



CITY OF DULUTH
Community Planning Division

411 W 1st St, Rm 208 * Duluth, Minnesota 55802-1197
Phone: 218/730.5580 Fax: 218/723-3559

File Number	PL 17-151, 152, 153	Contact	Steven Robertson, 218-730-5295	
Type	SUP, 3 Small Wireless Telecommunication Facilities	Planning Commission Date	November 14, 2017	
Deadline for Action	Application Date	Initial: Sep 6; Incomplete: Sep 27; Resubmitted: Oct 10		
	Date Extension Letter Mailed	N/A	90 Days* (237.163)	Dec 18, 2017
Location of Subject	3 Separate Sites in the City			
Applicant	Verizon Wireless	Contact		
Agent	Jaymes D Littlejohn	Contact		
Legal Description				
Site Visit Date	November 7, 2017	Sign Notice Date	-	
Neighbor Letter Date	N/A for Concurrent Use	Number of Letters Sent	N/A for Concurrent Use	

Proposal

The applicant is proposing to “install small wireless facilities on existing distribution poles that are owned and operated by Minnesota Power within the dedicated public right of way. The installation falls with the provisions of Minnesota Statute 237.162 and 247.163, as amended in 2017”. The three proposed locations are located in the platted right of way near 4405 West 4th Street (DUL Denfeld), 2400 London Road (DUL Red Tide), and 3860 (DUL Duluth East HS).

The wireless facilities will not be stealthed or camouflaged; the equipment will be visibly attached to the exterior of the pole. The attachments will include between 3 to 6 exterior mounted panel antennas or power converters mounted between at least 22 to 32 feet above the ground, with electric meters at about 5 feet from the ground and underground wire connections. The replacement wooden poles will be 35 to 40 feet tall.

	Current Zoning	Existing Land Use	Future Land Use Map Designation
Subject	Varies	Public Right of Way	Varies
North	Varies	Public Right of Way	Varies
South	Varies	Public Right of Way	Varies
East	Varies	Public Right of Way	Varies
West	Varies	Public Right of Way	Varies

Summary of Code Requirements

UDC Section 50-37.7.C. The planning commission shall review the application, and council shall approve the application or approve it with modifications, if it determines that:

- 1) The proposed concurrent use will not harm or inconvenience the health, safety and general welfare of the city;
- 2) No portion of a public easement proposed of use is being physically occupied by the public.

Comprehensive Plan Governing Principle and/or Policies and Current History (if applicable):

Principle #4 - Support emerging economic growth sectors. Emerging economic sectors add economic, cultural and social diversity. These include higher education, medical, value-added manufacturing, commercial outdoor recreation, historic resources interpretation, arts and music, information technology and visitor services.

Review and Discussion Items

1) Applicant is proposing to “install small wireless facilities on existing distribution poles that are owned and operated by Minnesota Power within the dedicated public right of way. The installation falls with the provisions of Minnesota Statute 237.162 and 247.1643, as amended in 2017”. The three proposed locations are located in right of way near 4405 West 4th Street (DUL Denfeld), 2400 London Road (DUL Red Tide), and 3860 (DUL Duluth East HS).

The wireless facilities will not be stealthed or camouflaged; the equipment will be visibly attached to the exterior of the pole. The attachments will include between 3 to 6 exterior mounted panel antennas or power converters mounted between at least 22 to 32 feet above the ground, with electric meters at about 5 feet from the ground and underground wire connections. The replacement wooden poles will be 35 to 40 feet tall.

2) A concurrent use permit would give the applicant the ability to use the dedicated public right of way, with conditions, at the same time that the public is using the right of way. This permit requires a public hearing and recommendation from the Planning Commission, but is approved by the City Council via ordinance. Unlike street right-of-way vacations, concurrent use permits are not recorded at the County as they are voidable agreements between the City and applicants.

3) All three facilities will be similar in general configuration. Ownership of the poles will remain with Minnesota Power, with the poles in dedicated public right of way.

4) Each of the three sites and replacement wooden poles has had a structure analysis. All three replacement poles will be embedded into the ground a distance of 15 feet.

5) Granting the proposed concurrent use permits will not harm or inconvenience the health, safety and general welfare of the city. The area proposed for the concurrent use permit will not take away from the public’s ability to use the public right-of-way, especially considering there are existing wooden poles at all three of the locations.

6) The UDC generally requires that new wireless facilities follow a location standard: first they should be collocated on existing towers or other structures on city owned properties first, and then existing towers or other structures on other (private) property, and so forth down the location standard list. As these are three small wireless facilities on existing infrastructure in public right of way, and as per the recent change in state statute, the city is processing these applications as concurrent use permits and not special use permits, and the UDC’s use specific standards do not apply in this specific situation.

7) The city has the ability to regulate land use, however, the FCC preempts local review on the potential environmental effects of radio frequency (RF) emissions, assuming that the provider is in compliance with the Commission's RF rules.

8) At the time that this memo was written, no written comments from the public have been received.

Staff Recommendation:

Based on the above findings, Staff recommends that the Planning Commission recommend approval of the three concurrent use permits subject to the following conditions:

- 1) The project be limited to, constructed, and maintained according to construction drawings submitted on October 10, 2017 and included with this staff report
- 2) Applicant, or his or her successors, shall remove the proposed obstructions at applicant's expense if directed to do so by the City with appropriate notice.
- 3) Any alterations to the approved plans that do not alter major elements of the plan may be approved by the Land Use Supervisor without further Planning Commission approval; however, all other changes must be approved by amending the City Council's approved ordinance.

Legend

Water Distribution Main

- Active
- Hydrant

Sanitary Sewer Mains

- CITY OF DULUTH
- WLSSD; PRIVATE; RICE LAKE TWP
- Sanitary Sewer Forced Main
- Storage Basin
- Pump Station

Storm Sewer Mains

- Storm Sewer Pipe
- Storm Sewer Catch Basin




Gas Distribution Main

- Coated Steel
- Plastic
- Trout Stream (GPS)
- Other Stream (GPS)























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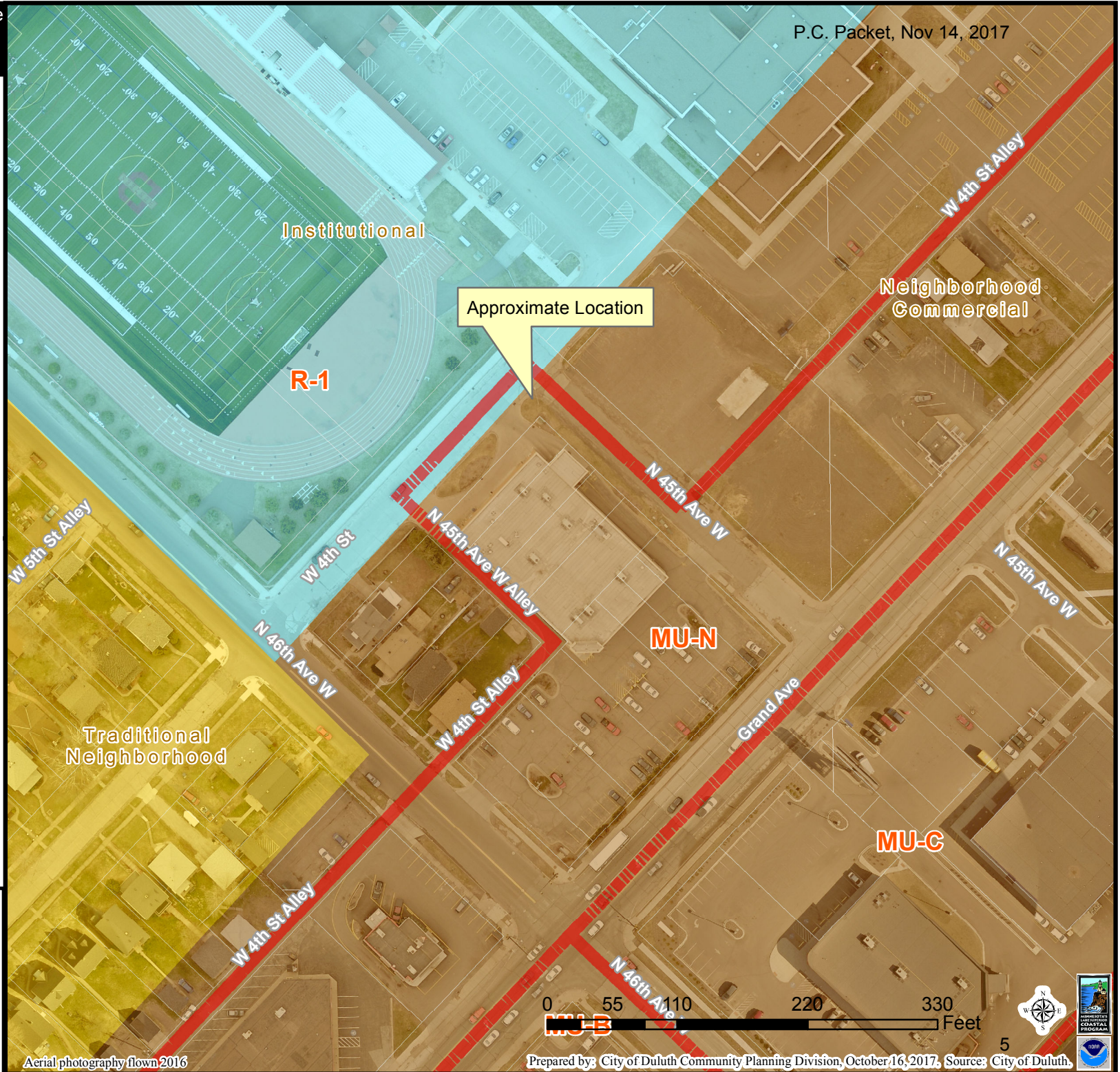
Legend

-  Zoning Boundaries
-  Trout Stream (GPS)
-  Other Stream (GPS)

Future Land Use

-  Preservation
-  Recreation
-  Rural Residential
-  Low-density Neighborhood
-  Traditional Neighborhood
-  Urban Residential
-  Neighborhood Commercial
-  Neighborhood Mixed Use
-  General Mixed Use
-  Central Business Secondary
-  Central Business Primary
-  Auto Oriented Commercial
-  Large-scale Commercial
-  Business Park
-  Tourism/Entertainment District
-  Medical District
-  Institutional
-  Commercial Waterfront
-  Industrial Waterfront
-  Light Industrial
-  General Industrial
-  Transportation and Utilities

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Legend

Water Distribution Main

- Active
- Hydrant

Sanitary Sewer Mains

- CITY OF DULUTH
- WLSSD; PRIVATE; RICE LAKE TWP
- Sanitary Sewer Forced Main
- Storage Basin
- Pump Station

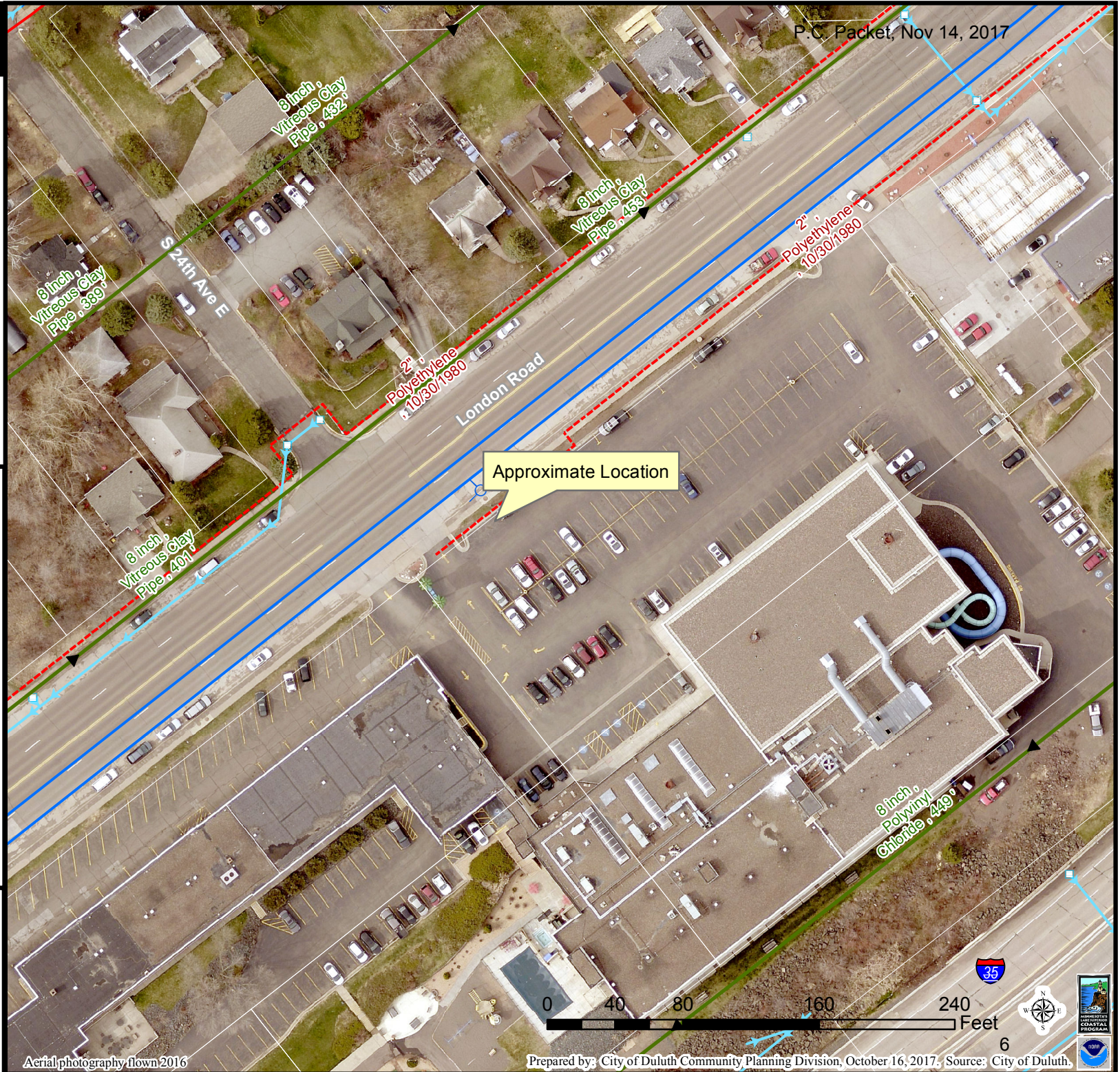
Storm Sewer Mains

- Storm Sewer Pipe
- Storm Sewer Catch Basin

Gas Distribution Main

- Coated Steel
- Plastic
- Trout Stream (GPS)
- Other Stream (GPS)

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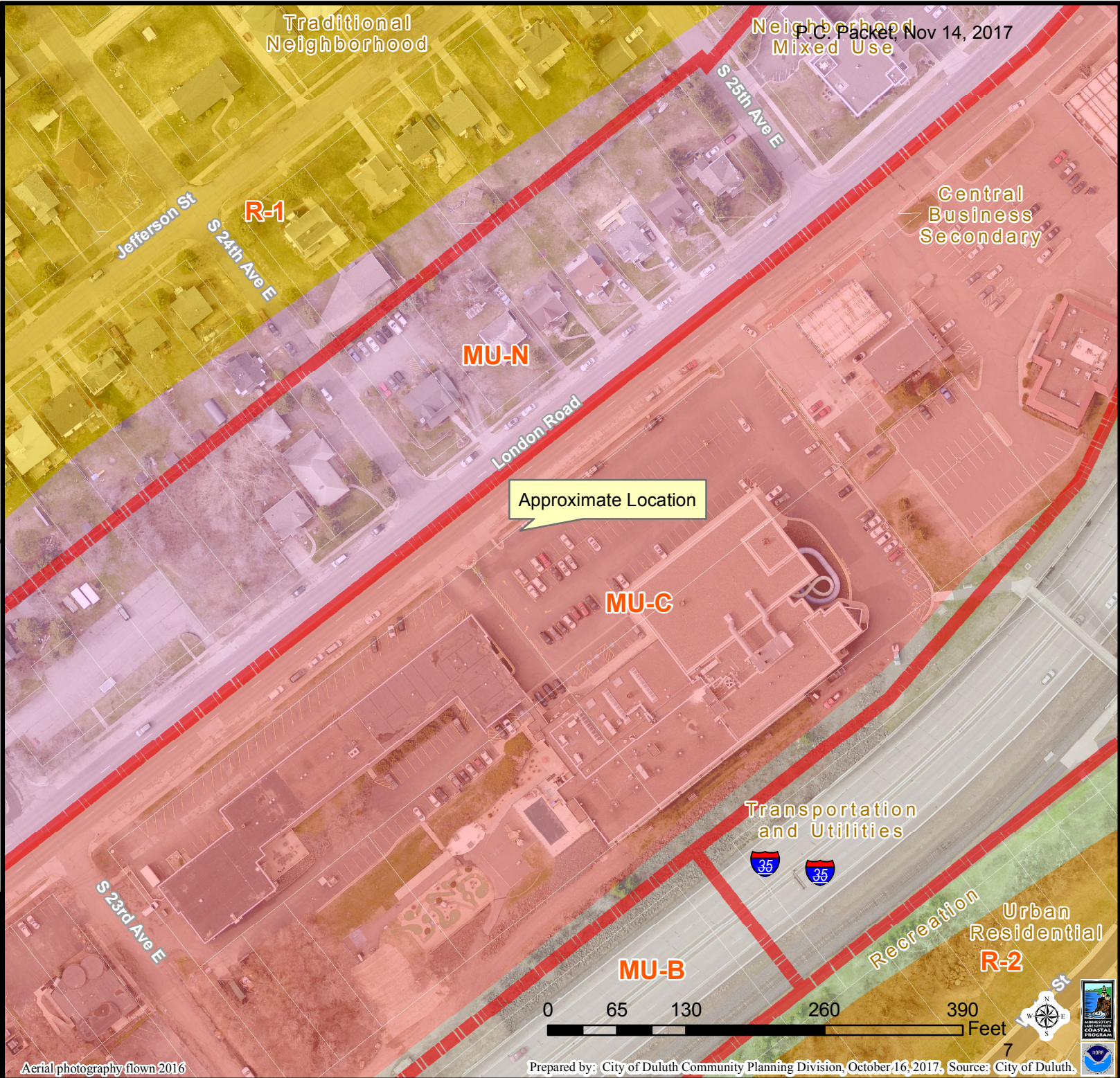
Legend

