195.5	PD-10017-1 Omni	3	25	4.1	15.0	2.4	2.4	1.00	1.00	7.5	3494.1	27.65	466	108
185.0	FibeAir 1500 HP /	2	15	1.7	1.6	6.0	11.0	1.00	1.00	0.0	0.0	27.11	128	43
184.0	DA6-W57BC	1	281	35.7	6.0	0.0	0.0	1.00	1.00	0.0	0.0	27.08	1314	405
180.0	AEHC AirScale MAA	3	108	6.8	3.2	21.5	5.9	0.80	0.66	0.0	0.0	26.96	397	467
180.0	FFHH-65C-R3	3	128	21.1	8.0	25.2	9.3	0.80	0.72	0.0	0.0	26.96	1337	551
180.0	HICAP Hybrid	2	9	1.3	1.4	9.3	5.8	0.80	0.90	0.0	0.0	26.96	67	25
180.0	PV-SFA12-3-12-126	3	592	15.0	0.0	0.0	0.0	0.75	0.75	0.0	0.0	26.96	928	2557
180.0	RRH 4T4R B12/71	3	84	2.2	1.8	12.1	7.4	0.80	0.67	0.0	0.0	26.96	131	362
180.0	RRH 4T4R B25/66	3	71	2.8	2.3	12.1	5.2	0.80	0.67	0.0	0.0	26.96	163	305
164.0	Amplink 1900e-F	3	73	2.5	1.1	10.5	22.5	0.80	0.67	0.0	0.0	26.43	146	315
164.0	ATM192012B-0	3	11	1.1	0.8	11.5	6.0	0.80	0.67	0.0	0.0	26.43	65	48
164.0	DBXLH-8585A-R2M	6	31	5.6	4.0	12.0	7.0	0.80	0.79	0.0	0.0	26.43	768	268
164.0	DC6-48-60-18-8	2	33	2.6	2.0	11.0	11.0	0.80	1.00	0.0	0.0	26.43	147	94
164.0	RRUS 11	3	51	3.3	1.6	17.0	7.2	0.80	0.67	0.0	0.0	26.43	188	219
164.0	RRUS 12	3	57	3.3	1.5	18.5	7.3	0.80	0.67	0.0	0.0	26.43	189	248
164.0	RRUS 32	3	53	2.7	2.3	12.1	7.0	0.80	0.67	0.0	0.0	26.43	158	229
164.0	RRUS A2	3	21	1.9	1.3	12.8	3.4	0.80	0.67	0.0	0.0	26.43	108	91
164.0	SBNHH-1D65C	6	50	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	26.43	1658	429
164.0	Sector Frames	3	500	15.0	0.0	0.0	0.0	0.75	0.75	0.0	0.0	26.43	910	2160
153.5	BXA-70080/8CF	12	23	8.3	7.9	8.1	5.7	0.80	0.89	0.0	0.0	26.07	2511	397
153.5	CBC721-DF-21-DCB	6	4	0.4	0.6	6.0	1.6	0.80	0.67	0.0	0.0	26.07	51	38
153.5	HD Sector Frames	3	650	15.0	0.0	0.0	0.0	0.80	0.67	0.0	0.0	26.07	855	2808
153.5	RC3DC-3315-PF-48	3	32	3.8	2.4	15.7	10.3	0.80	0.84	0.0	0.0	26.07	271	138
153.5	RRH 3JR52709AA	6	55	3.4	3.0	10.6	5.8	0.80	0.67	0.0	0.0	26.07	383	475
153.5	RRH4x30-4T4R-B13	6	57	2.5	1.8	12.0	9.0	0.80	0.67	0.0	0.0	26.07	287	494
153.5	RRH4x30-4T4R-B25	3	51	2.5	1.8	12.0	7.2	0.80	0.67	0.0	0.0	26.07	143	220
153.5	RRUS A2 Modules	12	21	1.9	1.3	12.8	3.4	0.80	0.67	0.0	0.0	26.07	426	366
144.0	6 ft HP Dish	1	281	35.7	6.0	0.0	0.0	1.00	1.00	0.0	0.0	25.72	1248	405
100.5	Small Beacon	3	10	1.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	23.84	117	43
15.00	GPS antenna	1	50	2.0	0.0	0.0	0.0	1.00	1.00	0.0	0.0	16.00	44	72
	Totals	123	10434	697.5										

Discrete Appurtenance Properties 0.9D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K _a	Orient. Factor	Vert. Ecc.(ft)	M _u (lb-ft)	Q _z (psf)	F _a (WL) (lb)	P _a (DL) (lb)
200.0	20 ft Dipole	1	34	6.0	20.0	0.0	0.0	1.00	1.00	10.0	2272.2	27.85	227	28
200.0	Large Beacon	1	50	2.4	0.0	0.0	0.0	1.00	1.00	0.5	45.0	27.58	90	41
199.0	LIGHT ROD W/EXT	1	65	4.0	0.0	0.0	0.0	1.00	1.00	6.5	980.2	27.72	151	53
198.0	20 ft Dipole	1	34	6.0	20.0	0.0	0.0	1.00	1.00	10.0	2267.7	27.79	227	28
198.0	3 ft Standoff	1	40	2.6	3.0	0.0	0.0	1.00	1.00	0.0	0.0	27.50	98	32
195.5	12"x12"x6"	1	15	1.2	0.6	6.1	2.8	1.00	1.00	0.0	0.0	27.43	45	12
195.5	6 ft Sidearm	3	70	5.2	5.7	0.0	0.0	1.00	0.67	0.0	0.0	27.43	386	170
195.5	PD-10017-1 Omni	3	25	4.1	15.0	2.4	2.4	1.00	1.00	7.5	3494.1	27.65	466	61
185.0	FibeAir 1500 HP /	2	15	1.7	1.6	6.0	11.0	1.00	1.00	0.0	0.0	27.11	128	24

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Tower Loading

184.0	DA6-W57BC	1	281	35.7	6.0	0.0	0.0	1.00	1.00	0.0	0.0	27.08	1314	228
180.0	AEHC AirScale MAA	3	108	6.8	3.2	21.5	5.9	0.80	0.66	0.0	0.0	26.96	397	262
180.0	FFHH-65C-R3	3	128	21.1	8.0	25.2	9.3	0.80	0.72	0.0	0.0	26.96	1337	310
180.0	HICAP Hybrid	2	9	1.3	1.4	9.3	5.8	0.80	0.90	0.0	0.0	26.96	67	14
180.0	PV-SFA12-3-12-126	3	592	15.0	0.0	0.0	0.0	0.75	0.75	0.0	0.0	26.96	928	1439
180.0	RRH 4T4R B12/71	3	84	2.2	1.8	12.1	7.4	0.80	0.67	0.0	0.0	26.96	131	204
180.0	RRH 4T4R B25/66	3	71	2.8	2.3	12.1	5.2	0.80	0.67	0.0	0.0	26.96	163	171
164.0	Amplink 1900e-F	3	73	2.5	1.1	10.5	22.5	0.80	0.67	0.0	0.0	26.43	146	177
164.0	ATM192012B-0	3	11	1.1	0.8	11.5	6.0	0.80	0.67	0.0	0.0	26.43	65	27
164.0	DBXLH-8585A-R2M	6	31	5.6	4.0	12.0	7.0	0.80	0.79	0.0	0.0	26.43	768	151
164.0	DC6-48-60-18-8	2	33	2.6	2.0	11.0	11.0	0.80	1.00	0.0	0.0	26.43	147	53
164.0	RRUS 11	3	51	3.3	1.6	17.0	7.2	0.80	0.67	0.0	0.0	26.43	188	123
164.0	RRUS 12	3	57	3.3	1.5	18.5	7.3	0.80	0.67	0.0	0.0	26.43	189	139
164.0	RRUS 32	3	53	2.7	2.3	12.1	7.0	0.80	0.67	0.0	0.0	26.43	158	129
164.0	RRUS A2	3	21	1.9	1.3	12.8	3.4	0.80	0.67	0.0	0.0	26.43	108	51
164.0	SBNHH-1D65C	6	50	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	26.43	1658	241
164.0	Sector Frames	3	500	15.0	0.0	0.0	0.0	0.75	0.75	0.0	0.0	26.43	910	1215
153.5	BXA-70080/8CF	12	23	8.3	7.9	8.1	5.7	0.80	0.89	0.0	0.0	26.07	2511	224
153.5	CBC721-DF-21-DCB	6	4	0.4	0.6	6.0	1.6	0.80	0.67	0.0	0.0	26.07	51	21
153.5	HD Sector Frames	3	650	15.0	0.0	0.0	0.0	0.80	0.67	0.0	0.0	26.07	855	1580
153.5	RC3DC-3315-PF-48	3	32	3.8	2.4	15.7	10.3	0.80	0.84	0.0	0.0	26.07	271	78
153.5	RRH 3JR52709AA	6	55	3.4	3.0	10.6	5.8	0.80	0.67	0.0	0.0	26.07	383	267
153.5	RRH4x30-4T4R-B13	6	57	2.5	1.8	12.0	9.0	0.80	0.67	0.0	0.0	26.07	287	278
153.5	RRH4x30-4T4R-B25	3	51	2.5	1.8	12.0	7.2	0.80	0.67	0.0	0.0	26.07	143	124
153.5	RRUS A2 Modules	12	21	1.9	1.3	12.8	3.4	0.80	0.67	0.0	0.0	26.07	426	206
144.0	6 ft HP Dish	1	281	35.7	6.0	0.0	0.0	1.00	1.00	0.0	0.0	25.72	1248	228
100.5	Small Beacon	3	10	1.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	23.84	117	24
15.00	GPS antenna	1	50	2.0	0.0	0.0	0.0	1.00	1.00	0.0	0.0	16.00	44	41
Totals		123	10434	697.5										

Discrete Appurtenance Properties 1.2D + 1.0Di + 1.0Wi

Elevation (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K _a	Orient. Factor	Vert. Ecc.(ft)	M _u (lb-ft)	Q _z (psf)	F _a (WL) (lb)	P _s (DL) (lb)
200.0	20 ft Dipole	1	168	13.7	20.0	0.0	0.0	1.00	1.00	10.0	601.6	5.15	60	210
200.0	Large Beacon	1	140	6.7	0.0	0.0	0.0	1.00	1.00	0.5	14.5	5.10	29	179
199.0	LIGHT ROD W/EXT	1	190	10.1	0.0	0.0	0.0	1.00	1.00	6.5	287.4	5.13	44	244
198.0	20 ft Dipole	1	168	13.7	20.0	0.0	0.0	1.00	1.00	10.0	600.4	5.14	60	210
198.0	3 ft Standoff	1	122	8.8	3.0	0.0	0.0	1.00	1.00	0.0	0.0	5.09	38	156
195.5	12" x12" x6"	1	50	1.9	0.6	6.1	2.8	1.00	1.00	0.0	0.0	5.07	8	64
195.5	6 ft Sidearm	3	177	12.1	5.7	0.0	0.0	1.00	0.67	0.0	0.0	5.07	105	689
195.5	PD-10017-1 Omni	3	124	9.6	15.0	2.4	2.4	1.00	1.00	7.5	939.9	5.11	125	466
185.0	FibeAir 1500 HP /	2	62	2.6	1.6	6.0	11.0	1.00	1.00	0.0	0.0	5.02	23	156
184.0	DA6-W57BC	1	1063	39.2	6.0	0.0	0.0	1.00	1.00	0.0	0.0	5.01	167	1343
180.0	AEHC AirScale MAA	3	247	8.6	3.2	21.5	5.9	0.80	0.66	0.0	0.0	4.99	58	967
180.0	FFHH-65C-R3	3	543	24.6	8.0	25.2	9.3	0.80	0.72	0.0	0.0	4.99	180	2048
180.0	HICAP Hybrid	2	45	2.0	1.4	9.3	5.8	0.80	0.90	0.0	0.0	4.99	12	113
180.0	PV-SFA12-3-12-126	3	1223	34.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	4.99	250	4830
180.0	RRH 4T4R B12/71	3	146	3.3	1.8	12.1	7.4	0.80	0.67	0.0	0.0	4.99	22	587
180.0	RRH 4T4R B25/66	3	135	3.9	2.3	12.1	5.2	0.80	0.67	0.0	0.0	4.99	27	537
164.0	Amplink 1900e-F	3	153	3.6	1.1	10.5	22.5	0.80	0.67	0.0	0.0	4.89	24	605
164.0	ATM192012B-0	3	51	1.4	0.8	11.5	6.0	0.80	0.67	0.0	0.0	4.89	9	192
164.0	DBXLH-8585A-R2M	6	174	6.1	4.0	12.0	7.0	0.80	0.79	0.0	0.0	4.89	96	1294
164.0	DC6-48-60-18-8	2	95	3.8	2.0	11.0	11.0	0.80	1.00	0.0	0.0	4.89	25	244
164.0	RRUS 11	3	138	3.5	1.6	17.0	7.2	0.80	0.67	0.0	0.0	4.89	23	533
164.0	RRUS 12	3	145	3.5	1.5	18.5	7.3	0.80	0.67	0.0	0.0	4.89	23	565

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Tower Loading

164.0	RRUS 32	3	125	3.9	2.3	12.1	7.0	0.80	0.67	0.0	0.0	4.89	26	486
164.0	RRUS A2	3	57	2.8	1.3	12.8	3.4	0.80	0.67	0.0	0.0	4.89	19	222
164.0	SBNHH-1D65C	6	315	13.1	8.0	11.9	7.1	0.80	0.84	0.0	0.0	4.89	220	2343
164.0	Sector Frames	3	1027	34.7	0.0	0.0	0.0	0.75	0.75	0.0	0.0	4.89	243	4059
153.5	BXA-70080/8CF	12	182	11.4	7.9	8.1	5.7	0.80	0.89	0.0	0.0	4.82	398	2692
153.5	CBC721-DF-21-DCB	6	20	0.7	0.6	6.0	1.6	0.80	0.67	0.0	0.0	4.82	9	147
153.5	HD Sector Frames	3	1331	34.6	0.0	0.0	0.0	0.80	0.67	0.0	0.0	4.82	228	5261
153.5	RC3DC-3315-PF-48	3	139	5.1	2.4	15.7	10.3	0.80	0.84	0.0	0.0	4.82	42	523
153.5	RRH 3JR52709AA	6	133	4.7	3.0	10.6	5.8	0.80	0.67	0.0	0.0	4.82	62	1036
153.5	RRH4x30-4T4R-B13	6	139	2.8	1.8	12.0	9.0	0.80	0.67	0.0	0.0	4.82	37	1083
153.5	RRH4x30-4T4R-B25	3	125	2.8	1.8	12.0	7.2	0.80	0.67	0.0	0.0	4.82	18	485
153.5	RRUS A2 Modules	12	57	2.8	1.3	12.8	3.4	0.80	0.67	0.0	0.0	4.82	75	885
144.0	6 ft HP Dish	1	1038	39.1	6.0	0.0	0.0	1.00	1.00	0.0	0.0	4.76	158	1313
100.5	Small Beacon	3	23	2.8	0.0	0.0	0.0	1.00	1.00	0.0	0.0	4.41	32	91
15.00	GPS antenna	1	183	4.7	0.0	0.0	0.0	1.00	1.00	0.0	0.0	2.96	12	232
Totals		123	28821	1076.9										

Discrete Appurtenance Properties 1.0D + 1.0W Service

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K _a	Orient. Factor	Vert. Ecc.(ft)	M _u (lb-ft)	Q _z (psf)	F _a (WL) (lb)	P _a (DL) (lb)
200.0	20 ft Dipole	1	34	6.0	20.0	0.0	0.0	1.00	1.00	10.0	591.1	11.59	59	34
200.0	Large Beacon	1	50	2.4	0.0	0.0	0.0	1.00	1.00	0.5	11.7	11.48	23	50
199.0	LIGHT ROD W/EXT	1	65	4.0	0.0	0.0	0.0	1.00	1.00	6.5	255.0	11.54	39	65
198.0	20 ft Dipole	1	34	6.0	20.0	0.0	0.0	1.00	1.00	10.0	589.9	11.57	59	34
198.0	3 ft Standoff	1	40	2.6	3.0	0.0	0.0	1.00	1.00	0.0	0.0	11.45	26	40
195.5	12"x12"x6"	1	15	1.2	0.6	6.1	2.8	1.00	1.00	0.0	0.0	11.42	12	15
195.5	6 ft Sidarm	3	70	5.2	5.7	0.0	0.0	1.00	0.67	0.0	0.0	11.42	100	210
195.5	PD-10017-1 Omni	3	25	4.1	15.0	2.4	2.4	1.00	1.00	7.5	909.0	11.51	121	75
185.0	FibeAir 1500 HP /	2	15	1.7	1.6	6.0	11.0	1.00	1.00	0.0	0.0	11.29	33	30
184.0	DA6-W57BC	1	281	35.7	6.0	0.0	0.0	1.00	1.00	0.0	0.0	11.27	342	281
180.0	AEHC AirScale MAA	3	108	6.8	3.2	21.5	5.9	0.80	0.66	0.0	0.0	11.22	103	324
180.0	FFHH-65C-R3	3	128	21.1	8.0	25.2	9.3	0.80	0.72	0.0	0.0	11.22	348	383
180.0	HICAP Hybrid	2	9	1.3	1.4	9.3	5.8	0.80	0.90	0.0	0.0	11.22	17	18
180.0	PV-SFA12-3-12-126	3	592	15.0	0.0	0.0	0.0	0.75	0.75	0.0	0.0	11.22	241	1776
180.0	RRH 4T4R B12/71	3	84	2.2	1.8	12.1	7.4	0.80	0.67	0.0	0.0	11.22	34	251
180.0	RRH 4T4R B25/66	3	71	2.8	2.3	12.1	5.2	0.80	0.67	0.0	0.0	11.22	42	212
164.0	Amplink 1900e-F	3	73	2.5	1.1	10.5	22.5	0.80	0.67	0.0	0.0	11.00	38	219
164.0	ATM192012B-0	3	11	1.1	0.8	11.5	6.0	0.80	0.67	0.0	0.0	11.00	17	33
164.0	DBXLH-8585A-R2M	6	31	5.6	4.0	12.0	7.0	0.80	0.79	0.0	0.0	11.00	200	186
164.0	DC6-48-60-18-8	2	33	2.6	2.0	11.0	11.0	0.80	1.00	0.0	0.0	11.00	38	66
164.0	RRUS 11	3	51	3.3	1.6	17.0	7.2	0.80	0.67	0.0	0.0	11.00	49	152
164.0	RRUS 12	3	57	3.3	1.5	18.5	7.3	0.80	0.67	0.0	0.0	11.00	49	172
164.0	RRUS 32	3	53	2.7	2.3	12.1	7.0	0.80	0.67	0.0	0.0	11.00	41	159
164.0	RRUS A2	3	21	1.9	1.3	12.8	3.4	0.80	0.67	0.0	0.0	11.00	28	63
164.0	SBNHH-1D65C	6	50	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	11.00	431	298
164.0	Sector Frames	3	500	15.0	0.0	0.0	0.0	0.75	0.75	0.0	0.0	11.00	237	1500
153.5	BXA-70080/8CF	12	23	8.3	7.9	8.1	5.7	0.80	0.89	0.0	0.0	10.85	653	276
153.5	CBC721-DF-21-DCB	6	4	0.4	0.6	6.0	1.6	0.80	0.67	0.0	0.0	10.85	13	26
153.5	HD Sector Frames	3	650	15.0	0.0	0.0	0.0	0.80	0.67	0.0	0.0	10.85	222	1950
153.5	RC3DC-3315-PF-48	3	32	3.8	2.4	15.7	10.3	0.80	0.84	0.0	0.0	10.85	70	96
153.5	RRH 3JR52709AA	6	55	3.4	3.0	10.6	5.8	0.80	0.67	0.0	0.0	10.85	100	330
153.5	RRH4x30-4T4R-B13	6	57	2.5	1.8	12.0	9.0	0.80	0.67	0.0	0.0	10.85	75	343
153.5	RRH4x30-4T4R-B25	3	51	2.5	1.8	12.0	7.2	0.80	0.67	0.0	0.0	10.85	37	153
153.5	RRUS A2 Modules	12	21	1.9	1.3	12.8	3.4	0.80	0.67	0.0	0.0	10.85	111	254
144.0	6 ft HP Dish	1	281	35.7	6.0	0.0	0.0	1.00	1.00	0.0	0.0	10.71	325	281

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Tower Loading

100.5	Small Beacon	3	10	1.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	9.92	30	30
15.00	GPS antenna	1	50	2.0	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.66	11	50
	Totals	123	10434	697.5										

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Tower LoadingLinear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out Of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	200.0	0.4" S.O.	1	0.40	0.08	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	200.0	1 5/8" Coax	2	1.98	1.04	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	198.0	3/8" Coax	1	0.44	0.08	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	195.5	1 1/4" Coax	2	1.55	0.66	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	195.5	1/2" Coax	2	0.65	0.16	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	195.5	7/8" Coax	1	1.11	0.52	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	184.0	CAT5	2	0.36	0.06	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	180.0	1 5/8" Coax	5	1.98	1.04	1	Lin App	Block	0.00	N	1.00	1.00	0.00
0.00	180.0	1.584" Hybrid Cable	1	1.58	1.78	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	180.0	1.584" Hybrid Cable	1	1.58	1.78	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	164.0	1 5/8" Coax	12	1.98	1.04	42	Lin App	Block	0.00	N	1.00	1.00	0.00
0.00	164.0	DC Power	4	0.78	0.60	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	164.0	Fiber	2	0.39	0.06	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	153.5	1 5/8" Coax	6	1.98	1.04	50	Lin App	Block	0.00	N	1.00	1.00	0.00
0.00	153.5	1 5/8" Coax	6	1.98	1.04	50	Lin App	Block	0.00	N	1.00	1.00	0.00
0.00	153.5	1.56" Hybrid Cable	3	1.56	1.78	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	153.5	W/G Ladder	1	3.00	6.00	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	144.0	EW90	1	1.32	0.32	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
100.0	140.0	1 1/4" Round Bar	6	1.25	4.18	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
60.00	80.00	1 1/4" Round Bar	6	1.25	4.18	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	40.00	1 1/2" Round Bar	6	1.50	6.01	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	15.00	CAT5	1	0.36	0.06	0	Lin App	Individual	0.00	N	1.00	1.00	0.00

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Section Forces**LoadCase 1.2D + 1.6W Normal****93 mph Normal to Face with No Ice**

Gust Response Factor (Gh): 0.85

Wind Importance Factor (Iw): 1.00

Section	Elev. (ft)	Q _z (psf)	A _f (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (s.)	EPA _a (sf)	EPA _{ai} (sf)	Wt. (lb)	Ice Wt. (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
13	195.0	27.41	0.00	5.70	0.00	0.14	2.82	1.00	1.00	0.0	3.23	6.45	0.00	547	0	339	173	512
12	180.0	26.96	0.00	10.45	0.00	0.12	2.89	1.00	1.00	0.0	5.91	22.31	0.00	1127	0	625	600	1225
11	161.3	26.34	9.23	10.20	0.00	0.23	2.49	1.00	1.00	0.0	15.15	44.01	0.00	2775	0	1355	1265	2619
10	151.3	25.99	1.34	1.29	0.00	0.18	2.65	1.00	1.00	0.0	2.08	14.05	0.00	444	0	195	421	616
9	145.0	25.76	4.76	7.81	0.00	0.21	2.55	1.00	1.00	0.0	8.61	50.86	0.00	1708	0	770	1507	2277
8	130.0	25.17	10.18	15.63	0.00	0.17	2.68	1.00	1.00	0.0	17.60	115.55	0.00	4059	0	1616	3287	4903
7	110.0	24.30	13.46	17.23	0.00	0.16	2.73	1.00	1.00	0.0	21.83	115.55	0.00	4671	0	1966	3173	5139
6	95.00	23.56	10.31	9.42	0.00	0.18	2.66	1.00	1.00	0.0	15.08	51.52	0.00	2561	0	1288	1394	2682
5	85.00	23.02	7.62	9.42	0.00	0.14	2.80	1.00	1.00	0.0	12.26	51.52	0.00	2309	0	1074	1362	2436
4	70.00	22.10	16.41	18.83	0.00	0.13	2.84	1.00	1.00	0.0	25.53	115.55	0.00	5847	0	2181	2885	5067
3	50.00	20.59	18.03	22.04	0.00	0.13	2.85	1.00	1.00	0.0	29.36	103.05	0.00	6160	0	2343	2436	4779
2	30.00	18.49	23.01	22.04	0.00	0.13	2.85	1.00	1.00	0.0	34.03	118.05	0.00	7486	0	2441	2459	4900
1	10.00	16.00	25.05	23.64	0.00	0.12	2.87	1.00	1.00	0.0	36.84	118.50	0.00	8318	0	2299	2135	4434
														48010	0			41590

LoadCase 1.2D + 1.6W 60 deg**93 mph 60 degree with No Ice**

Gust Response Factor (Gh): 0.85

Wind Importance Factor (Iw): 1.00

Section	Elev. (ft)	Q _z (psf)	A _f (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (s.)	EPA _a (sf)	EPA _{ai} (sf)	Wt. (lb)	Ice Wt. (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
13	195.0	27.41	0.00	5.70	0.00	0.14	2.82	0.80	1.00	0.0	3.23	6.45	0.00	547	0	339	173	512
12	180.0	26.96	0.00	10.45	0.00	0.12	2.89	0.80	1.00	0.0	5.91	22.31	0.00	1127	0	625	600	1225
11	161.3	26.34	9.23	10.20	0.00	0.23	2.49	0.80	1.00	0.0	13.31	44.01	0.00	2775	0	1190	1265	2454
10	151.3	25.99	1.34	1.29	0.00	0.18	2.65	0.80	1.00	0.0	1.81	14.05	0.00	444	0	170	421	590
9	145.0	25.76	4.76	7.81	0.00	0.21	2.55	0.80	1.00	0.0	7.66	50.86	0.00	1708	0	685	1507	2192
8	130.0	25.17	10.18	15.63	0.00	0.17	2.68	0.80	1.00	0.0	15.56	115.55	0.00	4059	0	1429	3287	4716
7	110.0	24.30	13.46	17.23	0.00	0.16	2.73	0.80	1.00	0.0	19.13	115.55	0.00	4671	0	1723	3173	4897
6	95.00	23.56	10.31	9.42	0.00	0.18	2.66	0.80	1.00	0.0	13.02	51.52	0.00	2561	0	1112	1394	2506
5	85.00	23.02	7.62	9.42	0.00	0.14	2.80	0.80	1.00	0.0	10.73	51.52	0.00	2309	0	941	1362	2303
4	70.00	22.10	16.41	18.83	0.00	0.13	2.84	0.80	1.00	0.0	22.24	115.55	0.00	5847	0	1901	2885	4786
3	50.00	20.59	18.03	22.04	0.00	0.13	2.85	0.80	1.00	0.0	25.75	103.05	0.00	6160	0	2055	2436	4491
2	30.00	18.49	23.01	22.04	0.00	0.13	2.85	0.80	1.00	0.0	29.43	118.05	0.00	7486	0	2111	2459	4570
1	10.00	16.00	25.05	23.64	0.00	0.12	2.87	0.80	1.00	0.0	31.83	118.50	0.00	8318	0	1986	2135	4121
														48010	0			39365

LoadCase 1.2D + 1.6W 90 deg**93 mph 90 degree with No Ice**

Gust Response Factor (Gh): 0.85

Wind Importance Factor (Iw): 1.00

Section	Elev. (ft)	Q _z (psf)	A _f (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (s.)	EPA _a (sf)	EPA _{ai} (sf)	Wt. (lb)	Ice Wt. (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
13	195.0	27.41	0.00	5.70	0.00	0.14	2.82	0.85	1.00	0.0	3.23	6.45	0.00	547	0	339	173	512
12	180.0	26.96	0.00	10.45	0.00	0.12	2.89	0.85	1.00	0.0	5.91	22.31	0.00	1127	0	625	600	1225
11	161.3	26.34	9.23	10.20	0.00	0.23	2.49	0.85	1.00	0.0	13.77	44.01	0.00	2775	0	1231	1265	2495
10	151.3	25.99	1.34	1.29	0.00	0.18	2.65	0.85	1.00	0.0	1.88	14.05	0.00	444	0	176	421	597
9	145.0	25.76	4.76	7.81	0.00	0.21	2.55	0.85	1.00	0.0	7.90	50.86	0.00	1708	0	706	1507	2214

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Section Forces

8	130.0	25.17	10.18	15.63	0.00	0.17	2.68	0.85	1.00	0.0	16.07	115.55	0.00	4059	0	1476	3287	4763
7	110.0	24.30	13.46	17.23	0.00	0.16	2.73	0.85	1.00	0.0	19.81	115.55	0.00	4671	0	1784	3173	4957
6	95.00	23.56	10.31	9.42	0.00	0.18	2.66	0.85	1.00	0.0	13.53	51.52	0.00	2561	0	1156	1394	2550
5	85.00	23.02	7.62	9.42	0.00	0.14	2.80	0.85	1.00	0.0	11.11	51.52	0.00	2309	0	974	1362	2336
4	70.00	22.10	16.41	18.83	0.00	0.13	2.84	0.85	1.00	0.0	23.07	115.55	0.00	5847	0	1971	2885	4856
3	50.00	20.59	18.03	22.04	0.00	0.13	2.85	0.85	1.00	0.0	26.65	103.05	0.00	6160	0	2127	2436	4563
2	30.00	18.49	23.01	22.04	0.00	0.13	2.85	0.85	1.00	0.0	30.58	118.05	0.00	7486	0	2193	2459	4653
1	10.00	16.00	25.05	23.64	0.00	0.12	2.87	0.85	1.00	0.0	33.08	118.50	0.00	8318	0	2064	2135	4200
														48010	0			39921

LoadCase 0.9D + 1.6W Normal

93 mph Normal to Face with No Ice (Reduced DL)

