



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 18-127, CUP	Contact	Steven Robertson, 218-730-5295	
Type	Concurrent Use Permit to Place Three Private Obstructions in the Public Right of Way/Public Facilities	Planning Commission Date	October 9, 2018	
Deadline for Action	Application Date	September 10, 2018		
	Date Extension Letter Mailed	N/A	90 Days* (237.163)	January 8, 2019
Location of Subject	Three Sites Near E Superior Street and North 60 th Avenue East			
Applicant	Verizon Wireless	Contact		
Agent	Amy Dresch	Contact		
Legal Description	On-file			
Site Visit Date	September 26, 2018	Sign Notice Date	September 24, 2018	
Neighbor Letter Date	N/A for Concurrent Use	Number of Letters Sent	N/A for Concurrent Use	

Proposal. The applicant is proposing to install three small cell installations "...two are co-locations on Minnesota Power wood utility power poles in the right of way near the intersection of E Superior Street and North 60th Ave E and the third is a proposed collocation on a Minnesota Power wood light pole located near the intersection of E Superior Street and Occidental Blvd...the purpose of these proposed small wireless facility installations is to address the data capacity and overage into the area as well as addressing capacity issues...". The project will replace the existing wooden poles with new poles, which will be between 34 and 38 feet tall.

Recommended Action: Recommend to the City Council (Ordinance) to Approve with Conditions.

	Current Zoning	Existing Land Use	Future Land Use Map Designation
Subject	F-2, P-1	Commercial	Neighborhood Mixed Use
North	R-1, P1	Residential/Recreation	Traditional Neighborhood/Preservation
South	R-1	Residential	Traditional Neighborhood
East	R-1	Residential	Low-density Neighborhood
West	R-1	Residential	Traditional Neighborhood

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.

The installation falls with the provisions of Minnesota Statute 237.162 and 247.1643, as amended in 2017.

Future Land Use: A transitional use between more intensive commercial uses and purely residential neighborhoods. Includes conversions of houses to office or live-work spaces. May include limited commercial-only space oriented to neighborhood or specialty retail markets.

Review and Discussion Items

- 1) The applicant is proposing three small wireless facilities on existing Minnesota Power poles. The project will replace the existing wooden poles with new poles, between 34 and 38 feet tall
- 2) Granting a concurrent use permit would give the applicant the ability to use dedicated public rights-of-way, with conditions, while preserving other existing public uses in the same right-of-way corridors. Concurrent use permits require a public hearing and recommendation by the Planning Commission, and 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 permits issued by the City to applicants who are private users of public rights-of-way.
- 3) Ownership of the poles will remain with Minnesota Power.
- 4) The replacement wooden poles will have a structure analysis by the manufacturer to ensure that they can support the weight of the private small cell facilities and required public infrastructure.
- 5) Granting the proposed concurrent use permit 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.
- 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 small wireless facilities would be located 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 Federal Communications Commission preempts local review on the potential environmental effects of radio frequency (RF) emissions, with the presumption that the applicant and service provider is in compliance with the Commission's RF rules. The applicant has submitted FCC categorical exclusion documentation for the sites with the initial application.
- 8) At the time that this memo was written, no written comments from the public have been received. City Engineering was still reviewing the exhibits at the time this staff report was written, and will likely have some requests for changes related to some of the technical aspects of the installations in the right of way.

Staff Recommendation:

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

- 1) The project be limited to, constructed, and maintained according to construction drawings submitted 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.