- Zoning Boundaries
- Trout Stream (GPS)
- Other Stream (GPS)













Future Land Use

- Preservation
- Recreation
- Rural Residential
- Low-density Neighborhood
- Traditional Neighborhood
- Urban Residential
- Neighborhood Commercial
- Neighborhood Mixed Use
- General Mixed Use
- Central Business Secondary
- Central Business Primary
- Auto Oriented Commercial
- Large-scale Commercial
- Business Park
- Tourism/Entertainment District
- Medical District
- Institutional
- Commercial Waterfront
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Legend




- Water Distribution Main**
 - Active
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 -  CITY OF DULUTH
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





















Aerial photography flown 2016

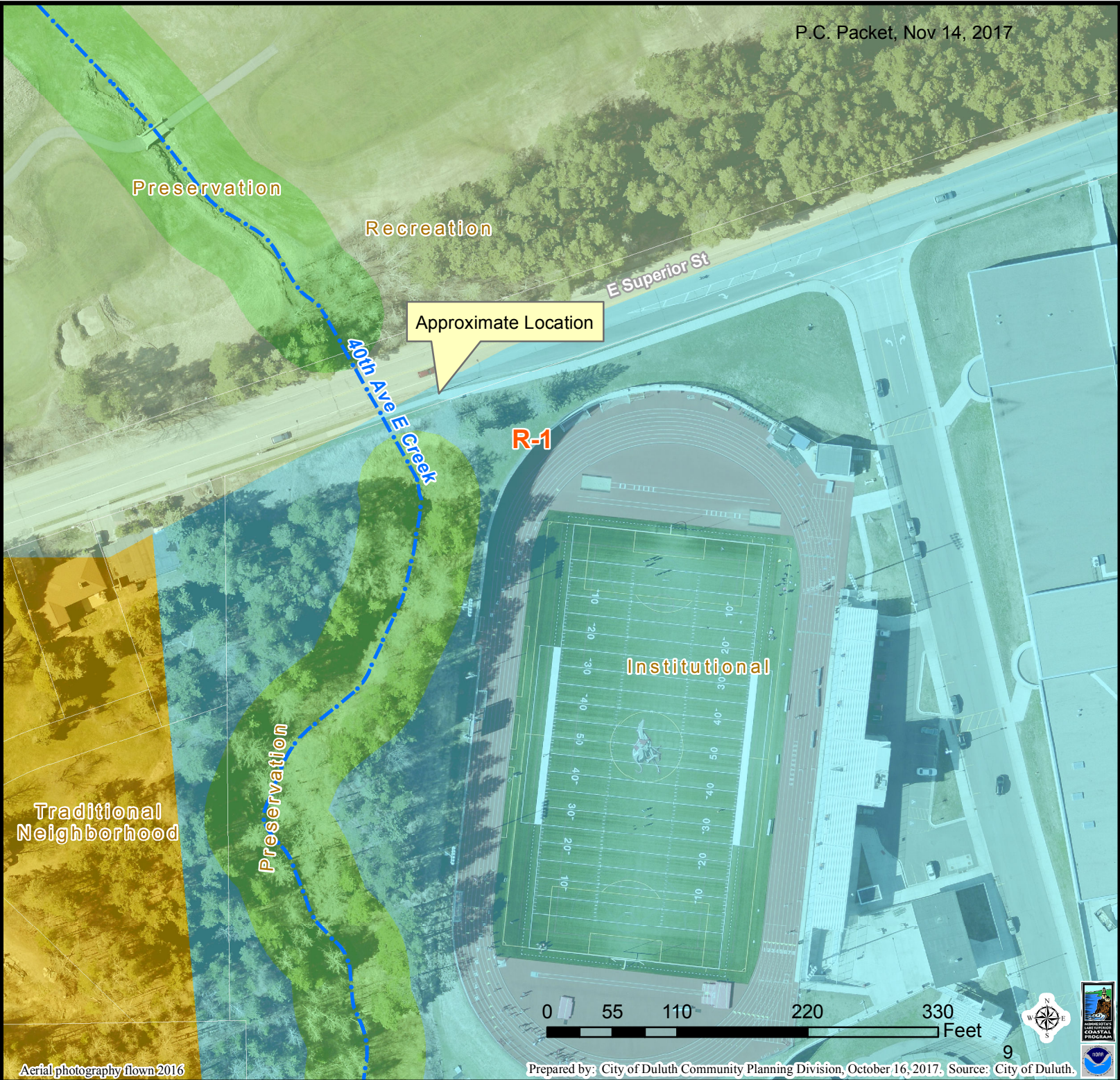
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-  Zoning Boundaries
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Future Land Use

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Aerial photography flown 2016





17-151



Moss & Barnett

October 10, 2017

Planning Commission
City of Duluth
411 West 1st Street, Suite 402
Duluth, Minnesota 55802

Re: Concurrent Use of Street Permit Application Supplemental Narrative for DUL Denfeld HS SC1

Dear Commission Members:

As discussed in our prior narrative, Verizon Wireless intends to install small wireless facilities on a replacement wood pole owned by Minnesota Power. This replacement pole will be at the same height as the existing pole. As requested by Staff, we have enclosed a street coordinate description for this installation and additional drawings and details. The enclosed drawings provide additional details regarding this installation, including the hand hole vault, restoration of the right-of-way, and any conflicts with existing utilities. These drawings should be used to replace the construction drawings previously submitted to the City for this site.

Once the City grants the Concurrent Use of Street Permit (the "Permit") for this site Verizon Wireless will commence construction based on a make-ready timeline developed in consultation with Minnesota Power. Construction will be completed through use of a standard bucket truck (approximately 12-feet wide by 20-feet long) or vehicle of equivalent size. To minimize traffic obstruction, the contractor will attempt to do most of their work off the main asphalt roadway, but obstruction of one driving lane may be necessary. The pole replacement should take less than half a day to complete, since no concrete curing needs to occur. Antenna and cabling attachment should also require less than a full business day. Enclosed are two examples of Verizon Wireless's traffic control plans accounting for both vehicular and pedestrian use of the right-of-way.

As discussed with City Staff, we understand that the Permit will include a condition requiring that Verizon Wireless indemnify the City in a manner consistent with Minnesota Law, including applicable statutes and the rules adopted by the Minnesota Public Utilities Commission for activities in the public right-of-way.

This installation will provide much needed service in an area where traditional, existing facilities have not been able to keep up with the ever-growing demand for wireless service in Duluth. Therefore, we respectfully request that the Commission recommend approval of the Permit for this site. If any reader of this letter has any question related to any of this installation, please do not hesitate to contact me.

We look forward to working with you to continue improving Verizon Wireless service in Duluth.

Sincerely,

Jaymes D. Littlejohn
Attorney at Law

(612) 877-5274 F: (612) 877-5047
j.littlejohn@lawmoss.com

Enclosures

cc: Amy Brandt, Verizon Wireless



SITE NAME: DUL DENFELD HIGH SCHOOL SC1

SITE NUMBER: 20141027670

SITE TYPE: SMALL CELL

POLE TYPE: REPLACEMENT 40' LIGHT POLE



Jacobs Engineering Group, Inc.
10000 Hennepin Avenue, Suite 113
Bloomington, Minnesota 55413
www.jacobs.com



Edge Consulting Engineers, Inc.
10000 Hennepin Avenue, Suite 113
Bloomington, Minnesota 55413
612.644.1347 fax
www.edgeconsulting.com

PROJECT NO: 20141027670
EDGE PROJECT NO: 11947
DRAWN BY: NBI
CHECKED BY: OGD

REV	DATE	DESCRIPTION
A	01/05/2016	PRELIM SMALL CELL DWG(S) [R]
B	01/17/2016	PRELIM SMALL CELL DWG(S) [P]
C	06/01/2016	PRELIM SMALL CELL DWG(S) [R]
D	06/06/2016	FINAL SMALL CELL DWG(S) [R]
E	10/10/2016	FINAL SMALL CELL DWG(S) [R]
F	10/10/2016	FINAL SMALL CELL DWG(S) [R]
G	10/10/2016	FINAL SMALL CELL DWG(S) [R]



DUL DENFELD HIGH SCHOOL SC1
DULUTH, MN
REPLACEMENT LIGHT POLE
SMALL CELL DRAWINGS

SHEET TITLE
TITLE SHEET & PROJECT DATA

SHEET NUMBER
T-1

EDGE CONSULTING ENGINEERS, INC.

SHEET INDEX

NO: SHEET TITLE

NO	SHEET TITLE
C-1	TITLE SHEET & PROJECT DATA
C-2	ENLARGED SITE PLAN
A-1	POLE ELEVATION
A-2	MOUNTING DETAILS
A-3	EQUIPMENT DETAILS
A-4	CABLE MOUNTING DETAILS
A-5	RADIOS DETAILS
E-1	CABLING DETAILS
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL DETAILS
E-4	ELECTRICAL DETAILS
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E-6	ELECTRICAL DETAILS
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E-61	ELECTRICAL DETAILS
E-62	ELECTRICAL DETAILS

APPLICABLE CODES

ALL WORK SHALL COMPLY WITH THE FOLLOWING APPLICABLE CODES:
- 2012 INTERNATIONAL BUILDING CODE
- 2012 INTERNATIONAL ELECTRICAL CODE
- IAWA 46A-2225 OR LATEST EDITION

PROJECT DESCRIPTION/SOW

- IN THE EVENT OF CONFLICT, THE MOST RESTRICTIVE CODE SHALL PREVAIL.
- INSTALL OF 40' REPLACEMENT WOOD LIGHT POLE BY UTILITY
- INSTALLATION OF PANEL ANTENNA
- INSTALLATION OF ERICSSON RR18 W/ POWER CONVERTERS
- INSTALLATION OF FIBER CABLES FROM PROPOSED MMH-H TO RADIOS
- INSTALLATION OF 1.25" SCH 40 CONDUIT FOR FIBER BETWEEN HAND-HOLE AND POLE BASE (APPROX. 45'), TO BE TRENCHED BELOW GRADE
- INSTALLATION OF 1.25" SCH 40 CONDUIT FOR FIBER WITHIN RIGHT OF WAY, TO BE TRENCHED BELOW GRADE
- INSTALLATION OF 2" SCH 40 ELECTRIC CONDUIT, BORED 12'-3" BY UTILITY
- INSTALLATION OF ELECTRIC CONDUCTORS, 12'-3" IN LENGTH
- INSTALLATION OF GROUND RING AROUND POLE BY UTILITY
- ALL OTHER CONSTRUCTION RELATED ACTIVITIES TO BE COMPLETED BY OTHERS

PROJECT DIRECTORY

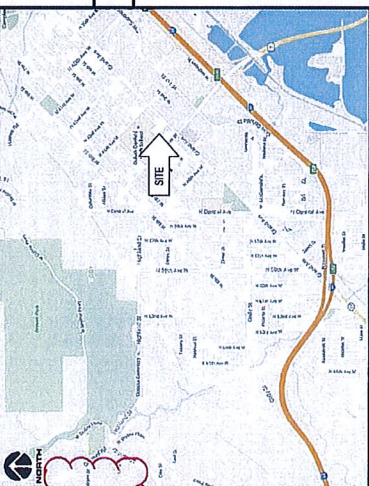
LESSOR:
MINNESOTA POWER
222 PATTON ROAD
DULUTH, MN 55812
PHONE: 218.722.8265

LESSEE:
MINNESOTA POWER
1601 BASH LAKE RD
DULUTH, MN 55812
CONTACT: MICHAEL KOCH
PHONE: 612.726.5460

SITE ACQUISITION:
EDGE CONSULTING ENGINEERS, INC.
2014 HENNEPIN AVENUE, SUITE 113
BLOOMINGTON, MN 55413
CONTACT: OTTO DINGFELDER III, P.E.
PHONE: 612.644.1349

ENGINEER:
EDGE CONSULTING ENGINEERS, INC.
2014 HENNEPIN AVENUE, SUITE 113
BLOOMINGTON, MN 55413
CONTACT: OTTO DINGFELDER III, P.E.
PHONE: 612.644.1349

AREA MAP



LOCATION MAP



SITE INFORMATION

APPROXIMATE ADDRESS:
4415 W 4TH ST
DULUTH, MINNESOTA 55807
HENNEPIN COUNTY

LOCATION DESCRIPTION:
LOCATED ON THE SW SIDE OF N 45TH AVE W, APPROXIMATELY 40'
SE OF THE N 45TH AVE W & W 4TH ST INTERSECTION

LATITUDE & LONGITUDE:
LAT: 45° 49' 28.93"N
LONG: 92° 09' 33.97"W

GROUND ELEVATION: 637.2' AMSL
(PER IAW CERTIFICATE)

POLE HEIGHT:
40' A.S.L.

MAXIMUM APPURTENANCE HEIGHT:
40' A.S.L.

STRUCTURAL REVIEW

LIGHT POLE STRUCTURAL ANALYSIS COMPLETED BY EDGE CONSULTING ENGINEERS
PROJECT #: 11947
DATE: 12/22/2015

CONTRACTOR TO REVIEW STRUCTURAL REPORT IN ITS ENTIRETY. ANY DISCREPANCIES OR DISAGREEMENTS BETWEEN THE REPORT AND THESE PLANS SHOULD BE RESOLVED PRIOR TO CONSTRUCTION.

LOCATION SCAN



11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

THESE SITE PLANS ADHERE TO ALL OF THE REQUIREMENTS CALLED OUT IN THE JURISDICTION PLANNING AND ZONING FOR ANTENNAS AND SUPPORT STRUCTURES WHERE SITE IS LOCATED. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS/CONDITIONS ON SITE IMMEDIATELY NOTIFY ENGINEER WORK OR BE RESPONSIBLE FOR THE SAME.

ENGINEER OF RECORD

EDGE CONSULTING ENGINEERS, INC.
CONTACT: OTTO DINGFELDER III (PE # 49720 (MN))
PHONE: 612.644.1349



JACOBS
Jacobs Engineering Group, Inc.
2727 Palmon Road
Duluth, MN 55812
www.jacobs.com



Edge Consulting Engineers, Inc.
2101 Highway 13 W
Duluth, MN 55812
www.edgeconsulting.com

PROJECT NO: 20141027670
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REV.	DATE	DESCRIPTION
A.	01/26/2016	PRELIM SMALL CELL DOWNSHIP
B.	07/22/2016	PRELIM SMALL CELL DOWNSHIP
C.	04/07/2016	PRELIM SMALL CELL DOWNSHIP
D.	04/02/2016	FINAL SMALL CELL DOWNSHIP
1.	10/10/2016	FINAL SMALL CELL DOWNSHIP
2.	10/09/2016	FINAL SMALL CELL DOWNSHIP

IT IS A VIOLATION OF LAW FOR ANY PERSON TO REPRODUCE OR TRANSMIT THIS DOCUMENT IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF THE PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