Gust Response Factor (Gh): 0.85

Wind Importance Factor (Iw): 1.00

Section	Elev. (ft)	Q _z (psf)	A _f (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (s.)	EPA _a (sf)	EPA _{ai} (sf)	Wt. (lb)	Ice Wt. (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
13	195.0	27.41	0.00	5.70	0.00	0.14	2.82	1.00	1.00	0.0	3.23	6.45	0.00	410	0	339	173	512
12	180.0	26.96	0.00	10.45	0.00	0.12	2.89	1.00	1.00	0.0	5.91	22.31	0.00	845	0	625	600	1225
11	161.3	26.34	9.23	10.20	0.00	0.23	2.49	1.00	1.00	0.0	15.15	44.01	0.00	2081	0	1355	1265	2619
10	151.3	25.99	1.34	1.29	0.00	0.18	2.65	1.00	1.00	0.0	2.08	14.05	0.00	333	0	195	421	616
9	145.0	25.76	4.76	7.81	0.00	0.21	2.55	1.00	1.00	0.0	8.61	50.86	0.00	1281	0	770	1507	2277
8	130.0	25.17	10.18	15.63	0.00	0.17	2.68	1.00	1.00	0.0	17.60	115.55	0.00	3044	0	1616	3287	4903
7	110.0	24.30	13.46	17.23	0.00	0.16	2.73	1.00	1.00	0.0	21.83	115.55	0.00	3503	0	1966	3173	5139
6	95.00	23.56	10.31	9.42	0.00	0.18	2.66	1.00	1.00	0.0	15.08	51.52	0.00	1921	0	1288	1394	2682
5	85.00	23.02	7.62	9.42	0.00	0.14	2.80	1.00	1.00	0.0	12.26	51.52	0.00	1732	0	1074	1362	2436
4	70.00	22.10	16.41	18.83	0.00	0.13	2.84	1.00	1.00	0.0	25.53	115.55	0.00	4385	0	2181	2885	5067
3	50.00	20.59	18.03	22.04	0.00	0.13	2.85	1.00	1.00	0.0	29.36	103.05	0.00	4620	0	2343	2436	4779
2	30.00	18.49	23.01	22.04	0.00	0.13	2.85	1.00	1.00	0.0	34.03	118.05	0.00	5615	0	2441	2459	4900
1	10.00	16.00	25.05	23.64	0.00	0.12	2.87	1.00	1.00	0.0	36.84	118.50	0.00	6238	0	2299	2135	4434
														36008	0			41590

LoadCase 0.9D + 1.6W 60 deg

93 mph 60 deg with No Ice (Reduced DL)

Gust Response Factor (Gh): 0.85

Wind Importance Factor (Iw): 1.00

Section	Elev. (ft)	Q _z (psf)	A _f (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (s.)	EPA _a (sf)	EPA _{ai} (sf)	Wt. (lb)	Ice Wt. (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
13	195.0	27.41	0.00	5.70	0.00	0.14	2.82	0.80	1.00	0.0	3.23	6.45	0.00	410	0	339	173	512
12	180.0	26.96	0.00	10.45	0.00	0.12	2.89	0.80	1.00	0.0	5.91	22.31	0.00	845	0	625	600	1225
11	161.3	26.34	9.23	10.20	0.00	0.23	2.49	0.80	1.00	0.0	13.31	44.01	0.00	2081	0	1190	1265	2454
10	151.3	25.99	1.34	1.29	0.00	0.18	2.65	0.80	1.00	0.0	1.81	14.05	0.00	333	0	170	421	590
9	145.0	25.76	4.76	7.81	0.00	0.21	2.55	0.80	1.00	0.0	7.66	50.86	0.00	1281	0	685	1507	2192
8	130.0	25.17	10.18	15.63	0.00	0.17	2.68	0.80	1.00	0.0	15.56	115.55	0.00	3044	0	1429	3287	4716
7	110.0	24.30	13.46	17.23	0.00	0.16	2.73	0.80	1.00	0.0	19.13	115.55	0.00	3503	0	1723	3173	4897
6	95.00	23.56	10.31	9.42	0.00	0.18	2.66	0.80	1.00	0.0	13.02	51.52	0.00	1921	0	1112	1394	2506
5	85.00	23.02	7.62	9.42	0.00	0.14	2.80	0.80	1.00	0.0	10.73	51.52	0.00	1732	0	941	1362	2303
4	70.00	22.10	16.41	18.83	0.00	0.13	2.84	0.80	1.00	0.0	22.24	115.55	0.00	4385	0	1901	2885	4786
3	50.00	20.59	18.03	22.04	0.00	0.13	2.85	0.80	1.00	0.0	25.75	103.05	0.00	4620	0	2055	2436	4491
2	30.00	18.49	23.01	22.04	0.00	0.13	2.85	0.80	1.00	0.0	29.43	118.05	0.00	5615	0	2111	2459	4570
1	10.00	16.00	25.05	23.64	0.00	0.12	2.87	0.80	1.00	0.0	31.83	118.50	0.00	6238	0	1986	2135	4121
														36008	0			39365

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

11/27/2020 3:18:17 PM

Customer: KGI

Section Forces

LoadCase 0.9D + 1.6W 90 deg

93 mph 90 deg with No Ice (Reduced DL)

Gust Response Factor (Gh): 0.85

Wind Importance Factor (Iw): 1.00

Section	Elev. (ft)	Q _z (psf)	A _f (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (s.)	EPA _a (sf)	EPA _{ai} (sf)	Wt. (lb)	Ice Wt. (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
13	195.0	27.41	0.00	5.70	0.00	0.14	2.82	0.85	1.00	0.0	3.23	6.45	0.00	410	0	339	173	512
12	180.0	26.96	0.00	10.45	0.00	0.12	2.89	0.85	1.00	0.0	5.91	22.31	0.00	845	0	625	600	1225
11	161.3	26.34	9.23	10.20	0.00	0.23	2.49	0.85	1.00	0.0	13.77	44.01	0.00	2081	0	1231	1265	2495
10	151.3	25.99	1.34	1.29	0.00	0.18	2.65	0.85	1.00	0.0	1.88	14.05	0.00	333	0	176	421	597
9	145.0	25.76	4.76	7.81	0.00	0.21	2.55	0.85	1.00	0.0	7.90	50.86	0.00	1281	0	706	1507	2214
8	130.0	25.17	10.18	15.63	0.00	0.17	2.68	0.85	1.00	0.0	16.07	115.55	0.00	3044	0	1476	3287	4763
7	110.0	24.30	13.46	17.23	0.00	0.16	2.73	0.85	1.00	0.0	19.81	115.55	0.00	3503	0	1784	3173	4957
6	95.00	23.56	10.31	9.42	0.00	0.18	2.66	0.85	1.00	0.0	13.53	51.52	0.00	1921	0	1156	1394	2550
5	85.00	23.02	7.62	9.42	0.00	0.14	2.80	0.85	1.00	0.0	11.11	51.52	0.00	1732	0	974	1362	2336
4	70.00	22.10	16.41	18.83	0.00	0.13	2.84	0.85	1.00	0.0	23.07	115.55	0.00	4385	0	1971	2885	4856
3	50.00	20.59	18.03	22.04	0.00	0.13	2.85	0.85	1.00	0.0	26.65	103.05	0.00	4620	0	2127	2436	4563
2	30.00	18.49	23.01	22.04	0.00	0.13	2.85	0.85	1.00	0.0	30.58	118.05	0.00	5615	0	2193	2459	4653
1	10.00	16.00	25.05	23.64	0.00	0.12	2.87	0.85	1.00	0.0	33.08	118.50	0.00	6238	0	2064	2135	4200
														36008	0			39921

LoadCase 1.2D + 1.0Di + 1.0Wi Normal

40 mph Normal with 0.75 in Radial Ice

Gust Response Factor (Gh): 0.85

Ice Dead Load Factor : 1.00

Ice Importance Factor : 1.00

Wind Importance Factor (Iw): 1.00

Section	Elev. (ft)	Q _z (psf)	A _f (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (s.)	EPA _a (sf)	EPA _{ai} (sf)	Wt. (lb)	Ice Wt. (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
13	195.0	5.07	0.00	26.34	20.64	0.60	1.81	1.00	1.00	1.8	19.51	6.45	19.56	2019	1472	152	54	206
12	180.0	4.99	0.00	47.72	37.27	0.51	1.89	1.00	1.00	1.8	32.97	25.27	67.54	4621	3495	264	234	497
11	161.3	4.87	9.23	43.25	33.05	0.59	1.81	1.00	1.00	1.8	41.10	52.97	85.91	6634	3860	308	299	607
10	151.3	4.81	1.34	7.49	6.19	0.58	1.81	1.00	1.00	1.7	6.83	18.11	17.85	1319	875	51	81	130
9	145.0	4.76	4.76	20.24	12.43	0.40	2.06	1.00	1.00	1.7	17.67	65.36	64.93	5353	3644	147	417	526
8	130.0	4.66	10.18	41.13	25.50	0.33	2.21	1.00	1.00	1.7	35.28	144.22	166.31	12157	8099	308	1031	1276
7	110.0	4.50	13.46	43.71	26.48	0.29	2.31	1.00	1.00	1.7	39.56	143.75	163.55	12996	8325	349	1025	1375
6	95.00	4.36	10.31	23.04	13.63	0.30	2.31	1.00	1.00	1.7	24.08	65.42	63.91	6733	4172	206	420	625
5	85.00	4.26	7.62	23.30	13.88	0.25	2.43	1.00	1.00	1.6	21.26	65.27	63.21	6118	3809	187	423	610
4	70.00	4.09	16.41	47.32	28.49	0.23	2.49	1.00	1.00	1.6	43.89	142.50	156.32	14093	8246	380	961	1341
3	50.00	3.81	18.03	51.28	29.24	0.22	2.53	1.00	1.00	1.6	47.67	129.11	119.88	13702	7543	391	754	1145
2	30.00	3.42	23.01	51.50	29.46	0.21	2.57	1.00	1.00	1.5	52.68	142.81	143.62	15666	8180	393	786	1179
1	10.00	2.96	25.05	51.59	27.95	0.19	2.62	1.00	1.00	1.3	54.63	140.69	132.01	15735	7417	360	657	1016
														117146	69136			10535

** = Section Force Exceeds Solidity Ratio Criteria

LoadCase 1.2D + 1.0Di + 1.0Wi 60 deg

40 mph 60 degree with 0.75 in Radial Ice

Gust Response Factor (Gh): 0.85

Ice Dead Load Factor : 1.00

Ice Importance Factor : 1.00

Wind Importance Factor (Iw): 1.00

Section	Elev. (ft)	Q _z (psf)	A _f (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (s.)	EPA _a (sf)	EPA _{ai} (sf)	Wt. (lb)	Ice Wt. (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
13	195.0	5.07	0.00	26.34	20.64	0.60	1.81	0.80	1.00	1.8	19.51	6.45	19.56	2019	1472	152	54	206
12	180.0	4.99	0.00	47.72	37.27	0.51	1.89	0.80	1.00	1.8	32.97	25.27	67.54	4621	3495	264	234	497
11	161.3	4.87	9.23	43.25	33.05	0.59	1.81	0.80	1.00	1.8	39.25	52.97	85.91	6634	3860	295	299	593
10	151.3	4.81	1.34	7.49	6.19	0.58	1.81	0.80	1.00	1.7	6.56	18.11	17.85	1319	875	49	81	130
9	145.0	4.76	4.76	20.24	12.43	0.40	2.06	0.80	1.00	1.7	16.72	65.36	64.93	5353	3644	139	417	526

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Section Forces

8	130.0	4.66	10.18	41.13	25.50	0.33	2.21	0.80	1.00	1.7	33.24	144.22	166.31	12157	8099	291	1031	1276	**
7	110.0	4.50	13.46	43.71	26.48	0.29	2.31	0.80	1.00	1.7	36.87	143.75	163.55	12996	8325	326	1025	1351	
6	95.00	4.36	10.31	23.04	13.63	0.30	2.31	0.80	1.00	1.7	22.02	65.42	63.91	6733	4172	188	420	608	
5	85.00	4.26	7.62	23.30	13.88	0.25	2.43	0.80	1.00	1.6	19.74	65.27	63.21	6118	3809	174	423	597	
4	70.00	4.09	16.41	47.32	28.49	0.23	2.49	0.80	1.00	1.6	40.61	142.50	156.32	14093	8246	352	961	1313	
3	50.00	3.81	18.03	51.28	29.24	0.22	2.53	0.80	1.00	1.6	44.07	129.11	119.88	13702	7543	361	754	1116	
2	30.00	3.42	23.01	51.50	29.46	0.21	2.57	0.80	1.00	1.5	48.08	142.81	143.62	15666	8180	359	786	1145	
1	10.00	2.96	25.05	51.59	27.95	0.19	2.62	0.80	1.00	1.3	49.62	140.69	132.01	15735	7417	327	657	983	
														117146	69136			10341	

** = Section Force Exceeds Solidity Ratio Criteria

LoadCase 1.2D + 1.0Di + 1.0Wi 90 deg

40 mph 90 degree with 0.75 in Radial Ice

Gust Response Factor (Gh): 0.85

Ice Dead Load Factor : 1.00

Ice Importance Factor : 1.00

Wind Importance Factor (Iw) : 1.00

Section	Elev. (ft)	Q _z (psf)	A _f (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (s.)	EPA _a (sf)	EPA _{ai} (sf)	Wt. (lb)	Ice Wt. (lb)	F _{st} (lb)	F _a (lb)	Force (lb)	
13	195.0	5.07	0.00	26.34	20.64	0.60	1.81	0.85	1.00	1.8	19.51	6.45	19.56	2019	1472	152	54	206	
12	180.0	4.99	0.00	47.72	37.27	0.51	1.89	0.85	1.00	1.8	32.97	25.27	67.54	4621	3495	264	234	497	
11	161.3	4.87	9.23	43.25	33.05	0.59	1.81	0.85	1.00	1.8	39.72	52.97	85.91	6634	3860	298	299	597	
10	151.3	4.81	1.34	7.49	6.19	0.58	1.81	0.85	1.00	1.7	6.63	18.11	17.85	1319	875	49	81	130	**
9	145.0	4.76	4.76	20.24	12.43	0.40	2.06	0.85	1.00	1.7	16.96	65.36	64.93	5353	3644	141	417	526	**
8	130.0	4.66	10.18	41.13	25.50	0.33	2.21	0.85	1.00	1.7	33.75	144.22	166.31	12157	8099	295	1031	1276	**
7	110.0	4.50	13.46	43.71	26.48	0.29	2.31	0.85	1.00	1.7	37.54	143.75	163.55	12996	8325	332	1025	1357	
6	95.00	4.36	10.31	23.04	13.63	0.30	2.31	0.85	1.00	1.7	22.54	65.42	63.91	6733	4172	192	420	612	
5	85.00	4.26	7.62	23.30	13.88	0.25	2.43	0.85	1.00	1.6	20.12	65.27	63.21	6118	3809	177	423	600	
4	70.00	4.09	16.41	47.32	28.49	0.23	2.49	0.85	1.00	1.6	41.43	142.50	156.32	14093	8246	359	961	1320	
3	50.00	3.81	18.03	51.28	29.24	0.22	2.53	0.85	1.00	1.6	44.97	129.11	119.88	13702	7543	369	754	1123	
2	30.00	3.42	23.01	51.50	29.46	0.21	2.57	0.85	1.00	1.5	49.23	142.81	143.62	15666	8180	367	786	1153	
1	10.00	2.96	25.05	51.59	27.95	0.19	2.62	0.85	1.00	1.3	50.87	140.69	132.01	15735	7417	335	657	992	
														117146	69136			10389	

** = Section Force Exceeds Solidity Ratio Criteria

LoadCase 1.0D + 1.0W Service Normal

Serviceability - 60 mph Wind Normal

Gust Response Factor (Gh): 0.85

Wind Importance Factor (Iw) : 1.00

Section	Elev. (ft)	Q _z (psf)	A _f (sf)	A _r (sf)	Ice A _r (sf)	e	C _f	D _f	D _r	T _{iz} (in)	A _e (s.)	EPA _a (sf)	EPA _{ai} (sf)	Wt. (lb)	Ice Wt. (lb)	F _{st} (lb)	F _a (lb)	Force (lb)	
13	195.0	11.41	0.00	5.70	0.00	0.14	2.82	1.00	1.00	0.0	3.23	6.45	0.00	456	0	88	45	133	
12	180.0	11.22	0.00	10.45	0.00	0.12	2.89	1.00	1.00	0.0	5.91	22.31	0.00	939	0	163	156	319	
11	161.3	10.97	9.23	10.20	0.00	0.23	2.49	1.00	1.00	0.0	15.15	44.01	0.00	2312	0	352	329	681	
10	151.3	10.82	1.34	1.29	0.00	0.18	2.65	1.00	1.00	0.0	2.08	14.05	0.00	370	0	51	109	160	
9	145.0	10.72	4.76	7.81	0.00	0.21	2.55	1.00	1.00	0.0	9.26	50.86	0.00	1424	0	215	392	608	
8	130.0	10.48	10.18	15.63	0.00	0.17	2.68	1.00	1.00	0.0	19.09	115.55	0.00	3382	0	456	855	1311	
7	110.0	10.12	13.46	17.23	0.00	0.16	2.73	1.00	1.00	0.0	23.26	115.55	0.00	3892	0	545	826	1371	
6	95.00	9.81	10.31	9.42	0.00	0.18	2.66	1.00	1.00	0.0	15.68	51.52	0.00	2134	0	348	363	711	
5	85.00	9.58	7.62	9.42	0.00	0.14	2.80	1.00	1.00	0.0	12.96	51.52	0.00	1924	0	295	354	650	
4	70.00	9.20	16.41	18.83	0.00	0.13	2.84	1.00	1.00	0.0	27.06	115.55	0.00	4872	0	602	751	1352	
3	50.00	8.57	18.03	22.04	0.00	0.13	2.85	1.00	1.00	0.0	27.30	103.05	0.00	5133	0	567	634	1201	
2	30.00	7.69	23.01	22.04	0.00	0.13	2.85	1.00	1.00	0.0	32.08	118.05	0.00	6239	0	599	640	1238	
1	10.00	6.66	25.05	23.64	0.00	0.12	2.87	1.00	1.00	0.0	34.73	118.50	0.00	6931	0	564	555	1119	
														40009	0			10854	

** = Section Force Exceeds Solidity Ratio Criteria

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Section Forces

LoadCase 1.0D + 1.0W Service 60 deg

Serviceability - 60 mph Wind 60 degree

Gust Response Factor (Gh): 0.85

Wind Importance Factor (Iw): 1.00

Section	Elev. (ft)	Q _z (psf)	A _f (sf)	A _r (sf)	Ice A _r (sf)	e	C _r	D _f	D _r	T _{iz} (in)	A _e (s.)	EPA _a (sf)	EPA _{ai} (sf)	Wt. (lb)	Ice Wt. (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
13	195.0	11.41	0.00	5.70	0.00	0.14	2.82	0.80	1.00	0.0	3.23	6.45	0.00	456	0	88	45	133
12	180.0	11.22	0.00	10.45	0.00	0.12	2.89	0.80	1.00	0.0	5.91	22.31	0.00	939	0	163	156	319
11	161.3	10.97	9.23	10.20	0.00	0.23	2.49	0.80	1.00	0.0	13.31	44.01	0.00	2312	0	309	329	638
10	151.3	10.82	1.34	1.29	0.00	0.18	2.65	0.80	1.00	0.0	1.81	14.05	0.00	370	0	44	109	154
9	145.0	10.72	4.76	7.81	0.00	0.21	2.55	0.80	1.00	0.0	8.31	50.86	0.00	1424	0	193	392	585
8	130.0	10.48	10.18	15.63	0.00	0.17	2.68	0.80	1.00	0.0	17.06	115.55	0.00	3382	0	408	855	1263
7	110.0	10.12	13.46	17.23	0.00	0.16	2.73	0.80	1.00	0.0	20.57	115.55	0.00	3892	0	482	826	1308
6	95.00	9.81	10.31	9.42	0.00	0.18	2.66	0.80	1.00	0.0	13.62	51.52	0.00	2134	0	303	363	665
5	85.00	9.58	7.62	9.42	0.00	0.14	2.80	0.80	1.00	0.0	11.43	51.52	0.00	1924	0	261	354	615
4	70.00	9.20	16.41	18.83	0.00	0.13	2.84	0.80	1.00	0.0	23.78	115.55	0.00	4872	0	529	751	1279
3	50.00	8.57	18.03	22.04	0.00	0.13	2.85	0.80	1.00	0.0	23.69	103.05	0.00	5133	0	492	634	1126
2	30.00	7.69	23.01	22.04	0.00	0.13	2.85	0.80	1.00	0.0	27.48	118.05	0.00	6239	0	513	640	1152
1	10.00	6.66	25.05	23.64	0.00	0.12	2.87	0.80	1.00	0.0	29.72	118.50	0.00	6931	0	482	555	1038
														40009	0			10275

** = Section Force Exceeds Solidity Ratio Criteria

LoadCase 1.0D + 1.0W Service 90 deg

Serviceability - 60 mph Wind 90 degree

Gust Response Factor (Gh): 0.85

Wind Importance Factor (Iw): 1.00

Section	Elev. (ft)	Q _z (psf)	A _f (sf)	A _r (sf)	Ice A _r (sf)	e	C _r	D _f	D _r	T _{iz} (in)	A _e (s.)	EPA _a (sf)	EPA _{ai} (sf)	Wt. (lb)	Ice Wt. (lb)	F _{st} (lb)	F _a (lb)	Force (lb)
13	195.0	11.41	0.00	5.70	0.00	0.14	2.82	0.85	1.00	0.0	3.23	6.45	0.00	456	0	88	45	133
12	180.0	11.22	0.00	10.45	0.00	0.12	2.89	0.85	1.00	0.0	5.91	22.31	0.00	939	0	163	156	319
11	161.3	10.97	9.23	10.20	0.00	0.23	2.49	0.85	1.00	0.0	13.77	44.01	0.00	2312	0	320	329	649
10	151.3	10.82	1.34	1.29	0.00	0.18	2.65	0.85	1.00	0.0	1.88	14.05	0.00	370	0	46	109	155
9	145.0	10.72	4.76	7.81	0.00	0.21	2.55	0.85	1.00	0.0	8.55	50.86	0.00	1424	0	199	392	591
8	130.0	10.48	10.18	15.63	0.00	0.17	2.68	0.85	1.00	0.0	17.57	115.55	0.00	3382	0	420	855	1275
7	110.0	10.12	13.46	17.23	0.00	0.16	2.73	0.85	1.00	0.0	21.24	115.55	0.00	3892	0	498	826	1323
6	95.00	9.81	10.31	9.42	0.00	0.18	2.66	0.85	1.00	0.0	14.14	51.52	0.00	2134	0	314	363	677
5	85.00	9.58	7.62	9.42	0.00	0.14	2.80	0.85	1.00	0.0	11.81	51.52	0.00	1924	0	269	354	624
4	70.00	9.20	16.41	18.83	0.00	0.13	2.84	0.85	1.00	0.0	24.60	115.55	0.00	4872	0	547	751	1297
3	50.00	8.57	18.03	22.04	0.00	0.13	2.85	0.85	1.00	0.0	24.59	103.05	0.00	5133	0	511	634	1144
2	30.00	7.69	23.01	22.04	0.00	0.13	2.85	0.85	1.00	0.0	28.63	118.05	0.00	6239	0	534	640	1174
1	10.00	6.66	25.05	23.64	0.00	0.12	2.87	0.85	1.00	0.0	30.97	118.50	0.00	6931	0	503	555	1058
														40009	0			10420

** = Section Force Exceeds Solidity Ratio Criteria

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Equivalent Lateral Force Method

(Based on ASCE7-10 Chapters 11, 12 & 15)

Spectral Response Acceleration for Short Period (S_g):	0.09
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.05
Long-Period Transition Period (T_L - Seconds):	12
Importance Factor (I_a):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	3.00
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.09
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.07
Seismic Response Coefficient (C_s):	0.03
Upper Limit C_s :	0.03
Lower Limit C_s :	0.03
Period based on Rayleigh Method (sec):	1.26
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.38
Total Unfactored Dead Load:	50.44 k
Seismic Base Shear (E):	1.97 k

LoadCase (1.2 + 0.2Sds) * DL + E**Seismic**

Section	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
13	195.00	456	652,614	0.022	44	555
12	180.00	939	1,204,48	0.041	81	1,144
11	161.39	2,312	2,552,21	0.088	172	2,817
10	151.39	370	373,894	0.013	25	451
9	145.00	1,424	1,355,74	0.047	92	1,735
8	130.00	3,382	2,770,87	0.095	187	4,121
7	110.00	3,892	2,532,82	0.087	171	4,742
6	95.00	2,134	1,134,67	0.039	77	2,600
5	85.00	1,924	877,711	0.030	59	2,344
4	70.00	4,872	1,700,70	0.058	115	5,936
3	50.00	5,133	1,126,82	0.039	76	6,254
2	30.00	6,239	677,371	0.023	46	7,601
1	10.00	6,931	165,577	0.006	11	8,445
20 ft Dipole	200.00	34	50,433	0.002	3	41
Large Beacon	200.00	50	74,166	0.003	5	61
LIGHT ROD W/EXT	199.00	65	95,752	0.003	6	79
20 ft Dipole	198.00	34	49,739	0.002	3	41
3 ft Standoff	198.00	40	58,517	0.002	4	49
12"x12"x6" Junction Box	195.50	15	21,563	0.001	1	18
6 ft Sidearm	195.50	210	301,880	0.010	20	256
PD-10017-1 Omni	195.50	75	107,814	0.004	7	91
Fibe Air 1500 HP / RFU-HP	185.00	30	39,966	0.001	3	37
DA6-W57BC	184.00	281	371,566	0.013	25	342
AEHC AirScale MAA 64T64R 192AE B41	180.00	324	415,642	0.014	28	395
FFHH-65C-R3	180.00	383	491,073	0.017	33	466

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Equivalent Lateral Force Method

HICAP Hybrid Breakout Box	180.00	18	22,475	0.001	2	21
PV-SFA12-3-12-126 w/ (2) Stiff Arms	180.00	1,776	2,278,33	0.078	154	2,164
RRH 4T4R B12/71 240W AHLOA	180.00	251	322,430	0.011	22	306
RRH 4T4R B25/66 480W AHFIG	180.00	212	271,322	0.009	18	258
Amplink 1900e-F	164.00	219	247,116	0.008	17	267
ATM192012B-0	164.00	33	37,237	0.001	3	40
DBXLH-8585A-R2M	164.00	186	209,879	0.007	14	227
DC6-48-60-18-8	164.00	66	74,022	0.003	5	80
RRUS 11	164.00	152	171,627	0.006	12	185
RRUS 12	164.00	172	193,969	0.007	13	209
RRUS 32	164.00	159	179,413	0.006	12	194
RRUS A2	164.00	63	71,630	0.002	5	77
SBNHH-1D65C	164.00	298	335,807	0.012	23	363
Sector Frames	164.00	1,500	1,692,57	0.058	114	1,828
BXA-70080/8CF	153.50	276	284,291	0.010	19	336
CBC721-DF-21-DCB	153.50	26	27,193	0.001	2	32
HD Sector Frames	153.50	1,950	2,008,57	0.069	136	2,376
RC3DC-3315-PF-48	153.50	96	98,884	0.003	7	117
RRH 3JR52709AA 2X60	153.50	330	339,913	0.012	23	402
RRH4x30-4T4R-B13	153.50	343	353,509	0.012	24	418
RRH4x30-4T4R-B25	153.50	153	157,596	0.005	11	186
RRUS A2 Modules	153.50	254	261,548	0.009	18	309
6 ft HP Dish	144.00	281	265,046	0.009	18	342
Small Beacon	100.50	30	17,237	0.001	1	37
GPS antenna	15.00	50	2,089	0.000	0	61
		50,443	29,127,337	1.000	1,967	61,457

LoadCase (0.9 - 0.2Sds) * DL + E**Seismic (Reduced DL)**

Section	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
13	195.00	456	652,614	0.022	44	402
12	180.00	939	1,204,48	0.041	81	828
11	161.39	2,312	2,552,21	0.088	172	2,039
10	151.39	370	373,894	0.013	25	326
9	145.00	1,424	1,355,74	0.047	92	1,255
8	130.00	3,382	2,770,87	0.095	187	2,982
7	110.00	3,892	2,532,82	0.087	171	3,432
6	95.00	2,134	1,134,67	0.039	77	1,882
5	85.00	1,924	877,711	0.030	59	1,697
4	70.00	4,872	1,700,70	0.058	115	4,296
3	50.00	5,133	1,126,82	0.039	76	4,525
2	30.00	6,239	677,371	0.023	46	5,500
1	10.00	6,931	165,577	0.006	11	6,111
20 ft Dipole	200.00	34	50,433	0.002	3	30
Large Beacon	200.00	50	74,166	0.003	5	44
LIGHT ROD W/EXT	199.00	65	95,752	0.003	6	57
20 ft Dipole	198.00	34	49,739	0.002	3	30
3 ft Standoff	198.00	40	58,517	0.002	4	35
12"x12"x6" Junction Box	195.50	15	21,563	0.001	1	13
6 ft Sidearm	195.50	210	301,880	0.010	20	185
PD-10017-1 Om ni	195.50	75	107,814	0.004	7	66
FibeAir 1500 HP / RFU-HP	185.00	30	39,966	0.001	3	26
DA6-W57BC	184.00	281	371,566	0.013	25	248

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Equivalent Lateral Force Method

AEHC AirScale MAA 64T64R 192AE B41	180.00	324	415,642	0.014	28	286
FFHH-65C-R3	180.00	383	491,073	0.017	33	337
HICAP Hybrid Breakout Box	180.00	18	22,475	0.001	2	15
PV-SFA12-3-12-126 w/ (2) Stiff Arms	180.00	1,776	2,278,33	0.078	154	1,566
RRH 4T4R B12/71 240W AHLOA	180.00	251	322,430	0.011	22	222
RRH 4T4R B25/66 480W AHFIG	180.00	212	271,322	0.009	18	186
Amplink 1900e-F	164.00	219	247,116	0.008	17	193
ATM192012B-0	164.00	33	37,237	0.001	3	29
DBXLH-8585A-R2M	164.00	186	209,879	0.007	14	164
DC6-48-60-18-8	164.00	66	74,022	0.003	5	58
RRUS 11	164.00	152	171,627	0.006	12	134
RRUS 12	164.00	172	193,969	0.007	13	152
RRUS 32	164.00	159	179,413	0.006	12	140
RRUS A2	164.00	63	71,630	0.002	5	56
SBNHH-1D65C	164.00	298	335,807	0.012	23	262
Sector Frames	164.00	1,500	1,692,57	0.058	114	1,322
BXA-70080/8CF	153.50	276	284,291	0.010	19	243
CBC721-DF-21-DCB	153.50	26	27,193	0.001	2	23
HD Sector Frames	153.50	1,950	2,008,57	0.069	136	1,719
RC3DC-3315-PF-48	153.50	96	98,884	0.003	7	85
RRH 3JR52709AA 2X60	153.50	330	339,913	0.012	23	291
RRH4x30-4T4R-B13	153.50	343	353,509	0.012	24	303
RRH4x30-4T4R-B25	153.50	153	157,596	0.005	11	135
RRUS A2 Modules	153.50	254	261,548	0.009	18	224
6 ft HP Dish	144.00	281	265,046	0.009	18	248
Small Beacon	100.50	30	17,237	0.001	1	26
GPS antenna	15.00	50	2,089	0.000	0	44
		50,443	29,127,337	1.000	1,967	44,473

