CASE FILE #PL201700011

Unwired Consulting, Inc.

2625 Monroe Drive NW, Rochester, Minnesota 55901

February 20, 2017

Nick M. Johnson
Planning Division
City of Bloomington
1800 West Old Shakopee Road
Bloomington, MN 55431

RE: Verizon Wireless rooftop cell site modifications
7901 Xerxes Avenue S, Bloomington, MN 55431

VZW site ID: MIN Gravel Pit;

Mr. Johnson,

Verizon Wireless needs to modify its existing cell site at the above referenced location.

Specifically, Verizon is proposing to remove (14) existing antennas and existing mounts and replace with (15) new antennas and new mounts and place on the existing equipment screens. Remove all existing feed lines and replace with (4) 6RRU hybrid cables and (6) 7/8" coax. Add PVC sleepers to support feed lines on the roof. Remove existing cable enclosures in the stairwell and repair and patch walls. Add doghouse at roof penetration. Relocate (1) distribution box and add (3) distribution boxes. Remove all TTAs and diplexers and add (16) RRUs.

Please feel free to contact me at 507-216-6576 with questions regarding this project.

Regards,

Matthew Kundert
Contract Representative for
Verizon Wireless

HERZOG
ENGINEERING LLC

December 19, 2016

Design 1
Attention: Sam Diedrich
9973 Valley View Road
Eden Prairie, MN 55344

Re: Structural Review
MIN Gravel Pit LTE ADD 850 PCS
7901 Xerxes Avenue S
Bloomington, MN 55431
Project Number: 161185

Dear Mr. Diedrich:

At your request, I have analyzed the structural capacity of the proposed mounts on the existing roof HVAC screen wall at (4) four sectors at the above stated location. The basis of my analysis, new equipment to be installed, and our analysis disclaimers and assumptions are noted below.

BASIS OF ANALYSIS

Reference codes, standards, and construction documents:
1.) 2015 Minnesota State Building Code (IBC 2012)
2.) ANSI/TIA-G-222-2005–Addendum 1, dated 2007 and Addendum 2, dated 2009, Structural Standard for Antenna Supporting Structures and Antennas
3.) Design 1 / MIN Gravel Pit LTEADD850 / Project No. 20161462361 Dwgs.

APPURTENANCES AND EQUIPMENT

Equipment to be added:
1.) X-sector (45.0' AGL centerline):
   a. Pos. #1 – (1) JMA X7CQAP-FRO-445-V antenna, (1) Distribution Box
   b. Pos. #2 – (1) JMA X7CQAP-FRO-445-V antenna, (1) RRUS12-B5 w/ 0208 mod and RRUSB13 w/ A2 mod
   c. Pos. #3 – (1) JMA X7CQAP-FRO-445-V antenna, (1) RRUS32-B2
   d. Pos. #4 – (1) JMA X7CQAP-FRO-460-V antenna, (1) RRUS32-B66
2.) Y-sector (45.0' AGL centerline):
   a. Pos. #1 – (1) JMA X7CQAP-FRO-445-V antenna, (1) Distribution Box
   b. Pos. #2 – (1) JMA X7CQAP-FRO-445-V antenna, (1) RRUS12-B5 w/ 0208 mod and RRUSB13 w/ A2 mod
   c. Pos. #3 – (1) JMA X7CQAP-FRO-445-V antenna, (1) RRUS32-B2
   d. Pos. #4 – (1) JMA X7CQAP-FRO-460-V antenna, (1) RRUS32-B66
3.) Z-sector (45.0' AGL centerline):
   a. Pos. #1 – (1) JMA X7CQAP-FRO-460-V antenna, (1) Distribution Box
   b. Pos. #2 – (1) JMA X7CQAP-FRO-460-V antenna, (1) RRUS12-B5 w/ 0208 mod and RRUSB13 w/ A2 mod

c. Pos. #3 – (1) JMA X7CQAP-FRO-460-V antenna, (1) RRUS32-B2
d. Pos. #4 – (1) JMA X7CQAP-FRO-460-V antenna, (1) RRUS32-B66

4.) 4 TH-sector (45.0' AGL centerline):
a. Pos. #1 – (1) JMA X7CQAP-FRO-445-V antenna, (1) Distribution Box
b. Pos. #2 – (1) JMA X7CQAP-FRO-445-V antenna, (1) RRUS12-B5 w/ 0208 mod and RRUSB13 w/ A2 mod
Pos. #3 – (1) JMA X7CQAP-FRO-445-V antenna, (1) RRUS32-B2 and (1) RRUS32-B66

DISCLAIMERS AND ASSUMPTIONS

1.) This analysis was performed under the assumption that all information provided to Herzog Engineering, LLC is current and correct. This includes but is not limited to site data, mapping reports, and existing and proposed appurtenances. If this information is not current and correct, this report should be considered obsolete and further analysis will be required.
2.) This analysis assumes that the structural components and mounts, including all steel sections and attachment hardware are in good working order and in their original state, free from rust or other forms of corrosion.
3.) Ring clamps, U-bolts, and other clamp style connections are excluded from this analysis unless noted otherwise in the report.

My review has found the existing building structure and associated new and existing support mounts **TO BE SUFFICIENT** to support the new and existing equipment as you have shown on the construction documents noted above.

This structural review has been performed in accordance with the local code requirements listed in this report.

If you have any questions or need anything further, please don't hesitate to contact me at 612-844-1234.

Sincerely,
Herzog Engineering, LLC

Greg Shor
Structural Engineer

Thomas L. Mach, P.E.
Structural Engineer

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Thomas L. Mach

Signature

Date 12/19/16 License # 42357