P.C. Packet, Nov 14, 2017
DUL DENFIELD HIGH SCHOOL
DULUTH, MN
REPLACEMENT LIGHT POLE
SMALL CELL DRAWINGS

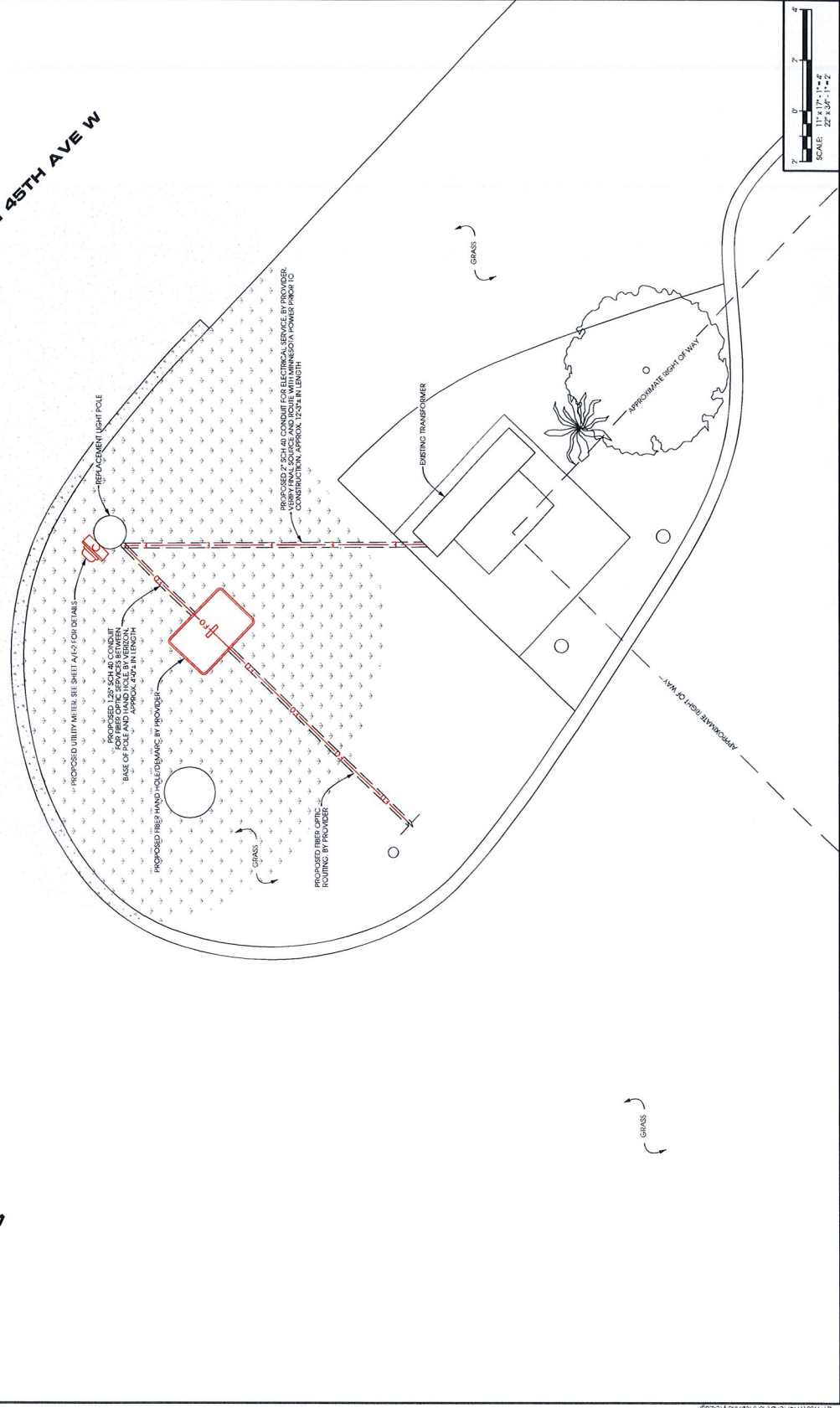
SHEET TITLE
ENLARGED SITE PLAN

SHEET NUMBER
C-2

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W 4TH ST

N 45TH AVE W





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EDGE PROJECT NO:	11947
DRAWN BY:	NBT
CHECKED BY:	OGD

REV.	DATE	DESCRIPTION
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C	10/27/2016	PRELIM SMALL CELL DWS/TRS
D	10/28/2016	FINAL SMALL CELL DWS/CLP
E	10/28/2016	FINAL SMALL CELL DWS/TRS
F	10/29/2016	FINAL SMALL CELL DWS/NBT
G	10/29/2016	FINAL SMALL CELL DWS/NBT

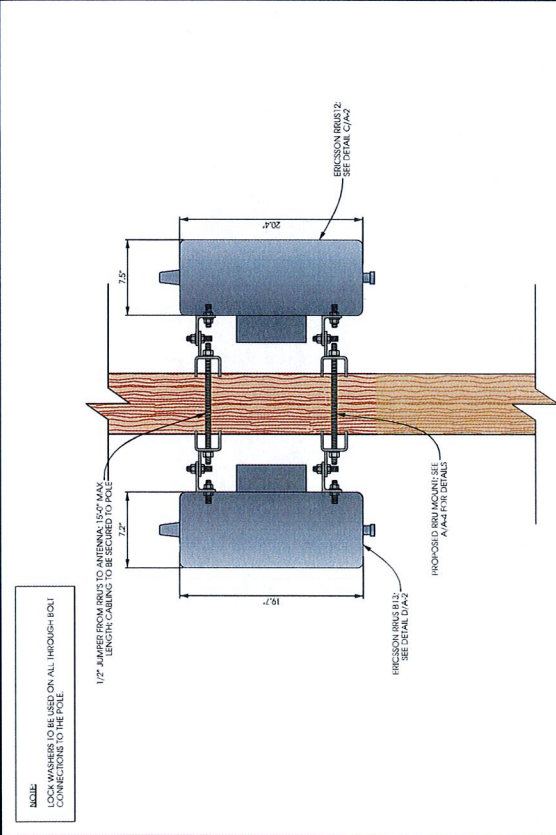
THIS IS NOT MEANT TO BE USED BY ANY PERSON UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER. TO AVOID THIS DOCUMENT.

DUL DENIED HIGH SCHOOL
DULUTH, MN
REPLACEMENT LIGHT POLE
SMALL CELL DRAWINGS

SHEET TITLE

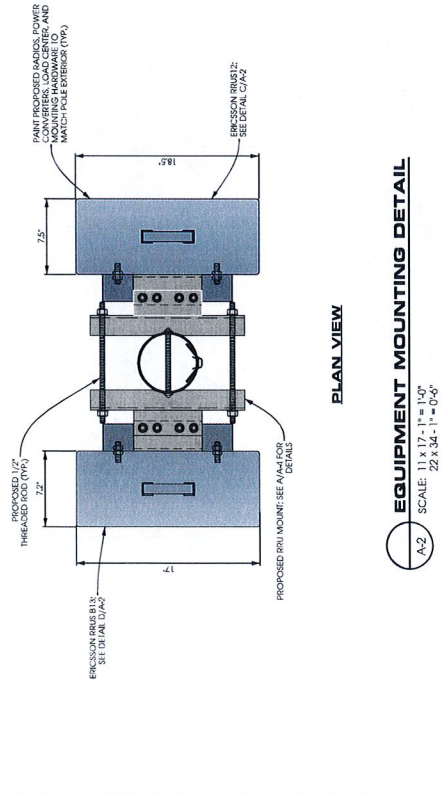
MOUNTING DETAILS

SHEET NUMBER
A-2



ELEVATION VIEW

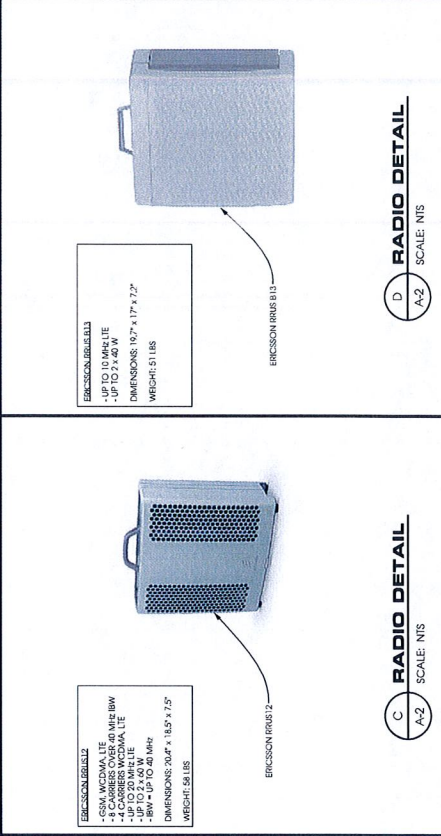
PIPE TO PIPE CLAMP
ANDREW PART # 454100 CRP ESQ/IV
SCALE: NTS



EQUIPMENT MOUNTING DETAIL

SCALE: 11/2, 1/2, 1/4 = 1/8\"/>

A-2 SCALE: 22 X 34 - 1\"/>



C RADIO DETAIL
SCALE: NTS

D RADIO DETAIL
SCALE: NTS



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277 Faxon Road
Roseland, NJ 07068
www.jacobs.com



Edge
Consulting Engineers, Inc.
1000 Valley Road, Suite 200
Roseland, NJ 07068
908.544.1549
www.edgeconsulting.com

PROJECT NO: 20141027670
EDGE PROJECT NO: 11947
DRAWN BY: NBT
CHECKED BY: OGD

REV	DATE	DESCRIPTION
A	01/05/2014	PRELIM SMALL CELL DWGS (JAK)
B	01/17/2014	PRELIM SMALL CELL DWGS (JAP)
C	03/07/2014	PRELIM SMALL CELL DWGS (JTB)
D	04/04/2014	FINAL SMALL CELL DWGS (JDB)
1	10/09/2014	FINAL SMALL CELL DWGS (NBT)
2	10/09/2014	FINAL SMALL CELL DWGS (NAP)

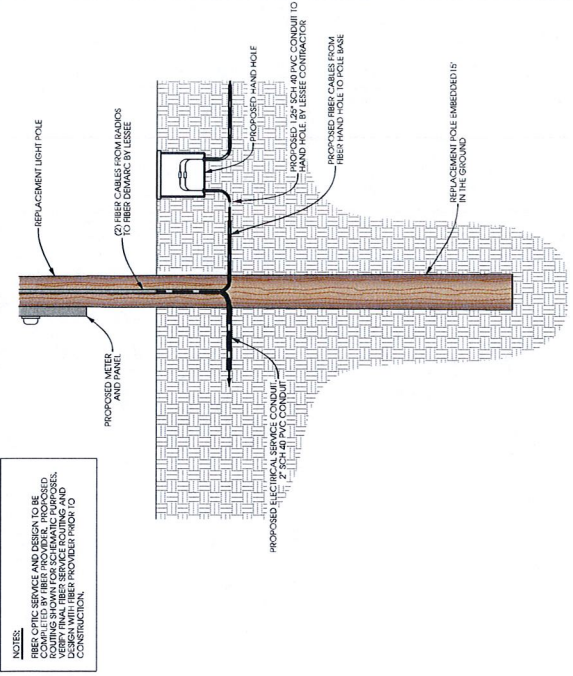
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P.C. Packet, Nov 14, 2017
DULDEN HIGH SCHOOL
DULUTH, MN
REPLACEMENT LIGHT POLE
SMALL CELL DRAWINGS

SHEET TITLE
CABLING DETAILS

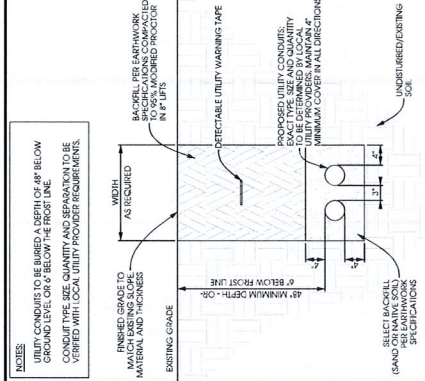
SHEET NUMBER
E-1

© JACOBS ENGINEERING GROUP, INC.

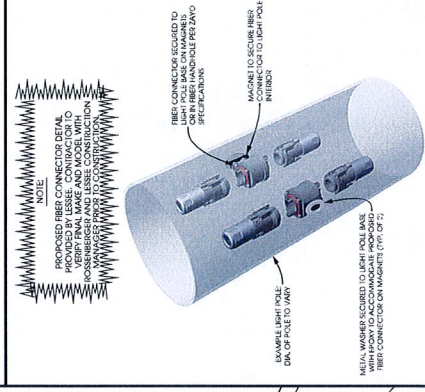


NOTES:
FIBER OPTIC SERVICE AND DESIGN TO BE COMPLETED BY FIBER PROVIDER. PROPOSED CONDUIT TYPE, SIZE, QUANTITY AND SEPARATION TO BE VERIFIED WITH LOCAL UTILITY PROVIDER PRIOR TO CONSTRUCTION.
VERIFY FINAL FIBER SERVICE ROUTING AND CONSTRUCTION WITH FIBER PROVIDER PRIOR TO CONSTRUCTION.

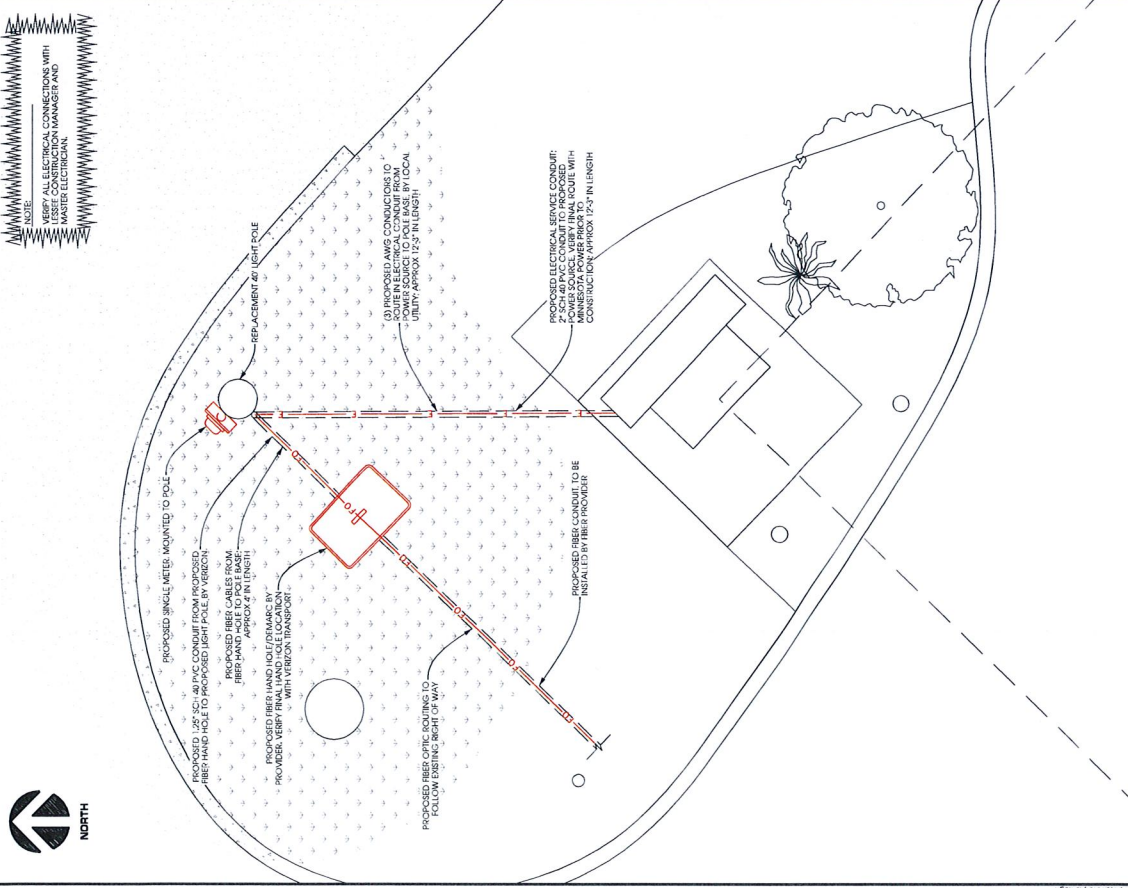
B POWER AND FIBER ROUTING
SCALE: NTS



D UTILITY TRENCH DETAIL
SCALE: NTS



C FIBER CONNECTOR
SCALE: NTS



A PROPOSED CABLING DIAGRAM
SCALE: NTS





NOTE:
 ALL GROUNDING SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70B. THE SMALL GROUNDING FOOTPRINTS DIMENSIONS MAY VARY FROM THE DIMENSIONS SHOWN ON THIS DRAWING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL ELECTRICAL INSURANCE BOARD AND THE LOCAL ELECTRICAL INSURANCE BOARD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL ELECTRICAL INSURANCE BOARD AND THE LOCAL ELECTRICAL INSURANCE BOARD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL ELECTRICAL INSURANCE BOARD AND THE LOCAL ELECTRICAL INSURANCE BOARD.