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Equivalent Modal Analysis Method

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_g):	0.09
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.05
Importance Factor (I_a):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	3.00
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.09
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.07
Period Based on Rayleigh Method (sec):	1.26
Redundancy Factor (p):	1.30

LoadCase (1.2 + 0.2Sds) * DL + E**Seismic**

Section	Height		Seismic				Horizontal Force (lb)	Vertical Force (lb)
	Above Base (ft)	Weight (lb)	a	b	c	S_{az}		
13	195.00	456	1.797	1.523	0.972	0.176	35	555
12	180.00	939	1.531	0.580	0.580	0.111	45	1,144
11	161.39	2,312	1.231	0.036	0.278	0.060	60	2,817
10	151.39	370	1.083	-0.079	0.177	0.044	7	451
9	145.00	1,424	0.993	-0.111	0.128	0.037	23	1,735
8	130.00	3,382	0.799	-0.112	0.053	0.029	42	4,121
7	110.00	3,892	0.572	-0.043	0.012	0.027	46	4,742
6	95.00	2,134	0.426	0.010	0.006	0.026	24	2,600
5	85.00	1,924	0.341	0.035	0.009	0.025	21	2,344
4	70.00	4,872	0.232	0.058	0.019	0.021	45	5,936
3	50.00	5,133	0.118	0.070	0.035	0.016	36	6,254
2	30.00	6,239	0.043	0.070	0.042	0.012	32	7,601
1	10.00	6,931	0.005	0.044	0.025	0.006	19	8,445
20 ft Dipole	200.00	34	1.890	1.980	1.140	0.203	3	41
Large Beacon	200.00	50	1.890	1.980	1.140	0.203	4	61
LIGHT ROD W/EXT	199.00	65	1.871	1.882	1.105	0.197	6	79
20 ft Dipole	198.00	34	1.852	1.787	1.070	0.192	3	41
3 ft Standoff	198.00	40	1.852	1.787	1.070	0.192	3	49
12"x12"x6" Junction Box	195.50	15	1.806	1.565	0.987	0.179	1	18
6 ft Sidearm	195.50	210	1.806	1.565	0.987	0.179	16	256
PD-10017-1 Omni	195.50	75	1.806	1.565	0.987	0.179	6	91
FibeAir 1500 HP / RFU-HP	185.00	30	1.617	0.832	0.694	0.130	2	37
DA6-W57BC	184.00	281	1.600	0.778	0.670	0.126	15	342
AEHC AirScale MAA 64T64R	180.00	324	1.531	0.580	0.580	0.111	16	395
FFHH-65C-R3	180.00	383	1.531	0.580	0.580	0.111	18	466
HICAP Hybrid Breakout Box	180.00	18	1.531	0.580	0.580	0.111	1	21
PV-SFA12-3-12-126 w/ (2) Stiff	180.00	1,776	1.531	0.580	0.580	0.111	86	2,164
RRH 4T4R B12/71 240W AHLOA	180.00	251	1.531	0.580	0.580	0.111	12	306
RRH 4T4R B25/66 480W AHFIG	180.00	212	1.531	0.580	0.580	0.111	10	258
Amplink 1900e-F	164.00	219	1.271	0.082	0.311	0.065	6	267
ATM192012B-0	164.00	33	1.271	0.082	0.311	0.065	1	40
DBXLH-8585A-R2M	164.00	186	1.271	0.082	0.311	0.065	5	227
DC6-48-60-18-8	164.00	66	1.271	0.082	0.311	0.065	2	80
RRUS 11	164.00	152	1.271	0.082	0.311	0.065	4	185
RRUS 12	164.00	172	1.271	0.082	0.311	0.065	5	209
RRUS 32	164.00	159	1.271	0.082	0.311	0.065	4	194
RRUS A2	164.00	63	1.271	0.082	0.311	0.065	2	77
SBNHH-1D65C	164.00	298	1.271	0.082	0.311	0.065	8	363
Sector Frames	164.00	1,500	1.271	0.082	0.311	0.065	42	1,828
BXA-70080/8CF	153.50	276	1.113	-0.062	0.195	0.046	6	336

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Equivalent Modal Analysis Method

CBC721-DF-21-DCB	153.50	26	1.113	-0.062	0.195	0.046	1	32
HD Sector Frames	153.50	1,950	1.113	-0.062	0.195	0.046	39	2,376
RC3DC-3315-PF-48	153.50	96	1.113	-0.062	0.195	0.046	2	117
RRH 3JR52709AA 2X60	153.50	330	1.113	-0.062	0.195	0.046	7	402
RRH4x30-4T4R-B13	153.50	343	1.113	-0.062	0.195	0.046	7	418
RRH4x30-4T4R-B25	153.50	153	1.113	-0.062	0.195	0.046	3	186
RRUS A2 Modules	153.50	254	1.113	-0.062	0.195	0.046	5	309
6 ft HP Dish	144.00	281	0.980	-0.114	0.122	0.036	4	342
Small Beacon	100.50	30	0.477	-0.008	0.006	0.027	0	37
GPS antenna	15.00	50	0.011	0.056	0.032	0.008	0	61
		50,443	59.428	21.543	20.498	4.128	791	61,457

LoadCase (0.9 - 0.2Sds) * DL + E

Seismic (Reduced DL)

Section	Height Above Base (ft)	Weight (lb)	a	b	c	S _{az}	Horizontal Force (lb)	Vertical Force (lb)
13	195.00	456	1.797	1.523	0.972	0.176	35	402
12	180.00	939	1.531	0.580	0.580	0.111	45	828
11	161.39	2,312	1.231	0.036	0.278	0.060	60	2,039
10	151.39	370	1.083	-0.079	0.177	0.044	7	326
9	145.00	1,424	0.993	-0.111	0.128	0.037	23	1,255
8	130.00	3,382	0.799	-0.112	0.053	0.029	42	2,982
7	110.00	3,892	0.572	-0.043	0.012	0.027	46	3,432
6	95.00	2,134	0.426	0.010	0.006	0.026	24	1,882
5	85.00	1,924	0.341	0.035	0.009	0.025	21	1,697
4	70.00	4,872	0.232	0.058	0.019	0.021	45	4,296
3	50.00	5,133	0.118	0.070	0.035	0.016	36	4,525
2	30.00	6,239	0.043	0.070	0.042	0.012	32	5,500
1	10.00	6,931	0.005	0.044	0.025	0.006	19	6,111
20 ft Dipole	200.00	34	1.890	1.980	1.140	0.203	3	30
Large Beacon	200.00	50	1.890	1.980	1.140	0.203	4	44
LIGHT ROD W/EXT	199.00	65	1.871	1.882	1.105	0.197	6	57
20 ft Dipole	198.00	34	1.852	1.787	1.070	0.192	3	30
3 ft Standoff	198.00	40	1.852	1.787	1.070	0.192	3	35
12"x12"x6" Junction Box	195.50	15	1.806	1.565	0.987	0.179	1	13
6 ft Sidearm	195.50	210	1.806	1.565	0.987	0.179	16	185
PD-10017-1 Omni	195.50	75	1.806	1.565	0.987	0.179	6	66
FibeAir 1500 HP / RFU-HP	185.00	30	1.617	0.832	0.694	0.130	2	26
DA6-W57BC	184.00	281	1.600	0.778	0.670	0.126	15	248
AEHC AirScale MAA 64T64R	180.00	324	1.531	0.580	0.580	0.111	16	286
FFHH-65C-R3	180.00	383	1.531	0.580	0.580	0.111	18	337
HICAP Hybrid Breakout Box	180.00	18	1.531	0.580	0.580	0.111	1	15
PV-SFA12-3-12-126 w/ (2) Stiff	180.00	1,776	1.531	0.580	0.580	0.111	86	1,566
RRH 4T4R B12/71 240W AHLOA	180.00	251	1.531	0.580	0.580	0.111	12	222
RRH 4T4R B25/66 480W AHFIG	180.00	212	1.531	0.580	0.580	0.111	10	186
Amplink 1900e-F	164.00	219	1.271	0.082	0.311	0.065	6	193
ATM192012B-0	164.00	33	1.271	0.082	0.311	0.065	1	29
DBXLH-8585A-R2M	164.00	186	1.271	0.082	0.311	0.065	5	164
DC6-48-60-18-8	164.00	66	1.271	0.082	0.311	0.065	2	58
RRUS 11	164.00	152	1.271	0.082	0.311	0.065	4	134
RRUS 12	164.00	172	1.271	0.082	0.311	0.065	5	152
RRUS 32	164.00	159	1.271	0.082	0.311	0.065	4	140
RRUS A2	164.00	63	1.271	0.082	0.311	0.065	2	56
SBNHH-1D65C	164.00	298	1.271	0.082	0.311	0.065	8	262
Sector Frames	164.00	1,500	1.271	0.082	0.311	0.065	42	1,322
BXA-70080/8CF	153.50	276	1.113	-0.062	0.195	0.046	6	243
CBC721-DF-21-DCB	153.50	26	1.113	-0.062	0.195	0.046	1	23
HD Sector Frames	153.50	1,950	1.113	-0.062	0.195	0.046	39	1,719
RC3DC-3315-PF-48	153.50	96	1.113	-0.062	0.195	0.046	2	85
RRH 3JR52709AA 2X60	153.50	330	1.113	-0.062	0.195	0.046	7	291
RRH4x30-4T4R-B13	153.50	343	1.113	-0.062	0.195	0.046	7	303
RRH4x30-4T4R-B25	153.50	153	1.113	-0.062	0.195	0.046	3	135
RRUS A2 Modules	153.50	254	1.113	-0.062	0.195	0.046	5	224

Site Number: Waukesha Sheriffs

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Equivalent Modal Analysis Method

6 ft HP Dish	144.00	281	0.980	-0.114	0.122	0.036	4	248
Small Beacon	100.50	30	0.477	-0.008	0.006	0.027	0	26
GPS antenna	15.00	50	0.011	0.056	0.032	0.008	0	44
		50,443	59.428	21.543	20.498	4.128	791	44,473

Site Number: Waukesha Sheriffs

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Force/Stress Summary

Section: 1 U20-2.25" MOD Bot Elev (ft): 0.00 Height (ft): 20.000															
		Pu	Len	Bracing %			Fy	Phic	Pn	Num	Shear		Bear	Use	
Max Compression Member		(kip)	(ft)	X	Y	Z	(ksi)	(kip)	Bolts	Holes	(kip)	(kip)	%	Controls	
LEG	12B - 12"BD 2.25"	-393.58	10.02	100	100	100	0.0	0.0	696.30	0	0	0.00	0.00	56	User Input
HORIZ		0.00	0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3.5X3.5X0.3125	-9.34	21.91	48	48	48	183.0	36.0	14.11	1	1	49.70	43.50	66	Member Z
Max Tension Member		Pu	Fy	Fu	Phit	Pn	Num	Num	Shear	Bear	Use				
		(kip)	(ksi)	(ksi)	(kip)	Bolts	Holes	(kip)	(kip)	%	Controls				
LEG	12B - 12"BD 2.25"	344.99	50	65	536.80	0	0	0.00	0.00	64	User Input				
HORIZ		0.00	0	0	0.00	0	0	0.00	0.00	0					
DIAG	SAE - 3.5X3.5X0.3125	8.78	36	58	54.17	1	1	49.70	37.52	23	Bolt Bear				
Max Splice Forces		Pu	phiRnt	Use	Num										
		(kip)	(kip)	%	Bolts	Bolt Type									
Top Tension		328.78	0.00	0	0										
Top Compression		371.20	0.00	0											
Bot Tension		357.17	0.00	0											
Bot Compression		402.81	0.00	0											

Section: 2 U18-12B-2" MOD Bot Elev (ft): 20.00 Height (ft): 20.000															
		Pu	Len	Bracing %			Fy	Phic	Pn	Num	Shear		Bear	Use	
Max Compression Member		(kip)	(ft)	X	Y	Z	(ksi)	(kip)	Bolts	Holes	(kip)	(kip)	%	Controls	
LEG	12B - 12"BD 2"	-362.43	10.02	100	100	100	0.0	0.0	583.57	0	0	0.00	0.00	62	User Input
HORIZ		0.00	0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3.5X3.5X0.3125	-9.33	20.15	48	48	48	168.3	36.0	16.67	1	1	49.70	43.50	55	Member Z
Max Tension Member		Pu	Fy	Fu	Phit	Pn	Num	Num	Shear	Bear	Use				
		(kip)	(ksi)	(ksi)	(kip)	Bolts	Holes	(kip)	(kip)	%	Controls				
LEG	12B - 12"BD 2"	322.41	50	65	424.10	0	0	0.00	0.00	76	User Input				
HORIZ		0.00	0	0	0.00	0	0	0.00	0.00	0					
DIAG	SAE - 3.5X3.5X0.3125	8.81	36	58	54.17	1	1	49.70	37.52	23	Bolt Bear				
Max Splice Forces		Pu	phiRnt	Use	Num										
		(kip)	(kip)	%	Bolts	Bolt Type									
Top Tension		299.52	0.00	0	0										
Top Compression		336.67	0.00	0											
Bot Tension		328.78	523.32	63	6	1 1/4 A325									
Bot Compression		371.20	0.00	0											

Site Number: Waukesha Sheriffs

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Site Name: Nashotah, WI

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Customer: KGI

Force/Stress Summary

Section: 3		U16-2"		Bot Elev (ft): 40.00				Height (ft): 20.000							
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	12B - 12"BD 2"	-327.34	1.2D + 1.6W	10.02	100	100	100	0.0	0.0	399.90	0	0	0.00	0.00	81 User Input
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 3X3X0.3125	-8.79	1.2D + 1.6W 90	18.44	48	48	48	180.4	36.0	12.35	1	1	49.70	43.50	71 Member Z

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	12B - 12"BD 2"	293.12	0.9D + 1.6W 60	50	65	424.10	0	0	0.00	0.00	69	User Input
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3X3X0.3125	8.32	1.2D + 1.6W 90	36	58	44.05	1	1	49.70	37.52	22	Bolt Bear

Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension		269.23	0.9D + 1.6W 60	0.00	0	0	
Top Compression		301.01	1.2D + 1.6W	0.00	0		
Bot Tension		299.52	0.9D + 1.6W 60	523.32	57	6	1 1/4 A325
Bot Compression		336.67	1.2D + 1.6W	0.00	0		

Section: 4		U14 MOD		Bot Elev (ft): 60.00				Height (ft): 20.000							
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	12B - 12"BD 1.75"	-291.19	1.2D + 1.6W	10.02	100	100	100	0.0	0.0	415.87	0	0	0.00	0.00	70 User Input
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 3X3X0.3125	-8.59	1.2D + 1.6W 90	16.80	48	48	48	164.3	36.0	14.89	1	1	31.81	34.80	57 Member Z

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	12B - 12"BD 1.75"	259.86	1.2D + 1.6W 60	50	65	324.70	0	0	0.00	0.00	80	User Input
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3X3X0.3125	8.05	1.2D + 1.6W 90	36	58	46.60	1	1	31.81	29.91	26	Bolt Bear

Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension		236.28	0.9D + 1.6W 60	0.00	0	0	
Top Compression		263.26	1.2D + 1.6W	0.00	0		
Bot Tension		269.23	0.9D + 1.6W 60	327.24	82	6	1 A325
Bot Compression		301.01	1.2D + 1.6W	0.00	0		

Site Number: Waukesha Sheriffs

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Site Name: Nashotah, WI

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Customer: KGI

Force/Stress Summary

Section: 5		U12-1.75"		Bot Elev (ft): 80.00				Height (ft): 10.000				Shear		Bear		Use	
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn (Bolts)	Num (Holes)	phiRnv (kip)	phiRn (kip)	Use %	Controls		
LEG	12B - 12"BD 1.75"	-252.92	1.2D + 1.6W	10.02	100	100	100	0.0	0.0	300.70	0	0	0.00	0.00	84	User Input	
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0		
DIAG	SAE - 3X3X0.1875	-8.26	1.2D + 1.6W 90	15.24	48	48	48	147.3	36.0	11.35	1	1	31.81	20.88	72	Member Z	
Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn (Bolts)	Num (Holes)	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls					
LEG	12B - 12"BD 1.75"	228.51	0.9D + 1.6W 60	50	65	324.70	0	0	0.00	0.00	70	User Input					
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0						
DIAG	SAE - 3X3X0.1875	7.74	1.2D + 1.6W 90	36	58	28.68	1	1	31.81	17.94	43	Bolt Bear					
Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type										
Top Tension		219.28	0.9D + 1.6W 60	0.00	0	0											
Top Compression		243.94	1.2D + 1.6W	0.00	0												
Bot Tension		236.28	0.9D + 1.6W 60	327.24	72	6	1 A325										
Bot Compression		263.26	1.2D + 1.6W	0.00	0												

Section: 6		U12-1.75"		Bot Elev (ft): 90.00				Height (ft): 10.000				Shear		Bear		Use	
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn (Bolts)	Num (Holes)	phiRnv (kip)	phiRn (kip)	Use %	Controls		
LEG	12B - 12"BD 1.75"	-233.84	1.2D + 1.6W	10.02	50	50	50	0.0	0.0	300.70	0	0	0.00	0.00	77	User Input	
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0		
DIAG	SAE - 3X3X0.1875	-8.26	1.2D + 1.6W 90	14.50	48	48	48	140.2	36.0	12.53	1	1	31.81	20.88	65	Member Z	
Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn (Bolts)	Num (Holes)	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls					
LEG	12B - 12"BD 1.75"	211.27	0.9D + 1.6W 60	50	65	324.70	0	0	0.00	0.00	65	User Input					
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0						
DIAG	SAE - 3X3X0.1875	7.82	1.2D + 1.6W 90	36	58	28.68	1	1	31.81	17.94	43	Bolt Bear					
Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type										
Top Tension		201.10	0.9D + 1.6W 60	0.00	0	0											
Top Compression		223.81	1.2D + 1.6W	0.00	0												
Bot Tension		219.28	0.9D + 1.6W 60	0.00	0												
Bot Compression		243.94	1.2D + 1.6W	0.00	0												

Site Number: Waukesha Sheriffs

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Site Name: Nashotah, WI

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Customer: KGI

Force/Stress Summary

Section: 7		U10 MOD		Bot Elev (ft): 100.0				Height (ft): 20.000				Shear		Bear		Use	
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn (Bolts)	Num (Holes)	Num (kip)	phiRnv (kip)	phiRn (kip)	Use (%)	Controls	
LEG	12B - 12"BD 1.5"	-212.13	1.2D + 1.6W	10.02	100	100	100	0.0	0.0	333.54	0	0	0.00	0.00	63	User Input	
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0		
DIAG	SAE - 3X3X0.1875	-8.44	1.2D + 1.6W 90	13.79	48	48	48	133.3	36.0	13.85	1	1	31.81	20.88	60	Member Z	
Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn (Bolts)	Num (Holes)	Num (kip)	phiRnv (kip)	Bear phiRn (kip)	Use (%)	Controls				
LEG	12B - 12"BD 1.5"	191.97	0.9D + 1.6W 60	50	65	238.60	0	0	0.00	0.00	80		User Input				
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0						
DIAG	SAE - 3X3X0.1875	7.99	1.2D + 1.6W 90	36	58	28.68	1	1	31.81	17.94	44		Bolt Bear				
Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use (%)	Num (Bolts)	Bolt Type										
Top Tension		161.62	0.9D + 1.6W 60	0.00	0	0											
Top Compression		180.51	1.2D + 1.6W	0.00	0												
Bot Tension		201.10	0.9D + 1.6W 60	327.24	61	6	1 A325										
Bot Compression		223.81	1.2D + 1.6W	0.00	0												

Section: 8		U08-12B-MOD		Bot Elev (ft): 120.0				Height (ft): 20.000				Shear		Bear		Use	
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn (Bolts)	Num (Holes)	Num (kip)	phiRnv (kip)	phiRn (kip)	Use (%)	Controls	
LEG	12B - 12"BD 1.25"	-166.81	1.2D + 1.6W	10.02	100	100	100	0.0	0.0	263.88	0	0	0.00	0.00	63	User Input	
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0		
DIAG	SAE - 2.5X2.5X0.1875	-9.30	1.2D + 1.6W 90	12.50	48	48	48	145.5	36.0	9.63	1	1	31.81	20.88	96	Member Z	
Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn (Bolts)	Num (Holes)	Num (kip)	phiRnv (kip)	Bear phiRn (kip)	Use (%)	Controls				
LEG	12B - 12"BD 1.25"	149.77	1.2D + 1.6W 60	50	65	165.70	0	0	0.00	0.00	90		User Input				
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0						
DIAG	SAE - 2.5X2.5X0.1875	9.83	1.2D + 1.6W 90	36	58	22.55	1	1	31.81	17.94	54		Bolt Bear				
Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use (%)	Num (Bolts)	Bolt Type										
Top Tension		112.90	0.9D + 1.6W 60	0.00	0	0											
Top Compression		128.55	1.2D + 1.6W	0.00	0												
Bot Tension		161.62	0.9D + 1.6W 60	327.24	49	6	1 A325										
Bot Compression		180.51	1.2D + 1.6W	0.00	0												

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Force/Stress Summary

Section: 9		U06-1.25"		Bot Elev (ft): 140.0				Height (ft): 10.000							
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	12B - 12"BD 1.25"	-108.31	1.2D + 1.6W	10.02	100	100	100	0.0	0.0	142.50	0	0	0.00	0.00	76 User Input
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 2.5X2.5X0.1875	-11.88	1.2D + 1.6W	11.41	48	48	48	132.8	36.0	11.54	1	1	31.81	20.88	102 Member Z

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	PhiT (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	12B - 12"BD 1.25"	94.91	1.2D + 1.6W 60	50	65	165.70	0	0	0.00	0.00	57	User Input
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 2.5X2.5X0.1875	10.54	1.2D + 1.6W 60	36	58	22.55	1	1	31.81	17.94	58	Bolt Bear

Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension		83.86	0.9D + 1.6W 60	0.00	0	0	
Top Compression		98.68	1.2D + 1.6W	0.00	0		
Bot Tension		112.90	0.9D + 1.6W 60	327.24	35	6	1 A325
Bot Compression		128.55	1.2D + 1.6W	0.00	0		

Section: 10		H-5.0		Bot Elev (ft): 150.0				Height (ft): 2.787							
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	SOL - 2" SOLID	-92.88	1.2D + 1.6W	2.04	100	100	100	48.9	50.0	118.70	0	0	0.00	0.00	78 Member X
HORIZ	SOL - 7/8" SOLID	-1.68	1.2D + 1.6W	4.981	100	100	100	218.6	50.0	2.84	0	0	0.00	0.00	59 Member X
DIAG	MOD - 7/8"SR+L1.5x1/	-7.42	1.2D + 1.6W 90	5.358	50	50	50	120.0	36.0	9.11	0	0	0.00	0.00	81 Member Z

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	PhiT (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	SOL - 2" SOLID	83.79	1.2D + 1.6W 60	50	65	141.37	0	0	0.00	0.00	59	Member
HORIZ	SOL - 7/8" SOLID	1.72	1.2D + 1.6W 60	50	65	27.06	0	0	0.00	0.00	6	Member
DIAG	MOD - 7/8"SR+L1.5x1/	7.45	1.2D + 1.6W 90	36	58	19.44	0	0	0.00	0.00	38	Member

Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension		74.48	0.9D + 1.6W 60	0.00	0	0	
Top Compression		88.01	1.2D + 1.6W	0.00	0		
Bot Tension		83.86	0.9D + 1.6W 60	0.00	0		
Bot Compression		98.68	1.2D + 1.6W	0.00	0		

Site Number: Waukesha Sheriffs

Code: ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Force/Stress Summary

Section: 11		H-5.0		Bot Elev (ft): 152.7				Height (ft): 17.213							
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	SOL - 2" SOLID	-82.92	1.2D + 1.6W	2.34	100	100	100	56.2	50.0	112.25	0	0	0.00	0.00	73 Member X
HORIZ	SOL - 7/8" SOLID	-2.44	1.2D + 1.6W 60	4.521	100	100	100	198.4	50.0	3.45	0	0	0.00	0.00	70 Member X
DIAG	MOD - 7/8"SR+L1.5x1/	-4.90	1.2D + 1.6W 90	5.378	50	50	50	120.4	36.0	9.06	0	0	0.00	0.00	54 Member Z

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	SOL - 2" SOLID	71.36	1.2D + 1.6W 60	50	65	141.37	0	0	0.00	0.00	50	Member
HORIZ	SOL - 7/8" SOLID	2.61	1.2D + 1.6W	50	65	27.06	0	0	0.00	0.00	9	Member
DIAG	MOD - 7/8"SR+L1.5x1/	4.73	1.2D + 1.6W 90	36	58	19.44	0	0	0.00	0.00	24	Member

Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension		29.01	0.9D + 1.6W 60	0.00	0	0	
Top Compression		36.26	1.2D + 1.6W	0.00	0		
Bot Tension		74.48	0.9D + 1.6W 60	0.00	0		
Bot Compression		88.01	1.2D + 1.6W	0.00	0		

Section: 12		H4.5-3/4"D		Bot Elev (ft): 170.0				Height (ft): 20.000							
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	SOL - 1 1/2" SOLID	-33.23	1.2D + 1.6W	2.30	100	100	100	73.5	50.0	53.58	0	0	0.00	0.00	62 Member X
HORIZ	SOL - 7/8" SOLID	-1.97	1.2D + 1.6W	4.481	100	100	100	196.6	50.0	3.51	0	0	0.00	0.00	55 Member X
DIAG	SOL - 3/4" SOLID	-3.33	1.2D + 1.6W	5.010	50	50	50	144.3	50.0	4.80	0	0	0.00	0.00	69 Member X

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	SOL - 1 1/2" SOLID	28.80	1.2D + 1.6W 60	50	65	79.52	0	0	0.00	0.00	36	Member
HORIZ	SOL - 7/8" SOLID	1.69	1.2D + 1.6W 60	50	65	27.06	0	0	0.00	0.00	6	Member
DIAG	SOL - 3/4" SOLID	3.42	1.2D + 1.6W 90	50	65	19.88	0	0	0.00	0.00	17	Member

Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension		3.31	0.9D + 1.6W	0.00	0	0	
Top Compression		7.51	1.2D + 1.6W	0.00	0		
Bot Tension		29.01	0.9D + 1.6W 60	0.00	0		
Bot Compression		36.26	1.2D + 1.6W	0.00	0		

Site Number: Waukesha Sheriffs

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Force/Stress Summary

Section: 13		V4.0-10FT		Bot Elev (ft): 190.0		Height (ft): 10.000									
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing % X Y Z			Fy (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	SOL - 1 1/2" SOLID	-6.66	1.2D + 1.6W	2.35	100	100	100	75.3	50.0	52.51	0	0	0.00	0.00	12 Member X
HORIZ	SOL - 7/8" SOLID	-3.17	1.2D + 1.6W	4.000	100	100	100	175.5	50.0	4.41	0	0	0.00	0.00	71 Member X
DIAG	SOL - 3/4" SOLID	-1.32	1.2D + 1.6W 60	4.641	50	50	50	133.7	50.0	5.59	0	0	0.00	0.00	23 Member X
Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls			
LEG	SOL - 1 1/2" SOLID	3.27	1.2D + 1.6W	50	65	79.52	0	0	0.00	0.00	4	Member			
HORIZ	SOL - 7/8" SOLID	3.37	1.2D + 1.6W 60	50	65	27.06	0	0	0.00	0.00	12	Member			
DIAG	SOL - 3/4" SOLID	1.70	1.2D + 1.6W	50	65	19.88	0	0	0.00	0.00	8	Member			
Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type								
Top Tension		0.03	0.9D + 1.6W	0.00	0	0									
Top Compression		0.34	1.2D + 1.0Di +	0.00	0										
Bot Tension		3.31	0.9D + 1.6W	0.00	0										
Bot Compression		7.51	1.2D + 1.6W	0.00	0										

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Support Forces Summary

Load Case	Node	FX (kip)	FY (kip)	FZ (kip)	(-) = Uplift (+) = Down
(0.9 - 0.2Sds) * DL + E 60 deg M1	1b	-0.14	-1.59	-0.08	
	1a	-1.53	22.00	0.90	
	1	0.02	22.00	-1.78	
(0.9 - 0.2Sds) * DL + E 60 deg M2	1b	0.56	8.23	0.32	
	1a	-1.19	17.10	0.69	
	1	0.01	17.10	-1.37	
(0.9 - 0.2Sds) * DL + E 90 deg M1	1b	0.01	0.52	0.00	
	1a	-1.94	27.76	1.13	
	1	0.02	14.14	-1.13	
(0.9 - 0.2Sds) * DL + E 90 deg M2	1b	0.61	8.86	0.34	
	1a	-1.35	19.42	0.78	
	1	0.01	14.14	-1.13	
(0.9 - 0.2Sds) * DL + E Normal M1	1b	0.41	6.28	0.26	
	1a	-0.41	6.28	0.26	
	1	0.00	29.87	-2.42	
(0.9 - 0.2Sds) * DL + E Normal M2	1b	0.76	11.09	0.45	
	1a	-0.76	11.09	0.45	
	1	0.00	20.24	-1.63	
(1.2 + 0.2Sds) * DL + E 60 deg M1	1b	0.23	3.77	0.13	
	1a	-1.90	27.42	1.12	
	1	0.02	27.42	-2.21	
(1.2 + 0.2Sds) * DL + E 60 deg M2	1b	0.93	13.62	0.54	
	1a	-1.56	22.50	0.91	
	1	0.01	22.50	-1.80	
(1.2 + 0.2Sds) * DL + E 90 deg M1	1b	0.39	5.89	0.21	
	1a	-2.32	33.19	1.35	
	1	0.02	19.54	-1.56	
(1.2 + 0.2Sds) * DL + E 90 deg M2	1b	0.98	14.25	0.56	
	1a	-1.72	24.83	1.00	
	1	0.01	19.54	-1.56	
(1.2 + 0.2Sds) * DL + E Normal M1	1b	0.78	11.66	0.47	
	1a	-0.78	11.66	0.47	
	1	0.00	35.31	-2.85	
(1.2 + 0.2Sds) * DL + E Normal M2	1b	1.13	16.49	0.66	
	1a	-1.13	16.49	0.66	
	1	0.00	25.65	-2.06	
0.9D + 1.6W 60 deg	1b	-30.07	-355.09	-17.23	
	1a	-17.17	199.88	8.05	
	1	-1.42	200.61	-18.92	
0.9D + 1.6W 90 deg	1b	-26.61	-307.47	-14.17	
	1a	-28.31	337.75	15.29	
	1	-1.83	15.12	-1.12	
0.9D + 1.6W Normal	1b	-14.24	-175.50	-10.13	
	1a	14.12	-175.44	-10.36	