Wyoming St Alley

Wyoming St Alley

Wyoming St Alley

Wyoming St Alley

Juniata St

N 60th Ave E

Juniata St Alley

Juniata St Alley

Juniata St Alley

Glenwood St

Glenwood St

Occidental Blvd

Lester River Road

N 62nd Ave E

State Hwy 61

Glenwood St Alley

Glenwood St Alley

N 54th Ave E

Oneida St

N 58th Ave E

N 60th Ave E

Approx Location

Approx Location

Oneida St Alley

Oneida St Alley

Tioga St

E Superior St

Private Dr

State Hwy 61

Brighton Beach Blvd

Otsego St

Otsego St Alley

Tioga St Alley

Approx Location

S 61st Ave E

N 53rd Ave E

Tioga St

N 57th Ave E

N 58th Ave E

E Superior St Alley

Congdon Blvd

Tioga St Alley

Tioga St Alley

S 55th Ave E

S 59th Ave E

S 60th Ave E

London Road

Colorado St Alley

Colorado St

Superior St Alley

S 56th Ave E

S 56th Ave E

S 57th Ave E

S 57th Ave E

Dodge St Alley

London Road

S 60th Ave E

S 55th Ave E

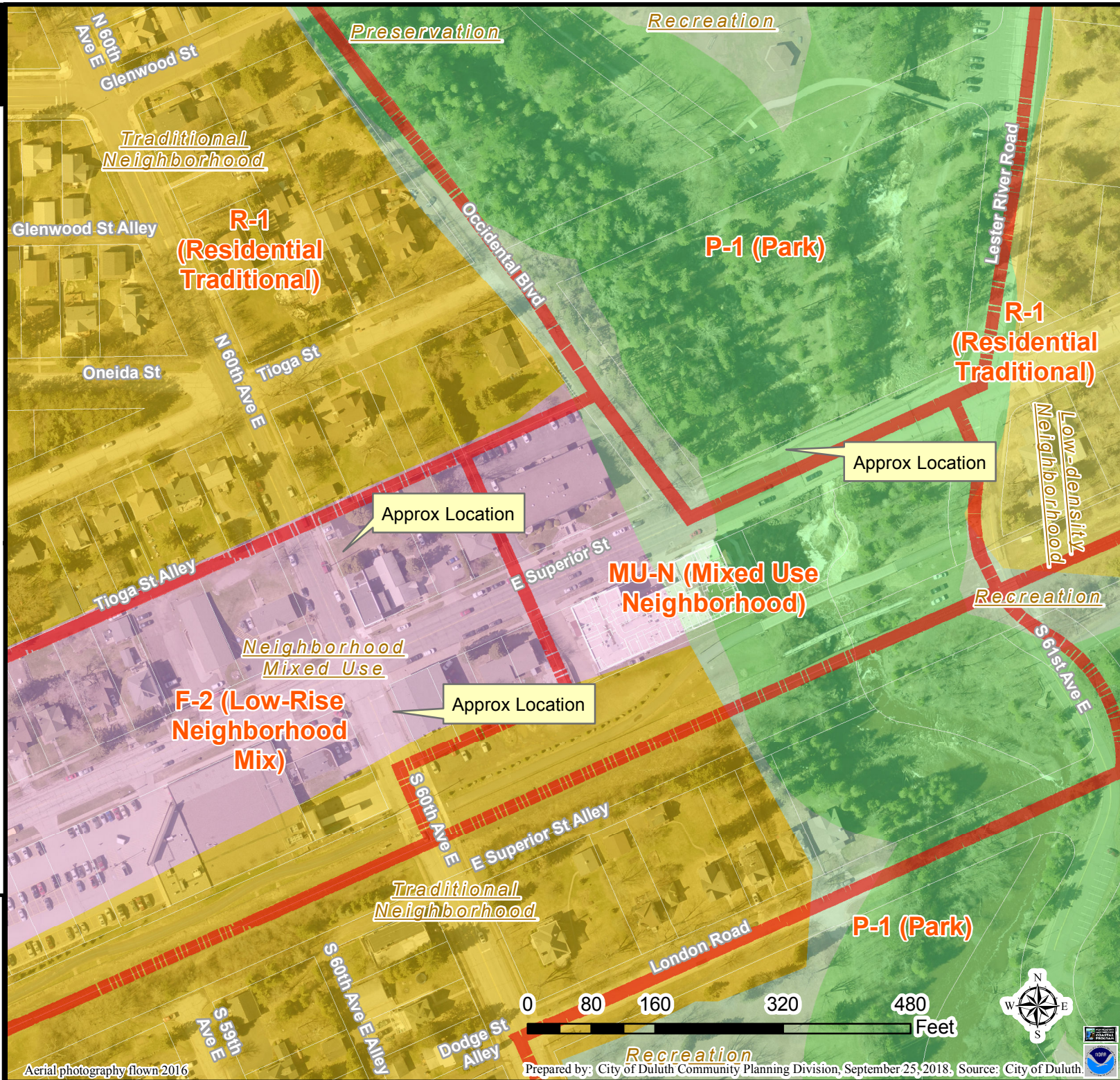
S 56th Ave E

Dodge St Alley

Legend

- Zoning Boundaries
- Future Land Use - Plus**
- 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