A. PROPOSED GROUNDING DIAGRAM
 SCALE: NTS

GROUNDING SYSTEM NOTES

1. SCOPE: THIS SECTION COVERS THE SPECIFICATIONS FOR CELL SITE GROUNDING. THE AREAS OF FOCUS ARE TOWER BUILDINGS AND INSTALLATION METHODS.
2. GENERAL:
 - 2.1 ALL GROUND RODS SHALL BE 5/8" COPPER CLAD STEEL 10 FT LONG. GROUND RODS SHALL BE EQUALLY SPACED AT 10 FT INTERVALS. REFER TO SITE GROUNDING PLAN FOR DETAILS AND PLACEMENT WITH GROUNDINGS.
 - 2.2 GROUNDING SYSTEM SHALL BE INTERCONNECTED TO ASSURE SATISFYING OHMS OR LESS RESISTANCE.
 - 2.3 ALL CABLED CONNECTIONS TO GALVANIZED MATERIAL SHALL BE PROPERLY PREPARED TO ASSURE A SATISFACTORY CABLED. THE CABLED CONNECTION SHALL BE COATED WITH A GOLD GALVANIZING SPRAY.
 - 2.4 CONTRACTOR SHALL PROVIDE PHOTO DOCUMENTATION OF THE GROUND SYSTEM BY PROVIDING A CD TO US CELLULAR.
 - ALL BARS AND COAX GROUNDING CONNECTIONS.
 - ALL WIRE-TOWRE CONNECTIONS.
 - CONNECTIONS TO POWER, TELCO, AC, FENCING AND ICE BRIDGE.
 - 2.5 CONTRACTOR SHALL PROVIDE AS-BUILT PLANS SHOWING LOCATION AND DIMENSIONS OF BELOW GRADE GROUNDING INSTALLATIONS.
 - 2.6 THE CONTRACTOR SHALL PROVIDE PHOTO DOCUMENTATION OF THE GROUND SYSTEM BY PROVIDING A CD TO US CELLULAR.
3. INSTALLATION:
 - 3.1 THE CONTRACTOR SHALL PROVIDE PHOTO DOCUMENTATION OF THE GROUND SYSTEM BY PROVIDING A CD TO US CELLULAR.
 - 3.2 NO BIRCH-ANGLE CABLED CONNECTION OTHER THAN GROUND RODS TO GROUND RING CONNECTIONS SHALL BE USED. ALL WIRE-TOWRE CONNECTIONS SHALL UTILIZE "Y" TYPE CONNECTIONS.
 - 3.3 ALL VERTICAL JUMPERS SHALL NOT BE WELDED WITHIN TWO (2) FT OF THE GROUND ROD.
 - 3.4 COPPER SHIELD REQUIRED FOR ALL MECHANICAL CONNECTIONS.
 - 3.5 ALL CABLES FINISHED WITH GOLD GALVANIZED SHIELD.
4. TOWER:
 - 4.1 #4 SOLID BARE COPPER WIRE SHALL BE BURIED A MINIMUM OF FOUR (4) FT UNDERGROUND AND INDICATE BUILDING FOOTPRINT IN TWO (2) FEET FROM THE FOUNDATION. THIS GROUNDING SYSTEM SHALL BE CONNECTED TO THE BUILDING GROUND RING IN TWO (2) PLACES USING CABLED CONNECTIONS. SUCH CONNECTIONS SHALL BE "Y" TYPE CABLED CONNECTIONS.
 - 4.2 THREE (3) #4 SOLID BARE COPPER WIRE SHALL BE RUN FROM THE TOWER GROUND RING TO THE TOWER BASE WIRE. THESE WIRE SHALL BE CONNECTED TO THE TOWER USING A CABLED CONNECTION. NO SHIMMERS SHALL BE USED IN THESE GROUND LEADS.
 - 4.3 THE CONTRACTOR SHALL PROVIDE PHOTO DOCUMENTATION OF THE GROUND SYSTEM BY PROVIDING A CD TO US CELLULAR.
 - 4.4 THE CONTRACTOR SHALL PROVIDE PHOTO DOCUMENTATION OF THE GROUND SYSTEM BY PROVIDING A CD TO US CELLULAR.
 - 4.5 THE CONTRACTOR SHALL PROVIDE PHOTO DOCUMENTATION OF THE GROUND SYSTEM BY PROVIDING A CD TO US CELLULAR.
5. BUILDINGS:
 - 5.1 #4 SOLID BARE COPPER WIRE SHALL BE BURIED A MINIMUM OF FOUR (4) FT UNDERGROUND AND INDICATE BUILDING FOOTPRINT IN TWO (2) FEET FROM THE FOUNDATION. THIS GROUNDING SYSTEM SHALL BE CONNECTED TO THE BUILDING GROUND RING IN TWO (2) PLACES USING CABLED CONNECTIONS. SUCH CONNECTIONS SHALL BE "Y" TYPE CABLED CONNECTIONS.
 - 5.2 #4 SOLID BARE COPPER WIRE SHALL BE INSTALLED FROM THE BUILDING GROUND RING AND CONNECTED TO THE COAXES BUS BAR LOCATED ON THE OUTSIDE OF BUILDING UNDER THE WAVEGUIDE POST WITH A MINIMUM ONE (1) FOOT FROM THE BUILDING GROUND RING. A "Y" TYPE OR PARALLEL TYPE CABLED CONNECTION SHALL BE USED FOR ALL CONNECTIONS TO THE BUILDING GROUND RING.
 - 5.3 ONE (1) ADDITIONAL #2 SOLID BARE GROUND WIRE LEAD SHALL BE INSTALLED DIRECTLY BELOW THE ELECTRICAL SERVICE ENTRANCE PORT (GROUND AND LUG ON THE MAIN DISCONNECT INSIDE THE BUILDING). THE WIRE SHALL BE CONNECTED TO THE BUILDING GROUND RING USING "Y" TYPE CABLED CONNECTION.
 - 5.4 ONE (1) ADDITIONAL #2 SOLID BARE COPPER GROUND WIRE LEAD SHALL BE INSTALLED DIRECTLY BELOW EACH HVAC EXHAUST.
6. COMPLIANCE:
 - 6.1 CONTRACTOR SHALL PROVIDE CONNECTIONS TO ALL EXISTING GROUND SYSTEMS AT THE SITE (SCADA, TELEMETRY, ETC.).
 - 6.2 ALL ELECTRICAL CODE COMPLIANCE.
 - 6.3 CONTRACTOR SHALL PROVIDE CONNECTIONS TO ALL EXISTING GROUND SYSTEMS AT THE SITE (SCADA, TELEMETRY, ETC.).
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 - 6.100 ALL ELECTRICAL CODE COMPLIANCE.

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 277 Pelican Road
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 501 High Way 1337
 Duluth, MN 55812
 www.edgeconsultants.com

PROJECT NO: 20141027670
 EDGE PROJECT NO: 11947
 DRAWN BY: NBT
 CHECKED BY: OGD

REV	DATE	DESCRIPTION
A	01/05/2014	PRELIM SMALL CELL DOWNSHIP
B	01/17/2014	PRELIM SMALL CELL DOWNSHIP
C	03/01/2014	PRELIM SMALL CELL DOWNSHIP
D	04/04/2014	FINAL SMALL CELL DOWNSHIP
E	10/10/2014	FINAL SMALL CELL DOWNSHIP
F	10/07/2014	FINAL SMALL CELL DOWNSHIP

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P.O. Box 11947
 Duluth, MN 55812
 REPLACEMENT LIGHT POLE
 SMALL CELL DRAWING

SHEET TITLE
GROUNDING PLAN

SHEET NUMBER
G-1

GROUNDING NOTES

17-152



Moss & Barnett

October 10, 2017

Planning Commission
City of Duluth
411 West 1st Street, Suite 402
Duluth, Minnesota 55802

Re: Concurrent Use of Street Permit Application Supplemental Narrative for DUL Red Tide SC1

Dear Commission Members:

As discussed in our prior narrative, Verizon Wireless intends to install small wireless facilities on a replacement wood pole owned by Minnesota Power. This replacement pole will be at the same height as the existing pole. As requested by Staff, we have enclosed a street coordinate description for this installation and additional drawings and details. The enclosed drawings provide additional details regarding this installation, including the hand hole vault, restoration of the right-of-way, and any conflicts with existing utilities. These drawings should be used to replace the construction drawings previously submitted to the City for this site.

Once the City grants the Concurrent Use of Street Permit (the "Permit") for this site Verizon Wireless will commence construction based on a make-ready timeline developed in consultation with Minnesota Power. Construction will be completed through use of a standard bucket truck (approximately 12-feet wide by 20-feet long) or vehicle of equivalent size. To minimize traffic obstruction, the contractor will attempt to do most of their work off the main asphalt roadway, but obstruction of one driving lane may be necessary. The pole replacement should take less than half a day to complete, since no concrete curing needs to occur. Antenna and cabling attachment should also require less than a full business day. Enclosed are two examples of Verizon Wireless's traffic control plans accounting for both vehicular and pedestrian use of the right-of-way.

As discussed with City Staff, we understand that the Permit will include a condition requiring that Verizon Wireless indemnify the City in a manner consistent with Minnesota Law, including applicable statutes and the rules adopted by the Minnesota Public Utilities Commission for activities in the public right-of-way.

This installation will provide much needed service in an area where traditional, existing facilities have not been able to keep up with the ever-growing demand for wireless service in Duluth. Therefore, we respectfully request that the Commission recommend approval of the Permit for this site. If any reader of this letter has any question related to any of this installation, please do not hesitate to contact me.

We look forward to working with you to continue improving Verizon Wireless service in Duluth.

Sincerely,

Jaymes D. Littlejohn

Attorney at Law

(612) 877-5274 F: (612) 877-5047

jay.littlejohn@lawmoss.com

Enclosures

cc: Amy Brandt, Verizon Wireless



SITE NAME: DUL RED TIDE SC

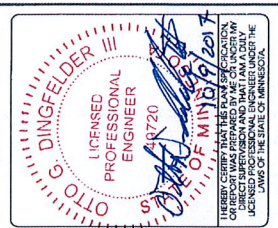
SITE NUMBER: 20151309625

SITE TYPE: SMALL CELL

POLE TYPE: REPLACEMENT 35' WOOD POLE



PROJECT NO:	20151309625	
EDGE PROJECT NO:	13795	
DRAWN BY:	NBT	
CHECKED BY:	OGD	
REV.	DATE	DESCRIPTION
A	10/10/2016	PRELIM SMALL CELL DWGS PER
B	10/10/2016	PRELIM SMALL CELL DWGS PER
C	10/10/2016	PRELIM SMALL CELL DWGS PER
D	10/10/2016	PRELIM SMALL CELL DWGS PER
E	10/10/2016	PRELIM SMALL CELL DWGS PER
F	10/10/2016	PRELIM SMALL CELL DWGS PER
G	10/10/2016	PRELIM SMALL CELL DWGS PER
H	10/10/2016	PRELIM SMALL CELL DWGS PER
I	10/09/2016	FINAL DWGS
J	10/09/2016	FINAL DWGS



DUL RED TIDE SC
DULUTH, MINNESOTA
REPLACEMENT WOOD POLE
SMALL CELL DRAWINGS

SHEET TITLE
TITLE SHEET & PROJECT DATA

SHEET NUMBER
T-1

NO:	SHEET TITLE
S-1	TITLE SHEET & PROJECT DATA
C-1	ENLARGED SITE PLAN
A-1	POLE ELEVATION
A-2	ROUTING DETAILS
A-3	ANTENNA DETAILS
A-4	CABLE TRENCHING DETAILS
A-5	RADIO DETAILS
E-1	CABLEING DETAILS
E-2	ELECTRICAL NOTES
G-1	GROUNDING PLAN
G-2	GROUNDING DETAILS

11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

THESE SHEETS SHALL BE USED TO OBTAIN THE REQUIREMENTS CALLED FOR IN THE PERMITS. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL ANTENNAS AND SUPPORT STRUCTURES WHERE THE SITE IS LOCATED. CONTRACTORS SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS/CONDITIONS ON SITE IMMEDIATELY UPON COMMENCEMENT OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DISCREPANCIES PRIOR TO PERFORMING ANY WORK OR BE RESPONSIBLE FOR THE SAME.

ENGINEER OF RECORD
EDGE CONSULTING ENGINEERS, INC.
CONTACT: OTTO DINGFELDER III (P.E. # 49720 (MN))
PHONE: 686.644.1449

STRUCTURAL REVIEW
LIGHT POLE STRUCTURAL ANALYSIS COMPLETED BY
EDGE CONSULTING ENGINEERS, INC.
PROJECT # 13795
DATE: 02/23/2016

CONTRACTOR TO REVIEW STRUCTURAL REPORT IN ITS ENTIRETY, AND DISSEMINATE ANY DISCREPANCIES OR DISAGREEMENTS BETWEEN THE REPORT AND CONSTRUCTION. DISCREPANCIES SHOULD BE RESOLVED PRIOR TO CONSTRUCTION.

PROJECT DESCRIPTION/SOW

- INSTALLATION OF (1) REPLACEMENT 35-FT WOOD POLE BY UTILITY
- INSTALLATION OF PANEL ANTENNAS
- INSTALLATION OF ERICSSON RRUS AND POWER CONVERTERS
- INSTALLATION OF ELECTRIC METER AND BISS-AMER BOX
- INSTALLATION OF HAND HOLE FOR FIBER AT POLE BASE, BY PROVIDER
- INSTALLATION OF CONDUIT FOR FIBER BETWEEN HAND HOLE AND POLE BASE (APPROX. 1'-0" IN LENGTH), TO BE TRENCHED BELOW GRADE BY VERIZON
- INSTALLATION OF CONDUIT FOR FIBER IN ROW, TO BE TRENCHED BELOW GRADE, BY PROVIDER
- INSTALLATION OF CONDUIT FOR ELECTRIC BETWEEN SINGLE METER AND POWER SOURCE TO BE TRENCHED BELOW GRADE BY UTILITY
- INSTALLATION OF GROUND RING AROUND POLE FOUNDATION BY UTILITY
- ALL OTHER CONSTRUCTION RELATED ACTIVITIES TO BE COMPLETED BY OTHERS

PROJECT DIRECTORY

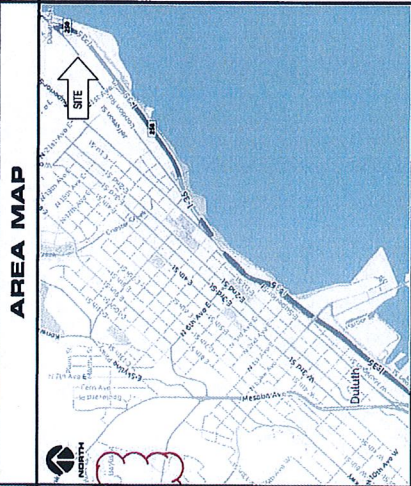
LESSOR:
VERIZON WIRELESS
10801 BUSH LAKE RD
BLOOMINGTON, MN 55438
CONTACT: COURTNEY BEDMARZ
PHONE: 762.946.6094

ENGINEERING CONSULTANTS:
EDGE CONSULTING ENGINEERS, INC.
2101 HIGHWAY 13 W
BURSVILLE, MN 55337
CONTACT: OTTO DINGFELDER III, P.E.
PHONE: 686.644.1449

LESSOR:
MINNESOTA POWER COMPANY
30 W SUPERIOR ST
DULUTH, MN 55802
PHONE: 218.722.2695

ENGINEER:
EDGE CONSULTING ENGINEERS, INC.
10801 BUSH LAKE RD
BLOOMINGTON, MN 55438
CONTACT: MICHAEL KOCH

SITE ACQUISITION:
JACOBS ENGINEERING GROUP, INC.
2727 FAITON RD
ROSEVILLE, MN 55113
CONTACT: JAY DRESCHE
PHONE: 762.831.1040



SITE INFORMATION

APPROXIMATE ADDRESS:
2400 LONDON RD
DULUTH, MN 55812
ST. LOUIS COUNTY

LOCATION DESCRIPTION:
LOCATED ON THE SE SIDE OF LONDON ROAD, APPROXIMATELY 80' NE OF THE LONDON ROAD & S 24TH AVE INTERSECTION

COORDINATES
LAT: 46° 28' 22.65" N
LONG: 92° 03' 51.65" W
GROUND ELEVATION: 698.7' AMSL
(PER 1A CERTIFICATE)

POLE HEIGHT:
35'0" A.G.L.
MAXIMUM APPURTENANCE HEIGHT:
35'0" A.G.L.