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	1	0.12	396.34	-37.93
1.0D + 1.0W Service 60 deg	1b	-6.98	-80.31	-4.00
	1a	-5.35	65.31	2.60
	1	-0.37	65.44	-5.93
1.0D + 1.0W Service 90 deg	1b	-6.07	-67.81	-3.21
	1a	-8.27	101.47	4.49
	1	-0.46	16.79	-1.28
1.0D + 1.0W Service Normal	1b	-2.87	-33.19	-2.13
	1a	2.84	-33.13	-2.18
	1	0.03	116.76	-10.92
1.2D + 1.0Di + 1.0Wi 60 deg	1b	-8.47	-37.69	-4.88
	1a	-2.71	92.91	1.11
	1	-0.37	92.83	-2.90
1.2D + 1.0Di + 1.0Wi 90 deg	1b	-7.61	-26.14	-4.13
	1a	-5.32	124.96	2.81
	1	-0.44	49.23	1.32
1.2D + 1.0Di + 1.0Wi Normal	1b	-4.66	5.30	-3.13
	1a	4.64	5.56	-3.16
	1	0.02	137.20	-7.23
1.2D + 1.6W 60 deg	1b	-29.76	-350.88	-17.05
	1a	-17.50	205.35	8.26
	1	-1.40	206.07	-19.31
1.2D + 1.6W 90 deg	1b	-26.29	-303.15	-13.99
	1a	-28.65	343.53	15.49
	1	-1.81	20.16	-1.50
1.2D + 1.6W Normal	1b	-13.93	-170.88	-9.93
	1a	13.81	-170.81	-10.16
	1	0.12	402.22	-38.33

Max Uplift: 355.09 (kip)
 Max Down: 402.22 (kip)
 Max Shear: 38.33 (kip)

Moment: 6,617.22 (kip-ft) 1.2D + 1.6W Normal
 Total Down: 60.53 (kip)
 Total Shear: 58.42 (kip)

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Site Name: Nashotah, WI

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Deflections and Rotations

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
40 mph 60 degree with 0.75 in Radial Ice	10.00	0.0044	0.0000	0.0263
	100.00	0.1474	0.0072	0.1830
	140.00	0.3236	0.0123	0.3377
	152.79	0.4068	0.0244	0.3793
	164.49	0.4909	0.0693	0.4432
	179.93	0.6200	0.2095	0.4690
	184.53	0.6574	0.2646	0.4799
	194.92	0.7451	0.3818	0.4402
	197.27	0.7646	0.3150	0.4072
	199.63	0.7845	0.1180	0.4606
40 mph 90 degree with 0.75 in Radial Ice	200.00	0.7868	0.4082	0.4886
	10.00	0.0041	0.0003	0.0251
	100.00	0.1472	0.0038	0.1839
	140.00	0.3258	0.0048	0.3311
	152.79	0.4069	0.0081	0.3795
	164.49	0.4909	0.0136	0.4396
	179.93	0.6198	0.0301	0.4633
	184.53	0.6569	0.0367	0.4731
	194.92	0.7444	-0.0407	0.3480
	197.27	0.7635	-0.0671	0.2937
40 mph Normal with 0.75 in Radial Ice	199.63	0.7807	0.0521	0.1952
	200.00	0.7851	0.0520	0.4058
	10.00	0.0035	-0.0006	0.0219
	100.00	0.1479	0.0060	0.1851
	140.00	0.3240	0.0094	0.3425
	152.79	0.4090	0.0128	0.3788
	164.49	0.4941	0.0237	0.4468
	179.93	0.6254	0.0566	0.4756
	184.53	0.6637	0.0697	0.4901
	194.92	0.7553	0.0931	0.7067
93 mph 60 deg with No Ice (Reduced DL)	197.27	0.7729	0.0245	0.6143
	199.63	0.7921	-0.0315	0.6699
	200.00	0.8015	0.0992	1.0137
	10.00	0.0087	0.0005	0.0760
	100.00	0.6288	0.0419	0.7873
	140.00	1.3856	0.0798	1.4572
	152.79	1.7435	0.2302	1.6088
	164.49	2.1005	0.8295	1.8662
	179.93	2.6376	2.7607	2.0357
	184.53	2.7926	3.5264	2.0924
93 mph 60 degree with No Ice	194.92	3.1519	5.2244	2.0648
	197.27	3.2318	5.4499	1.7812
	199.63	3.3129	1.6156	1.9384
	200.00	3.3235	5.6471	2.0761
	10.00	0.0087	0.0005	0.0759
	100.00	0.6305	0.0420	0.7900
	140.00	1.3905	0.0800	1.4636
	152.79	1.7501	0.2312	1.6166
	164.49	2.1088	0.8335	1.8758
	179.93	2.6488	2.7751	2.0465
184.53	2.8046	3.5451	2.1039	

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	194.92	3.1658	5.2526	2.0769
	197.27	3.2461	5.4769	1.7914
	199.63	3.3276	1.6231	1.9475
	200.00	3.3383	5.6779	2.0867
93 mph 90 deg with No Ice (Reduced DL)	10.00	0.0080	0.0015	0.0740
	100.00	0.6301	0.0167	0.7884
	140.00	1.3939	0.0118	1.4330
	152.79	1.7469	0.0401	1.6160
	164.49	2.1029	0.0806	1.8517
	179.93	2.6396	0.2096	1.9283
	184.53	2.7937	0.2619	1.9562
	194.92	3.1522	-0.2254	1.4830
	197.27	3.2309	-0.2253	1.2637
	199.63	3.3040	0.4053	0.9106
	200.00	3.3203	0.4033	1.7239
93 mph 90 degree with No Ice	10.00	0.0080	0.0015	0.0740
	100.00	0.6319	0.0167	0.7912
	140.00	1.3990	0.0118	1.4393
	152.79	1.7535	0.0402	1.6237
	164.49	2.1113	0.0807	1.8612
	179.93	2.6508	0.2099	1.9380
	184.53	2.8057	0.2623	1.9662
	194.92	3.1660	-0.2253	1.4931
	197.27	3.2452	-0.2252	1.2736
	199.63	3.3187	0.4058	0.9197
	200.00	3.3351	0.4037	1.7341
93 mph Normal to Face with No Ice (Reduced DL)	10.00	0.0063	-0.0023	0.0694
	100.00	0.6440	0.0263	0.8055
	140.00	1.4190	0.0420	1.4900
	152.79	1.7851	0.0610	1.6434
	164.49	2.1509	0.1316	1.9071
	179.93	2.7041	0.3547	2.0057
	184.53	2.8647	0.4449	2.0408
	194.92	3.2431	0.6308	2.8384
	197.27	3.3172	0.1863	2.5181
	199.63	3.3957	0.0234	2.6425
	200.00	3.4341	0.7098	3.9941
93 mph Normal to Face with No Ice	10.00	0.0063	-0.0023	0.0694
	100.00	0.6459	0.0264	0.8083
	140.00	1.4237	0.0421	1.4966
	152.79	1.7915	0.0612	1.6507
	164.49	2.1590	0.1321	1.9165
	179.93	2.7151	0.3561	2.0152
	184.53	2.8766	0.4468	2.0508
	194.92	3.2567	0.6335	2.8485
	197.27	3.3313	0.1886	2.5279
	199.63	3.4102	0.0234	2.6526
	200.00	3.4487	0.7127	4.0045
Seismic (Reduced DL) 60 degree M1	10.00	0.0002	0.0000	0.0025
	100.00	0.0280	0.0010	0.0366
	140.00	0.0647	0.0017	0.0721
	152.79	0.0826	0.0019	0.0826
	164.49	0.1010	0.0018	0.0964
	179.93	0.1288	0.0015	0.0995
	184.53	0.1367	0.0016	0.1010
	194.92	0.1552	0.0015	0.1009
	197.27	0.1593	-0.0013	0.0993

Site Number: Waukesha Sheriffs

Code:

ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

	199.63	0.1634	0.0000	0.1011
	200.00	0.1641	0.0012	0.1014
Seismic (Reduced DL) 60 degree M2	10.00	0.0000	0.0000	0.0007
	100.00	0.0106	0.0004	0.0140
	140.00	0.0251	0.0007	0.0288
	152.79	0.0322	0.0007	0.0345
	164.49	0.0399	0.0007	0.0413
	179.93	0.0521	0.0006	0.0436
	184.53	0.0556	0.0007	0.0446
	194.92	0.0638	0.0007	0.0446
	197.27	0.0656	-0.0006	0.0436
	199.63	0.0674	0.0000	0.0448
	200.00	0.0677	0.0005	0.0449
Seismic (Reduced DL) 90 degree M1	10.00	0.0001	0.0000	0.0024
	100.00	0.0283	0.0006	0.0368
	140.00	0.0654	0.0010	0.0705
	152.79	0.0826	0.0011	0.0827
	164.49	0.1010	0.0010	0.0962
	179.93	0.1288	0.0009	0.0994
	184.53	0.1367	0.0009	0.1009
	194.92	0.1552	0.0009	0.1009
	197.27	0.1593	-0.0015	0.0994
	199.63	0.1634	0.0007	0.1011
	200.00	0.1641	0.0007	0.1014
Seismic (Reduced DL) 90 degree M2	10.00	0.0001	0.0000	0.0007
	100.00	0.0111	0.0002	0.0146
	140.00	0.0264	0.0004	0.0290
	152.79	0.0334	0.0004	0.0358
	164.49	0.0414	0.0004	0.0428
	179.93	0.0541	0.0004	0.0454
	184.53	0.0577	0.0005	0.0465
	194.92	0.0663	0.0005	0.0466
	197.27	0.0682	-0.0009	0.0455
	199.63	0.0701	0.0004	0.0468
	200.00	0.0704	0.0004	0.0471
Seismic (Reduced DL) Normal M1	10.00	0.0001	-0.0001	0.0023
	100.00	0.0284	0.0010	0.0369
	140.00	0.0641	0.0017	0.0729
	152.79	0.0826	0.0019	0.0816
	164.49	0.1009	0.0018	0.0965
	179.93	0.1288	0.0015	0.0992
	184.53	0.1367	0.0016	0.1008
	194.92	0.1552	0.0015	0.1010
	197.27	0.1593	0.0000	0.0992
	199.63	0.1634	-0.0012	0.1010
	200.00	0.1641	0.0012	0.1014
Seismic (Reduced DL) Normal M2	10.00	0.0001	0.0000	0.0008
	100.00	0.0112	0.0004	0.0147
	140.00	0.0254	0.0007	0.0307
	152.79	0.0334	0.0008	0.0357
	164.49	0.0414	0.0008	0.0430
	179.93	0.0541	0.0007	0.0452
	184.53	0.0577	0.0008	0.0464
	194.92	0.0663	0.0009	0.0467
	197.27	0.0682	0.0000	0.0454
	199.63	0.0701	-0.0007	0.0468
	200.00	0.0704	0.0007	0.0471

Site Number: Waukesha Sheriffs

Code:

ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

Seismic 60 degree M1	10.00	0.0001	0.0000	0.0023
	100.00	0.0281	0.0010	0.0367
	140.00	0.0651	0.0017	0.0723
	152.79	0.0829	0.0019	0.0832
	164.49	0.1014	0.0018	0.0969
	179.93	0.1293	0.0015	0.1001
	184.53	0.1373	0.0016	0.1015
	194.92	0.1559	0.0015	0.1013
	197.27	0.1600	-0.0013	0.0998
	199.63	0.1642	0.0000	0.1017
Seismic 60 degree M2	10.00	0.0001	0.0000	0.0005
	100.00	0.0107	0.0004	0.0141
	140.00	0.0253	0.0007	0.0287
	152.79	0.0323	0.0007	0.0349
	164.49	0.0401	0.0007	0.0414
	179.93	0.0523	0.0006	0.0439
	184.53	0.0558	0.0007	0.0448
	194.92	0.0641	0.0007	0.0447
	197.27	0.0659	-0.0006	0.0438
	199.63	0.0677	0.0000	0.0449
Seismic 90 degree M1	10.00	0.0001	0.0000	0.0023
	100.00	0.0284	0.0006	0.0370
	140.00	0.0658	0.0010	0.0706
	152.79	0.0829	0.0011	0.0831
	164.49	0.1014	0.0010	0.0967
	179.93	0.1293	0.0009	0.0999
	184.53	0.1373	0.0009	0.1014
	194.92	0.1559	0.0009	0.1014
	197.27	0.1600	-0.0015	0.0999
	199.63	0.1642	0.0007	0.1016
Seismic 90 degree M2	10.00	0.0001	0.0000	0.0006
	100.00	0.0112	0.0002	0.0147
	140.00	0.0267	0.0004	0.0289
	152.79	0.0335	0.0004	0.0363
	164.49	0.0415	0.0004	0.0431
	179.93	0.0543	0.0004	0.0456
	184.53	0.0579	0.0005	0.0467
	194.92	0.0666	0.0005	0.0468
	197.27	0.0685	-0.0009	0.0457
	199.63	0.0703	0.0004	0.0470
Seismic Normal M1	10.00	0.0001	-0.0001	0.0022
	100.00	0.0285	0.0010	0.0371
	140.00	0.0643	0.0017	0.0734
	152.79	0.0829	0.0019	0.0820
	164.49	0.1013	0.0018	0.0970
	179.93	0.1293	0.0015	0.0997
	184.53	0.1373	0.0016	0.1012
	194.92	0.1559	0.0015	0.1014
	197.27	0.1600	0.0000	0.0997
	199.63	0.1641	-0.0012	0.1015
Seismic Normal M2	10.00	0.0002	0.0000	0.0008
	100.00	0.0113	0.0004	0.0148

Site Number: Waukesha Sheriffs

Code:

ANSI/TIA-222-G

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Site Name: Nashotah, WI

Engineering Number: REV03

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Customer: KGI

	140.00	0.0253	0.0007	0.0310
	152.79	0.0335	0.0008	0.0363
	164.49	0.0415	0.0008	0.0432
	179.93	0.0543	0.0008	0.0454
	184.53	0.0579	0.0009	0.0466
	194.92	0.0666	0.0009	0.0468
	197.27	0.0685	0.0000	0.0456
	199.63	0.0703	-0.0007	0.0470
	200.00	0.0707	0.0007	0.0473
Serviceability - 60 mph Wind 60 degree	10.00	0.0021	0.0000	0.0195
	100.00	0.1648	0.0077	0.2065
	140.00	0.3640	0.0129	0.3818
	152.79	0.4575	0.0250	0.4212
	164.49	0.5510	0.0714	0.4878
	179.93	0.6914	0.2160	0.5090
	184.53	0.7320	0.2729	0.5184
	194.92	0.8265	0.3951	0.4751
	197.27	0.8472	0.3430	0.4439
	199.63	0.8683	0.1111	0.4822
	200.00	0.8711	0.4239	0.5169
Serviceability - 60 mph Wind 90 degree	10.00	0.0020	0.0004	0.0190
	100.00	0.1656	0.0041	0.2073
	140.00	0.3668	0.0050	0.3756
	152.79	0.4586	0.0083	0.4240
	164.49	0.5521	0.0127	0.4853
	179.93	0.6930	0.0258	0.5048
	184.53	0.7334	0.0310	0.5131
	194.92	0.8275	-0.0429	0.3902
	197.27	0.8481	-0.0598	0.3344
	199.63	0.8671	0.0433	0.2386
	200.00	0.8716	0.0431	0.4478
Serviceability - 60 mph Wind Normal	10.00	0.0015	-0.0006	0.0179
	100.00	0.1694	0.0066	0.2117
	140.00	0.3721	0.0100	0.3912
	152.79	0.4684	0.0127	0.4301
	164.49	0.5643	0.0219	0.4996
	179.93	0.7092	0.0492	0.5252
	184.53	0.7514	0.0601	0.5356
	194.92	0.8506	0.0798	0.7427
	197.27	0.8705	0.0189	0.6595
	199.63	0.8907	-0.0270	0.6931
	200.00	0.9007	0.0855	1.0424

CCIplate

Project Information	
BU #	Waukesha Sheriffs
Site Name	Nashotah
Order #	REV03

Tower Information	
Tower Type	Self Support
TIA-222 Rev	G

 Load Z Normalization

Applied Loads		
	Comp.	Uplift
Axial (k)	402.22	355.09
Shear (k)	38.33	30.07

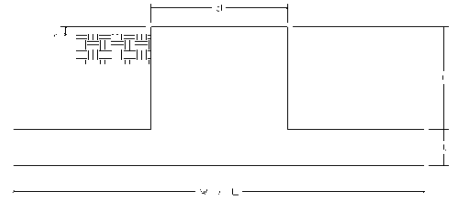
Anchor Rod Data	
Quantity:	6
Diameter (in):	1.25
Material Grade:	A687
Grout Considered:	Yes
l_{ar} (in):	0
Eta Factor, η :	0.55
Thread Type:	N-Included
Configuration:	Symmetrical

Fy=105 ksi Fu=150 ksi
 Grout Considered
 Bending Interaction Not Considered

Anchor Rod Results	
Axial, P_u (kips)	59.18
Shear, V_u (kips)	5.01
Moment, M_u (kip-in)	-
Axial Cap., ϕP_n (kips)	96.90
Shear Cap., ϕV_n (kips)	-
Moment Cap., ϕM_n (kip-in)	-
Stress Rating	70.5%

Pass

Site Name: Nashotah
 Site Number: Waukesha Sheriffs
 Engineering Number: REV03
 Engineer: JHH
 Date: 11/13/20
 Tower Type: SST w/3 Legs



Design Loads (Factored) - Analysis per TIA-222-G Standards

Design / Analysis / Mapping:	Analysis		
Compression/Leg:	402.2 k	Concrete Strength (f'_c):	3000 psi
Uplift/Leg:	355.1 k	Pad Tension Steel Depth:	38.00 in
Total Shear:	58.4 k	ϕ_{Shear} :	0.75
Moment:	6617.2 k-ft	$\phi_{\text{Flexure / Tension}}$:	0.90
Tower + Appurtenance Weight:	60.5 k	$\phi_{\text{Compression}}$:	0.65
Depth to Base of Foundation (l + t - h):	6.00 ft	β :	0.85
Diameter of Pier (d):	3.00 ft	Bottom Pad Rebar Size #:	9
Height of Pier above Ground (h):	0.50	# of Bottom Pad Rebar:	58
Width of Pad (W):	28.00 ft	Pad Bottom Steel Area:	58.00 in ²
Length of Pad (L):	28.00 ft	Pad Steel F_y :	60000 psi
Thickness of Pad (t):	3.50 ft	Top Pad Rebar Size #:	9
Tower Leg Center to Center:	20.00 ft	# of Top Pad Rebar:	58
Number of Tower Legs:	3.0 (1 if MP or GT)	Pad Top Steel Area:	58.00 in ²
Tower Center from Mat Center:	2.89 ft	Pier Rebar Size #:	8
Depth Below Ground Surface to Water Table:	99.00 ft	Pier Steel Area (Single Bar):	0.79 in ²
Unit Weight of Concrete:	150.0 pcf	# of Pier Rebar:	15
Unit Weight of Soil Above Water Table:	115.0 pcf	Pier Steel F_y :	60000 psi
Unit Weight of Water:	62.4 pcf	Pier Cage Diameter:	28.0 in
Unit Weight of Soil Below Water Table:	50.0 pcf	Rebar Strain Limit:	0.008
Friction Angle of Uplift:	15.0 Degrees	Steel Elastic Modulus:	29000 ksi
Ultimate Coefficient of Shear Friction:	0.35	Tie Rebar Size #:	4
Ultimate Compressive Bearing Pressure:	9000.0 psf	Tie Steel Area (Single Bar):	0.20 in ²
Ultimate Passive Pressure on Pad Face:	0.0 psf	Tie Spacing:	8 in
$\phi_{\text{Soil and Concrete Weight}}$:	0.9	Tie Steel F_y :	60000 psi
ϕ_{Soil} :	0.75		

Overturning Moment Usage

Design OTM:	7171.6 k-ft
OTM Resistance:	8973.0 k-ft
Design OTM / OTM Resistance:	0.80 Result: OK

Soil Bearing Pressure Usage

Net Bearing Pressure:	3352 psf
Factored Nominal Bearing Pressure:	6750 psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.50 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

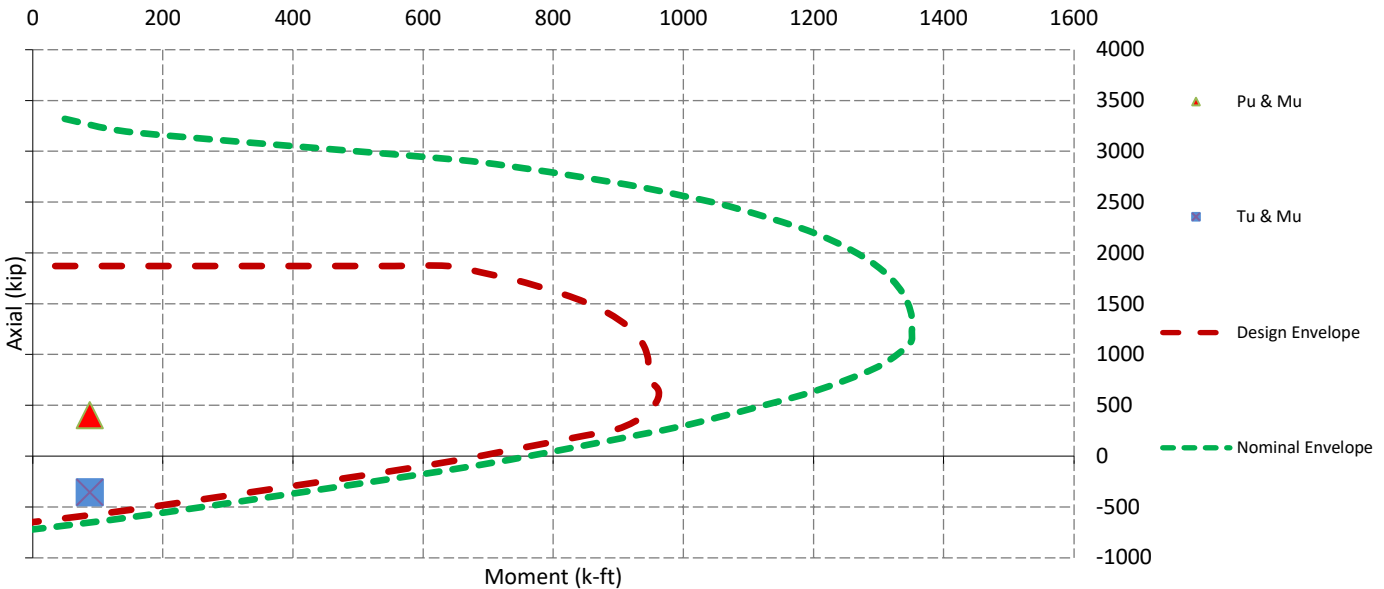
Sliding Factor of Safety

Total Factored Sliding Resistance:	181.4 k
Sliding Design / Sliding Resistance:	0.32 Result: OK

One Way Shear, Flexural Capacity, and Punching Shear

Factored One Way Shear (V_u):	215.2 k
One Way Shear Capacity (ϕV_c):	719.8 k - ACI11.3.1.1
$V_u / \phi V_c$:	0.30 Result: OK
Load Direction Controlling Shear Capacity:	Diagonal to Pad Edge
Lower Steel Pad Factored Moment (M_u):	1622.2 k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	8474.9 k-ft - ACI10.3
$M_u / \phi M_n$:	0.19 Result: OK
Load Direction Controlling Flexural Capacity:	Diagonal to Pad Edge
Upper Steel Pad Factored Moment (M_u):	541.3 k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	8730.4 k-ft
$M_u / \phi M_n$:	0.06 Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0045 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0045 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	6 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	6 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear (V_u):	355.1 k
Nominal Punching Shear Capacity ($\phi_c V_n$):	1451.6 k - ACI11.12.2.1
$V_u / \phi V_c$:	0.24 Result: OK
Factored Moment in Pier (M_u):	87.6 k-ft
Pier Moment Capacity (ϕM_n):	637.5 k-ft
$M_u / \phi M_n$:	0.14 Result: OK
Factored Shear in Pier (V_u):	38.9 k
Pier Shear Capacity (ϕV_n):	69.0 k
$V_u / \phi V_c$:	0.56 Result: OK
Pier Shear Reinforcement Ratio:	0.0020 OK - Reinforcement Ratio Met - ACI11.5.6.3
Factored Tension in Pier (T_u):	355.1 k
Pier Tension Capacity (ϕT_n):	639.9 k
$T_u / \phi T_n$:	0.55 Result: OK
Factored Compression in Pier (P_u):	402.2 k
Pier Compression Capacity (ϕP_n):	1334.0 k - ACI10.3.6.2
$P_u / \phi P_n$:	0.30 Result: OK
Pier Compression Reinforcement Ratio:	0.012 OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4
$M_u / \phi_B M_n + T_u / \phi_T T_n$:	0.69 Result: OK

Nominal and Design Moment Capacity and Factored Design Loads



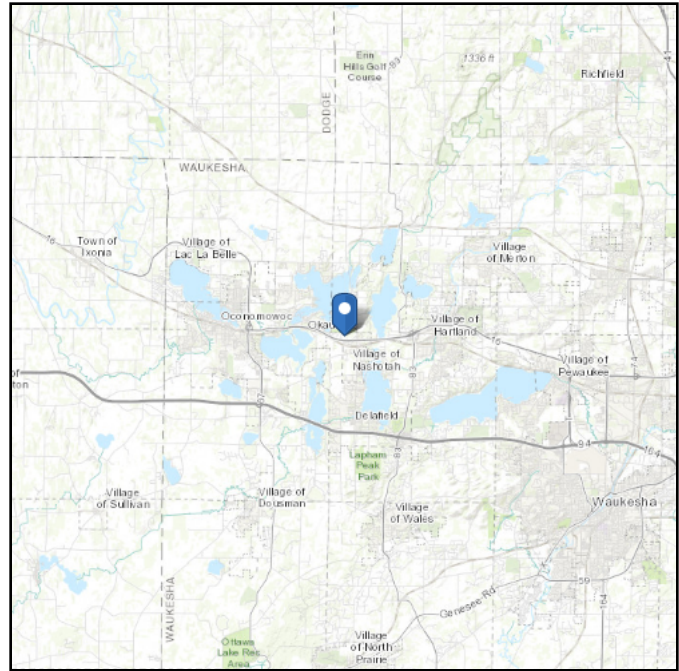


ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-10
Risk Category: III
Soil Class: D - Stiff Soil

Elevation: 934.45 ft (NAVD 88)
Latitude: 43.1037
Longitude: -88.412



Wind

Results:

Wind Speed:	120 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. 26.5-1B and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Fri Nov 13 2020

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 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

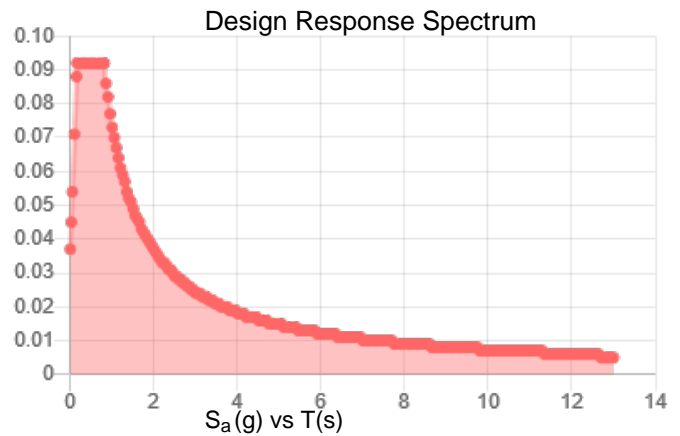
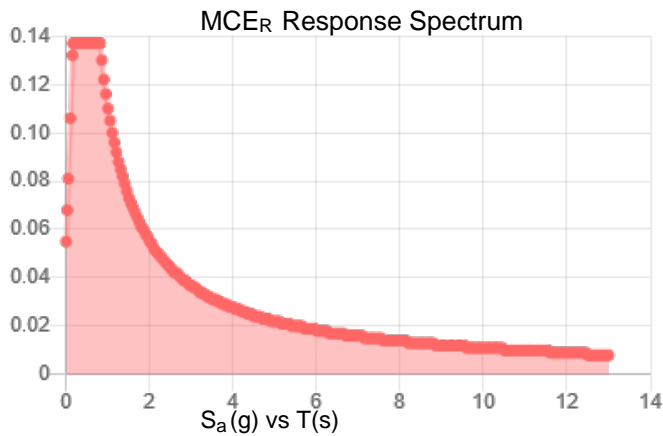


Site Soil Class: D - Stiff Soil

Results:

S_s :	0.086	S_{DS} :	0.092
S_1 :	0.046	S_{D1} :	0.073
F_a :	1.6	T_L :	12
F_v :	2.4	PGA :	0.041
S_{MS} :	0.137	PGA _M :	0.066
S_{M1} :	0.11	F _{PGA} :	1.6
		I_e :	1.25

Seismic Design Category B



Data Accessed:

Fri Nov 13 2020

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: 0.75 in.

Concurrent Temperature: -5 F

Gust Speed: 40 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Fri Nov 13 2020

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.

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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1 SEVENTH AMENDMENT TO LEASE AGREEMENT WITH NEW CINGULAR WIRELESS PCS, LLC
2
3

4 WHEREAS, Waukesha County owns a radio tower (the "Tower") located at the 500
5 Riverview Avenue, the City of Waukesha, Waukesha County, State of Wisconsin (the "Site");
6 and
7

8 WHEREAS, New Cingular Wireless PSC, LLC, currently leases the Tower and ground space at
9 the Site for operation of a cellular communications facility pursuant to that certain Tower
10 and Ground Space Lease Agreement dated December 1, 1998, as amended (the "Lease"); and
11

12 WHEREAS, New Cingular Wireless PSC, LLC desires to modify or relocate various equipment,
13 antennas and/or feedlines on the Communication Facility, which the County is willing to
14 approve so long as the Agreement is otherwise amended as required hereby; and
15

16 WHEREAS, the County is willing to permit the upgrades, and otherwise amend the Lease
17 with New Cingular Wireless PSC, LLC without requiring an increase in rent; and
18

19 WHEREAS, it is therefore necessary and desirable for the parties to execute an amendment
20 to the Lease to formalize their agreement.
21

22 THE COUNTY BOARD OF SUPERVISORS OF THE COUNTY OF WAUKESHA ORDAINS that an
23 amendment to the Lease substantially in the form of the Seventh Amendment to Tower and
24 Ground Space Lease between the County and New Cingular Wireless PSC, LLC for use of the
25 Tower and surrounding lands, attached hereto, is hereby approved.
26

27 BE IT FURTHER ORDAINED that the Director of Emergency Preparedness or his designee is
28 authorized to finalize and execute the Seventh Amendment to Tower and Ground Space
29 Lease and any other documents necessary to effectuate the intent thereof.