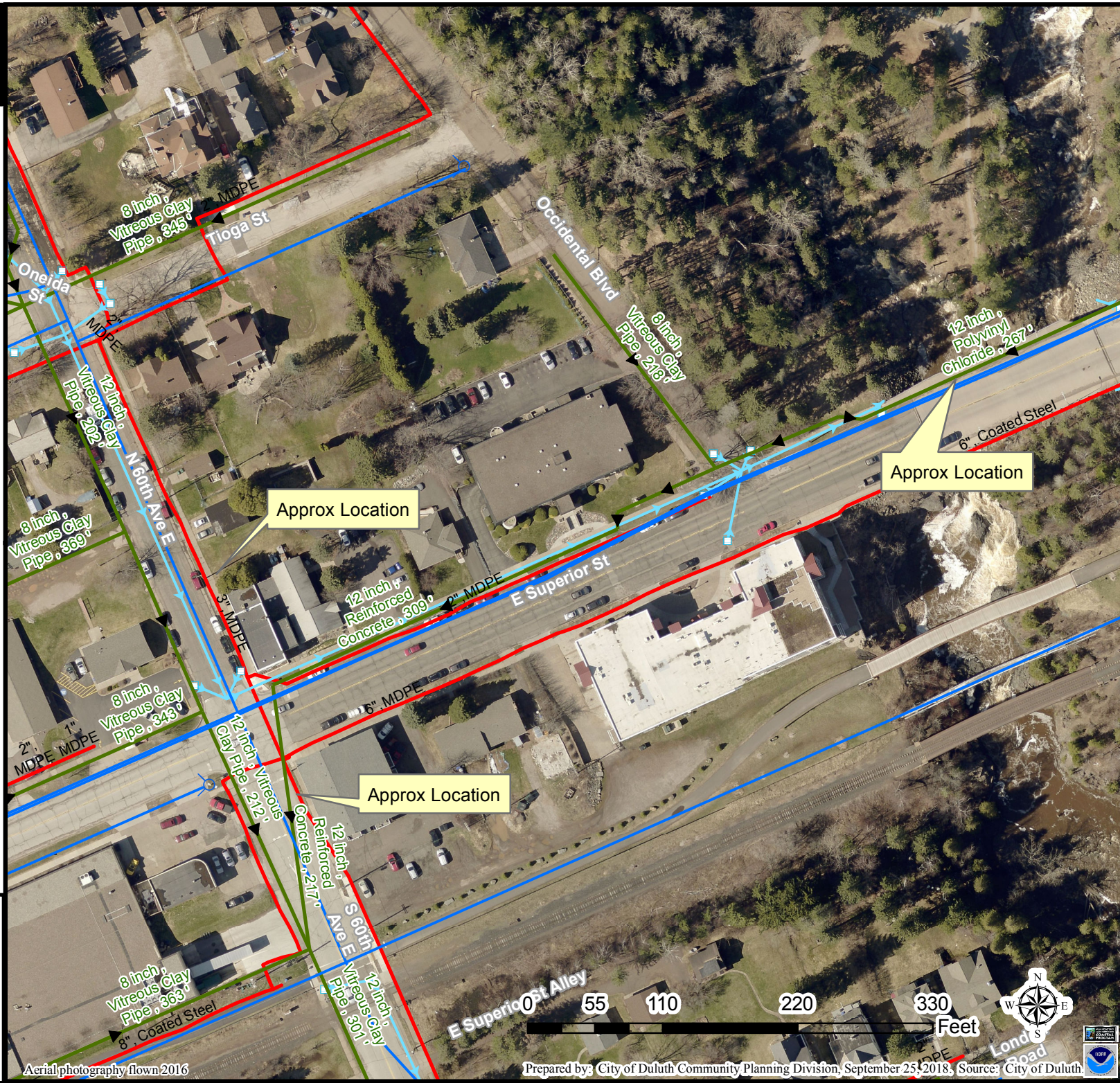
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Legend