APPLICABLE CODES

ALL WORK SHALL COMPLY WITH THE FOLLOWING APPLICABLE CODES:
- 2012 INTERNATIONAL BUILDING CODE
- 2014 NATIONAL ELECTRIC CODE
- TIA/EIA-222-G OR LATEST EDITION

IN THE EVENT OF CONFLICT, THE MOST RESTRICTIVE CODE SHALL PREVAIL





JACOBS
Jacobs Engineering Group, Inc.
2727 Nathan Road
Rochester, MN 55901
www.jacobs.com



Edge Consulting Engineers, Inc.
2101 Highway 13 SW
Rochester, MN 55901
651.281.1400
www.edgeconsulting.com

PROJECT NO: 201813094205
EDGE PROJECT NO: 13795
DRAWN BY: NBT
CHECKED BY: OGD

REV.	DATE	DESCRIPTION
A	10/19/2016	PRELIM SMALL CELL DWGS PER
B	03/27/2016	PRELIM SMALL CELL DWGS PER
C	05/04/2016	PRELIM SMALL CELL DWGS PER
D	07/20/2016	PRELIM SMALL CELL DWGS PER
E	10/19/2016	FINAL DWGS
F	10/19/2016	FINAL DWGS

DESIGNED BY: NBT
DIRECT SUPERVISION AND PARTIAL AIDED BY: OGD
CHECKED BY: OGD
DATE OF DESIGN: 10/19/2016
DATE OF CONSTRUCTION: 11/15/2016
DATE OF THE STATE OF MINNESOTA:

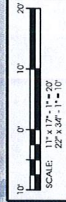
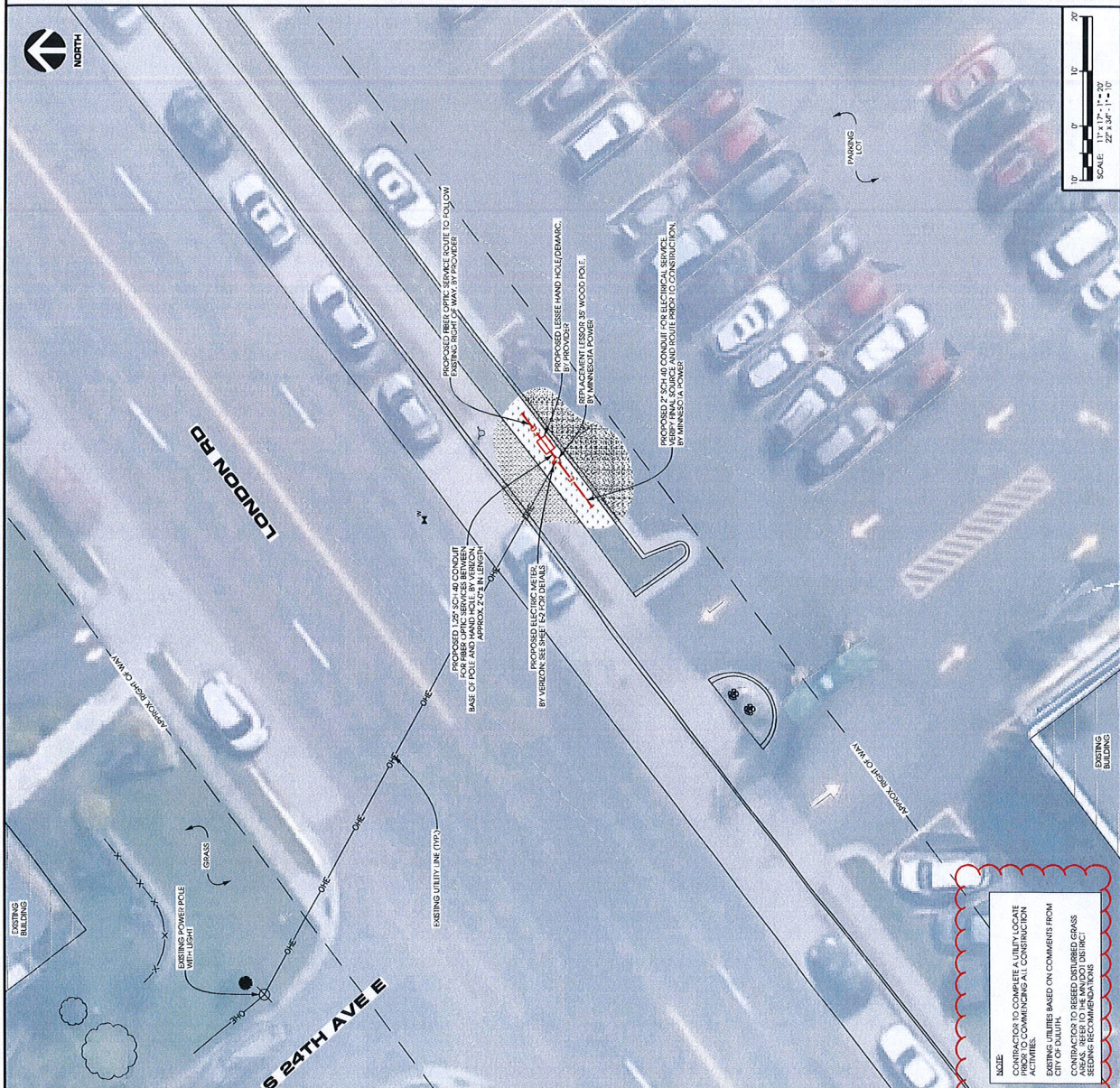
P.C. Packet, Nov 14, 2017

DUL RED TIDE SC
DULUTH, MINNESOTA
REPLACEMENT WOOD POLE
SMALL CELL DRAWINGS

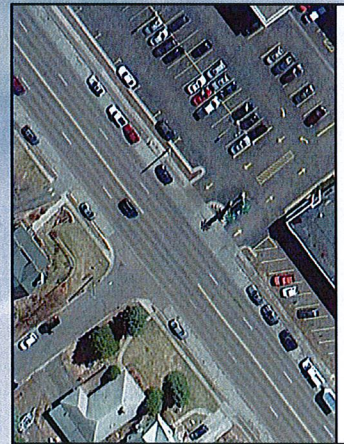
SHEET TITLE
SITE PLAN

SHEET NUMBER
C-1

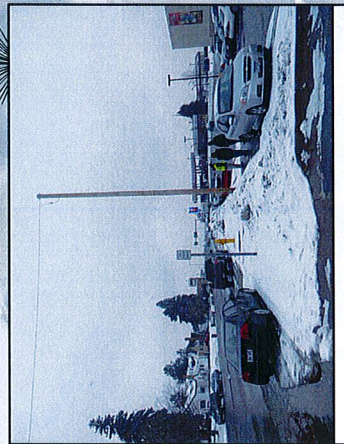
© EDGE CONSULTING ENGINEERS, INC.



NOTE:
CONTRACTOR TO COMPLETE A UTILITY LOCATE PRIOR TO COMMENCING ALL CONSTRUCTION ACTIVITIES BASED ON COMMENTS FROM CITY OF DULUTH.
CONTRACTOR TO RESEED DISTURBED GRASS AREAS. REFER TO THE WINDOZ DRAWING REGARDING RESEEDING AREAS.



AERIAL OVERVIEW



SITE OVERVIEW [LOOKING NORTHEAST]



REPLACEMENT POLE LOCATION [LOOKING NORTHWEST]



PROJECT NO: 201513096205
 EDGE PROJECT NO: 13795
 DRAWN BY: NBT
 CHECKED BY: OGD

REV	DATE	DESCRIPTION
A	05/17/2016	PRELIM SMALL CELL DWGS PER
B	05/17/2016	PRELIM SMALL CELL DWGS PER
C	05/24/2016	PRELIM SMALL CELL DWGS PER
D	09/29/2016	PRELIM SMALL CELL DWGS PER
0	10/10/2016	FINAL DWGS NBT
1	10/09/2016	FINAL DWGS NBT

I HEREBY CERTIFY THAT THIS PLAN SPECIFICATION, DESIGN, CALCULATION, AND CONSTRUCTION DETAILS ARE THE WORK OF ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULUTH LICENSED PROFESSIONAL ENGINEER FOR THE STATE OF MINNESOTA.

P.C. Packet, Nov 14, 2017

DULUTH TIDE SC
 DULUTH, MINNESOTA
 REPLACEMENT WOOD POLE
 SMALL CELL DRAWINGS

SHEET TITLE
ENLARGED SITE PLAN

SHEET NUMBER
C-2

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JACOBS
Jacobs Engineering Group, Inc.
227 Nathan Wood
Rochester, MN 55901
www.jacobs.com



Edge
Consulting Engineers, Inc.
10000 Highway 101
Minneapolis, MN 55437
612.421.1200
www.edgeconsulting.com

PROJECT NO: 20161309625
EDGE PROJECT NO: 13795
DRAWN BY: NBT
CHECKED BY: OGD

REV.	DATE	DESCRIPTION
A	03/01/2016	PRELIM SMALL CELL DWG- PER
B	03/01/2016	PRELIM SMALL CELL DWG- PER
C	05/04/2016	PRELIM SMALL CELL DWG- FOR
D	07/28/2016	PRELIM SMALL CELL DWG- FOR
E	10/19/2016	FINAL DWGSS
F	10/19/2016	FINAL DWGSS
G		NBT

P.C. Packet, Nov 14, 2017

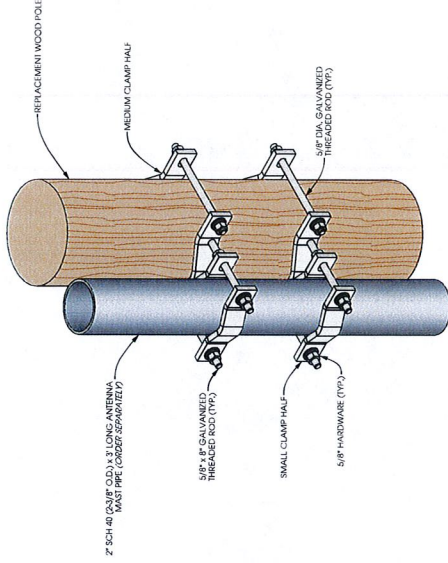
LEGACY CARRIER THAT THE PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY OR UNDER THE SUPERVISION OF AN ENGINEER OR ARCHITECT IS UNLAWFUL UNDER THE LICENSING PROFESSIONAL ENGINEER ACT OR THE LAWS OF THE STATE OF MINNESOTA.

DUL RED TIDE SC
DULUTH, MINNESOTA
REPLACEMENT WOOD POLE
SMALL CELL DRAWINGS

SHEET TITLE
MOUNTING DETAILS

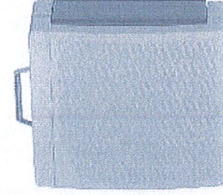
SHEET NUMBER
A-2

© EDGE CONSULTING ENGINEERS, INC.



B PIPE TO PIPE CLAMP
SCALE: NTS
ANDREW PART # 158850 OR EQUIV.

ERICSSON RR15 B13
- UP TO 15 MHz LTE
- UP TO 2.740 W
DIMENSIONS: 19.7\"/>



ERICSSON RR15 B13

D RADIO DETAIL
SCALE: NTS

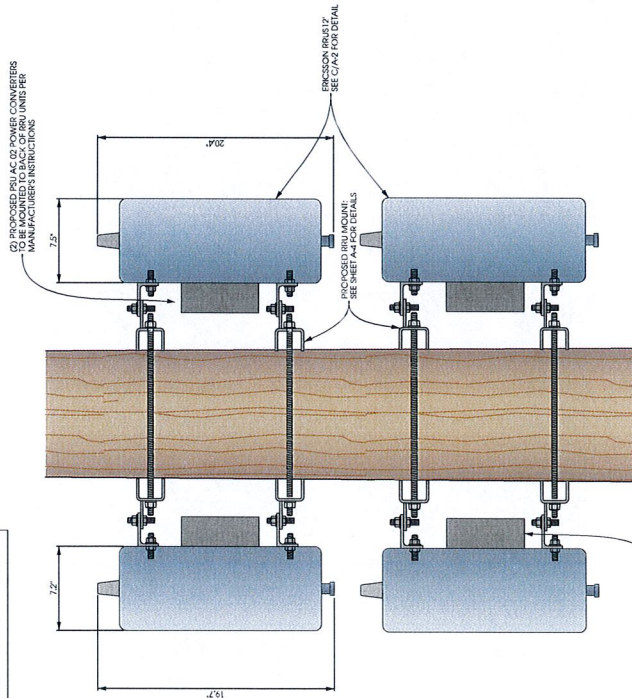
ERICSSON RR15 B12
- GSM, WCDMA, LTE
- 8 CARRIERS @ 5.40 MHz BW
- UP TO 20 MHz LTE
- 80W - UP TO 40 MHz
DIMENSIONS: 20.4\"/>



ERICSSON RR15 B12

C RADIO DETAIL
SCALE: NTS

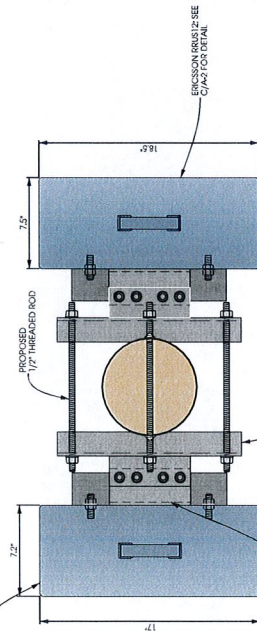
NOTE:
LOCK WASHERS SHALL BE USED ON ALL THROUGH BOLT CONNECTIONS TO THE POLE



(7) PROPOSED RR15 AC (2) POWER CONVERTERS TO BE MOUNTED TO BACK OF RR15 UNITS PER MANUFACTURER'S INSTRUCTIONS

ELEVATION VIEW

ERICSSON RR15 B11 - SEE D/A-2 FOR DETAILS

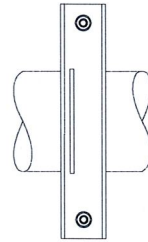
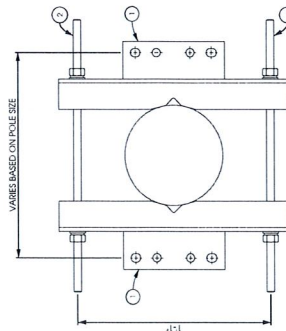
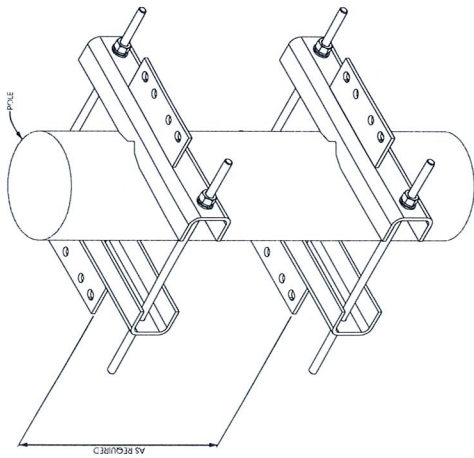


PROPOSED SHARPED ANGLE BRACKET TO BE MOUNTED TO BACK OF RR15 UNITS PER MANUFACTURER'S INSTRUCTIONS

PLAN VIEW

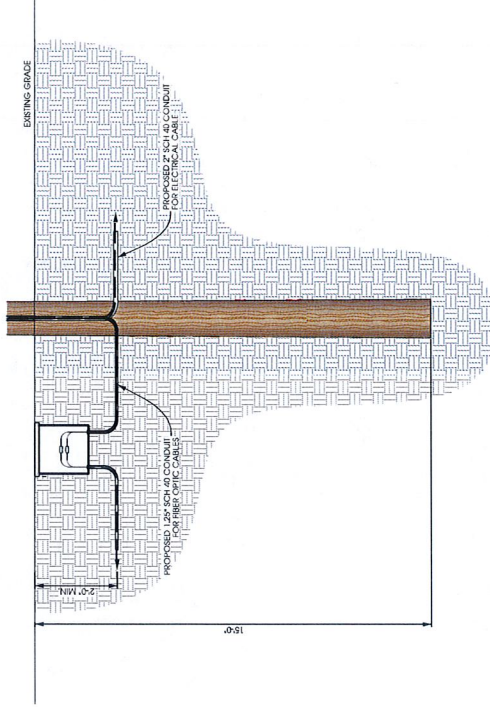
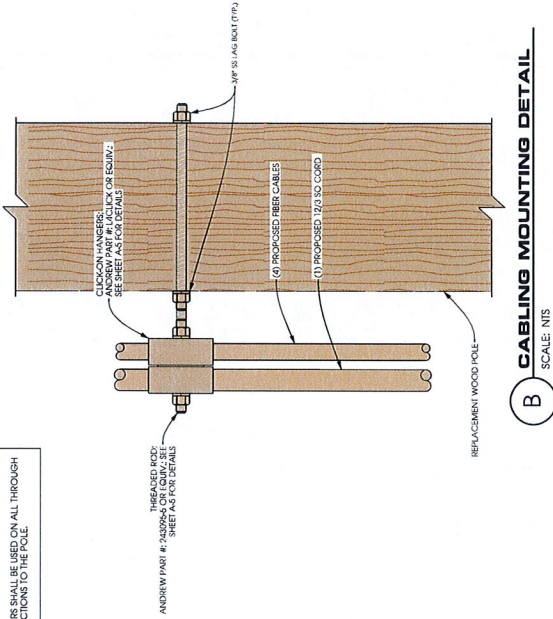
A EQUIPMENT MOUNTING DETAIL
SCALE: NTS

REVISION	DESCRIPTION
1	ISSUED FOR PERMIT
2	ISSUED FOR PERMIT
3	ISSUED FOR PERMIT
4	ISSUED FOR PERMIT
5	ISSUED FOR PERMIT
6	ISSUED FOR PERMIT
7	ISSUED FOR PERMIT
8	ISSUED FOR PERMIT
9	ISSUED FOR PERMIT
10	ISSUED FOR PERMIT



A RADIO UNIT MOUNTING DETAIL
SCALE: NTS

NOTE:
LOCK WASHERS SHALL BE USED ON ALL THROUGH BOLT CONNECTIONS TO THE POLE.



PROJECT NO.: 201613096205
EDGE PROJECT NO.: 13796
DRAWN BY: NBT
CHECKED BY: OGD

REV.	DATE	DESCRIPTION
A	10/11/2016	PRELIM SMALL CELL DWG PER
B	10/21/2016	PRELIM SMALL CELL DWG PER
C	10/26/2016	PRELIM SMALL CELL DWG PER
D	10/28/2016	PRELIM SMALL CELL DWG PER
E	11/01/2016	PANEL DWGS
F	11/02/2016	PANEL DWGS
G		PANEL DWGS

THIS DRAWING IS THE PROPERTY OF THE CONSULTING ENGINEER. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREIN. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF THE CONSULTING ENGINEER. THE CONSULTING ENGINEER'S LIABILITY IS LIMITED BY THE PROFESSIONAL ENGINEER ACT AND THE LAWS OF THE STATE OF MINNESOTA.

DUL RED TIDE SC
DULUTH, MINNESOTA
REPLACEMENT WOOD POLE
SMALL CELL DRAWINGS

SHEET TITLE
**EQUIPMENT
DETAILS**

SHEET NUMBER
A-4

17-153



Moss & Barnett

October 10, 2017

Planning Commission
City of Duluth
411 West 1st Street, Suite 402
Duluth, Minnesota 55802

Re: Concurrent Use of Street Permit Application Supplemental Narrative for DUL Duluth East HS SC1

Dear Commission Members:

As discussed in our prior narrative, Verizon Wireless intends to install small wireless facilities on a replacement wood pole owned by Minnesota Power. This replacement pole will be at the same height as the existing pole. As requested by Staff, we have enclosed a street coordinate description for this installation and additional drawings and details. The enclosed drawings provide additional details regarding this installation, including the hand hole vault, restoration of the right-of-way, and any conflicts with existing utilities. These drawings should be used to replace the construction drawings previously submitted to the City for this site.