Market: IL/WI
Cell Site Number: WI0159
Cell Site Name: Downtown Waukesha
Fixed Asset Number: 10011988

SEVENTH AMENDMENT TO LEASE

THIS SEVENTH AMENDMENT TO LEASE (“**Seventh Amendment**”), dated as of the latter of the signature dates below, is by and between Waukesha County, Wisconsin, a quasi-municipal corporation, having a mailing address of 515 W. Moreland Blvd., Waukesha, Wisconsin 53188 (“**County**”) and New Cingular Wireless PCS, LLC, a Delaware limited liability company, having a mailing address of 1025 Lenox Park Blvd NE, 3rd Floor Atlanta, GA 30319 (“**Lessee**”).

WHEREAS, County and Lessee entered into a Lease dated December 1, 1998, as amended by that certain First Amendment to Lease dated June 26, 2012, as further amended by that Second Amendment to Lease dated June 5, 2015, and Third Amendment to Lease dated October 19, 2018, and Fourth Amendment to Lease Agreement dated June 11, 2020, and Fifth Amendment to the Lease Agreement dated April 26, 2021, and as further amended by that certain Sixth Amendment to the Lease Agreement dated December 21, 2021 whereby County leased to Lessee certain Premises, therein described, that are a portion of the Property located at 500 Riverview Avenue, Waukesha, WI 53188 for use as a cellular communications facility (“**Agreement**”); and

WHEREAS, among other things, the Agreement requires that modifications and improvements to the Communication Facility desired by Lessee that would result in additional equipment, change space requirements or change configuration, placement or number of antennas or feedlines are subject to the County’s prior approval, and may result in demand for increased rent or other modification of Agreement terms; and

WHEREAS, Lessee desires to modify or relocate various equipment, antennas and/or feedlines on the Communication Facility, which the County is willing to approve so long as the Agreement is otherwise amended as required hereby, and;

WHEREAS, County and Lessee, in their mutual interest, wish to amend the Agreement as set forth below accordingly.

NOW THEREFORE, in consideration of the foregoing and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, County and Lessee agree to amend the Agreement as follows:

1. **Additional Equipment Modification.** County consents to the installation and operation of the additional equipment described on the attached Exhibit B-5 (the “**Additional Equipment**”). County’s execution of this Seventh Amendment will signify County’s approval of Exhibit B-5. Exhibit B-5 hereby supplements Exhibit B-4 as well as Exhibit B-3 to the Agreement with respect to approved equipment upon the Premises.
2. **Other Terms and Conditions Remain.** In the event of any inconsistencies between the Agreement and this Seventh Amendment, the terms of this Seventh Amendment shall control. Except as expressly set forth in this Seventh Amendment, the Agreement

otherwise is unmodified and remains in full force and effect. Each reference in the Agreement to itself shall be deemed also to refer to this Seventh Amendment.

3. **Capitalized Terms.** All capitalized terms used but not defined herein shall have the same meanings as defined in the Agreement.

IN WITNESS WHEREOF, the parties have caused their properly authorized representatives to execute and seal this Seventh Amendment on the dates set forth below.

“COUNTY”

Waukesha County, Wisconsin,
a quasi-municipal corporation

By: _____
Name: _____
Title: _____
Date: _____

“LESSEE”

New Cingular Wireless PCS, LLC,
a Delaware limited liability company

By: AT&T Mobility Corporation
Its: Manager

By: _____
Name: _____
Title: _____
Date: _____

LESSEE ACKNOWLEDGEMENT

STATE OF _____)
) ss:
COUNTY OF _____)

On the ____ day of _____ in the year ____ before me, the undersigned, a notary public in and for said state, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the _____ of AT&T Mobility Corporation, the Manager of New Cingular Wireless PCS, LLC, a Delaware limited liability company described herein and that the instrument was signed on behalf of the limited liability company, authority of the limited liability company and that he./she acknowledged this instrument to be the free act and deed of the limited liability company.

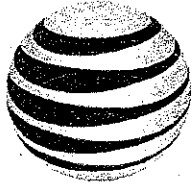
Notary Public: _____
My Commission Expires: _____

COUNTY ACKNOWLEDGEMENT

STATE OF WISCONSIN)
) ss:
COUNTY OF WAUKESHA)

On this ____ day of _____, 2022 before me, the undersigned, personally appeared Gary Bell, personally known to me or proved to me on the basis of satisfactory evidence to be the Director of Emergency Management for Waukesha County described herein and that the instrument was signed on behalf of Waukesha County, he being authorized to do so, for the purposes therein contained.

Notary Public: _____
My Commission Expires: _____



AT&T MOBILITY

SITE NAME:
SITE ID:
FA LOCATION CODE:
PROJECT:
PACE ID:
ADDRESS:

DOWNTOWN WAUKESHA
WI0159
10011988
5G NR 1SR CBAND
MRCHI063868
500 RIVERVIEW AVENUE
WAUKESHA, WI 53188
SILO
43.0215722°/-88.2336667°

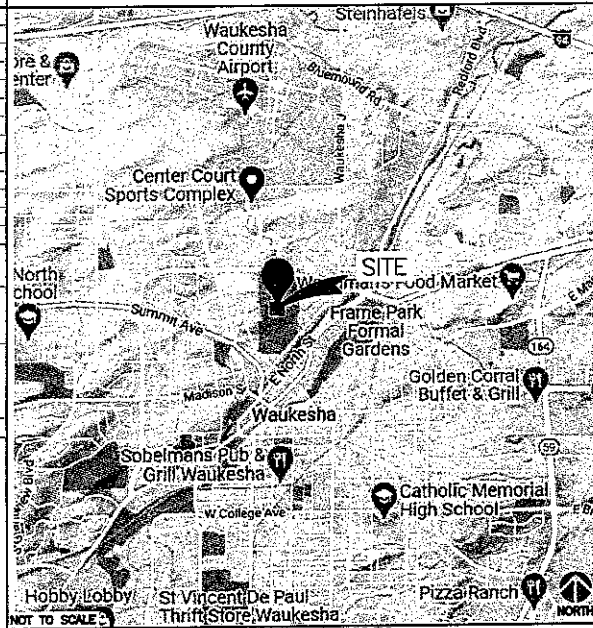
STRUCTURE INFO:
SITE COORDINATES:

THE DESIGN SHOWN ON THESE DRAWINGS IS BASED ON INFORMATION GATHERED FROM AT&T RFDS AT&T RFDS V2020_1.00 DATED 12/03/21

SITE INFORMATION

SITE NAME	DOWNTOWN WAUKESHA
SITE ID	WI0159
FA LOCATION CODE	10011988
ADDRESS	500 RIVERVIEW AVENUE
CITY, STATE, ZIP	WAUKESHA, WI 53188
COUNTY	WAUKESHA
LATITUDE	43.0215722
LONGITUDE	-88.2336667
GROUND ELEVATION	925'
STRUCTURE ELEVATION	124'-0"
STRUCTURE TYPE	SILD
STRUCTURE HEIGHT	124'-0"
RAD CENTER	88'-0"
APPLICANT	AT&T WIRELESS 830 NATIONAL PARKWAY SCHLAUMBURG, IL 60173
SITE ACQUISITION	WHITNEY NEWTON - SITE ACQUISITION SPECIALIST 155 INTERNATIONAL BLVD. GLENDALE HEIGHTS, IL 60139 WHITNEY.NEWTON@NEXIUS.COM
A&E SERVICE	JOHN M. BANKS 804 FOX GLEN BARRINGTON, IL 60010 CONTACT: JOHN M. BANKS PHONE: (847) 277-0070 EMAIL: JBANKS@WESTCHESTERSERVICES.COM
STRUCTURE OWNER	WESTERN NATIONAL BANK OF CICERO & AVERIS PROPERTIES LTD

VICINITY MAP



APPLICABLE CODES

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH CURRENT EDITIONS OF THE FOLLOWING APPLICABLE CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

- 2015 INTERNATIONAL BUILDING CODE
- 2014 NATIONAL ELECTRICAL CODE
- TIA/EIA-222-H

THESE DRAWINGS ARE DESIGNED TO THE LATEST CODES. THEY ALSO MEET THE ADOPTED REQUIREMENTS OF THE JURISDICTION.

DRAWING INDEX

T-1	TITLE SHEET
C-1	OVERALL SITE PLAN
C-2	DETAILED SITE PLAN
C-3	SHELTER SITE PLAN
C-4	TOWER ELEVATIONS
RF-1	RF SCHEDULE
RF-2	ALPHA SECTOR ANTENNA PLAN
RF-3	BETA SECTOR ANTENNA PLAN
RF-4	GAMMA SECTOR ANTENNA PLAN
EQ-1	EQUIPMENT DETAILS
GN-1	GENERAL NOTES

SCOPE OF WORK

- ALPHA, BETA, GAMMA:**
- REMOVE 1X EXISTING SENH11-1065B ANTENNA FROM POS 1
 - RELOCATE 1X EXISTING RRUS-32 B30 FROM POS 1 TO POS 2
 - INSTALL 1X NEW AIR8449 B77D W/AIR8419 B77E STACKED ON POSITION 1
 - REMOVE LIMITS 850 THAS W/ASSOCIATED EQUIPMENT IN POS 1
 - CAP OFF EXISTING LIMITS COAX
 - REMOVE 2X DCB SQUIDS
 - INSTALL 2X DCS FULL SQUIDS
 - INSTALL 2X 8AWG6 DC TRUNKS
- REPAIRS:**
- INSTALL NEW CABLE TRAY COVERS ON VERTICAL RUNS UP THE SMOKESTACK,
 - PAINT TO MATCH EXISTING TRAY COVERS / SMOKESTACK
 - REPAIR/REPLACE ANY DAMAGED FENCE SECTIONS
- POWER:**
- CONVERT 6330 FOR MDMODE
 - INSTALL 6849 FOR CBAND/ODD
 - INSTALL 6X 50A BREAKERS IN EXISTING POWER PLANT
 - INSTALL 4X RECTIFIERS IN EXISTING POWER PLANT

ANY DEVIATION THAT DIFFERS SUBSTANTIALLY FROM WHAT IS SHOWN ON THE CONSTRUCTION DRAWINGS MUST BE APPROVED BY THE ENGINEER OF RECORD. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK CAN BE MADE DURING CONSTRUCTION WITHOUT ISSUING A CHANGE ORDER.



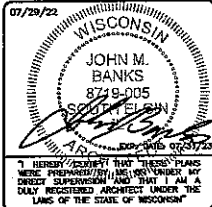
NEXIUS



JOHN M. BANKS
ARCHITECT
804 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847-277-0070
FAX: 847-277-0080
EMAIL: JBANKS@WESTCHESTERSERVICES.COM

REVISIONS			
REV.	DATE	DESCRIPTION	BY
0	06/23/22	CONSTRUCTION SET	MC
1	07/29/22	CONSTRUCTION SET	MC

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET



5G NR 1SR CBAND
10011988
DOWNTOWN WAUKESHA
500 RIVERVIEW AVENUE
WAUKESHA, WI 53188

SHEET TITLE

TITLE SHEET

SHEET NUMBER

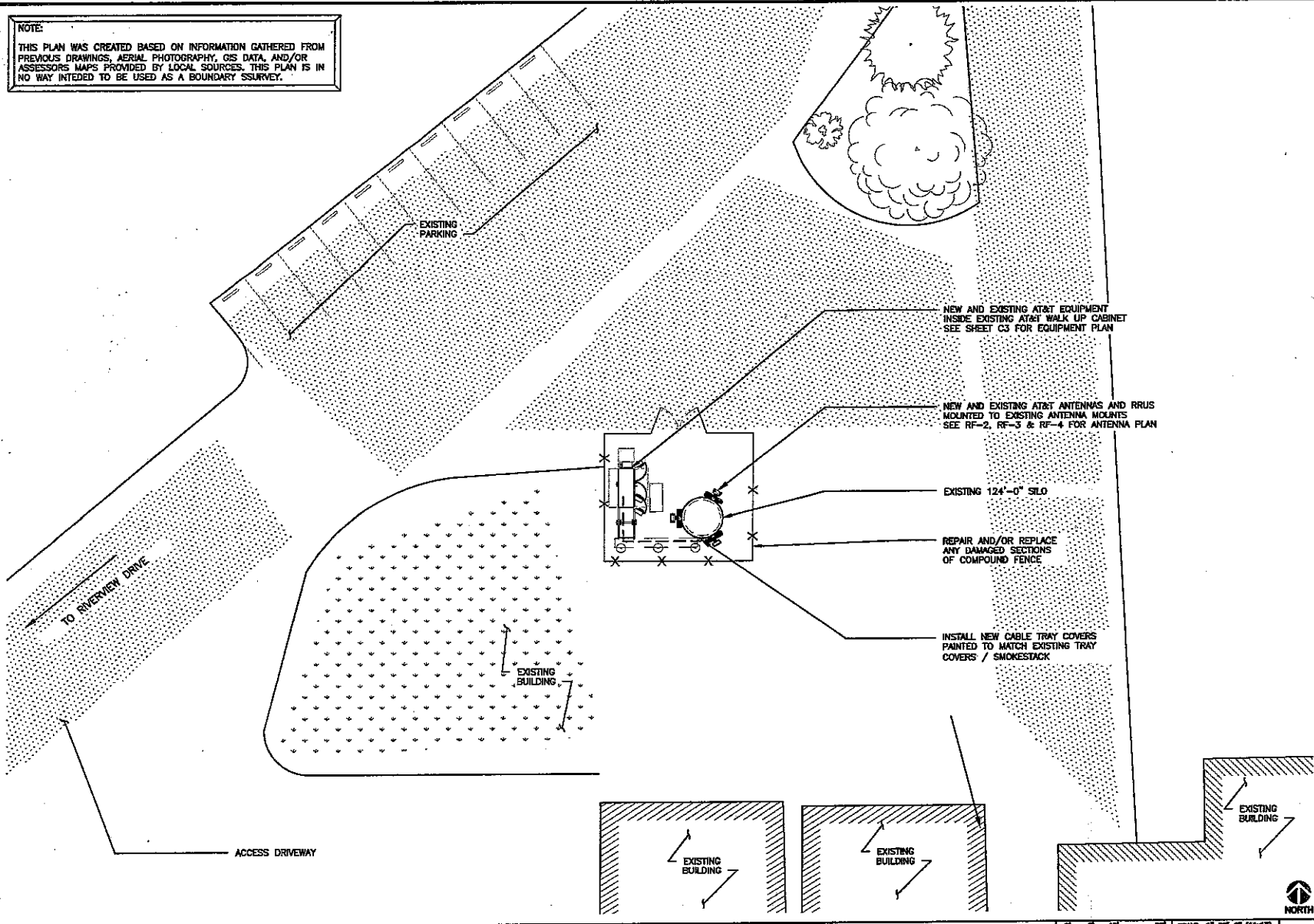
T1




TO OBTAIN LOCATION OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN, CALL LOCAL STATE ONE CALL
TOLL FREE: 1-800-242-8511 OR
www.diggershotline.com

WISCONSIN STATUTE
REQUIRES MIN OF 2
WORKING DAYS NOTICE
BEFORE YOU EXCAVATE


NOTE:
 THIS PLAN WAS CREATED BASED ON INFORMATION GATHERED FROM PREVIOUS DRAWINGS, AERIAL PHOTOGRAPHY, GIS DATA, AND/OR ASSESSORS MAPS PROVIDED BY LOCAL SOURCES. THIS PLAN IS IN NO WAY INTENDED TO BE USED AS A BOUNDARY SURVEY.





301 S. MARQUETTE AVE.
MINNEAPOLIS, MN 55402

NEXIUS




804 FOX GLEN
BARRINGTON, IL 60010
PHONE: 847-277-0070
ADMIN@westchesterservices.com
WI FORM No. 4007-11

JOHN M. BANKS ARCHITECT
 804 FOX GLEN
 BARRINGTON, IL 60010
 TELEPHONE: 847-277-0070
 FAX: 847-277-0080
 EMAIL: JOHNS@WESTCHESTERSERVICES.COM

REVISIONS			
NO.	DATE	DESCRIPTION	BY
0	08/23/22	CONSTRUCTION SET	MG
1	07/29/22	CONSTRUCTION SET	MG

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

07/29/22



JOHN M. BANKS
8729-005
SCOTT ELSA
REGISTERED ARCHITECT

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF WISCONSIN.

5G NR 1SR CBAND
10011988
DOWNTOWN WAUKESHA
500 RIVERVIEW AVENUE
WAUKESHA, WI 53188

SHEET TITLE

OVERALL SITE PLAN

SHEET NUMBER

C-1

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PREPARED BY MEASURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.

OVERALL SITE PLAN

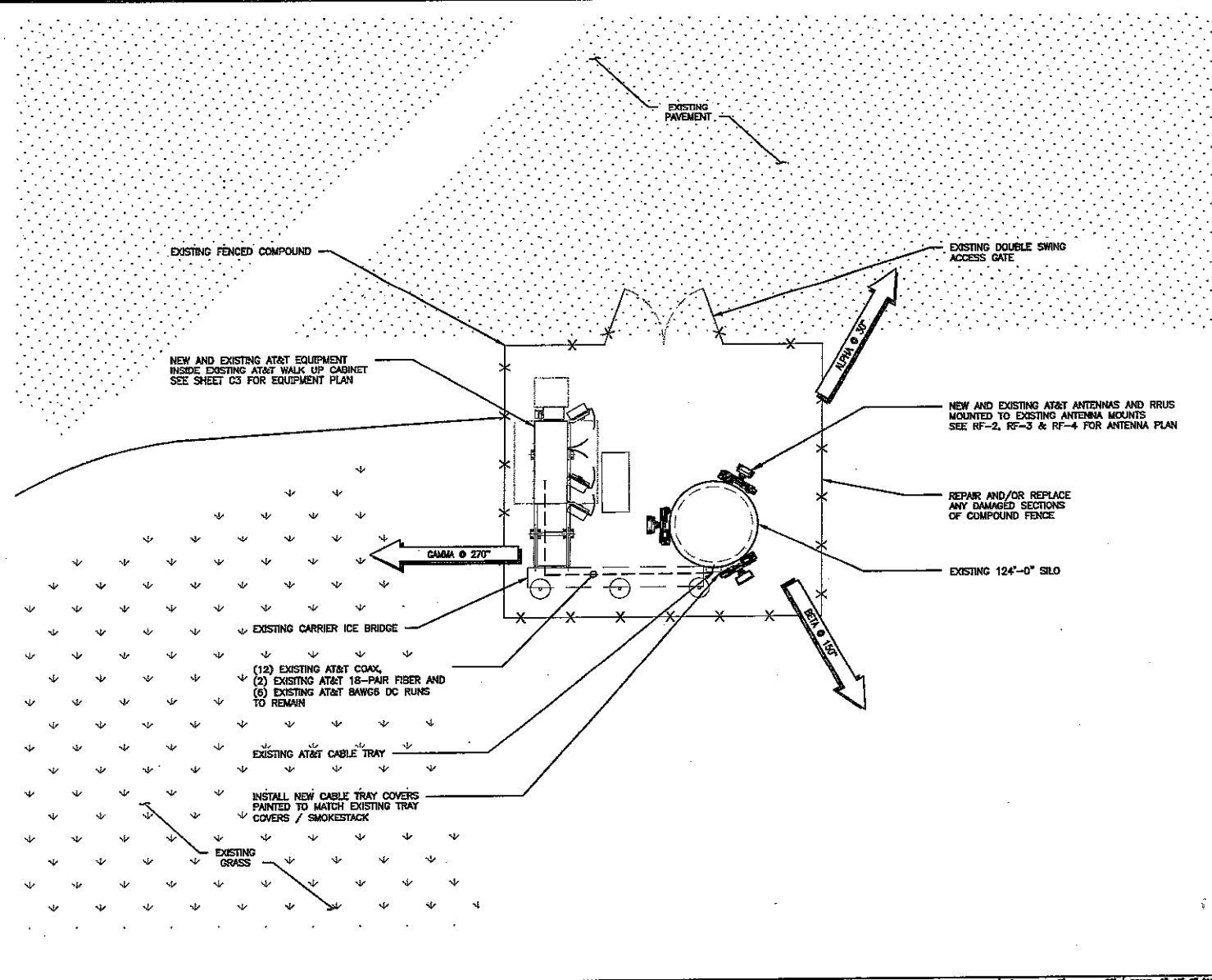
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 1
 (OR) 2"=30'-0" (3/32"=1')

Referred on: 11/22/22

File Number: 177-O-079

Referred to: JU 6

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY OF WATSECO. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO WATSECO SERVICES IS STRICTLY PROHIBITED.



WESTCHESTER SERVICES LLC

804 FOX GLEN
BARRINGTON, IL 60015
PHONE: 847-277-0070
ADMIN@WESTCHESTERSERVICES.COM
WI PERM No. 4967-11

JOHN M. BANKS ARCHITECT

804 FOX GLEN
BARRINGTON, IL 60015
TELEPHONE: 847-277-0070
FAX: 847-277-0080
EMAIL: JSBANKS@WESTCHESTERSERVICES.COM

REVISIONS			
REV.	DATE	DESCRIPTION	BY
0	06/23/22	CONSTRUCTION SET	MC
1	07/29/22	CONSTRUCTION SET	MC

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

07/29/22

WISCONSIN ARCHITECT

JOHN M. BANKS
8749-005
SEAL TELEPHON

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A FULLY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF WISCONSIN.

5G NR 1SR CBAND
10011988
DOWNTOWN WAUKESHA
500 RIVERVIEW AVENUE
WAUKESHA, WI 53188

SHEET TITLE

DETAILED SITE PLAN

SHEET NUMBER

C-2

DETAILED SITE PLAN

Referred on: 11/22/22

File Number: 177-O-079

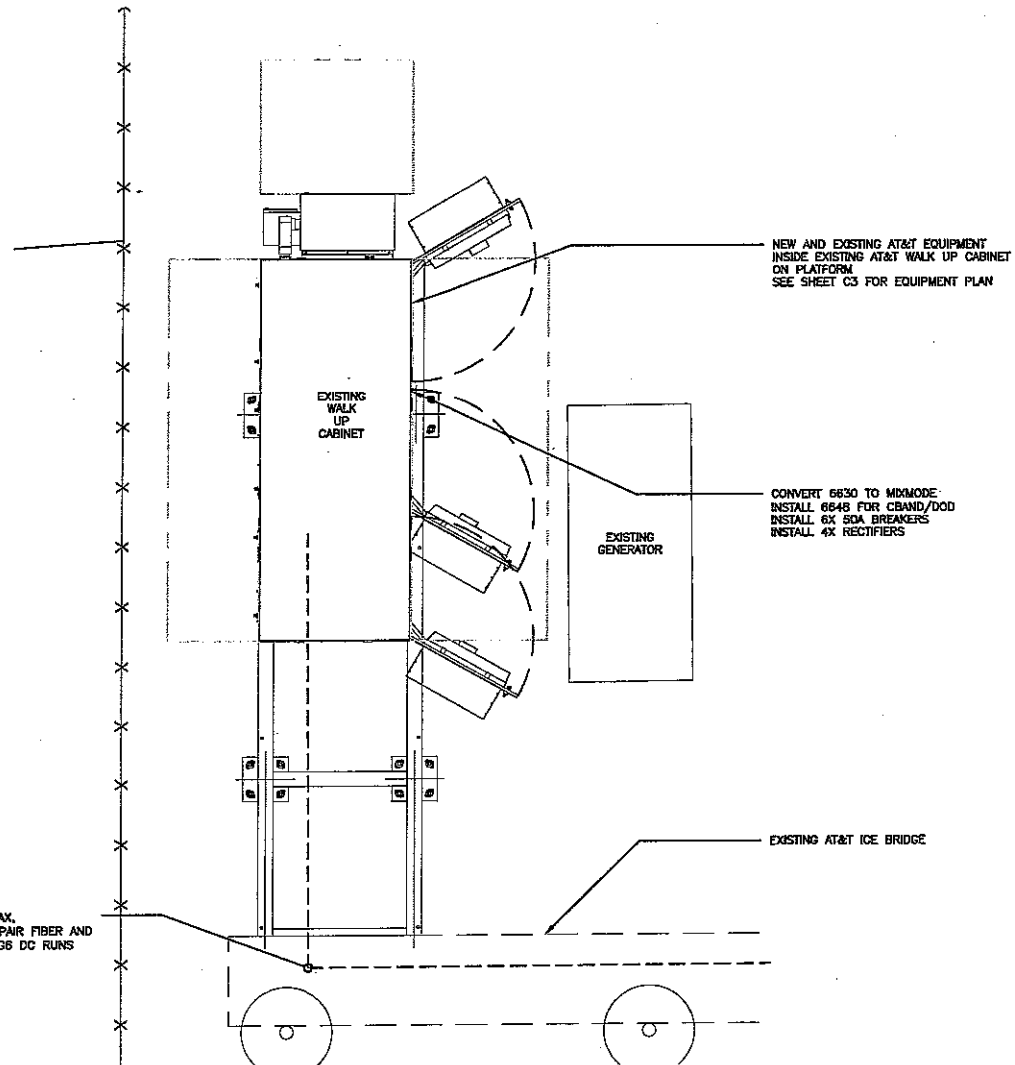
SCALE: 1"=10'-0" (11x17)
(OR) 2"=10'-0" (22x34)



1

Referred to: JU 7

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PREPARED BY INHOUSE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CHERRY BROWNE IS STRICTLY PROHIBITED.



WESTCHESTER SERVICES LLC

604 FOX GLEN
BARRINGTON, IL 60010
PHONE: 847-277-0070
ADMIN@WESTCHESTERSERVICES.COM
WI FIRM No. 4087-11

JOHN M. BANKS ARCHITECT

604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847-277-0070
FAX : 847-277-0080
EMAIL: JMBANKS@WESTCHESTERSERVICES.COM

REVISIONS			
NO.	DATE	DESCRIPTION	BY
0	06/23/22	CONSTRUCTION SET	MC
1	07/29/22	CONSTRUCTION SET	MC

NOT FOR CONSTRUCTION UNLESS
LABELED AS CONSTRUCTION SET

07/29/22

WISCONSIN
JOHN M. BANKS
8739-005
REGISTERED ARCHITECT

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY/IN THE PRESENCE OF/UNDER MY DIRECT SUPERVISION AND THAT I AM A FULLY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF WISCONSIN

5G NR 1SR CBAND
10011988
DOWNTOWN WALKESHA
500 RIVERVIEW AVENUE
WALKESHA, WI 53188

SHEET TITLE
SHELTER SITE PLAN

SHEET NUMBER
C-3

SHELTER SITE PLAN

SCALE 1/8"=1'-0" (15x17)
(OR) 1/2"=1'-0" (24x36)



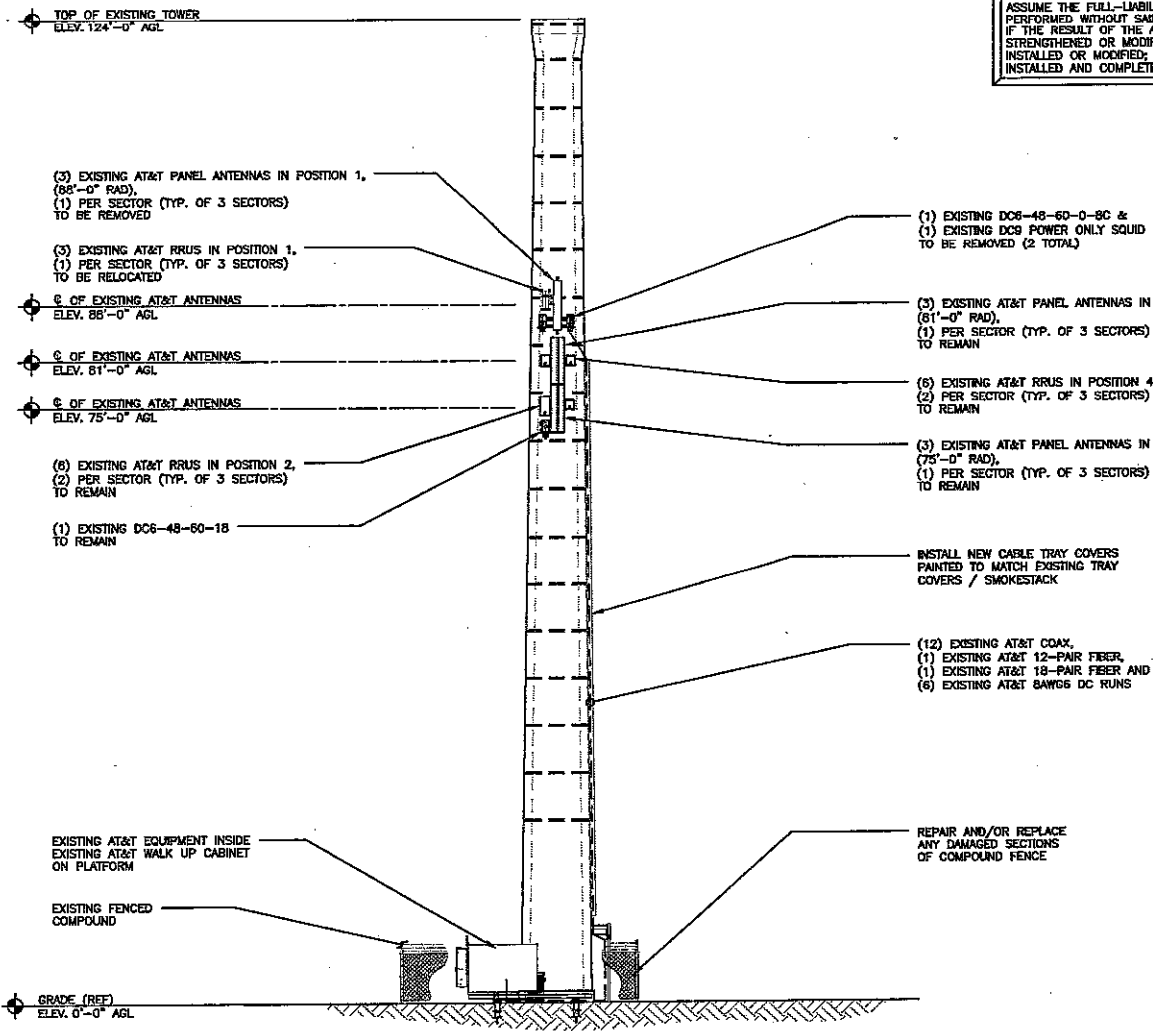
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Referred on: 11/22/22

File Number: 177-O-079

Referred to: JU 8

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PREPARED BY MATTHEW. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.