- Gas Main
- Water Main
- Hydrant
- Sanitary Sewer Mains**
- CITY OF DULUTH
- WLSSD; PRIVATE
- Sanitary Sewer Forced Main
- Storage Basin
- Pump Station
- Storm Sewer Mains**
- Storm Sewer Pipe
- Storm Sewer Catch Basin

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Aerial photography flown 2016



SITE NAME: DUL SUPER ONE SC1 1

SITE NUMBER: 20171735330

LOCATION CODE: 484029

SITE TYPE: SMALL CELL

INSTALLATION TYPE: REPLACEMENT LIGHT POLE



Jacobs Engineering Group, Inc.
2727 Patton Road
Roseville, Minnesota 55113
www.jacobs.com



2101 Highway 13 W
Burnsville, MN 55337
608.644.1449 voice
608.644.1549 fax
www.edgeconsult.com

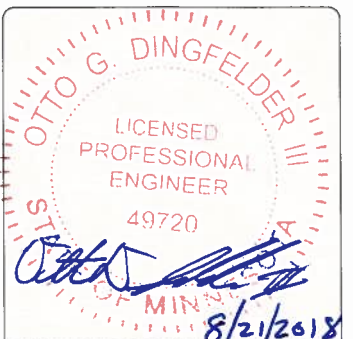
PROJECT NO: 20171735330

LOCATION CODE: 484029

EDGE PROJECT NO: 18069

CHECKED BY: OGD

REV.	DATE	DESCRIPTION	INT.
A	05/03/2018	PRELIM SMALL CELL DWGS	ZRS
B	05/15/2018	PRELIM SMALL CELL DWGS	MWH
C	05/17/2018	PRELIM SMALL CELL DWGS	KJM
D	08/16/2018	FINAL SMALL CELL DWGS	MWH



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.

DUL SUPER ONE SC1 1
DULUTH, MINNESOTA
REPLACEMENT LIGHT POLE
SMALL CELL DRAWINGS

SHEET TITLE
TITLE SHEET &
PROJECT DATA

SHEET NUMBER
G-001

SITE INFORMATION

APPROXIMATE ADDRESS:
6002 E. SUPERIOR
DULUTH, MN 55804
ST. LOUIS COUNTY

SITE COORDINATES:
LAT: 46°-50'-18.00"N
LONG: 92°-00'-32.82"W
GROUND ELEVATION: 659.7' AMSL
(PER 1A CERTIFICATE)

REPLACEMENT POLE



PROJECT DESCRIPTION/SOW

WORK PRODUCT

INSTALLED BY

REPLACEMENT WOOD LIGHT POLE
OVERHEAD ELECTRIC SERVICE BETWEEN POLE BASE AND POWER SOURCE
FIBER CONDUIT, BETWEEN HAND HOLE AND POLE BASE, TO BE TRENCHED/DIRECTIONALLY BORED BELOW GRADE
FIBER CONDUIT, WITHIN RIGHT OF WAY, TO BE TRENCHED/DIRECTIONALLY BORED BELOW GRADE
FIBER HAND HOLE AT POLE BASE
DIPLEXERS
LOAD CENTER
ELECTRICAL METER
ERICSSON RRUS AND POWER CONVERTERS
PANEL ANTENNA

MN POWER
FIBER PROVIDER
FIBER PROVIDER
FIBER PROVIDER
VERIZON
VERIZON
VERIZON
VERIZON
VERIZON
VERIZON

NO:

SHEET TITLE

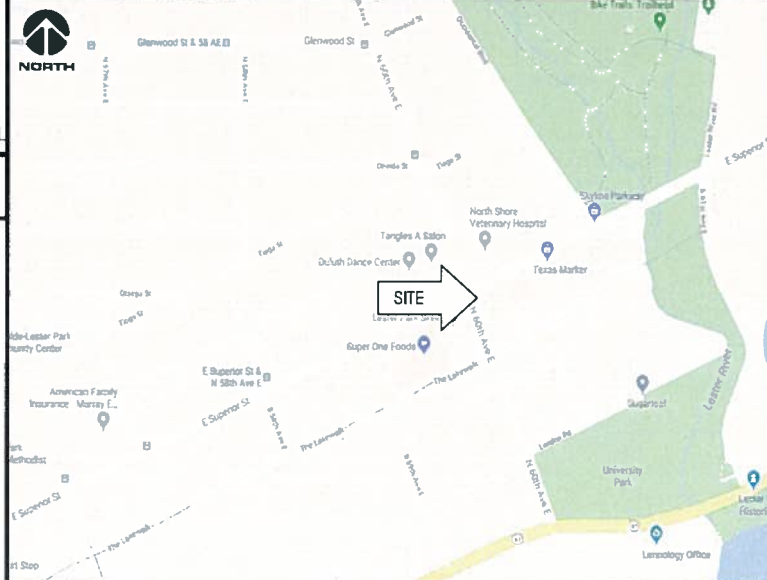
G-001 TITLE SHEET & PROJECT DATA
G-002 GENERAL SPECIFICATIONS
G-003 GENERAL SPECIFICATIONS
N/A SURVEY
C-101 SITE PLAN
T-201 SITE ELEVATION
T-501 ANTENNA DETAILS
T-502 EQUIPMENT DETAILS
E-101 UTILITY PLAN
E-102 GROUNDING PLAN
E-501 UTILITY DETAILS
E-502 GROUNDING DETAILS

* COMPLETED BY OTHERS
** REVIEWED AND APPROVED BY STRUCTURAL ENGINEER

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.



PROJECT DIRECTORY

LESSEE:
VERIZON WIRELESS
10801 BUSH LAKE RD
BLOOMINGTON, MN 55438
CONTACT: AMANDA TURNER
PHONE: 952.946.4706

LESSOR:
MINNESOTA POWER COMPANY
30 W SUPERIOR ST
DULUTH, MN 55802
PHONE: 218.722.2625

ENGINEERING COMPANY:
EDGE CONSULTING ENGINEERS, INC.
2101 HIGHWAY 13 W
BURNSVILLE, MN 55337
CONTACT: OTTO DINGFELDER III, P.E.
PHONE: 608.644.1449

RF ENGINEER:
VERIZON WIRELESS
10801 BUSH LAKE RD
BLOOMINGTON, MN 55438
CONTACT: MICHAEL KOCH

SITE ACQUISITION:
JACOBS ENGINEERING GROUP, INC.
2727 PATTON ROAD
ROSEVILLE, MN 55113
CONTACT: AMY DRESCH
PHONE: 952.831.1043

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

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS/CONDITIONS ON SITE. IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO PERFORMING ANY WORK OR BE RESPONSIBLE FOR THE SAME.