Once the City grants the Concurrent Use of Street Permit (the "Permit") for this site Verizon Wireless will commence construction based on a make-ready timeline developed in consultation with Minnesota Power. Construction will be completed through use of a standard bucket truck (approximately 12-feet wide by 20-feet long) or vehicle of equivalent size. To minimize traffic obstruction, the contractor will attempt to do most of their work off the main asphalt roadway, but obstruction of one driving lane may be necessary. The pole replacement should take less than half a day to complete, since no concrete curing needs to occur. Antenna and cabling attachment should also require less than a full business day. Enclosed are two examples of Verizon Wireless's traffic control plans accounting for both vehicular and pedestrian use of the right-of-way.

As discussed with City Staff, we understand that the Permit will include a condition requiring that Verizon Wireless indemnify the City in a manner consistent with Minnesota Law, including applicable statutes and the rules adopted by the Minnesota Public Utilities Commission for activities in the public right-of-way.

This installation will provide much needed service in an area where traditional, existing facilities have not been able to keep up with the ever-growing demand for wireless service in Duluth. Therefore, we respectfully request that the Commission recommend approval of the Permit for this site. If any reader of this letter has any question related to any of this installation, please do not hesitate to contact me.

We look forward to working with you to continue improving Verizon Wireless service in Duluth.

Sincerely,

Jaymes D. Littlejohn
Attorney at Law

[Redacted contact information]

Enclosures

cc: Amy Brandt, Verizon Wireless



SITE NAME: DUL EAST HIGH SCHOOL

SITE NUMBER: 20141027632

SITE TYPE: SMALL CELL

POLE TYPE: REPLACEMENT 31' POLE



7000 Metro Boulevard, Suite 400
Duluth, MN 55804
612.331.1040
www.jacobs.com



Edge
Consulting Engineers, Inc.
1000 Superior Street
Duluth, MN 55804
612.331.1040
www.edgeconsulting.com

PROJECT NO:	20141027632	
EDGE PROJECT NO:	11648	
DRAWN BY:	NBT	
CHECKED BY:	OGD	
REV.	DATE	DESCRIPTION
A	10/29/2016	PRELIM SMALL CELL DWGS THE
B	12/29/2016	PRELIM SMALL CELL DWGS THE
C	10/29/2016	FINAL DWGS
D	10/29/2016	FINAL DWGS
E	10/29/2016	FINAL DWGS
F	10/29/2016	FINAL DWGS
G	10/29/2016	FINAL DWGS



P.C. Packet, Nov 14, 2017	
DUL EAST HIGH SCHOOL DULUTH, MINNESOTA REPLACEMENT LIGHT POLE SMALL CELL DRAWINGS	
SHEET TITLE TITLE SHEET & PROJECT DATA	
SHEET NUMBER T-1	

SHEET INDEX

NO:	SHEET TITLE
S1	TITLE SHEET & PROJECT DATA
A1	POLE ELEVATION
A2	MOUNTING DETAILS
A3	EQUIPMENT DETAILS
A4	ROOF DETAILS
E1	CABLEING DETAILS
E2	GROUNDING PLAN
G1	GROUNDING DETAILS
G2	GROUNDING DETAILS

APPLICABLE CODES

ALL WORK SHALL COMPLY WITH THE FOLLOWING APPLICABLE CODES:
- 2012 INTERNATIONAL BUILDING CODE
- IBC 1101.10
- IBC 1101.12
- IBC 1101.14
- IBC 1101.16
- IBC 1101.18
- IBC 1101.20
- IBC 1101.22
- IBC 1101.24
- IBC 1101.26
- IBC 1101.28
- IBC 1101.30
- IBC 1101.32
- IBC 1101.34
- IBC 1101.36
- IBC 1101.38
- IBC 1101.40
- IBC 1101.42
- IBC 1101.44
- IBC 1101.46
- IBC 1101.48
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- IBC 1101.52
- IBC 1101.54
- IBC 1101.56
- IBC 1101.58
- IBC 1101.60
- IBC 1101.62
- IBC 1101.64
- IBC 1101.66
- IBC 1101.68
- IBC 1101.70
- IBC 1101.72
- IBC 1101.74
- IBC 1101.76
- IBC 1101.78
- IBC 1101.80
- IBC 1101.82
- IBC 1101.84
- IBC 1101.86
- IBC 1101.88
- IBC 1101.90
- IBC 1101.92
- IBC 1101.94
- IBC 1101.96
- IBC 1101.98
- IBC 1102.00

PROJECT DESCRIPTION/SOW

THE VERIZON WIRELESS CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING:
• INSTALLATION (1) REPLACEMENT 31' WOOD POLE, BY UTILITY
• INSTALLATION (1) PANEL ANTENNA
• INSTALLATION (1) ERICSSON RR18 W/ POWER CONVERTERS
• INSTALLATION (1) LOAD CENTER BREAKER BOX
• INSTALLATION (2) FIBER CABLES FROM PROPOSED MMH1 TO RADIOS
• INSTALLATION (1) UNDERGROUND CONDUIT FOR FIBER BETWEEN HAND HOLE AND POLE BASE (APPROX. 1'-0"), TO BE TRENCHED BELOW GRADE
• INSTALLATION OF GROUND RINGS AROUND POLE FOUNDATION BY UTILITY
• INSTALLATION (1) UNDERGROUND CONDUIT FOR FIBER IN ROW, BY PROVIDER
• ALL OTHER CONSTRUCTION RELATED ACTIVITIES TO BE COMPLETED BY OTHERS

PROJECT DIRECTORY

LESSOR:
VERIZON WIRELESS
1000 BUSH LANE RD
SUITE 200
CONTACT: COURTNEY BEDNARZ

ENGINEER:
VERIZON WIRELESS
1000 BUSH LANE RD
SUITE 200
CONTACT: MICHAEL KOCH

ENGINEERING COMPANY:
EDGE CONSULTING ENGINEERS, INC.
2101 HIGHWAY 13 N WY
SUITE 200
CONTACT: OTTO DINGFELDER III, P.E.
PHONE: 688.644.1449

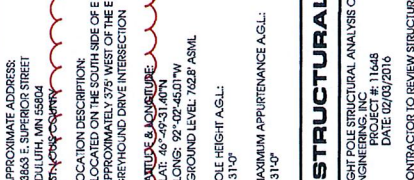
SELECTIVE SITE CONSULTANTS, INC.
1000 BUSH LANE RD
SUITE 200
CONTACT: JEFFREY ANDREWS
PHONE: 688.616.0233

LESSOR:
MINNESOTA POWER
30 WY SUPERIOR STREET
DULUTH, MN 55804
PHONE: 218.722.2625

AREA MAP



LOCATION MAP



SITE INFORMATION

APPROXIMATE ADDRESS:
3843 E. SUPERIOR STREET
DULUTH, MN 55804

LOCATION DESCRIPTION:
LOCATED ON THE SOUTH SIDE OF E SUPERIOR STREET
APPROXIMATELY 375' WEST OF THE E SUPERIOR STREET &
GREYHOUND DRIVE INTERSECTION

UNITS & DIMENSIONS:
LAT: 46 59' 53" NORTH
LONG: 92 51' 40" WEST
GROUND LEVEL: 762.2' ASL
POLE HEIGHT A.G.L.:
31'-0"

MAXIMUM APPURTENANCE A.G.L.:
31'-0"

STRUCTURAL REVIEW

LIGHT POLE STRUCTURAL ANALYSIS COMPLETED BY EDGE
ENGINEERS, INC.
PROJECT #: 11648
DATE: 02/09/2016

CONTRACTOR TO REVIEW STRUCTURAL REPORT IN ITS ENTIRETY, ANY DISCREPANCIES OR DISAGREEMENTS BETWEEN THE REPORT AND THESE PLANS SHOULD BE RESOLVED PRIOR TO CONSTRUCTION.

LOCATION SCAN



11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

THESE SITE PLANS ADHERE TO ALL OF THE REQUIREMENTS CALLED OUT IN THE JURISDICTION PLANNING AND ZONING FOR ANTENNAS AND SUPPORT STRUCTURES WHERE SITE IS LOCATED. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS ON CONDITIONS OF SITE. IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR DISAGREEMENTS BEFORE ANY WORK, OR BE RESPONSIBLE FOR THE SAME.

ENGINEER OF RECORD

EDGE CONSULTING ENGINEERS, INC.
CONTACT: OTTO DINGFELDER III (PE # 49720 (MN))
PHONE: 688.644.1449



verizon

JACOBS

7300 Metro Boulevard, Suite 400
Duluth, MN 55811
612.281.1100
www.jacobs.com



Edge
Consulting Engineers, Inc.
14000 Highway 100, Suite 200
Duluth, MN 55817
612.281.1100
www.edgeconsulting.com

PROJECT NO: 20141027632
EDGE PROJECT NO: 11648
DRAWN BY: NBT
CHECKED BY: OGD

REV.	DATE	DESCRIPTION
A	02/09/2016	PRELIM SMALL CELL DWSIS TIE
B	02/09/2016	PRELIM SMALL CELL DWSIS TIE
C	10/19/2016	FINAL DWSIS
D	10/19/2016	FINAL DWSIS
E	10/19/2016	FINAL DWSIS
F	10/19/2016	FINAL DWSIS
G	10/19/2016	FINAL DWSIS
H	10/19/2016	FINAL DWSIS
I	10/19/2016	FINAL DWSIS
J	10/19/2016	FINAL DWSIS
K	10/19/2016	FINAL DWSIS
L	10/19/2016	FINAL DWSIS
M	10/19/2016	FINAL DWSIS
N	10/19/2016	FINAL DWSIS
O	10/19/2016	FINAL DWSIS
P	10/19/2016	FINAL DWSIS
Q	10/19/2016	FINAL DWSIS
R	10/19/2016	FINAL DWSIS
S	10/19/2016	FINAL DWSIS
T	10/19/2016	FINAL DWSIS
U	10/19/2016	FINAL DWSIS
V	10/19/2016	FINAL DWSIS
W	10/19/2016	FINAL DWSIS
X	10/19/2016	FINAL DWSIS
Y	10/19/2016	FINAL DWSIS
Z	10/19/2016	FINAL DWSIS

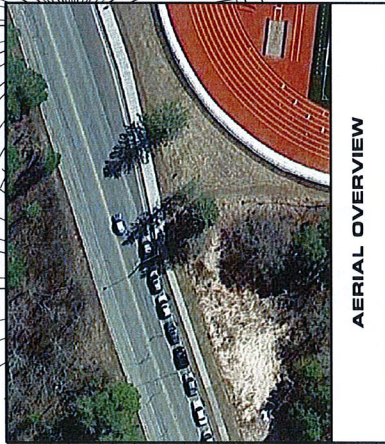
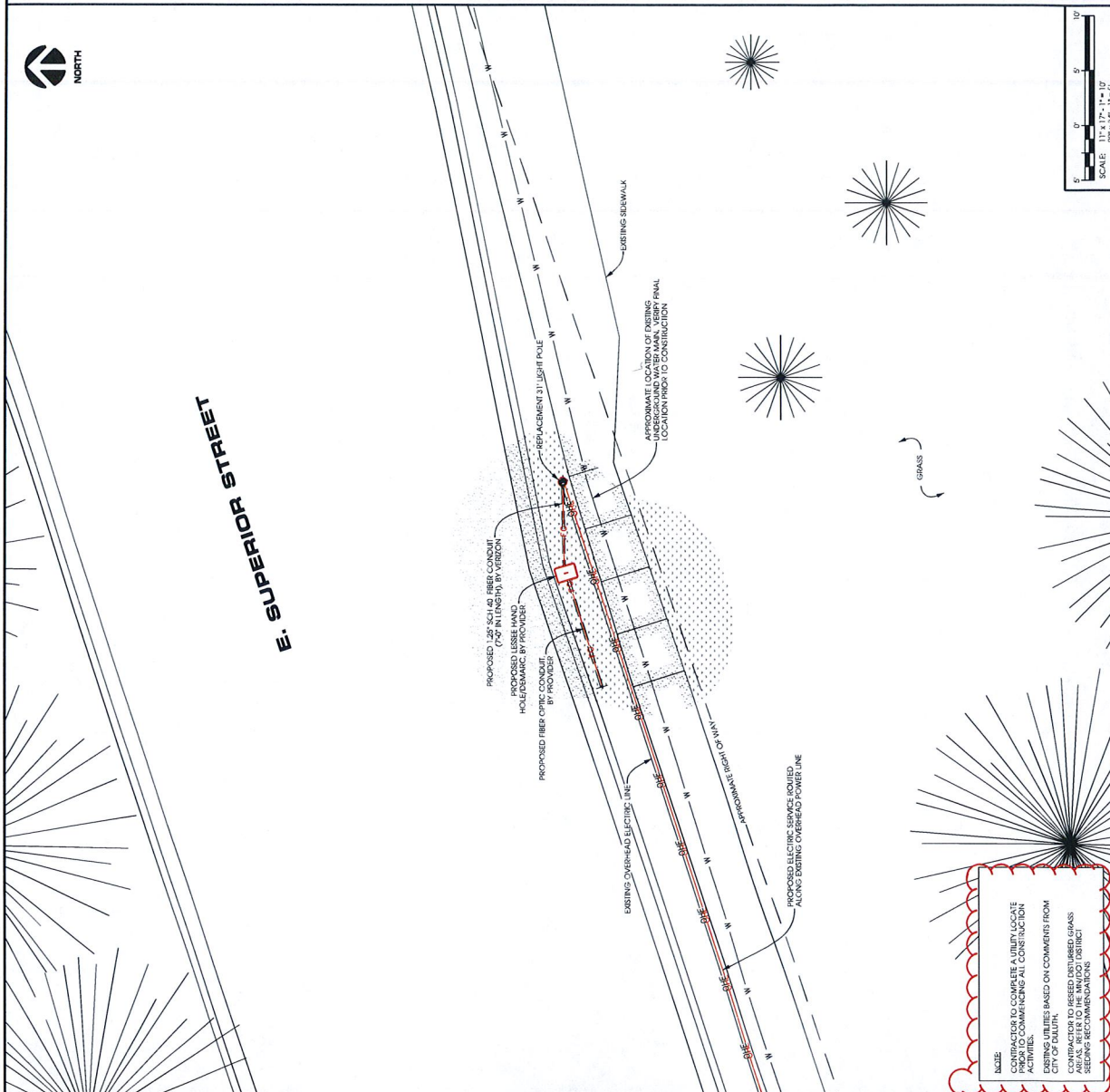
IT IS A MUST OF ANY CONTRACTOR TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING ANY CONSTRUCTION ACTIVITIES.

DUL EAST HIGH SCHOOL
DULUTH, MINNESOTA
REPLACEMENT LIGHT POLE
SMALL CELL DRAWINGS

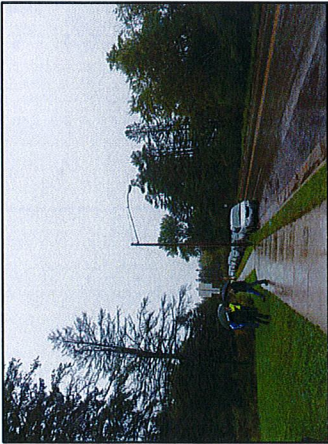
SHEET TITLE
SITE PLAN

SHEET NUMBER
C-1

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AERIAL OVERVIEW



SITE OVERVIEW [LOOKING SOUTHEAST]



SITE OVERVIEW [LOOKING EAST]

NOTE:
CONTRACTOR TO COMPLETE A UTILITY LOCATE PRIOR TO COMMENCING ALL CONSTRUCTION ACTIVITIES.
EXISTING UTILITIES BASED ON COMMENTS FROM CONTRACTOR TO RESEE OUTLINES GRASS AREAS. REFER TO THE MANHOLE DISTRICT SEEING RECOMMENDATIONS



verizon

JACOBS

7300 Maple Road, Suite 400
Edina, MN 55437
www.jacobs.com

Edge
Consulting Engineers, Inc.

2101 Highway 13 NW
Edina, MN 55437
612.526.1597 fax
www.edge-engineers.com

PROJECT NO: 20141027432
EDGE PROJECT NO: 11648
DRAWN BY: NBT
CHECKED BY: OSD

REV	DATE	DESCRIPTION
1	10/09/2016	PRELIM SMALL CELL DWGS PER
2	10/09/2016	FINAL DWGS
3	10/09/2017	FINAL DWGS
4	10/09/2017	FINAL DWGS

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

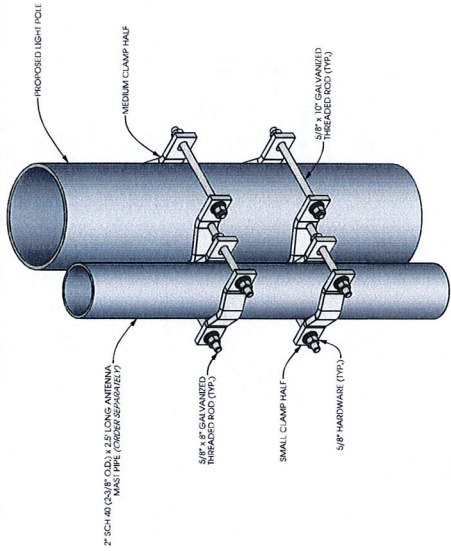
P.C. Packet, Nov 14, 2017

DUL EAST HIGH SCHOOL
DULUTH, MINNESOTA
REPLACEMENT LIGHT POLE
SMALL CELL DRAWINGS

SHEET TITLE
MOUNTING DETAIL

SHEET NUMBER
A-2

© HOKI CONSULTING ENGINEERS, INC.