NOTE:
 IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY, PRIOR TO THE ONSET OF CONSTRUCTION, THAT THE SUPPORTING STRUCTURE(S) AND MOUNTING SYSTEM(S) HAVE BEEN DEEMED STRUCTURALLY ADEQUATE BY A LICENSED PROFESSIONAL ENGINEER TO SUPPORT THE EXISTING AND PROPOSED EQUIPMENT AND ASSOCIATED CONSTRUCTION LOADS, INCLUDING BUT NOT LIMITED TO THOSE DEPICTED, HEREIN, THE CONTRACTOR SHALL ASSUME THE FULL-LIABILITY AND RISK AND/OR AFFURTEANCES IF PERFORMED WITHOUT SAID PASSING STRUCTURAL ANALYSIS OR EVALUATION. IF THE RESULT OF THE ANALYSIS REQUIRES THE STRUCTURE BE STRENGTHENED OR MODIFIED; SUCH MODIFICATIONS SHALL BE PROPERLY INSTALLED OR MODIFIED; SUCH MODIFICATIONS SHALL BE PROPERLY INSTALLED AND COMPLETED PRIOR TO THE ONSET OF CONSTRUCTION.



WESTCHESTER SERVICES LLC
 804 FOX GLEN
 BARRINGTON, IL 60010
 PHONE: 847-277-0070
 AED@westchesterservices.com
 WI FIRM No. 4897-11

JOHN M. BANKS ARCHITECT
 804 FOX GLEN
 BARRINGTON, IL 60010
 TELEPHONE: 847-277-0070
 FAX: 847-277-0080
 EMAIL: JMBANKS@WESTCHESTERSERVICES.COM

REVISIONS			
REV.	DATE	DESCRIPTION	BY
0	06/23/22	CONSTRUCTION SET	MC
1	07/28/22	CONSTRUCTION SET	MC

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

07/28/22
WISCONSIN ARCHITECT
 JOHN M. BANKS
 8749-005
 SCOTT W. ELKMAN
 ARCHITECT
 1 HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME, OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF WISCONSIN

5G NR 1SR CBAND
 10011988
 DOWNTOWN WALKESHA
 500 RIVERVIEW AVENUE
 WALKESHA, WI 53188

SHEET TITLE
BUILDING ELEVATION

SHEET NUMBER
C-4

SILO ELEVATION (EXISTING)

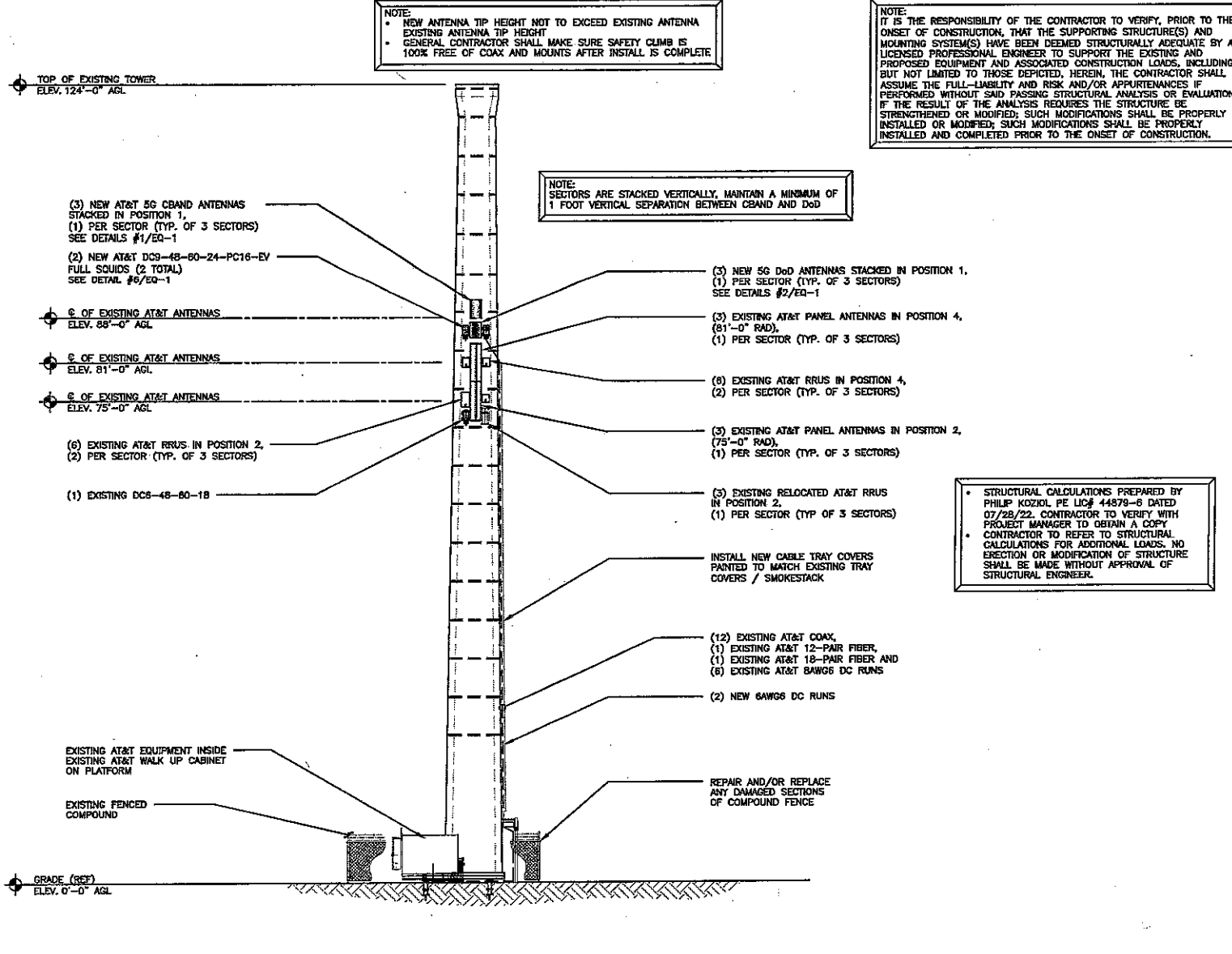
SCALE
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File Number: 177-O-079

Referred to: JU 9

Referred on: 11/22/22

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROVIDED BY SOURCE. ANY USE OR MODIFICATION OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.



NEXUS

WESTCHESTER SERVICES LLC

804 FOX GLEN
BARRINGTON, IL 60010
PHONE: 847-277-0070
ADMIN@WESTCHESTERSERVICES.COM
WI FIRM NO. 4897-11

JOHN M. BANKS ARCHITECT

804 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847-277-0070
FAX: 847-277-0080
EMAIL: JMBANKS@WESTCHESTERSERVICES.COM

REVISIONS

REV.	DATE	DESCRIPTION	BY
0	06/23/22	CONSTRUCTION SET	MC
1	07/29/22	CONSTRUCTION SET	MC

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

07/29/22

WISCONSIN

JOHN M. BANKS
8749-005

1. I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF WISCONSIN.

5G NR 1SR CBAND
10011988
DOWNTOWN WAUKESHA
500 RIVERVIEW AVENUE
WAUKESHA, WI 53188

SHEET TITLE

BUILDING ELEVATION

SHEET NUMBER

C-4.1

SILO ELEVATION (PROPOSED)

SCALE
N.T.S. 1

Referred on: 11/22/22

File Number: 177-0-079

Referred to: JU 10

THE DESIGN SHOWN ON THESE DRAWINGS IS BASED ON INFORMATION GATHERED FROM AT&T RFD5 AIRSET RFD5 V2020...1.00 DATED 12/05/21

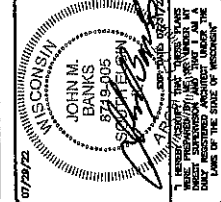
EXISTING											
SECTOR	ANTENNA TECHNOLOGY	ANTENNA POSITION	MODEL	RAD CENTER (RCL)	AZIMUTH	COAX CABLES	OTHER CABLES	TIMAS	TOWER DECKERS	RRUS	OTHER DEVICES
ALPHA	UMTS/LTE/C	#1	(1) NHH4-105B	86'-0"	30°			(2) TMAS	N/A	(1) RRUS-32 B30	(3) DCS-46-60-16-8C
	LTE 205C NR	#2	(1) NHH4-50B-RH4	75'-0"				N/A	(1) RRUS-44B B5B12 (1) RRUS-42B B5B		
	EMPTY	#3	N/A	N/A				N/A	N/A		
BETA	LTE 304C	#4	(1) NHH4-50B-RB	81'-0"	150°	(1) 1.5" COAX	(9) SAVES DC POWER (R) (1) 12 PAIR FIBER (B) (1) 18 PAIR FIBER (B)	N/A	N/A	(1) RRUS-47B B14 (1) RRUS-41B B25	(3) DCS-46-60-24-8C (3) DCS-46-60-24-8C
	UMTS/LTE/C	#1	(1) NHH4-105B	86'-0"				(2) TMAS	(1) RRUS-32 B30		
	LTE 205C NR	#2	(1) NHH4-50B-RH4	75'-0"				N/A	(1) RRUS-44B B5B12 (1) RRUS-42B B5B		
GAMMA	EMPTY	#3	N/A	N/A	270°			N/A	N/A	N/A	
	LTE 304C	#4	(1) NHH4-50B	81'-0"				N/A	(2) TMAS	(1) RRUS-32 B30	
	UMTS/LTE/C	#1	(1) NHH4-105B	86'-0"				N/A	(1) RRUS-44B B5B12 (1) RRUS-42B B5B		

PROCESSED												
SECTOR	ANTENNA TECHNOLOGY	ANTENNA POSITION	MODEL	RAD CENTER (RCL)	AZIMUTH	COAX CABLES	OTHER CABLES	TIMAS	TOWER DECKERS	RRUS	OTHER DEVICES	
ALPHA	5G BAND 56 DSD	#1	(1) ARK48 B7TD (1) ARK49 B7RO	86'-0"	30°			N/A	N/A	(1) RRUS-44B B5B12 (1) RRUS-42B B5B	(3) DCS-46-60-16-8C (3) DCS-46-60-24-8C	
	LTE 205C	#2	(1) NHH4-50B-RH4	75'-0"				N/A	N/A	(1) RRUS-47B B14 (1) RRUS-41B B25		
	EMPTY	#3	N/A	N/A				N/A	N/A	N/A		
BETA	LTE 304C	#4	(1) NHH4-50B-RB	81'-0"	150°	(1) 1.5" COAX	(9) SAVES DC POWER (R) (1) 12 PAIR FIBER (B) (1) 18 PAIR FIBER (B)	N/A	N/A	(1) RRUS-47B B14 (1) RRUS-41B B25	(3) DCS-46-60-16-8C (3) DCS-46-60-24-8C	
	5G BAND 56 DSD	#1	(1) ARK48 B7TD (1) ARK49 B7RO	86'-0"				N/A	N/A	(1) RRUS-44B B5B12 (1) RRUS-42B B5B		
	LTE 205C	#2	(1) NHH4-50B-RH4	75'-0"				N/A	N/A	(1) RRUS-47B B14 (1) RRUS-41B B25		
GAMMA	EMPTY	#3	N/A	N/A	270°			N/A	N/A	N/A		
	LTE 304C	#4	(1) NHH4-50B-RB	81'-0"				N/A	N/A	(2) TMAS		(1) RRUS-32 B30
	UMTS/LTE/C	#1	(1) NHH4-105B	86'-0"				N/A	(1) RRUS-44B B5B12 (1) RRUS-42B B5B			



JOHN M. BANKS ARCHITECT
604 FOX CLEN
BANKS BUILDING
TELEPHONE 847-277-0070
FAX 847-277-0080
EMAIL JBANKS@JOHNMBANKSARCHITECT.COM

REV	DATE	DESCRIPTION
0	06/23/21	CONSTRUCTION SET
1	07/09/21	CONSTRUCTION SET



5G NR 1SR CBAND
10011988
DOWNTOWN WAUKESHA
500 RIVERVIEW AVENUE
WAUKESHA, WI 53188

SHEET TITLE
RF SCHEDULE

SHEET NUMBER
RF-1

SCALE
1
INCHES
= 1
FEET

Referred to: JU 11

File Number: 177-O-079

ANTENNA & CABLE CONFIGURATION

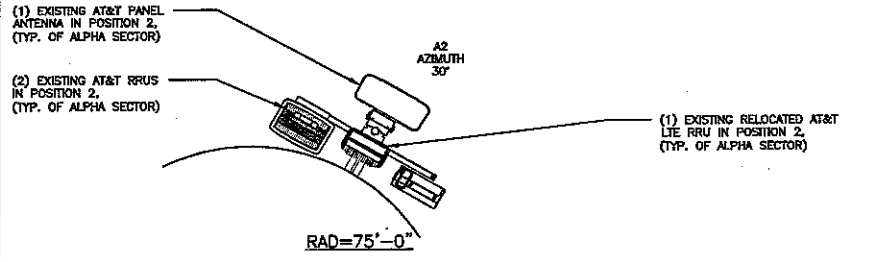
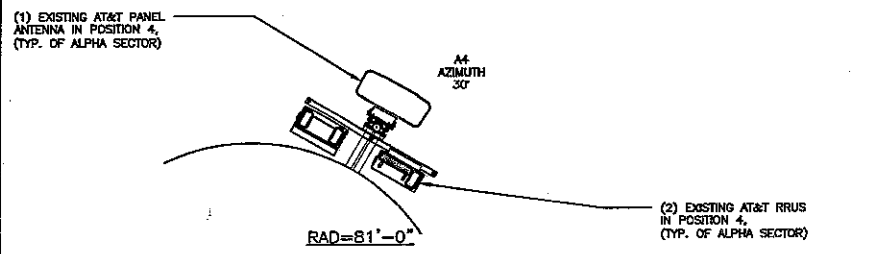
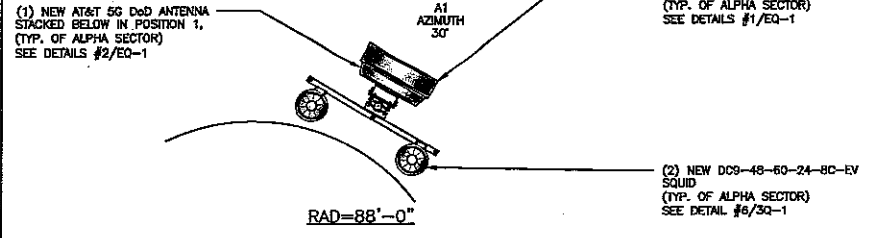
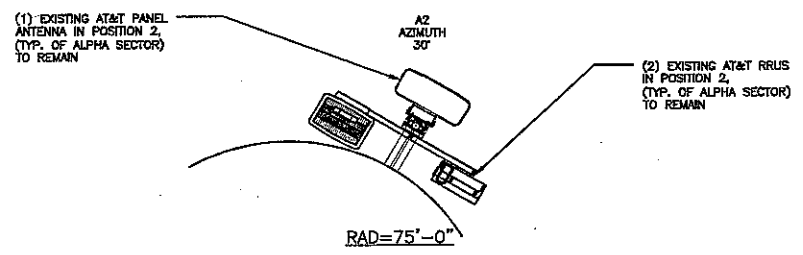
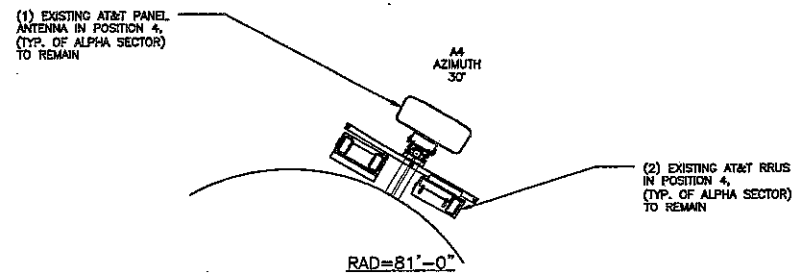
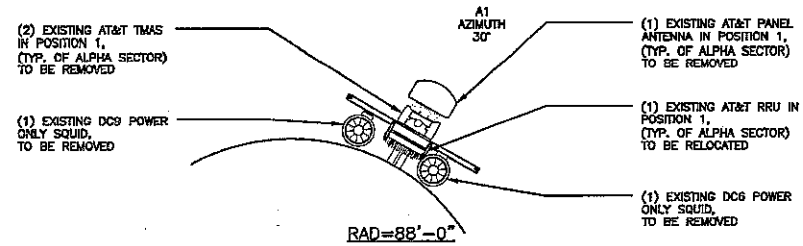
Referred on: 11/22/22

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY TO WESTCHESTER SERVICES LLC. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CURRENT SERVICES IS STRICTLY PROHIBITED.

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PREPARED BY AND FOR THE EXCLUSIVE USE OF THE CLIENT. ANY USE OR REPRODUCTION OF THIS INFORMATION WITHOUT THE WRITTEN PERMISSION OF WESTCHESTER SERVICES, LLC IS STRICTLY PROHIBITED.

STRUCTURAL CALCULATIONS PREPARED BY PHILIP KOZIOLO PE LIC# 44879-6 DATED 07/26/22. CONTRACTOR TO VERIFY WITH PROJECT MANAGER TO OBTAIN A COPY CONTRACTOR TO REFER TO STRUCTURAL CALCULATIONS FOR ADDITIONAL LOADS. NO ERECTION OR MODIFICATION OF STRUCTURE SHALL BE MADE WITHOUT APPROVAL OF STRUCTURAL ENGINEER.

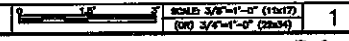
NOTE: SECTORS ARE STACKED VERTICALLY, MAINTAIN A MINIMUM OF 1 FOOT VERTICAL SEPARATION BETWEEN CBAND AND DcD



ANTENNA PLAN (EXISTING ALPHA)



ANTENNA PLAN (PROPOSED ALPHA)



WESTCHESTER SERVICES LLC

804 FOX GLEN
BARRINGTON, IL 60010
PHONE: 847-277-0070
ADMIN@WESTCHESTERSERVICES.COM
WI PERM No. 4867-11

JOHN M. BANKS ARCHITECT

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REVISIONS			
REV.	DATE	DESCRIPTION	BY
0	06/23/22	CONSTRUCTION SET	MC
1	07/29/22	CONSTRUCTION SET	MC

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

07/29/22

WISCONSIN

JOHN M. BANKS
8779-005

Professional Engineer Seal

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY/UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF WISCONSIN.

5G NR 1SR CBAND
10011968
DOWNTOWN WAUKESHA
500 RIVERVIEW AVENUE
WAUKESHA, WI 53188

SHEET TITLE

ALPHA SECTOR
ANTENNA PLAN

SHEET NUMBER

RF-2

Referred on: 11/22/22

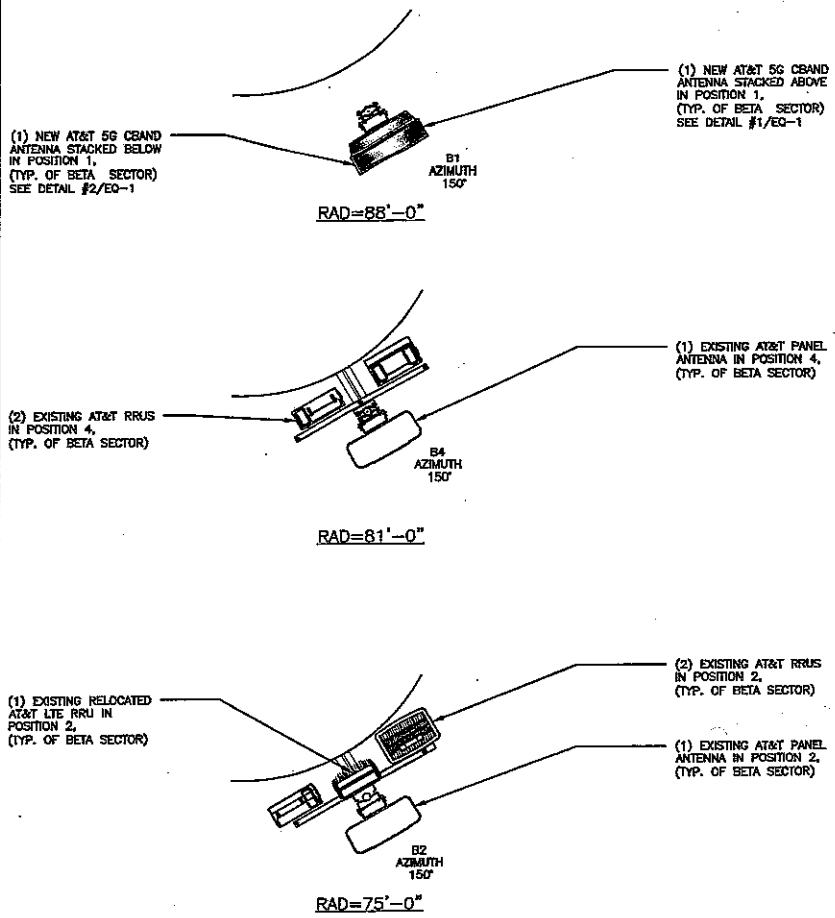
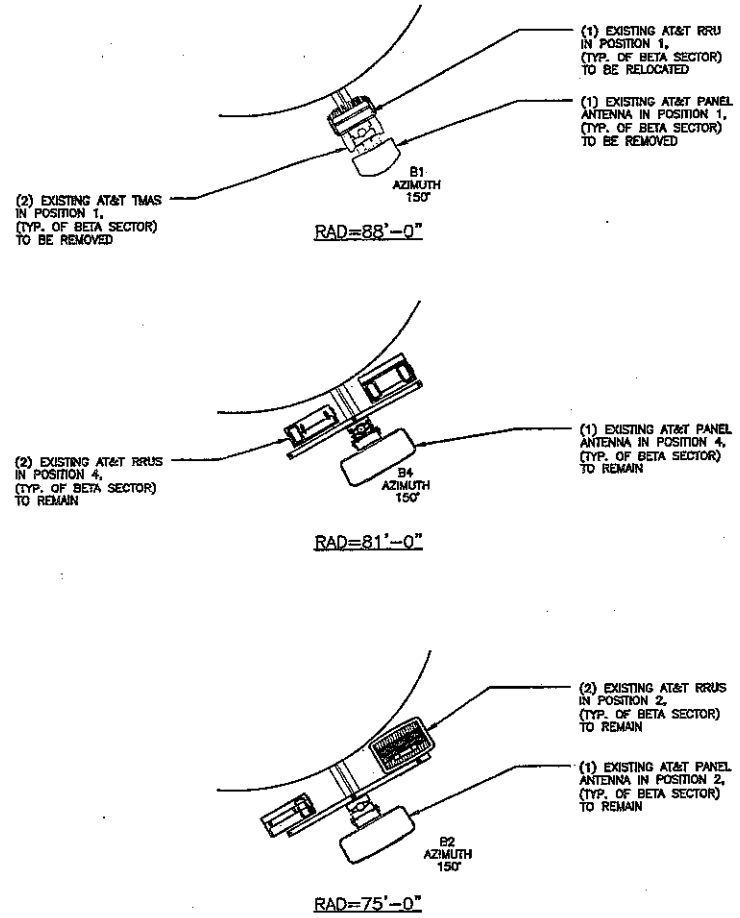
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Referred to: JU 12

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• STRUCTURAL CALCULATIONS PREPARED BY PHILIP KOZIOL PE LIC# 44879-S DATED 07/28/22. CONTRACTOR TO VERIFY WITH PROJECT MANAGER TO OBTAIN A COPY
 • CONTRACTOR TO REFER TO STRUCTURAL CALCULATIONS FOR ADDITIONAL LOADS. NO ERECTION OR MODIFICATION OF STRUCTURE SHALL BE MADE WITHOUT APPROVAL OF STRUCTURAL ENGINEER.

NOTE:
 SECTORS ARE STACKED VERTICALLY. MAINTAIN A MINIMUM OF 1 FOOT VERTICAL SEPARATION BETWEEN CSAND AND Dsd



ANTENNA PLAN (EXISTING BETA)

SCALE: 3/8"=1'-0" (11x17)
 (OR) 3/4"=1'-0" (22x34)



2

ANTENNA PLAN (PROPOSED BETA)

SCALE: 3/8"=1'-0" (11x17)
 (OR) 3/4"=1'-0" (22x34)



1



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REVISIONS				
NO.	DATE	DESCRIPTION	BY	BT
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1	07/29/22	CONSTRUCTION SET	MC	

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07/29/22
WISCONSIN
 JOHN M. BANKS
 8749-005
 SCOTT FELSON
 REGISTERED ARCHITECT
 I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED (BY) ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF WISCONSIN

5G NR 15R CBAND
 10011988
 DOWNTOWN WAUKESHA
 500 RIVERVIEW AVENUE
 WAUKESHA, WI 53188

SHEET TITLE
BETA SECTOR ANTENNA PLAN

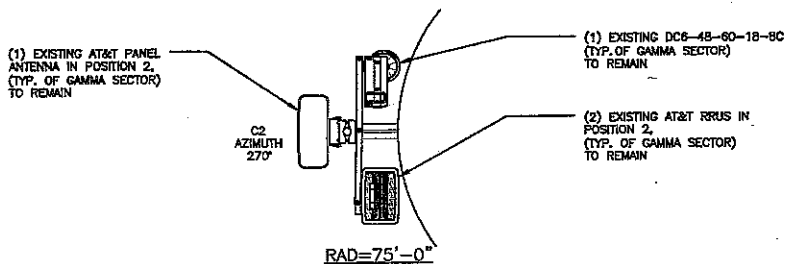
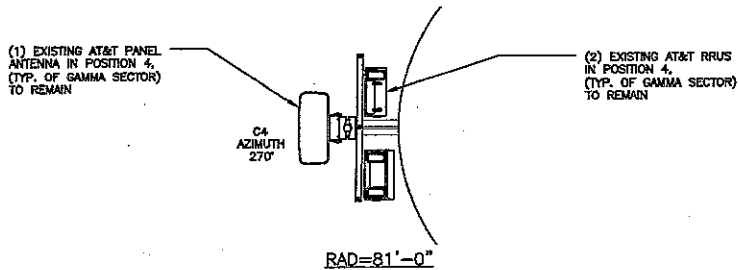
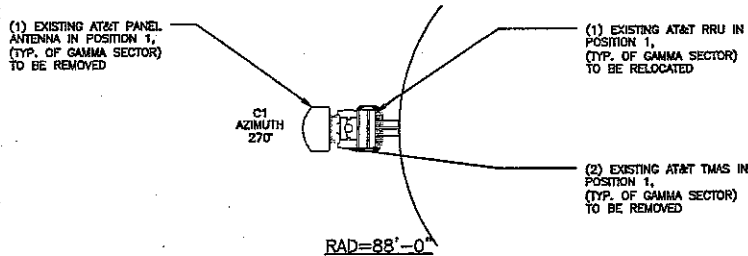
SHEET NUMBER
RF-3

Referred on: 11/22/22

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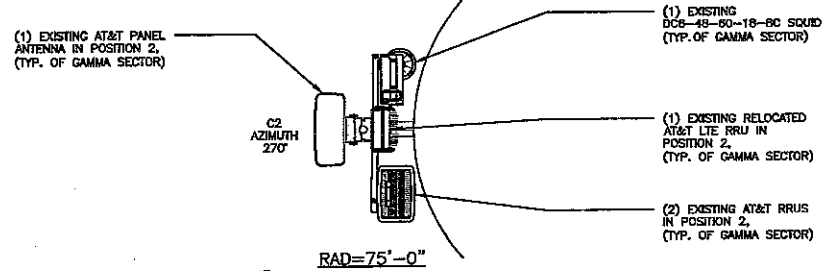
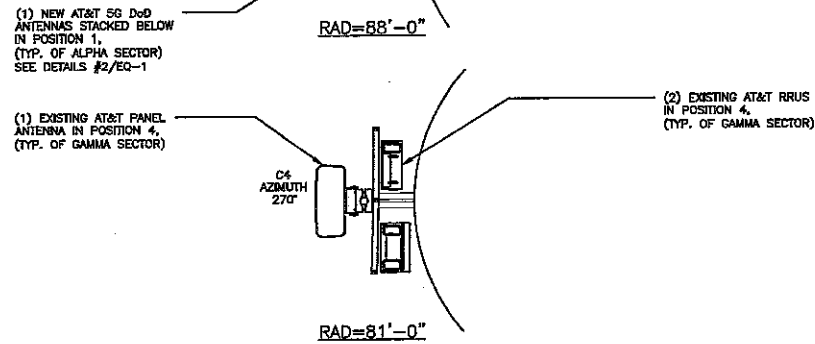
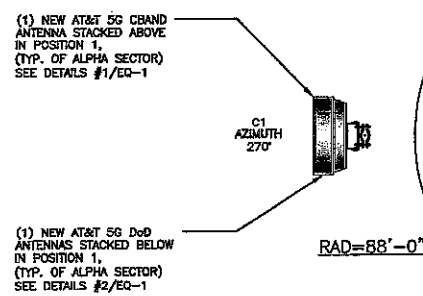
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• STRUCTURAL CALCULATIONS PREPARED BY PHILIP KOZIOL, PE LIC# 44879-6 DATED 07/28/22. CONTRACTOR TO VERIFY WITH PROJECT MANAGER TO OBTAIN A COPY. CONTRACTOR TO REFER TO STRUCTURAL CALCULATIONS FOR ADDITIONAL LOADS. NO ERECTION OR MODIFICATION OF STRUCTURE SHALL BE MADE WITHOUT APPROVAL OF STRUCTURAL ENGINEER.