ENGINEER OF RECORD

EDGE CONSULTING ENGINEERS, INC.
CONTACT: OTTO DINGFELDER III (PE # 49720 (MN))
PHONE: 608.644.1449

STRUCTURAL REVIEW

STRUCTURAL ANALYSIS COMPLETED BY:
TO BE DETERMINED
PROJECT #: 18069

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

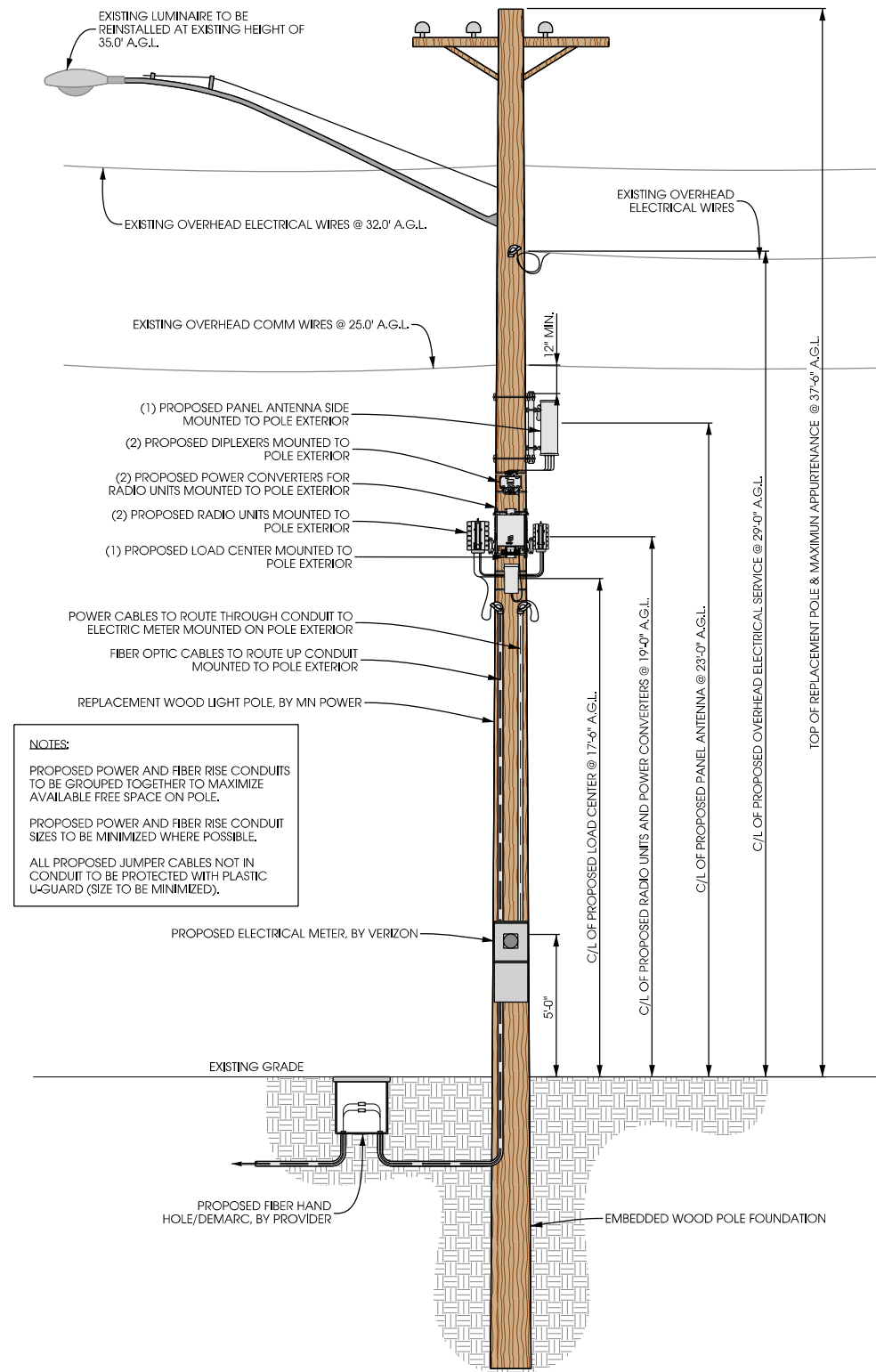
LOCATION SCAN



EXISTING POLE	
POLE HEIGHT:	37'-06" A.G.L.
MAXIMUM APPURTENANCE HEIGHT:	37'-06" A.G.L.

PROPOSED POLE	
POLE HEIGHT:	37'-06" A.G.L.
ANTENNA TIP HEIGHT:	24'-02" A.G.L.
MAXIMUM APPURTENANCE HEIGHT:	37'-06" A.G.L.

NOTES:
 TYPICAL INSTALLATION SHOWN.
 ALL ELEVATIONS ARE ASSUMED TO BE MEASURED FROM ABOVE GRADE LEVEL.
 ALL PROPOSED POLE-MOUNTED EQUIPMENT TO BE PAINTED TO MATCH POLE.

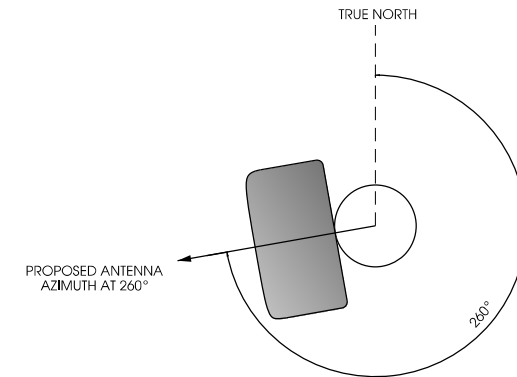


NOTES:
 PROPOSED POWER AND FIBER RISE CONDUITS TO BE GROUPED TOGETHER TO MAXIMIZE AVAILABLE FREE SPACE ON POLE.
 PROPOSED POWER AND FIBER RISE CONDUIT SIZES TO BE MINIMIZED WHERE POSSIBLE.
 ALL PROPOSED JUMPER CABLES NOT IN CONDUIT TO BE PROTECTED WITH PLASTIC U-GUARD (SIZE TO BE MINIMIZED).