PIPE TO PIPE CLAMP
SCALE: NIS
ANDREW PART #. ISS100 OR EQUIV.

GENERAL NOTES:
BOTH RF AND POWER SUPPLY DISCONNECT SWITCHES SHALL BE PROVIDED. THE RF DISCONNECT SHALL BE A "LOCKOUT" TYPE TO MAKE THE RF TRANSMITTER INOPERABLE. THE POWER SUPPLY DISCONNECT SHALL BE A "TRIP" TYPE TO MAKE THE POWER SUPPLY INOPERABLE. THE DISCONNECTS SHALL BE LOCATED OUTSIDE THE MAXIMUM PERMISSIBLE RF EXPOSURE DISTANCE. A "KEEP OUT" TAG SHALL BE PLACED ON THE DISCONNECTING DEVICES DURING SERVICE ON POLE.

SCHNEIDER DUZ2188
- 30A AC DISCONNECT
WITH LED LIGHT



SCHNEIDER ELECTRIC - SQUARE D
NUMBER OF POLES: 2
VOLTAGE: 240 VAC
DIMENSIONS: 5.5W x 7.25H x 3.25D
WEIGHT: 4.2 LB
CONTRACTOR TO INSTALL LED LIGHT

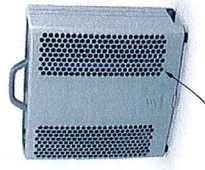
LOAD CENTER DETAIL
SCALE: NIS

ERICSSON RR18313
- UP TO 10 MHz LIE
- UP TO 2.4W
DIMENSIONS: 19.7" x 17" x 7.2"
WEIGHT: 51 LBS

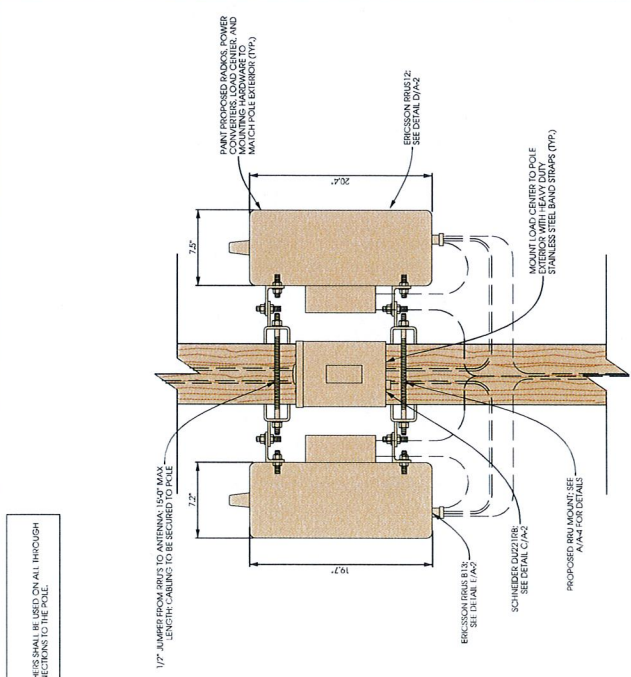


RADIO DETAIL
SCALE: NIS

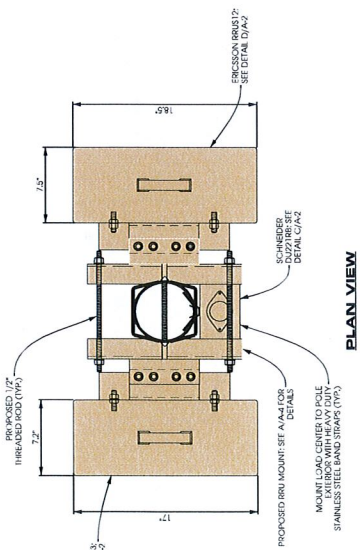
ERICSSON RR18312
- GSM, WCDMA LIE
- 2 CARRIERS OVER 40 MHz BW
- UP TO 2.4W LIE
- UP TO 2.4W LIE
- 18W x UP TO 40 MHz
DIMENSIONS: 20.4" x 18.5" x 7.2"
WEIGHT: 58 LBS



RADIO DETAIL
SCALE: NIS

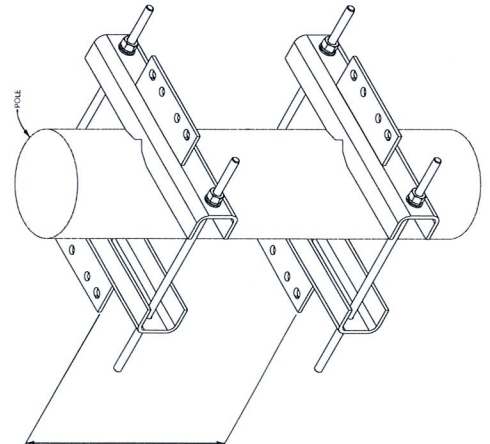


ELEVATION VIEW

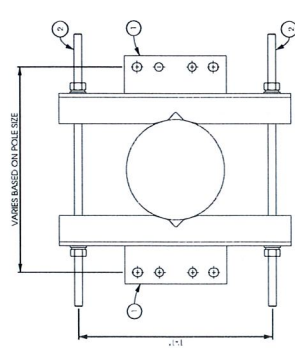


EQUIPMENT MOUNTING DETAIL
SCALE: 11 x 17 - 1/4" = 1'-0"
22 x 34 - 1/4" = 0'-6"

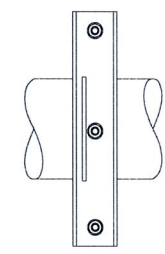
ITEM NO.	QUANTITY	DESCRIPTION
1	1	REPLACEMENT WOOD POLE
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3	1	REPLACEMENT LIGHT POLE
4	1	REPLACEMENT LIGHT POLE
5	1	REPLACEMENT LIGHT POLE
6	1	REPLACEMENT LIGHT POLE
7	1	REPLACEMENT LIGHT POLE
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9	1	REPLACEMENT LIGHT POLE
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100	1	REPLACEMENT LIGHT POLE



ISOMETRIC VIEW



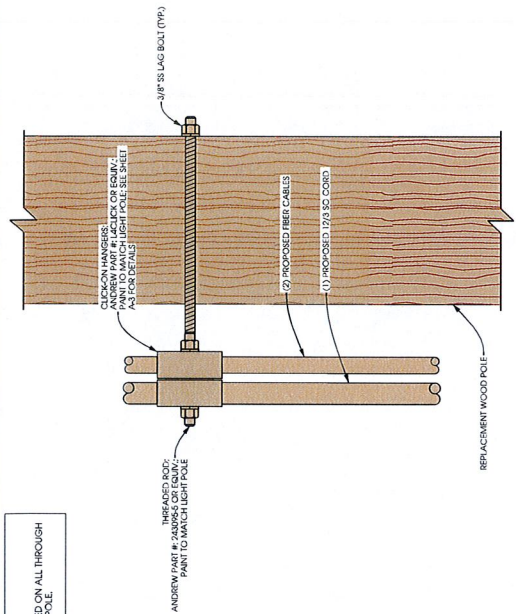
PLAN VIEW



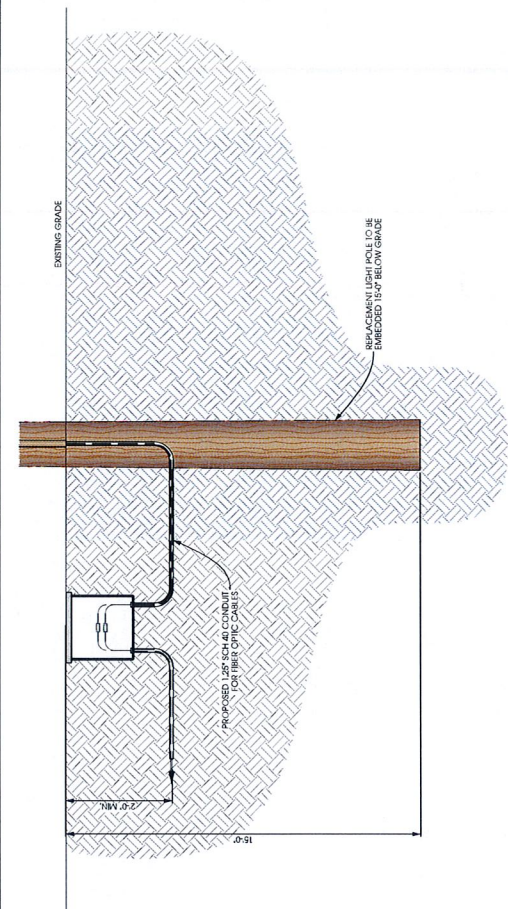
ELEVATION VIEW

A RADIO MOUNTING DETAIL
SCALE: NTS

NOTE:
LOCK WASHERS SHALL BE USED ON ALL THROUGH BOLT CONNECTIONS TO THE POLE.



B CABLE MOUNTING DETAIL
SCALE: NTS



C EMBEDDED POLE DETAIL
SCALE: NTS



PROJECT NO: 20141027632
EDGE PROJECT NO: 11648
DRAWN BY: NBT
CHECKED BY: OGD

REV	DATE	DESCRIPTION
1	10/20/14	PRELIM CELL DWGS
2	10/24/14	PRELIM SMALL CELL DWGS
3	10/24/14	PRELIM SMALL CELL DWGS
4	10/24/14	PRELIM SMALL CELL DWGS
5	10/24/14	PRELIM SMALL CELL DWGS
6	10/24/14	FINAL DWGS
7	10/24/14	FINAL DWGS
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97	10/24/14	FINAL DWGS
98	10/24/14	FINAL DWGS
99	10/24/14	FINAL DWGS
100	10/24/14	FINAL DWGS

IF A VIOLATION OF LAW OR ANY PROSECUTION IS INITIATED, THE ENGINEER SHALL BE RESPONSIBLE FOR NOTIFYING THE APPROPRIATE AGENCIES AND THE PUBLIC. THE ENGINEER SHALL BE RESPONSIBLE FOR NOTIFYING THE APPROPRIATE AGENCIES AND THE PUBLIC. THE ENGINEER SHALL BE RESPONSIBLE FOR NOTIFYING THE APPROPRIATE AGENCIES AND THE PUBLIC.

DUL EAST HIGH SCHOOL
DULUTH, MINNESOTA
REPLACEMENT LIGHT POLE
SMALL CELL DRAWINGS

SHEET TITLE
EQUIPMENT
DETAILS

SHEET NUMBER
A-4

© 2014 EDGE CONSULTING ENGINEERS, INC.



PROJECT NO: 20141027632
 EDGE PROJECT NO: 11668
 DRAWN BY: NBT
 CHECKED BY: OGD

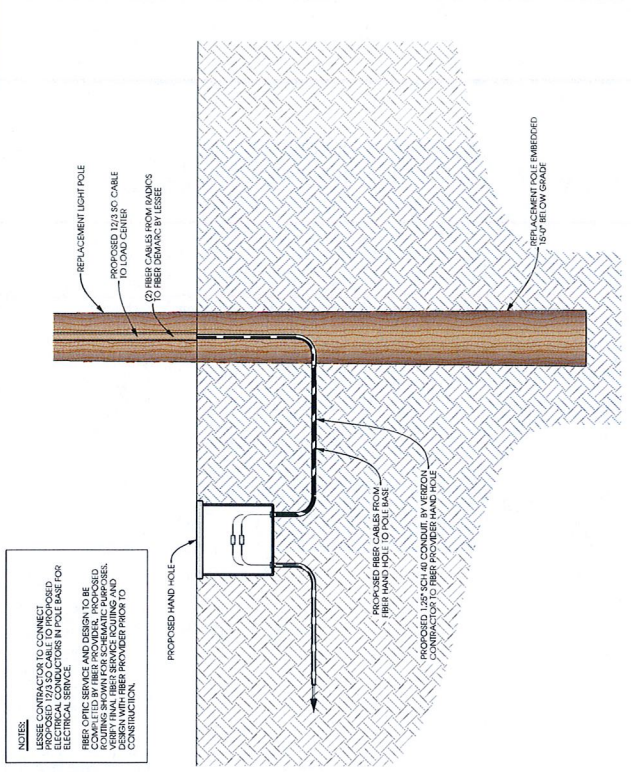
REV.	DATE	DESCRIPTION
A	10/09/2016	PRELIM SMALL CELL DWGS PER
B	10/24/2016	PRELIM SMALL CELL DWGS PER
C	10/20/2016	FINAL DWGS
D	10/09/2017	FINAL DWGS (MAY)
E	10/09/2017	FINAL DWGS (MAY)
F	10/10/2017	FINAL DWGS (MAY)

IT IS A VIOLATION OF LAW FOR ANY PERSON, FIRM OR COMPANY TO REPRODUCE OR TRANSMIT IN ANY MANNER THE CONTENTS OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

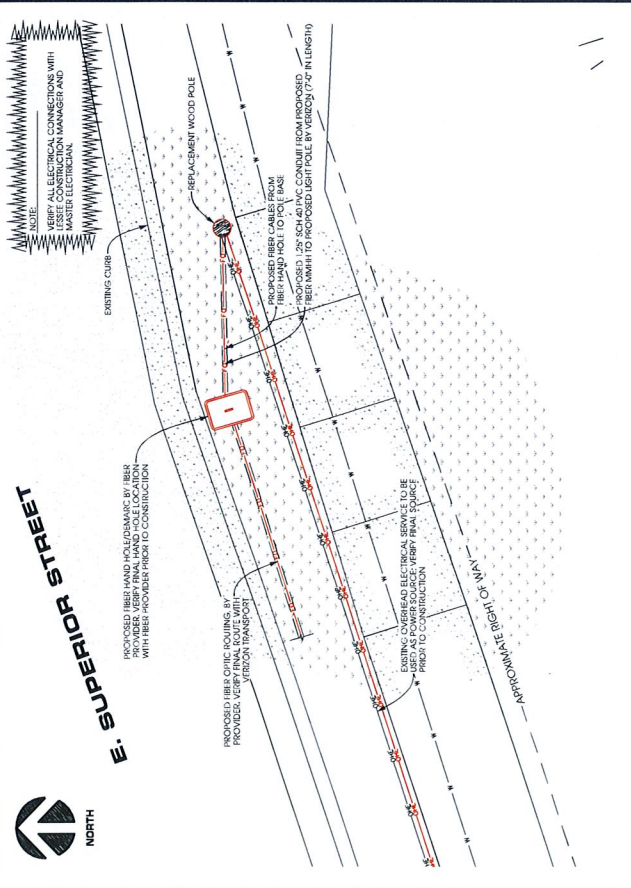
P.C. Packet, Nov 14, 2017
 DUL EAST HIGH SCHOOL
 DULUTH, MINNESOTA
 REPLACEMENT LIGHT POLE
 SMALL CELL DRAWINGS

SHEET TITLE
CABLING DETAILS
 SHEET NUMBER
E-1

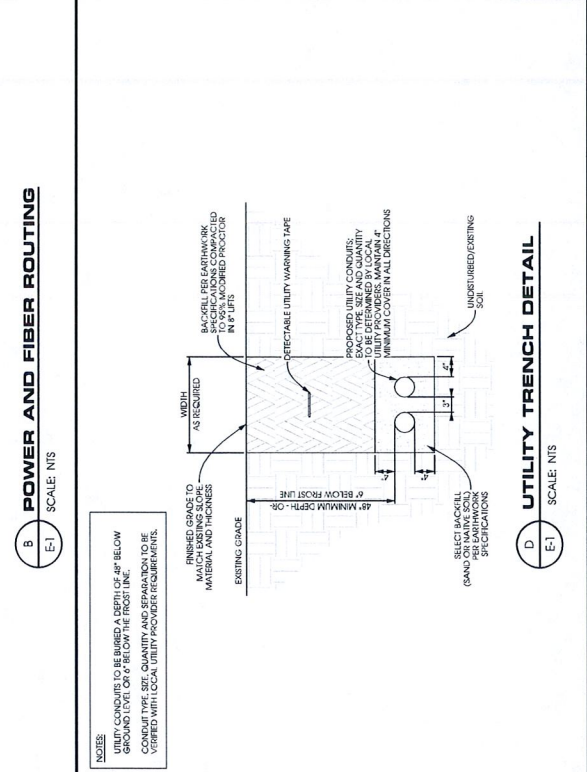
© 2016 CONESTOGA POWER SYSTEMS, INC.