NOTE:
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REVISIONS				
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1	07/29/22	CONSTRUCTION SET	MC	

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

07/29/22

WISCONSIN

JOHN M. BANKS
8749-005
SPEECH ENGINEER

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF WISCONSIN

5G NR 15R CBAND
10011988
DOWNTOWN WAUKESHA
500 RIVERVIEW AVENUE
WAUKESHA, WI 53188

SHEET TITLE
GAMMA SECTOR ANTENNA PLAN

SHEET NUMBER
RF-4

ANTENNA PLAN (EXISTING GAMMA)



ANTENNA PLAN (PROPOSED GAMMA)



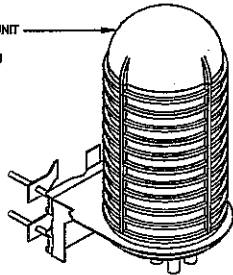
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File Number: 177-O-079

Referred to: JU 14

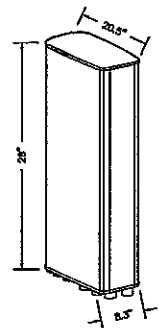
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NEW SURGE PROTECTION UNIT
(RAYCAP P/N)
DC9-48-60-24-PC16-EV)

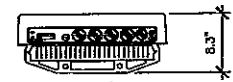


DC9-48-60-24-8C-EV DETAIL

SCALE: 6
N.T.S. NOT USED



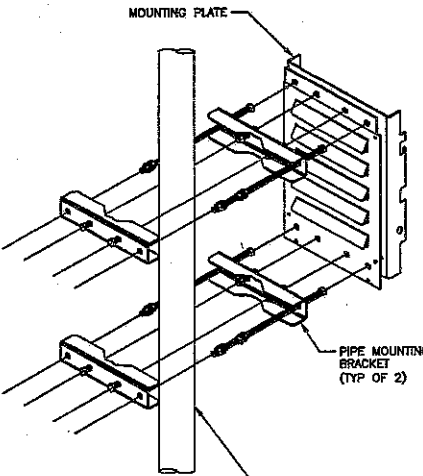
ERICSSON AIR6419 N77C
DIMENSIONS, HxWxD: (28"x20.5"x8.3")
WEIGHT, WITHOUT MOUNTING BRACKET: (40.6 lbs)



ISOMETRIC VIEW

5G DoD BAND ANTENNA DETAIL

SCALE: 2
N.T.S.

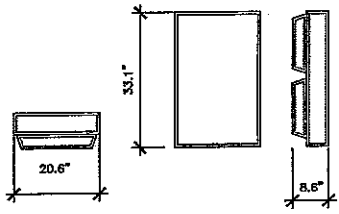


NOTE: ANTENNA NOT SHOWN FOR CLARITY

RRH MOUNTING PLATE DETAIL


SCALE: 5
N.T.S. NOT USED

ERICSSON AIR6449 N77
DIMENSIONS, HxWxD: (33.1"x20.6"x8.6")
WEIGHT, WITHOUT MOUNTING BRACKET: (104 lbs)



5G CBAND ANTENNA DETAIL

SCALE: 1
N.T.S.



301 S. MARSHMETTE AVE.
MINNEAPOLIS, MN 55402

NEXIUS

WESTCHESTER SERVICES LLC

804 FOX GLEN
BARRINGTON, IL 60010
PHONE: 847-277-0070
KEYWORD: WESTCHESTER-SERVICES.COM
WI FIRM No. 4887-11

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07/29/22

WISCONSIN

JOHN M. BANKS
8719-005
SCOTT E. LEHN
ARCHITECT

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED/REVISED UNDER MY SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF WISCONSIN

5G NR 1SR CBAND
10011988
DOWNTOWN WAUKESHA
500 RIVERVIEW AVENUE
WAUKESHA, WI 53188

SHEET TITLE
CABLE NOTES & COLOR CODING

SHEET NUMBER
EQ-1

GENERAL CONSTRUCTION

1. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
2. GENERAL CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK. GENERAL CONTRACTOR IS RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS, DIMENSIONS, AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, ORDINANCES, AND ISSUE ALL APPROPRIATE NOTICES.
4. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS.
5. PLANS ARE NOT TO BE SCALED. SPACING BETWEEN EQUIPMENT IS THE MINIMUM REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF WORK AND PREPARED BY THE ENGINEER PRIOR TO PROCEEDING WITH WORK.
6. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE ENGINEER PRIOR TO PROCEEDING.
8. CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR OF ANY EXISTING CONDITIONS THAT DEVIATE FROM THE DRAWINGS PRIOR TO BEGINNING CONSTRUCTION.
9. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS AND THE LOCAL JURISDICTION.
10. GENERAL CONTRACTOR SHALL COORDINATE WORK AND SCHEDULE WORK ACTIVITIES WITH OTHER DISCIPLINES.
11. WORK SHALL BE DONE IN A PROFESSIONAL MANNER BY COMPETENT EXPERIENCED PERSONNEL IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST ACCEPTED PRACTICE.
12. SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH UL LISTED MATERIALS APPROVED BY LOCAL JURISDICTION. CONTRACTOR SHALL KEEP AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DEBRIS.
13. CONTRACTOR SHALL PROVIDE WRITTEN NOTICE TO THE CONSTRUCTION MANAGER 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
14. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
15. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
16. GENERAL CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS FOR ALL TRADES AND CONTRACTORS TO THE SITE AND/OR BUILDING.
17. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY OF THE SITE FOR THE DURATION OF CONSTRUCTION UNTIL JOB COMPLETION.
18. CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR CONSTRUCTION. IF CONTRACTOR CANNOT OBTAIN A PERMIT, THEY MUST NOTIFY THE GENERAL CONTRACTOR IMMEDIATELY.
19. THE GENERAL CONTRACTOR SHALL MAINTAIN IN GOOD CONDITION ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS ON THE PREMISES AT ALL TIMES.
20. THE GENERAL CONTRACTOR SHALL PROVIDE PORTABLE FIRE EXTINGUISHERS WITH A RATING OF NOT LESS THAN 2-A TO 2-A-10-BC AND SHALL BE WITHIN 25 FEET OF TRAVEL DISTANCE TO ALL PORTIONS OF WHERE THE WORK IS BEING COMPLETED DURING CONSTRUCTION.
21. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, COMMUNICATIONS, AND OTHER UTILITIES SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS SHALL INCLUDE BUT NOT BE LIMITED TO FALL PROTECTION, CONFINED SPACE, ELECTRICAL SAFETY, AND TRENCHING / EXCAVATION.
22. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED, CAPPED, PLUGGED OR OTHERWISE DISCONNECTED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.

23. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE FEDERAL AND LOCAL JURISDICTION FOR EROSION AND SEDIMENT CONTROL.
24. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION.
25. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUNDING. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
26. THE SUBGRADE SHALL BE BROUGHT TO A SMOOTH UNIFORM GRADE AND COMPACTED TO 85 PERCENT STANDARD PROCTOR DENSITY UNDER PAVEMENT AND STRUCTURES AND 80 PERCENT STANDARD PROCTOR DENSITY IN OPEN SPACE.
27. ALL TRENCHES IN PUBLIC RIGHT OF WAY SHALL BE BACKFILLED WITH FLOWABLE FILL OR OTHER MATERIAL PRE-APPROVED BY THE LOCAL JURISDICTION.
28. ALL NECESSARY RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LAWFUL MANNER.
29. ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS, AND OTHER DOCUMENTS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR AT COMPLETION OF CONSTRUCTION AND PRIOR TO PAYMENT.
30. CONTRACTOR SHALL SUBMIT A COMPLETE SET OF AS-BUILT REDLINES TO THE GENERAL CONTRACTOR UPON COMPLETION OF PROJECT AND PRIOR TO FINAL PAYMENT.
31. NO OUTDOOR STORAGE OR SOLID WASTE CONTAINERS ARE PROPOSED.
32. ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST GROUNDING STANDARD.
33. CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
34. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM SITE VISITS AND/OR DRAWINGS PROVIDED BY THE SITE OWNER.
35. CONTRACTORS SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
36. ALL CABLE INSTALLATIONS TO FOLLOW MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.

ANTENNA MOUNTING

1. DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO CURRENT ANSI/TIA-222 OR APPLICABLE LOCAL CODES.
2. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS NOTED OTHERWISE.
3. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS NOTED OTHERWISE.
4. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
5. ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH LOCK NUTS, DOUBLE NUTS AND SHALL BE TORQUED TO MANUFACTURER'S RECOMMENDATIONS.
6. CONTRACTOR SHALL INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATION FOR INSTALLATION AND GROUNDING.
7. PRIOR TO SETTING ANTENNA AZIMUTHS AND DOWNTILTS, ANTENNA CONTRACTOR SHALL CHECK THE ANTENNA MOUNT FOR TIGHTNESS AND ENSURE THAT THEY ARE PLUMB. ANTENNA AZIMUTHS SHALL BE SET FROM TRUE NORTH AND BE ORIENTED WITHIN +/- 5% AS DEFINED BY THE RFDS. ANTENNA DOWNTILTS SHALL BE WITHIN +/- 0.5% AS DEFINED BY THE RFDS. REFER TO ND-00246.
8. MAINTAIN A MINIMUM OF 3 FEET SEPARATION BETWEEN ALL ANTENNAS. IF 3 FEET IS NOT OBTAINABLE BETWEEN ANY OF THE ANTENNAS, NOTIFY VELEX CM FOR FURTHER DIRECTION.

TORQUE REQUIREMENTS

1. ALL RF CONNECTIONS SHALL BE TIGHTENED WITH A TORQUE WRENCH AND A TORQUE MARK INDICATED ON BOTH SIDES OF THE CONNECTION.
2. ALL GROUNDING AND ANTENNA HARDWARE SHALL ALL BE TIGHTENED WITH A TORQUE WRENCH AND A TORQUE MARK INDICATED ON THE NUT SIDE STARTING FROM THE THREADS TO THE SOLID SURFACE. TORQUE TO THE FOLLOWING VALUES:
 - 2.1. ALL 5/16" ANTENNA HARDWARE TIGHTENED TO 9 FT-LBS.
 - 2.2. ALL 1/2" ANTENNA HARDWARE TIGHTENED TO 43 FT-LBS.
 - 2.3. ALL DIN-TYPE CONNECTIONS TIGHTENED TO 18-22 FT-LBS.
 - 2.4. ALL N-TYPE CONNECTIONS TIGHTENED TO 15-20 IN-LBS.

COAXIAL CABLE NOTES

1. TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS. PRIOR TO ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.
2. CONTRACTOR SHALL VERIFY THE DOWNTILTS OF EACH ANTENNA WITH A DIGITAL LEVEL.
3. CONTRACTOR SHALL CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION. REFER TO "ANTENNA SYSTEM LABELING STANDARD" ND-00027 LATEST VERSION.
4. USE 1/2" COAX ON ANTENNAS UNLESS OTHERWISE SPECIFIED.
5. FILL VOID AROUND CABLES AT CONDUIT OPENING WITH FOAM SEALANT TO PREVENT WATER INTRUSION.
6. ALL COAXIAL CABLE SHALL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE, IN AN APPROVED MANNER, AT DISTANCES NOT TO EXCEED 4'-0".
7. CONTRACTOR SHALL FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING BOTH THE INSTALLATION AND GROUNDING OF ALL COAXIAL CABLES, CONNECTORS, ANTENNAS, AND ALL OTHER EQUIPMENT.
8. ALL OUTDOOR RF CONNECTIONS SHALL BE WEATHERPROOFED USING COLD SHRINK OR HEAT SHRINK ON ALL ANTENNA AND RADIO CONNECTIONS.

GENERAL CABLE AND EQUIPMENT NOTES

1. PRIOR TO INSTALLATION CONTRACTOR SHALL VERIFY MAKE AND MODEL OF ANTENNA, DIPLEXERS, AND COAX CONFIGURATION.
2. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
3. CONTRACTOR SHALL REFERENCE THE STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING.
4. IF REQUIRED TO PAINT ANTENNAS AND/OR COAX:
 - 4.1. TEMPERATURE SHALL BE ABOVE 50° F.
 - 4.2. PAINT COLOR MUST BE APPROVED BY BUILDING OWNER/LANDLORD.
 - 4.3. FOR REGULATED TOWERS, FAA/FCC APPROVED PAINT IS REQUIRED.
 - 4.4. DO NOT PAINT OVER COLOR CODING OR ON EQUIPMENT MODEL NUMBERS.
5. ALL PROPOSED GROUND BAR DOWNLEADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUND BAR DOWNLEADS A MINIMUM DISTANCE OF 4'-0" BELOW GROUND BAR. TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION.
6. NO BOLT THREADS TO PROTRUDE MORE THAN 1-1/2".



WESTCHESTER SERVICES LLC
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 BARRINGTON, IL 60010
 PHONE: 847-277-0070
 ADMIN@WESTCHESTER-SERVICES.COM
 WI FIRM No. 4927-11

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 BARRINGTON, IL 60010
 TELEPHONE: 847-277-0070
 FAX: 847-277-0080
 EMAIL: JBANKS@WESTCHESTER-SERVICES.COM

REVISIONS			
REV.	DATE	DESCRIPTION	BY
0	08/23/22	CONSTRUCTION SET	MC
1	07/20/22	CONSTRUCTION SET	MC

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

07/29/22

 JOHN M. BANKS
 8749-005
 STATE OF WISCONSIN
 I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A duly REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF WISCONSIN

5G NR 1SR CBAND
 1001988
 DOWNTOWN WAUKESHA
 500 RIVERVIEW AVENUE
 WAUKESHA, WI 53188

SHEET TITLE
NOTES & SPECIFICATIONS

SHEET NUMBER
GN-1

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY OF WAUKESHA. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CURRENT SERVICES IS STRICTLY PROHIBITED.



Date: July 28, 2022

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2595 N Dallas Parkway
Frisco, TX 75034

Subject: Structural Analysis Report

AT&T Mobility Co-Locate

Site Number: WI0159
Site Name: Downtown Waukesha
FA#: 10011988
Pace#: MRCHI063868
PTN#: 3352A114X2

Engineering Firm Designation: Westchester Services, LLC

Site Data: 500 Riverview Ave., Waukesha, WI 53188
N43.021572, W88.233667
Waukesha County – 124ft Chimney

Andrew Miller,

Westchester Services, LLC is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned local structure. The purpose of the analysis is to determine acceptability of the local structure stress level. Based on our analysis we have determined the stress levels under the below loading conditions to be:

Existing and Proposed Equipment

Sufficient Capacity

Note: See Table 2-1 for the existing and proposed loading.

Member Type	Result	Pass/Fail
Overall	44.3%	Pass

The analysis has been performed in accordance with the following criteria:

Building Code: Wisconsin Commercial Building Code
TIA Standard: TIA-222-H

I certify that this report was prepared by me or under my direct supervision and that I am a licensed Professional Engineer under the laws of the State of Wisconsin.

Philip Koziol, PE
Professional Engineer

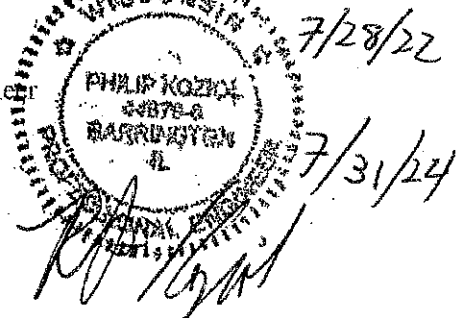


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1) INTRODUCTION

This is a 124ft tall monopole located in Waukesha County, WI. The proposed antennas will be mounted on existing single antenna mounts attached via tension bands to the chimney.

2) ANALYSIS CRITERIA

The structural analysis was performed for this structure in accordance with the requirements of TIA-222-H Structural Standards for Antenna Supporting Structures and Antennas using an ultimate gust wind speed of 107 mph with no ice, 40 mph with 1.5 inch ice, risk category II, exposure category C with topographic category 1 and crest height of 0 feet.

Table 2-1 – Proposed Final Antenna Configuration
(New antennas in bold)

Sector (Az.)	Center Line Elevation (ft)	Pos.	Antenna	Radio(s)	Note
Alpha (0°)	88	1	(1) Air6449 B77D (1) Air6419 B77G		1
	75	2	(1) NNH4-65B-R6H4	(1) RRUS4449 B5/B12 (1) RRUS4426 B30 (1) RRUS32 B30	
		3			
	81	4	(1) NNH4-65B-R6	(1) RRUS4478 B14 (1) RRUS4415 B25	
Beta (120°)	88	1	(1) Air6449 B77D (1) Air6419 B77G		1
	75	2	(1) NNH4-65B-R6H4	(1) RRUS4449 B5/B12 (1) RRUS4426 B30 (1) RRUS32 B30	
		3			
	81	4	(1) NNH4-65B-R6	(1) RRUS4478 B14 (1) RRUS4415 B25	
Gamma (240°)	88	1	(1) Air6449 B77D (1) Air6419 B77G		1
	75	2	(1) NNH4-65B-R6H4	(1) RRUS4449 B5/B12 (1) RRUS4426 B30 (1) RRUS32 B30	
		3			
	81	4	(1) NNH4-65B-R6	(1) RRUS4478 B14 (1) RRUS4415 B25	

Note: 1. Proposed antennas are to be installed stacked vertically on the same pipe mount, RAD for antennas will be ±3ft to accommodate this

Additional Equipment:

(2) DC9-48-60-24-8C-EV

(1) DC6-48-60-18-8C

3) ANALYSIS PROCEDURE

Table 3-1 – Documents Provided

Document	Remarks	Reference	Date	Source
Most Recent Site Photos	N/A	N/A	None	
Mount Analysis Report	MasTec	20835-MNT1	4/24/20	Nexius

Table 3-2 – Companion Document

Document	Remarks	Date	Note
RFDS Scoping Document	Nexius	12/13/21	
Preliminary Construction Drawings	WSLLC	3/3/22	Rev A
Mount Analysis Report	WSLLC	4/12/22	Pass

3.1) Analysis Method

Mathcad 15 is a mathematics software program used for creating hand calc templates. The output of these calculations can be found in Appendix A.

4) ANALYSIS RESULTS

Table 4-1 – Critical Section Capacity (Summary)

Member Type	Value	Limit	Pass/Fail
Bending Moment	859.1kip*ft	1939.5kip*ft	Pass
Overall			Pass

4.1) Recommendations

The chimney has sufficient capacity to carry the existing and proposed loads.

5) ASSUMPTIONS

- The analysis performed is to the theoretical capacity of the members and connections. No accommodations are taken for any damaged, rusted, deteriorated, or otherwise compromised member conditions. To this, the tower or structure is assumed to be properly maintained and monitored and this analysis cannot be considered to be a condition assessment of the structure.
- The analysis is performed to the minimum design wind, ice, and other environmental loading prescribed by the governing building codes and standards. Any higher loading conditions required by the local jurisdiction or structure owner should be made known to Westchester immediately for analysis. No lesser conditions will be accommodated.
- If the Topographic Category would be 2, 3, or 4, then the Rigorous Topographic Factor Procedure (Method 2) is used. In the case it would be categorized at Topographic Category 1 (slope less than 10% or bottom half of feature), then Method 2 defaults to Method 1. In that situation, the Simplified Topographic Factor Procedure (Method 1) is used. Method 2 Topographic coefficients will be based on conservative engineering judgment and best available geographic survey data.
- Member sizes are assumed to be of standard AISC or manufacturer designations unless explicitly specified otherwise. The geometry of the tower or structure is assumed as schematic. Steel grade and concrete strength are assumed to be conservative standard and fully developed unless otherwise specified.
- The information provided to Westchester for analysis is assumed accurate and up to date as supplied. No independent efforts were taken by Westchester to verify the validity of the information supplied. If any additional information is presented at any time that contradicts what is referenced in the analysis, the analysis is invalid and must be performed again with the new information.
- Any reinforcement or modifications are assumed to be fully installed and functional.
- All welds are assumed to have been performed to current welding standards and are assumed to develop their full capacity and to be in good condition. In addition, all bolts and bolt-like anchors are assumed to be fully tightened, fastened, or bonded to the manufacturers' specifications and are assumed to have full capacity.
- Mount connections to towers are intentionally neglected from this analysis unless otherwise noted. Full rigorous analysis of these connections is not possible with standard methods. Typically, these connections are tested empirically by the mount manufacturer combined with full FEA analysis. Good engineering practice would demand that these critical connections are adequately designed. It is reasonable to assume that a passing mount analysis can be taken to indicate the mount to tower connection is passing as well.

- Numerous connection details of large-scale structures are unobtainable and are omitted from the structural analysis. This includes, but is not limited to: bolts, welds, flanges, and small gusset plates. These connections are considered adequate and are therefore neglected from the analysis. In addition, in the absence of building plans, many wall, floor, and ceiling constructions can only be determined from observable field data and are supplemented by best judgment and experience.
- Antennas, dishes, feedlines, and any other such appurtenances are assumed adequate through manufacturer testing. No analysis is provided for the structural strength or stability of these items unless otherwise specified.
- Other carrier equipment that is unknown at the time of the analysis are conservatively estimated visually (size and weight) as this information may not be available.
- Antenna and other equipment small-scale mounting systems (equipment to mount pipe) are assumed structurally sound unless specifically called for in the analysis.
- Soil conditions and foundations are not considered unless specified in the analysis and have no deterioration or defects. For sites located on a building, only local effects of the equipment is considered unless otherwise specified. The overall structure of the building and its foundation are assumed to be unaffected by the telecom equipment.
- Any differences between the scope of work and that found at the site at any time prior to installation must be brought to the attention of Westchester immediately. Any changes or substitutions to any part of the scope of work must be brought to Westchester for explicit approval. Any changes made without prior approval will render the analysis and its conclusions invalid.

APPENDIX A
CALCULATIONS

Westchester Services, LLC.

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Client: Nexus/AT&T

Date: 7/28/2022
By: TH
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References:

- 1) Wisconsin Commercial Building Code
- 2) ANSI TIA-222-H, Structural Standard for Antenna Supporting Structures and Antennas
- 3) AISC 360-10 Specification for Structural Steel Buildings
- 4) Structural Analysis by MasTec, dated 4/24/20

Input

Wind Factors (as per TIA-222-H)

$V_b = 107$ mph	V_{nom} per Ref. (2)
$V_j = 40$ mph	Basic wind speed with ice
$V_m = 30$ mph	Wind speed for concurrent man live load
$t_i = 1.5$ in	Design ice thickness
$G_{HT} = 1.0$	Ref. (2), Chapter 16.6
$R_c = II^0$	Risk Category
$K_d = 0.95$	Wind Direction Probability Factor, Ref. (2), Table 2-2
$E_x = UC$	Exposure category. See Ref. (2), Table 2-4
$TC = II^0$	Topographic Category. See Ref. (2), Table 2-5
$H_c = 0$ ft	Crest Height
$z_s = 921$ ft	Elevation above Sea Level of base of structure

Does rooftop wind speed up factor apply (per Ref. (2) Section 2.6.7)?

query = Yes No

Ks conditions (must meet 1 to require Ks factor)

- 1. Building is 50ft in height or greater and unobstructed in a continuous 90deg quadrant by other buildings of comparable height from the windward wall for 2600ft or 20 times the height of the structure, whichever is less..
- 2. Building protrudes 50+ft above the average height of immediately adjacent buildings in a continuous 90deg quadrant.

Chimney Geometry

The chimney is a prestress concrete chimney.

The dimensions of the chimney are from the referenced material. Two sections are considered in the calculations.

$$N_{sections} = 6$$

Number of chimney sections

$$H = \begin{pmatrix} 121.75 \\ 100 \\ 80 \\ 60 \\ 40 \\ 20 \\ 0 \end{pmatrix} \text{ ft}$$

Height at boundaries
of each section

$$n_{side} = \begin{pmatrix} 360 \\ 360 \\ 360 \\ 360 \\ 360 \\ 360 \\ 360 \end{pmatrix}$$

Number of sides
(360 for circular)

$$OD_{top} = 68\text{in}$$

Outer diameter at top

$$OD_{bot} = 101.0\text{in}$$

Outer diameter at bottom

$$\phi M_n = 1939.51\text{kip}\cdot\text{ft}$$

Allowable base moment per Ref (4)

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Antennas/Radios

Antenna name/model

Elevation of antennas

Number of antennas

$N_{antenna} = 8$

Number of antenna groups

NNH4-65B-R6
NNH4-65B-R6H4
Air 6419-N77G
Air6449-N77D
RRUS32
RRUS4415-B25/B30
RRUS4478-B14
RRUS4449-B5/B12
RRUS4426-B30
DC9

z _{ant} = 81 ft
75
88
88
75
81
81
75
75
88

n _{ant} = 3
3
3
3
3
3
3
3
3
3

Height of antennas*

Width of antennas*

Depth of antennas*

Weight of antennas

height _{ant} = 72 in
72
28.3
30.4
27.2
15
14.9
28
15
32.8

width _{ant} = 19.6 in
19.6
16.1
15.9
12.1
13.2
13.1
10
13.2
10.25

depth _{ant} = 7.8 in
7.8
7.6
8.1
7
6.4
7.3
13
5.8
10.25

Weight _{ant} = 88.2 lbf
88.2
66.1
81.6
53
46
60
85
48.4
38

Local Shielding Factor

LocalShielding = 0.90
0.90
0.90
0.90
0.75
0.75
0.75
0.75
0.75
0.75

Antenna Shape?

SHAPE = 1
1
1
1
1
1
1
1
1
1
0

Shape Guide:
0 = Round
1 = Flat
2 = Dish w/o Radome
3 = Dish w/ Radome
4 = Dish w/ Shroud
5 = Grid Dish

h & w for dishes are outer diameters.
Ellipse shape OK

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Mounts and Other Equipment

$$N_{\text{equip}} = 3$$

Number of appurtenance groups

Name/model

Number of appurtenances

Elevation

Antenna Mounts
Antenna Mounts
Antenna Mounts
"not used"

$$n_{\text{equip}} = \begin{pmatrix} 3 \\ 3 \\ 3 \\ 0 \end{pmatrix}$$

$$z_{\text{equip}} = \begin{pmatrix} 88 \\ 81 \\ 75 \\ 0 \end{pmatrix} \text{ ft}$$

CaAa of equipment

CaAa with ice

$$CaAa_{\text{equip}} = \begin{pmatrix} 1 \\ 1 \\ 1 \\ 0 \end{pmatrix} \text{ ft}^2$$

$$CaAa_{\text{equip,ice}} = \begin{pmatrix} 1.4 \\ 1.4 \\ 1.4 \\ 0 \end{pmatrix} \text{ ft}^2$$

Weight

Weight with ice

$$\text{weight}_{\text{equip}} = \begin{pmatrix} 35 \\ 35 \\ 35 \\ 0 \end{pmatrix} \text{ lbf}$$

$$\text{weight}_{\text{equip,ice}} = \begin{pmatrix} 45 \\ 45 \\ 45 \\ 0 \end{pmatrix} \text{ lbf}$$

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Feedlines

Number of coaxial cables

Nominal coaxial size

Length of coaxial cables

$N_{feed} =$	12
	2
	6
	0
	0
	0
	0

$Size_{feed} =$	0.875	in
	0.5	
	0.5	
	0	
	0	
	0	
	0	

$L_{feed} =$	88	ft
	88	
	88	
	0	
	0	
	0	
	0	

$N_{Feed} = 3$

Number of feedline groups

$n_{feed} = 3$

Number of feedlines exposed to wind loading

This value includes the cable race tray up the chimney

Wind load calculations collapsed



Calculations

Section Length

$$L := \begin{cases} \text{for } n \in 1..N_{\text{sections}} \\ l_n \leftarrow H_n - H_{n+1} \\ 1 \end{cases}$$

$$L = \begin{pmatrix} 21.75 \\ 20 \\ 20 \\ 20 \\ 20 \\ 20 \end{pmatrix} \text{ ft}$$

O.D. at the boundaries of each section

$$D := \begin{cases} \text{for } n \in 1..N_{\text{sections}} + 1 \\ D_n \leftarrow OD_{\text{top}} + \frac{-(OD_{\text{bot}} - OD_{\text{top}})(H_n - H_1)}{[H_1 - H_{(N_{\text{sections}}+1)}]} \\ D \end{cases}$$

$$D = \begin{pmatrix} 5.667 \\ 6.158 \\ 6.61 \\ 7.061 \\ 7.513 \\ 7.965 \\ 8.417 \end{pmatrix} \text{ ft}$$

O.D. at center line of each section

$$D_{\text{mid}} := \begin{cases} \text{for } n \in 1..N_{\text{sections}} \\ d_n \leftarrow \frac{D_n + D_{n+1}}{2} \\ d \end{cases}$$

$$D_{\text{mid}} = \begin{pmatrix} 5.912 \\ 6.384 \\ 6.836 \\ 7.287 \\ 7.739 \\ 8.191 \end{pmatrix} \text{ ft}$$

Section Calculations

$$\text{Aspect} := \begin{cases} \text{for } i \in 1..N_{\text{sections}} \\ x_i \leftarrow \frac{L_i}{D_{\text{mid}_i}} \\ x \end{cases} \quad \text{Aspect} = \begin{pmatrix} 3.679 \\ 3.133 \\ 2.926 \\ 2.744 \\ 2.584 \\ 2.442 \end{pmatrix}$$

$$C_f := \begin{cases} \text{for } i \in 1..N_{\text{sections}} \\ x_i \leftarrow \begin{cases} \text{if } n_{\text{side}_i} = 4 \\ \begin{cases} 1.3 & \text{if } \text{Aspect}_i \leq 1 \\ 1.3 + 0.1 \cdot \frac{\text{Aspect}_i - 1}{7 - 1} & \text{if } 1 < \text{Aspect}_i \leq 7 \\ 1.4 + 0.6 \cdot \frac{\text{Aspect}_i - 7}{25 - 7} & \text{if } 7 < \text{Aspect}_i < 25 \\ 2.0 & \text{if } \text{Aspect}_i \geq 25 \end{cases} \end{cases} \end{cases}$$

See Figure 6-21, Ref. (4)

*Square chimney,
wind normal to face*

$$\begin{cases} \text{if } 4 < n_{\text{side}_i} \leq 8 \\ \begin{cases} 1.0 & \text{if } \text{Aspect}_i \leq 1 \\ 1.0 + 0.2 \cdot \frac{\text{Aspect}_i - 1}{7 - 1} & \text{if } 1 < \text{Aspect}_i \leq 7 \\ 1.2 + 0.2 \cdot \frac{\text{Aspect}_i - 7}{25 - 7} & \text{if } 7 < \text{Aspect}_i < 25 \\ 1.4 & \text{if } \text{Aspect}_i \geq 25 \end{cases} \end{cases}$$

*Pentagonal through Octagonal
chimney.*

$$\begin{cases} \text{if } n_{\text{side}_i} > 8 \\ \begin{cases} 0.5 & \text{if } \text{Aspect}_i \leq 1 \\ 0.5 + 0.1 \cdot \frac{\text{Aspect}_i - 1}{7 - 1} & \text{if } 1 < \text{Aspect}_i \leq 7 \\ 0.6 + 0.1 \cdot \frac{\text{Aspect}_i - 7}{25 - 7} & \text{if } 7 < \text{Aspect}_i < 25 \\ 0.7 & \text{if } \text{Aspect}_i \geq 25 \end{cases} \end{cases}$$

*Round chimney; moderately
smooth, as D/D will typically be
significantly lower than 0.02*

$$C_f = \begin{pmatrix} 0.545 \\ 0.536 \\ 0.532 \\ 0.529 \\ 0.526 \\ 0.524 \end{pmatrix}$$

$$K_d := \begin{cases} \text{for } i \in 1..N_{\text{sections}} \\ x_i \leftarrow \begin{cases} 0.90 & \text{if } n_{\text{side}_i} = 4 \\ 0.95 & \text{if } 4 < n_{\text{side}_i} \leq 8 \\ 0.95 & \text{if } n_{\text{side}_i} > 8 \end{cases} \end{cases} \quad K_d = \begin{pmatrix} 0.95 \\ 0.95 \\ 0.95 \\ 0.95 \\ 0.95 \\ 0.95 \end{pmatrix} \quad \text{From Table 6-4, Ref. (4)}$$

$$K_{zt} := 1 \quad \text{Important Factor, Table 6-1, Ref (4)}$$

$$G := 0.85$$

$$z_g := 1200\text{-ft} \quad \alpha := 7 \quad \text{Table 6-2, Ref. (4)}$$

$$K_z := \begin{cases} \text{for } i \in 1..N_{\text{sections}} \\ x_i \leftarrow \begin{cases} 2.01 \cdot \left(\frac{H_1 - 0.5 \cdot L_1}{z_g} \right)^{\frac{2}{\alpha}} & \text{if } H_1 - 0.5 \cdot L_1 \geq 15\text{-ft} \\ 2.01 \cdot \left(\frac{15\text{-ft}}{z_g} \right)^{\frac{2}{\alpha}} & \text{otherwise} \end{cases} \end{cases} \quad K_z = \begin{pmatrix} 1.018 \\ 0.959 \\ 0.892 \\ 0.811 \\ 0.701 \\ 0.575 \end{pmatrix}$$

$$q_z := \begin{cases} \text{for } i \in 1..N_{\text{sections}} \\ x_i \leftarrow 0.00256 \cdot K_z \cdot K_{zt} \cdot K_e \cdot K_s \cdot K_d \cdot V^2 \cdot \text{psf} \end{cases} \quad q_z = \begin{pmatrix} 27.411 \\ 25.825 \\ 24.035 \\ 21.832 \\ 18.868 \\ 15.478 \end{pmatrix} \cdot \text{psf}$$

$$A_f := \begin{cases} \text{for } i \in 1..N_{\text{sections}} \\ x_i \leftarrow L_i \cdot D_{\text{mid}_i} \end{cases} \quad A_f = \begin{pmatrix} 128.593 \\ 127.676 \\ 136.711 \\ 145.746 \\ 154.781 \\ 163.816 \end{pmatrix} \text{ft}^2$$

$$F := \begin{cases} \text{for } i \in 1..N_{\text{sections}} \\ x_i \leftarrow q_{z_i} \cdot G \cdot C_{f_i} \cdot A_{f_i} \\ x \end{cases}$$

$$F = \begin{pmatrix} 1.632 \\ 1.501 \\ 1.486 \\ 1.431 \\ 1.307 \\ 1.129 \end{pmatrix} \cdot \text{kip}$$

$$z_{\text{center}} := \begin{cases} \text{for } i \in 1..N_{\text{sections}} \\ x_i \leftarrow H_i - 0.5 \cdot L_i \\ x \end{cases}$$

$$z_{\text{center}} = \begin{pmatrix} 110.875 \\ 90 \\ 70 \\ 50 \\ 30 \\ 10 \end{pmatrix} \text{ ft}$$

Overturning moment at the bottom of the section

$$M := \begin{cases} \text{for } i \in 1..N_{\text{sections}} \\ x_i \leftarrow \sum_{j=1}^{N_{\text{antenna}}} \text{if}[z_{\text{ant}_j} > (H_i - L_i), F_{A_j} \cdot [z_{\text{ant}_j} - (H_i - L_i)], 0] \dots \\ \quad + \sum_{j=1}^{N_{\text{equip}}} \text{if}[z_{\text{equip}_j} > (H_i - L_i), F_{\text{equip}_j} \cdot [z_{\text{equip}_j} - (H_i - L_i)], 0] \dots \\ \quad + \text{if}[z_{\text{feed}} > H_i - L_i, 0.5 \cdot q_{\text{feed}} \cdot [z_{\text{feed}} - (H_i - L_i)]^2, 0] \dots \\ \quad + \sum_{j=1}^i [F_j \cdot [z_{\text{center}_j} - (H_i - L_i)]] \\ x \end{cases}$$

$$M = \begin{pmatrix} 17.746 \\ 72.358 \\ 210.977 \\ 392.753 \\ 609.788 \\ 859.068 \end{pmatrix} \cdot \text{kip}\cdot\text{ft}$$

Chimney Review

$$\frac{M_6}{\phi M_n} = 44.293\%$$

< 100%, OK

1 MODIFY THE 2023 DISTRICT ATTORNEY'S BUDGET TO CREATE A 0.50 FTE SENIOR
2 ADMINISTRATIVE SPECIALIST POSITION AND TRANSFER PERSONNEL APPROPRIATIONS TO
3 INTERDEPARTMENTAL TO FUND A PILOT PROJECT WITH CORPORATION COUNSEL FOR A
4 SHARED FINANCIAL ANALYST
5

6 WHEREAS, the Waukesha County District Attorney's Office is experiencing the retirement of a
7 long term Fiscal Specialist staff person in December 2022 which is providing it with an
8 opportunity to examine currently assigned tasks to determine how this work could be
9 accomplished in the future; and
10

11 WHEREAS, the Waukesha County District Attorney's Office has the need for some professional
12 level financial analyst work related to restitution reimbursement and tracking, budget
13 development and monitoring, as well as grant reporting; and
14

15 WHEREAS, the Waukesha County Corporation Counsel has a Financial Analyst staff person with
16 the ability to allocate some time to the District Attorney's Office to provide professional level
17 financial assistance; and
18

19 WHEREAS, some of the non-financial tasks that have been assigned to the District Attorney's
20 Fiscal Specialist staff person could be reassigned to a newly created part-time 0.50 FTE Senior
21 Administrative Specialist staff person; and
22

23 WHEREAS, the Waukesha County District Attorney's Office and Corporation Counsel would like
24 to pilot this partnership to determine if it is a cost effective way to accomplish necessary tasks
25 and provide professional financial assistance to both Departments; and
26

27 WHEREAS, the District Attorney's Office plans to fund this shared Financial Analyst position and
28 the new part-time Senior Administrative Specialist position by unfunding a Fiscal Specialist
29 position; and
30

31 WHEREAS, Corporation Counsel will cross-charge the District Attorney's Office
32 interdepartmentally for the shared position, which requires transferring appropriations from
33 personnel costs to interdepartmental.
34

35 THE COUNTY BOARD OF SUPERVISORS OF THE COUNTY OF WAUKESHA ORDAINS that effective
36 12/31/2022 the Waukesha County District Attorney's Office is authorized to create a regular
37 part-time Senior Administrative Specialist staff position, 2022 Open Range 03 (\$20.09/hour
38 minimum, \$23.34/hour mid-point, \$26.58/hour maximum).
39

40 BE IT FURTHER ORDAINED that the 2023 Waukesha County District Attorney's Office budget is
41 modified to transfer \$18,550 from the personnel cost appropriation unit, where the fiscal
42 specialist funds are budgeted, to the interdepartmental appropriation unit to fund a cross
43 charge for a portion of the Financial Analyst staff assistance provided by the Corporation
44 Counsel Financial Analyst.

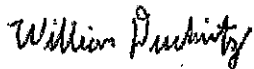
FISCAL NOTE

MODIFY THE 2023 DISTRICT ATTORNEY'S BUDGET TO CREATE A 0.50 FTE SENIOR ADMINISTRATIVE SPECIALIST POSITION AND TRANSFER PERSONNEL APPROPRIATIONS TO INTERDEPARTMENTAL TO FUND A PILOT PROJECT WITH CORPORATION COUNSEL FOR A SHARED FINANCIAL ANALYST

This ordinance creates a 0.50 FTE senior administrative specialist position in the District Attorney's Office, 2022 Open Range 03 (\$20.09/hour minimum, \$23.34/hour mid-point, \$26.58/hour maximum) and transfers personnel appropriations to the interdepartmental appropriation unit to fund a pilot project with Corporation Counsel for a shared financial analyst position. This position creation and the increase in interdepartmental charges is funded by unfunding one regular, full-time fiscal specialist position, Range S-08 (\$19.62/hour minimum, \$22.55/hour mid-point, \$25.92/hour maximum) in the District Attorney's Office.

The District Attorney's Office will experience the retirement of a long-term fiscal specialist staff person in December 2022, which is providing an opportunity to examine currently assigned tasks to determine how this work could be accomplished in the future. The office has the need for some professional level financial analyst work related to restitution reimbursement and tracking, budget development and monitoring, and grant reporting. Corporation Counsel has a financial analyst staff person with the ability to allocate some time to the District Attorney. The non-financial tasks from the fiscal specialist position will be reassigned to a newly created 0.50 FTE senior administrative specialist position.

The unfunded fiscal specialist position was budgeted at \$87,850 in 2023, which is sufficient to cover the increased interdepartmental charge of \$18,550 for 0.20 FTE of the financial analyst salary and benefit cost in 2023 and the new part-time senior administrative specialist position, which is estimated to cost \$43,350.



William Duckwitz

Budget Manager

11/17/2022

MJC JE# 2022-00008940

1 MODIFY THE 2022 SHERIFF'S DEPARTMENT BUDGET FOR ABOVE BUDGET AMERICAN RESCUE
2 PLAN ACT GRANT AND INTERDEPARTMENTAL BAILIFF SERVICES REVENUE
3

4 WHEREAS, in March 2021, the federal government approved legislation authorizing and funding
5 the American Rescue Plan Act (ARPA) allocating \$350 billion of direct aid to state and local
6 governments through the Coronavirus State and Local Fiscal Recovery Funds (CSLFRF) program;
7 and
8

9 WHEREAS, Waukesha County's CSLFRF allocation is \$78.5 million, which must be spent or
10 obligated by December 31, 2024 and completed by December 31, 2026; and
11

12 WHEREAS, permissible uses of the grant funding include supporting public health; responding
13 to negative economic impacts from the public health emergency; building public sector capacity
14 and administrative needs; providing premium pay for essential workers; investing in water,
15 sewer, and broadband infrastructure; and recovering lost revenue to fund general government
16 services; and
17

18 WHEREAS, the Waukesha County Board previously accepted CSLFRF funding (Enrolled
19 Ordinance 176-46); and
20

21 WHEREAS, the Waukesha County Sheriff's Department had employees out sick with COVID-19
22 and still needed to fill their posts; and
23

24 WHEREAS, the Waukesha County Sheriff's Department received \$162,300 in ARPA funds in
25 2022 to assist with overtime related to filling these posts; and
26

27 WHEREAS, the Waukesha County Sheriff's Department had additional expenditures directly
28 associated with personal protective equipment to protect department employees from
29 contracting COVID-19; and
30

31 WHEREAS, the Waukesha County Sheriff's Department received \$20,800 in ARPA funds in 2022
32 to pay for this personal protective equipment; and
33

34 WHEREAS, these personnel and operating costs are eligible under final ARPA grant rules
35 because they support the public health response to the pandemic; and
36

37 WHEREAS, due to higher court security needs, the Waukesha County Sheriff's Department
38 anticipates that interdepartmental revenues for bailiff services will exceed budget by \$130,000;
39 and
40

41 WHEREAS, the Waukesha County Sheriff's Department projects personnel expenditures to
42 exceed the 2022 modified budget due to additional coverage needed during COVID-19 sick
43 leave and greater than anticipated demand for court security services; and
44

45 WHEREAS, the Waukesha County Sheriff's Department is requesting to appropriate greater
46 than budgeted revenue to provide additional expenditure authority for the related expenses.

47
48 THE COUNTY BOARD OF SUPERVISORS OF THE COUNTY OF WAUKESHA ORDAINS that the
49 Waukesha County Sheriff's Department 2022 budget be modified by increasing personnel cost
50 expenditures by \$292,300, operating expenditures by \$20,800, general government revenue by
51 \$183,100, and interdepartmental revenue by \$130,000.

FISCAL NOTE

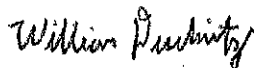
**MODIFY THE 2022 SHERIFF'S DEPARTMENT BUDGET FOR ABOVE BUDGET AMERICAN RESCUE
PLAN ACT GRANT AND INTERDEPARTMENTAL BAILIFF SERVICES REVENUE**

This ordinance modifies the 2022 Waukesha County Sheriff's Department budget by appropriating \$292,300 of additional personnel expenditures, for overtime due to coverage needed for COVID-19 sick leave and additional court security services, and \$20,800 of additional operating expenses for personal protective equipment (PPE) related to preventing the spread of COVID-19.

The ordinance increases the budget for general government revenue by \$183,100 due to above-budget American Rescue Plan Act (ARPA) revenue received for the COVID-19 sick leave coverage and PPE. These costs are eligible under final ARPA grant rules because they support the public health response to the pandemic. This ordinance also increases the interdepartmental revenue budget for bailiff services for Circuit Courts by \$130,000 for higher than budgeted court security. A financial summary of the budget modifications proposed in this ordinance is displayed below.

Appropriation Unit	Description	Funding Source	Amount
EXPENSES			
Personnel Cost	Overtime	ARPA	\$ 162,300
Personnel Cost	Overtime	Bailiff Services	\$ 130,000
Subtotal Personnel Costs			\$ 292,300
Operating Expenses	PPE	ARPA	\$ 20,800
Total Expenses			\$ 313,100
REVENUES			
General Government Revenue		ARPA	\$ 183,100
Interdepartmental Revenue		Bailiff Services	\$ 130,000
Total Revenues			\$ 313,100

This ordinance results in no additional tax levy impact.



William Duckwitz
Budget Manager
11/22/2022
MJC JE# 2022-00009023

1 AUTHORIZE THE WAUKESHA COUNTY SHERIFF'S DEPARTMENT TO AMEND THE 2020-2024
2 POLICE PATROL SERVICES CONTRACT WITH THE TOWN OF DELAFIELD, CREATE AN ADDITIONAL
3 1.00 FTE DEPUTY SHERIFF POSITION FUNDED BY THE TOWN OF DELAFIELD BEGINNING
4 JANUARY 1, 2023, AND AMEND THE 2023 SHERIFF'S DEPARTMENT BUDGET ACCORDINGLY
5

6 WHEREAS, the Waukesha County Sheriff's Department has provided municipal patrol coverage
7 to the Town of Delafield since 1991; and
8

9 WHEREAS, the term of the current police patrol services contract is from January 1, 2020
10 through December 31, 2024; and
11

12 WHEREAS, the Town of Delafield Board requested that the existing contract with the Waukesha
13 County Sheriff's Department be amended to increase their police services from two days per
14 week to five days per week and all necessary equipment, beginning on January 1, 2023; and
15

16 WHEREAS, the Waukesha County Sheriff's Department will need to create one 1.00 FTE Deputy
17 Sheriff position to provide patrol services; and
18

19 WHEREAS, the proposed contract amendment is a full-cost recovery contract amendment with
20 a 2023 additional annual cost of \$128,214, for the additional days of police services and other
21 related costs beginning on January 1, 2023; and
22

23 WHEREAS, the contract amendment will require the purchase of a vehicle, estimated to cost
24 \$44,000, which will be funded initially through General Fund balance with costs recovered from
25 the town over the following years.
26

27 THE COUNTY BOARD OF SUPERVISORS OF THE COUNTY OF WAUKESHA ORDAINS that effective
28 January 1, 2023 that one regular full-time Deputy Sheriff position, (2023 range, \$32.53/hour -
29 \$41.57/hour) will be created in the Waukesha County Sheriff's Department with a sunset
30 provision should the Town of Delafield choose not to fund the position in the future.
31

32 BE IT FURTHER ORDAINED that the Waukesha County Sheriff's Department 2023 budget be
33 modified by increasing charges for services revenues by \$128,214, General Fund balance use by
34 \$44,000, the personnel cost appropriation unit by \$108,373, the operating expense
35 appropriation unit by \$12,300, the interdepartmental charge appropriation unit by \$7,541, and
36 the fixed asset appropriation unit by \$44,000 to fund the positions and the costs associated
37 with the contract expansion.
38

39 BE IT FURTHER ORDAINED that the contract for services on file with the Waukesha County
40 Sheriff's Department to provide police services to the Town of Delafield be amended to reflect
41 the desired expansion in patrol services, and the Waukesha County Sheriff is authorized to
42 execute Amendment #1.

FISCAL NOTE

AUTHORIZE THE WAUKESHA COUNTY SHERIFF'S DEPARTMENT TO AMEND THE 2020-2024 POLICE PATROL SERVICES CONTRACT WITH THE TOWN OF DELAFIELD, CREATE AN ADDITIONAL 1.00 FTE DEPUTY SHERIFF POSITION FUNDED BY THE TOWN OF DELAFIELD BEGINNING JANUARY 1, 2023, AND AMEND THE 2023 SHERIFF'S DEPARTMENT BUDGET ACCORDINGLY

This ordinance modifies the existing municipal police patrol services contract with the Town of Delafield, and creates one regular, full-time (1.00 FTE) Deputy Sheriff position (2023 salary range \$67,662 - \$86,466). The position and related costs would be funded entirely by the Town of Delafield. The position would be authorized to begin on January 1, 2023, and the term of the existing contract ends on December 31, 2024. If the Town of Delafield chooses not to continue funding this position in future, the position will sunset.

This ordinance also modifies the 2023 Sheriff's Department budget by increasing expenditure authority and revenue by \$172,214 to cover the costs associated with this contract amendment, as detailed in the table below.

Appropriation Unit	Description	Amount
Persomel	Salary and Benefit Costs	\$ 108,373.00
Operating	Ammunition, Weapon, Taser, Emergency Supplies, etc.	\$ 12,300.00
Interdepartmental	Vehicle Repair, Vehicle Maintenance, EUTF Charges	\$ 7,541.00
Fixed Assets	Additional Vehicle	\$ 44,000.00
	Total	\$ 172,214.00

This ordinance is funded with municipal contract revenue and does not result in a direct levy impact.

William Duckwitz

William Duckwitz
Budget Manager
11/28/2022
MJC JE# 2022-00009326

1 MODIFY THE 2022 DEPARTMENT OF HEALTH AND HUMAN SERVICES BUDGET TO INCREASE
2 GENERAL GOVERNMENT REVENUE AND APPROPRIATE ADDITIONAL EXPENDITURES FOR
3 CHILDREN WITH LONG-TERM SUPPORT NEEDS - THIRD PARTY ADMINISTRATOR
4

5 WHEREAS, the Waukesha County Department of Health and Human Services' Children's Long-
6 Term Support (CLTS) waiver program is a fully funded Medicaid program for eligible children
7 diagnosed with severe and chronic disabilities to purchase supports and services that enable
8 these children to remain living safely at home and in their communities; and
9

10 WHEREAS, to receive funds for these supports and services, claims are submitted and paid
11 through a third-party administrator (TPA) contracted by the State of Wisconsin Department of
12 Health Services; and
13

14 WHEREAS, expenditures and revenues in the CLTS-TPA program are pass-through transactions
15 required by the State of Wisconsin and are informational-only transactions with no tax levy
16 impact; and
17

18 WHEREAS, the state has mandated that the CLTS wait list be eliminated, and efforts to reduce
19 the wait list and serve more clients have required the purchase of additional supportive goods
20 and services that, along with higher prices, are expected result in above budget expenditures
21 and revenues by \$1,000,000; and
22

23 WHEREAS, the \$1,000,000 in additional expenditures will be entirely reimbursed and funded
24 through the CLTS-TPA program, creating an additional \$1,000,000 in general government
25 revenue not contemplated in the 2022 budget.
26

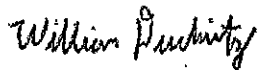
27 THE COUNTY BOARD OF SUPERVISORS OF THE COUNTY OF WAUKESHA ORDAINS
28 that the 2022 Waukesha County Department of Health and Human Services, Children's Long-
29 Term Support – Third Party Administrator program budget be modified to increase general
30 government revenue by \$1,000,000 and operating expenses by \$1,000,000.

FISCAL NOTE

MODIFY THE 2022 DEPARTMENT OF HEALTH AND HUMAN SERVICES BUDGET TO INCREASE
GENERAL GOVERNMENT REVENUE AND APPROPRIATE ADDITIONAL EXPENDITURES FOR
CHILDREN WITH LONG-TERM SUPPORT NEEDS - THIRD PARTY ADMINISTRATOR

This ordinance modifies the 2022 Waukesha County Health and Human Services budget by appropriating \$1,000,000 of additional operating expenditures for the Children's Long-Term Support (CLTS) waiver program related to additional costs associated with reducing the wait list for children into the program (resulting in higher client enrollment), as well as rising costs from service providers for goods and services. Examples of these include counseling, respite care, home modifications, therapeutic supplies, and assistive technology. This ordinance increases the budget for general government revenue by \$1,000,000. Since this program is supported with pass-through Medicaid funding from the state, these transactions offset and result in neither a favorable nor an unfavorable impact to county. The 2023 budget for CLTS – Third Party Administrator program has been increased \$2,500,000.

This ordinance results in no additional tax levy impact.



William Duckwitz
Budget Manager
11/21/2022
AJK
JE# 2022-00009137

1 AUTHORIZE THE WAUKESHA COUNTY DEPARTMENT OF ADMINISTRATION TO ACCEPT UNITED
2 STATES DEPARTMENT OF TREASURY AMERICAN RESCUE PLAN ACT – LOCAL ASSISTANCE AND
3 TRIBAL CONSISTENCY FUND GRANT FUNDING
4

5 WHEREAS, in March 2021, the federal government approved legislation authorizing and funding
6 the American Rescue Plan Act (ARPA), which authorized the United States Department of
7 Treasury to provide \$2.0 billion across fiscal years 2022 and 2023 to eligible local governments
8 for use on any governmental purpose except for lobbying activities; and
9

10 WHEREAS, this is a separate allocation from the \$78.5 million that the County received in
11 Coronavirus State and Local Fiscal Recovery Funds (CSLFRF); and
12

13 WHEREAS, Waukesha County's allocation is \$100,000, with \$50,000 available in 2022 and
14 \$50,000 available in 2023; and
15

16 WHEREAS, the cost of ballots for elections has nearly doubled during 2022 from \$0.11 to \$0.21
17 per ballot; and
18

19 WHEREAS, the finance committee previously approved a Contingency Fund transfer of \$70,000
20 to the County Clerk's Office, mostly related to higher ballot costs; and
21

22 WHEREAS, this funding is available to partially offset the need to utilize Contingency Funds for
23 higher ballot costs in 2022.
24

25 THE COUNTY BOARD OF SUPERVISORS OF THE COUNTY OF WAUKESHA ORDAINS the Waukesha
26 County Department of Administration is authorized to accept US Department of Treasury
27 American Rescue Plan Act Grant funding through the Local Assistance and Tribal Consistency
28 Fund program to fund permissible expenditures.
29

30 BE IT FURTHER ORDAINED that the Waukesha County Clerk's 2022 budget be modified to
31 increase general government revenues by \$50,000 and decrease fund balance use from the
32 Contingency Fund by \$50,000.

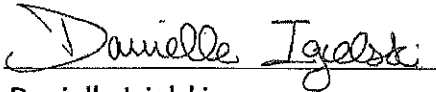
FISCAL NOTE

AUTHORIZE THE WAUKESHA COUNTY DEPARTMENT OF ADMINISTRATION TO ACCEPT UNITED STATES DEPARTMENT OF TREASURY AMERICAN RESCUE PLAN ACT – LOCAL ASSISTANCE AND TRIBAL CONSISTENCY FUND GRANT FUNDING

This ordinance allows for the Waukesha County Department of Administration to accept \$100,000 from the American Rescue Plan Act (ARPA) – Local Assistance and Tribal Consistency Fund program; half of which is available to the County in 2022 and half in 2023. The department intends to use the 2022 allocation of \$50,000 to partially offset the need for Contingency Funds use in the County Clerk's Office budget that was previously approved by the County Board's Finance Committee to cover above budget election ballot costs.

Regarding the 2023 allocation of \$50,000, the department plans to monitor budgets and apply these funds to an area(s) similarly experiencing increasing costs, which may require a requested ordinance if additional expenditure authority is needed.

This ordinance results in no additional direct tax levy impact.



Danielle Igielski
Accounting Services Manager
11/22/2022

1 APPROVE 2023 SALARY RANGE ADJUSTMENTS TO THE 2022 NON-REPRESENTED, SEASONAL,
2 AND TEMPORARY SALARY RANGES, AND CREATE NEW PAY POLICIES FOR REGISTERED NURSES

3
4 WHEREAS, it is necessary to maintain competitive salary and benefit systems and structures to
5 attract and retain a qualified workforce; and

6
7 WHEREAS, the County recognizes the importance of maintaining and adjusting the salary
8 ranges consistent with the overall market; and

9
10 WHEREAS, seasonal and temporary employees are vital components of the County workforce,
11 which enables the County to deliver quality and cost-efficient programs and services; and

12
13 WHEREAS, market conditions have created a competitive environment when recruiting for
14 seasonal and temporary employees; and

15
16 WHEREAS, the labor market for recruiting and retaining Registered Nurses is highly competitive,
17 creating challenges in staffing the Mental Health Center and necessitating the use of contracted
18 agency staff, which is more expensive; and

19
20 WHEREAS, to incentivize county-employed Registered Nurses to cover shifts with critical
21 staffing needs similar to competing employers, it is appropriate to recommend a new pay
22 policy, which allows Registered Nurses to be paid a higher alternate rate when assigned to work
23 12-hour shifts; and

24
25 WHEREAS, under this new policy, Registered Nurses working 12-hour shifts would be paid the
26 same wage as Weekend Registered Nurses, 2022 Step Range Temporary-32 (\$46.55 per hour
27 minimum - \$58.49 per hour maximum), which is higher than their current Step Range-17
28 (\$30.47 per hour minimum - \$39.38 per hour maximum); and

29
30 WHEREAS, these 12-hour shift rates are not overtime eligible for regular full-time Registered
31 Nurses; and

32
33 WHEREAS, to align with competing employers it is also appropriate to increase the first-shift
34 Saturday and Sunday shift premium for Registered Nurses assigned to the Mental Health Center
35 Inpatient Unit from \$1.00 per hour to \$1.85 per hour; and

36
37 WHEREAS, the County has provided for the fiscal impact of this ordinance in the County budget
38 for 2023.

39
40 THE COUNTY BOARD OF SUPERVISORS OF THE COUNTY OF WAUKESHA ORDAINS that effective
41 December 31, 2022, a salary range adjustment of three percent (3%) will be applied to the non-
42 represented, seasonal, and temporary salary ranges.

45 BE IT FURTHER ORDAINED, that effective December 31, 2022, a new pay policy will be created
46 that allows Registered Nurses, when assigned to work 12-hour shifts, to be paid a higher
47 alternate rate at 2022 Step Range Temporary-32 (Step 1, \$46.55/hour – Step 2, \$48.68/hour –
48 Step 3, \$51.05/hour – Step 4, \$53.37/hour – Step 5, \$55.83/hour – Step 6, \$58.49/hour).

49
50 BE IT FURTHER ORDAINED that effective December 31, 2022, the first-shift Saturday and
51 Sunday shift premium for Registered Nurses assigned to the Mental Health Center Inpatient
52 Unit be increased from \$1.00 per hour to \$1.85 per hour.

FISCAL NOTE

APPROVE 2023 SALARY RANGE ADJUSTMENTS TO THE 2022 NON-REPRESENTED, SEASONAL, AND TEMPORARY SALARY RANGES, AND CREATE NEW PAY POLICIES FOR REGISTERED NURSES

This ordinance authorizes a 3% across-the-board wage increase for all non-represented 2022 salary ranges effective December 31st, 2022. This includes all employees except elected officials and those represented by a collective bargaining agreement. The fiscal impact of these changes is illustrated below:

	2022 Wages & Benefits Base	2023 ATB Changes	2023 Wages & Benefits Base	%
Salaries	\$86,137,037	\$2,584,111	\$88,721,148	3.0%
Retirement	\$5,700,376	\$171,011	\$5,871,387	3.0%
Social Security	\$6,543,907	\$192,348	\$6,736,255	2.9%
Total	\$98,381,320	\$2,947,470	\$101,328,790	3.0%

In addition, this ordinance assists the Health and Human Services Department in addressing the need to fill critical shifts at the Mental Health Center Inpatient Unit by adjusting incentives for Registered Nurses. The first adjustment is providing an alternate 12-hour pay rate (matching that of Weekend Registered Nurses) for regular full-time, regular part-time and temporary staff to work 12-hour shifts. This chart below displays the pay range in 2022 and 2023 rates adjusted by the 3% increase included in this ordinance.

Step	2022 Rate	2023 Rate
Step 1	\$46.55	\$47.95
Step 2	\$48.68	\$50.14
Step 3	\$51.05	\$52.58
Step 4	\$53.37	\$54.97
Step 5	\$55.83	\$57.50
Step 6	\$58.49	\$60.24

Providing the higher alternate rate for 12-hour shifts limits the need to pay contract nurses at a significantly higher rate of pay than full-time Registered Nurses. The 2023 budget includes an increase in contracted nursing expenses of \$171,000, and this change in pay policy is intended to have neutral or favorable impact in the budget.

The second incentive adjustment contained within in this ordinance includes increasing the Saturday and Sunday first-shift premium pay for Registered Nurses working at the Mental Health Center Inpatient

Unit from \$1.00 per hour to \$1.85. The estimated impact of this change is less than \$1,000 annually.

The 2023 adopted budget includes sufficient expenditure authority for the changes proposed in this ordinance.

Danielle Igielski

Danielle Igielski
Accounting Services Manager
11/21/2022

1 APPROVE LIMITED COMPROMISE AGREEMENT FOR WORKER'S COMPENSATION CASE ENTITLED
2 CHANTEL ELSE VS. COUNTY OF WAUKESHA
3
4

5 WHEREAS, an employee of the Waukesha County Department of Health & Human Services has
6 filed a Worker's Compensation claim against Waukesha County for injuries occurring while
7 employed with Waukesha County; and
8

9 WHEREAS, the continuation of the litigation possesses substantial risk to both sides of the
10 litigation and both sides will continue to incur significant additional expenses without a
11 settlement; and
12

13 WHEREAS, the former employee has expressed a willingness to enter into a limited compromise
14 agreement which is on file in the Corporation Counsel's office pending approval by the County
15 Board and which has been shared in closed session with the County Board; and
16

17 WHEREAS, it has been determined that settlement of these issues at this time in a limited
18 manner is in the best interest of Waukesha County.
19

20 THE COUNTY BOARD OF SUPERVISORS OF THE COUNTY OF WAUKESHA ORDAINS that the
21 limited compromise agreement on file with the Corporation Counsel and previously shared with
22 the Board in the Worker's Compensation case entitled Chantel Else vs. County of Waukesha is
23 hereby approved.