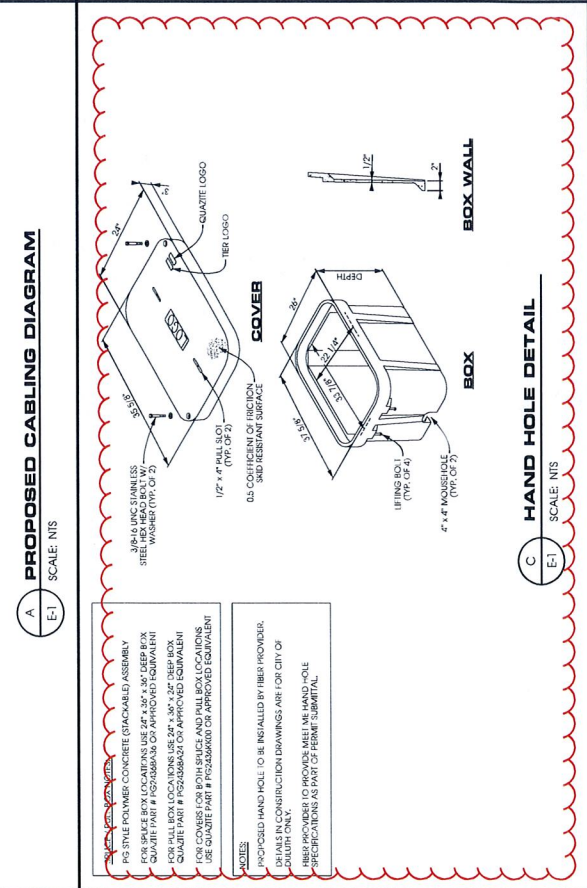
B POWER AND FIBER ROUTING
 SCALE: NIS



A PROPOSED CABLING DIAGRAM
 SCALE: NIS



D UTILITY TRENCH DETAIL
 SCALE: NIS



C HAND HOLE DETAIL
 SCALE: NIS

NOTES:
 1. VERIFY ALL ELECTRICAL CONNECTIONS WITH LESSEE CONSTRUCTION MANAGER AND LESSEE CONTRACTOR PRIOR TO CONSTRUCTION.
 2. FIBER OPTIC SERVICE AND DESIGN TO BE COMPLETED BY FIBER PROVIDER. PROPOSED FIBER OPTIC ROUTING BY FIBER PROVIDER. VERIFY FINAL FIBER SERVICE ROUTING AND CONDUIT WITH FIBER PROVIDER PRIOR TO CONSTRUCTION.
 3. PROPOSED FIBER CABLES FROM FIBER HAND HOLE TO POLE BASE.
 4. PROPOSED 1/2x3/32 CABLE TO CONDUIT IN GROUND, COMPACTED TO FIBER PROVIDER HAND POLE.
 5. EXISTING OVERHEAD ELECTRICAL SERVICE TO BE USED AS POWER SOURCE - VERIFY FINAL SOURCE PRIOR TO CONSTRUCTION.
 6. REPLACEMENT POLE EMBEDDED 15' OF BELOW GRADE.
 7. PROPOSED 1/2x3/32 CABLE TO CONDUIT IN GROUND, COMPACTED TO FIBER PROVIDER HAND POLE. VERIFY WITH FIBER PROVIDER PRIOR TO CONSTRUCTION.
 8. PROPOSED UTILITY CONDUIT TO BE DETERMINED BY LOCAL UTILITY PROVIDER. MINIMUM COVER IN ALL DIRECTIONS.
 9. UNBURRED FIBERS.
 10. SELECT BASKET (SAND OR MARKED SOIL) SPECIFICATIONS.
 11. FINISHED GRADE TO BE BURIED A DEPTH OF 48" BELOW GROUND LEVEL OR 6" BELOW THE FRONT LINE.
 12. CONDUIT TYPE, SIZE, QUANTITY AND SEPARATION TO BE VERIFIED WITH LOCAL UTILITY PROVIDER REQUIREMENTS.
 13. MESH AS REQUIRED.
 14. BASKET INS EACH WAY TO 6" BELOW PROCTOR FINISH.
 15. DETECTABLE UTILITY WARNING TAPE.
 16. PROPOSED UTILITY CONDUIT TO BE DETERMINED BY LOCAL UTILITY PROVIDER.
 17. MINIMUM COVER IN ALL DIRECTIONS.
 18. UNBURRED FIBERS.
 19. SELECT BASKET (SAND OR MARKED SOIL) SPECIFICATIONS.
 20. QUARTZ LOGO.
 21. TIER LOGO.
 22. 3/8x3/8 IN. STAINLESS STEEL HEX HEAD BOLT W/ WASHER (TYP. OF 2).
 23. 1/2" x 4" x 1/2" (TYP. OF 2).
 24. 65 CONCRETE OR FIBERGLASS SAND RESISTANT SURFACE.
 25. COVER.
 26. BOX WALL.
 27. BOX.
 28. LIFTING BOLT (TYP. OF 4).
 29. 4" x 4" MOUNTING (TYP. OF 2).
 30. PROPOSED HAND HOLE TO BE INSTALLED BY FIBER PROVIDER. DRAWINGS IN CONSTRUCTION DRAWINGS ARE FOR CITY OF DULUTH ONLY. FIBER PROVIDER TO PROVIDE MEET THE HAND HOLE SPECIFICATIONS AS PART OF PERMIT SUBMITTAL.



City of Duluth Special Use Permit
 AIR PHOTO/PARCEL MAP
 Verizon Wireless Small Cell on Culver's Light Pole



Site Acquisition | Telecommunications

Exhibit I

SECTION 1 EXECUTIVE SUMMARY

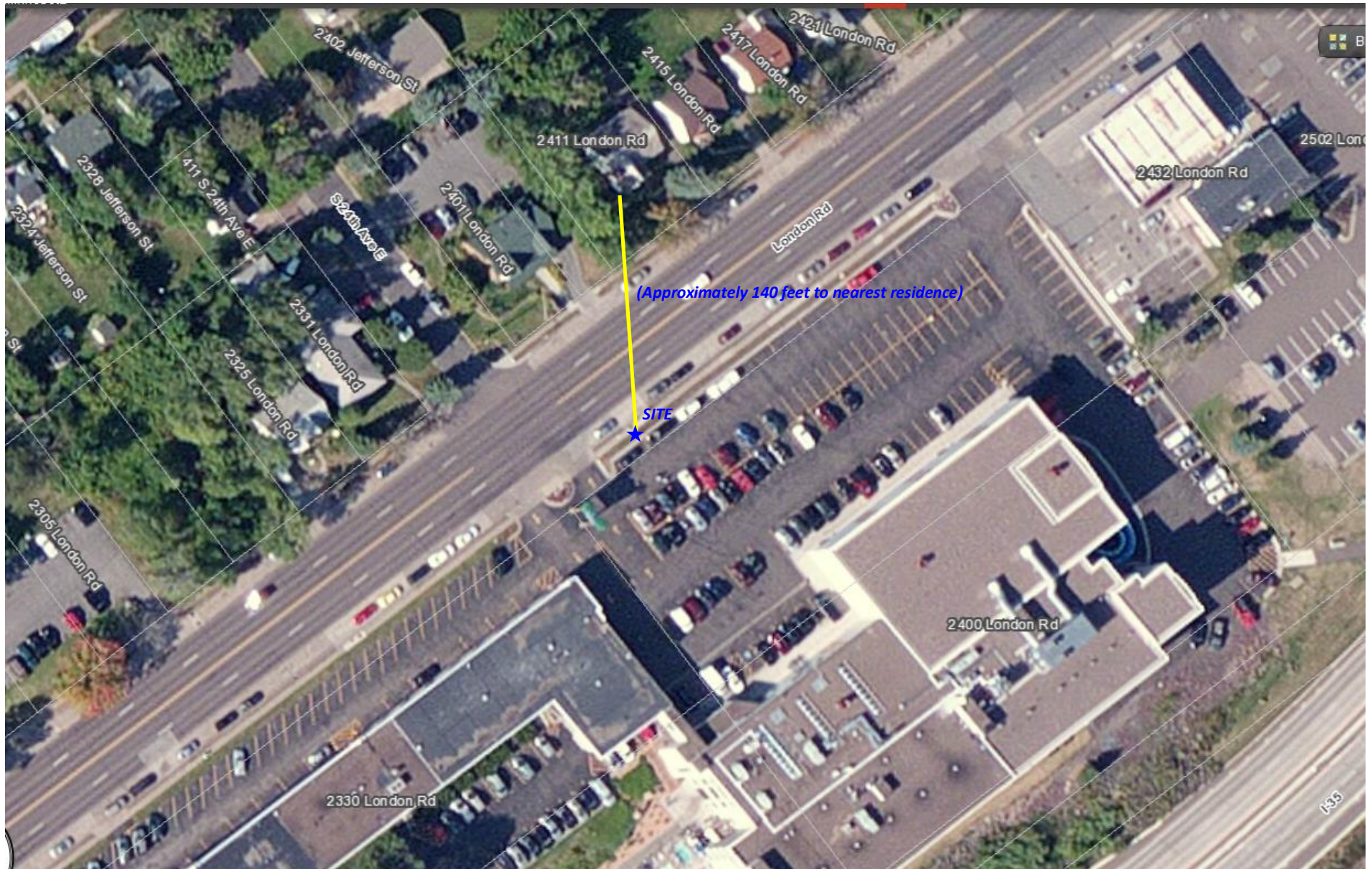
Site Name: DUL Denfeld HS SC1
Site Location: Duluth, Minnesota
Purpose: Small Cell Installation
Structure Type: Proposed 40 ft. Wood Pole

Per your request, we have completed a structural analysis for the above described structure. It is proposed to install the light pole. The proposed pole is to be a 55 foot class 1 Douglas fir pole. It is proposed to be embedded 15 feet, leaving 40 feet above grade. One loading scenario was considered in the analysis. The loading condition takes into account the existing loading along with the proposed loading. The loading condition is described in Section 3.2.

Our analysis was performed in accordance with the current Minnesota Building Code (IBC 2012) and all of its referenced standards.

The results of our analysis indicate that the proposed structure will be structurally adequate to support the proposed change in loading. Refer to Section 3.4 for additional information regarding assumptions for this analysis.

Please refer to the report which follows this summary for further information. Feel free to contact us if you have any questions or concerns.



City of Duluth Special Use Permit

AIR PHOTO/PARCEL MAP

Verizon Wireless Small Cell on MN Power Pole (Red Tide)



Site Acquisition | Telecommunications

Exhibit I

SECTION 1 EXECUTIVE SUMMARY

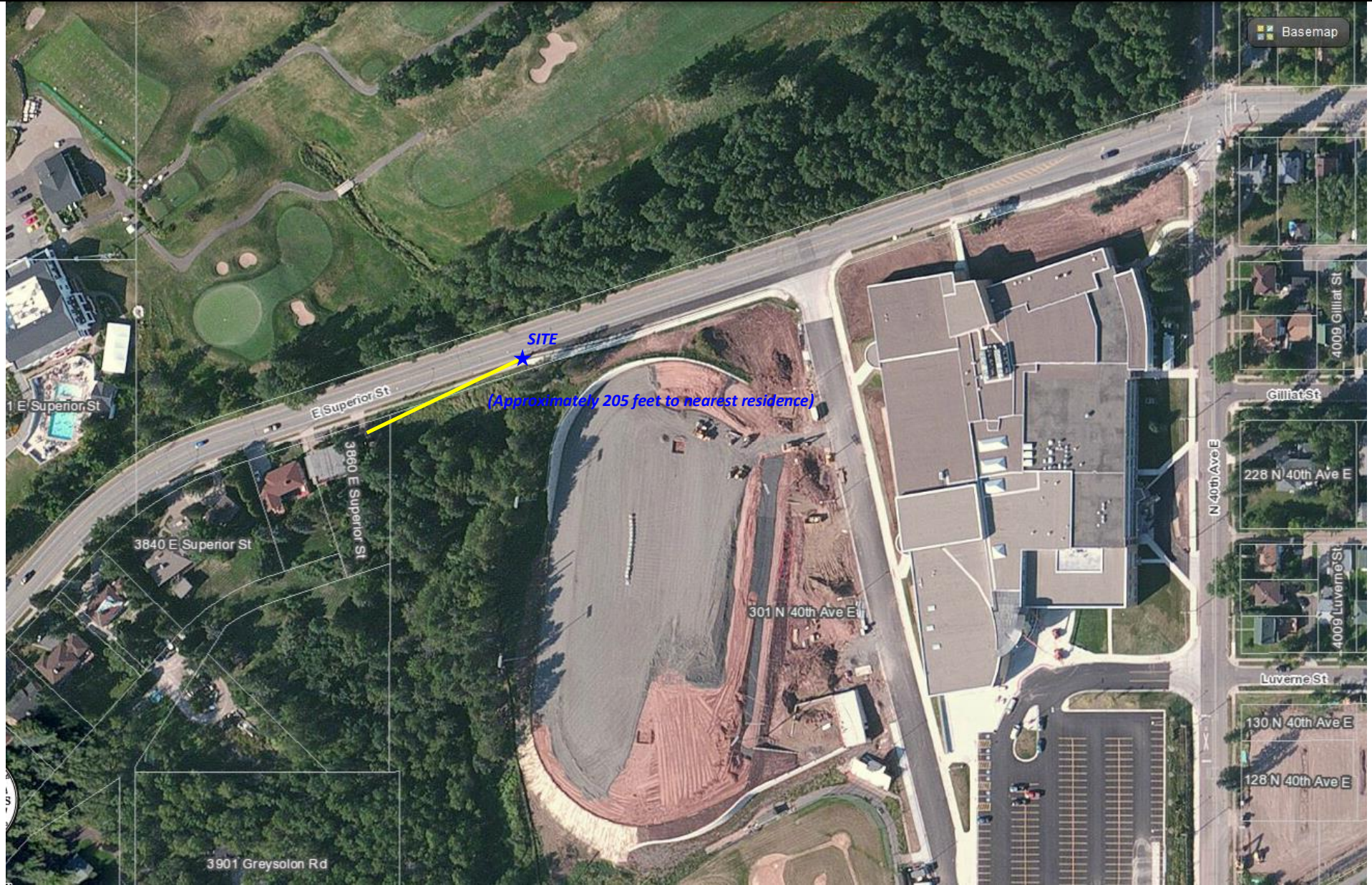
Site Name: DUL Red Tide SC
Site Location: Duluth, Minnesota
Purpose: Small Cell Installation
Structure Type: Replacement 35 ft. Wood Pole

Per your request, we have completed a structural analysis for the above described structure. It is proposed to install the wood pole. The proposed pole is to be a 50 foot class 1 Douglas fir pole. It is proposed to be embedded 15 feet, leaving 35 feet above grade. One loading scenario was considered in the analysis. The loading condition takes into account the existing loading along with the proposed loading. The loading condition is described in Section 3.2.

Our analysis was performed in accordance with the current Minnesota Building Code (IBC 2012) and all of its referenced standards.

The results of our analysis indicate that the proposed structure will be structurally adequate to support the proposed change in loading. Refer to Section 3.4 for additional information regarding assumptions for this analysis.

Please refer to the report which follows this summary for further information. Feel free to contact us if you have any questions or concerns.



City of Duluth Special Use Permit

AIR PHOTO/PARCEL MAP

Verizon Wireless Small Cell on MN Power Pole (Duluth East)



Site Acquisition | Telecommunications

Exhibit I

SECTION 1 EXECUTIVE SUMMARY

Site Name: DUL East High School
Site Location: Duluth, Minnesota
Purpose: Small Cell Installation
Structure Type: Proposed 40 ft. Wood Pole

Per your request, we have completed a structural analysis for the above described structure. It is proposed to install the light pole. The proposed pole is to be a 55 foot class 1 Douglas Fir pole. It is proposed to be embedded 15 feet, leaving 40 feet above grade. One loading scenario was considered in the analysis. The loading condition takes into account the existing loading along with the proposed loading. The loading condition is described in Section 3.2.

Our analysis was performed in accordance with the current Minnesota Building Code (IBC 2012) and all of its referenced standards.

The results of our analysis indicate that the proposed structure will be structurally adequate to support the proposed change in loading. Refer to Section 3.4 for additional information regarding assumptions for this analysis.

Please refer to the report which follows this summary for further information. Feel free to contact us if you have any questions or concerns.



March 28, 2016

City of Duluth
Construction Services and Inspections Department
City Hall, Room 210
411 West First Street
Duluth, MN 55802

To Whom It May Concern:

As owner of the following utility poles, we consent to allowing Verizon Wireless to apply for City permits for small cell wireless antennas and equipment on each of the following poles in Duluth:

1. Southeast corner of N. 45th Avenue and W. 4th Street (near Denfeld HS)
2. (approx.) 3863 East Superior Street (near Duluth East HS)
3. Northeast corner of S. 24th Avenue E. and London Road

As attachments to our poles, Verizon Wireless will also be required to obtain attachment permits from Minnesota Power and meet our attachment design standards.

Sincerely,

Minnesota Power
A Division of Allete, Inc.



June 23, 2016

Mr. Steven Robertson, Senior Planner
City of Duluth – Community Planning
411 W. 1st Street, Room 208
Duluth, MN 55802

Dear Mr. Robertson,

Cellular Inc. Network Corporation d/b/a Verizon Wireless is aware of the interference issues that can arise while co-locating with other carriers. In the event a collocation by an additional carrier is proposed, careful isolation studies will be performed to determine the correct vertical and horizontal separation between Verizon Wireless' antennas and any other carrier. This will avoid the possibility of our frequency interfering with other equipment. In addition, Verizon Wireless has acquired an FCC license, which exclusively entitles the company to operate within an assigned frequency range. This in turn eliminates any interference issues from CB radios, electronic appliances, pacemakers, fire and police equipment as well as other carriers. In the highly unlikely event that interference does occur, Verizon Wireless agrees to fully cooperate with the entity experiencing interference to identify and correct, to the extent reasonably possible, any issues caused by its installation.

Sincerely,

Michael Koch

Michael Koch
RF Engineer – Northern MN Market