A POLE ELEVATION
 SCALE: 11" x 17" - 1" = 8'-0"
 22" x 34" - 1" = 4'-0"



B SITE ELEVATION



C ANTENNA ORIENTATION
 SCALE: NTS

ANTENNAS					
QUANTITY	MAKE	MODEL	CENTERLINE	TIP HEIGHT	AZIMUTH
1	JMA	X7CQAP-FRO-260	23' AGL	24'-02" AGL	260°

EQUIPMENT			
QUANTITY	TYPE	MAKE	MODEL
1	RRU	ERICSSON	RRU 8843
1	RRU	ERICSSON	RRU 4449
2	PSU	ERICSSON	PSU 6302
2	DIPLEXER	COMMSCOPE	CBC 1923T-4310 E1 1F13PO6

CABLING			
QUANTITY	TYPE	MAKE	MODEL
16	COAX	COMMSCOPE	F4HMDM-1M-D

D ANTENNA AND CABLING
 SCALE: NTS



PROJECT NO: 20171735330
 LOCATION CODE: 484029
 EDGE PROJECT NO: 18069
 CHECKED BY: OGD

REV.	DATE	DESCRIPTION	INT.
A	05/03/2018	PRELIM SMALL CELL DWGS	ZRS
B	05/15/2018	PRELIM SMALL CELL DWGS	MWH
C	05/17/2018	PRELIM SMALL CELL DWGS	KJM
D	08/16/2018	FINAL SMALL CELL DWGS	MWH

- APPROVED -
 SEE SHEET G-001 FOR
 ENGINEER SEAL

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.

DUL SUPER ONE SC1 1
 DULUTH, MINNESOTA
 REPLACEMENT LIGHT POLE
 SMALL CELL DRAWINGS

SHEET TITLE
SITE ELEVATION

SHEET NUMBER
T-201



verizon

JACOBS

Jacobs Engineering Group, Inc
2727 Patton Road
Roseville, Minnesota 55113
www.jacobs.com

Edge
Consulting Engineers, Inc.

2101 Highway 13 W
Burnsville, MN 55337
608.644.1449 voice
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DUL SUPER ONE SC1 1
DULUTH, MINNESOTA
REPLACEMENT LIGHT POLE
SMALL CELL DRAWINGS

SHEET TITLE
SITE PLAN

SHEET NUMBER
C-101



A AERIAL OVERVIEW



B SITE OVERVIEW [LOOKING NORTHEAST]



C SITE OVERVIEW [LOOKING NORTHWEST]

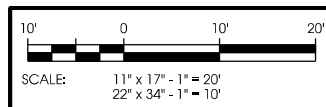
POWER AND FIBER ROUTING NOTE:
THE PROPOSED POWER AND FIBER ROUTES ARE PRELIMINARY, AND WILL BE CONFIRMED WITH THE LANDLORD AND FIBER PROVIDER PRIOR TO CONSTRUCTION. IF THE GENERAL CONTRACTOR NOTICES ANY DISCREPANCIES BETWEEN THESE PLANS AND THE ACTUAL SOURCES OF POWER AND FIBER, THE VERIZON CONSTRUCTION ENGINEER AND PROJECT ENGINEER ARE TO BE NOTIFIED PRIOR TO COMMENCING WORK.

MNDOT SITE INFORMATION:
-HIGHWAY NO: MN-281
-COUNTY: ST. LOUIS
-S7 T50N R13W
-CITY: DULUTH, MN
-FACILITY: REPLACEMENT 37.5' LIGHT POLE

-POLE TYPE: WOOD
-NO. OF CONDUCTORS: 3
-VOLTAGE: 120/240 SINGLE PHASE
-LIGHTING: YES
-FIBER OPTIC UNDERGROUND
-ELECTRICAL OVERHEAD WIRE
-FIBER CONDUIT INSTALLED BY PROVIDER

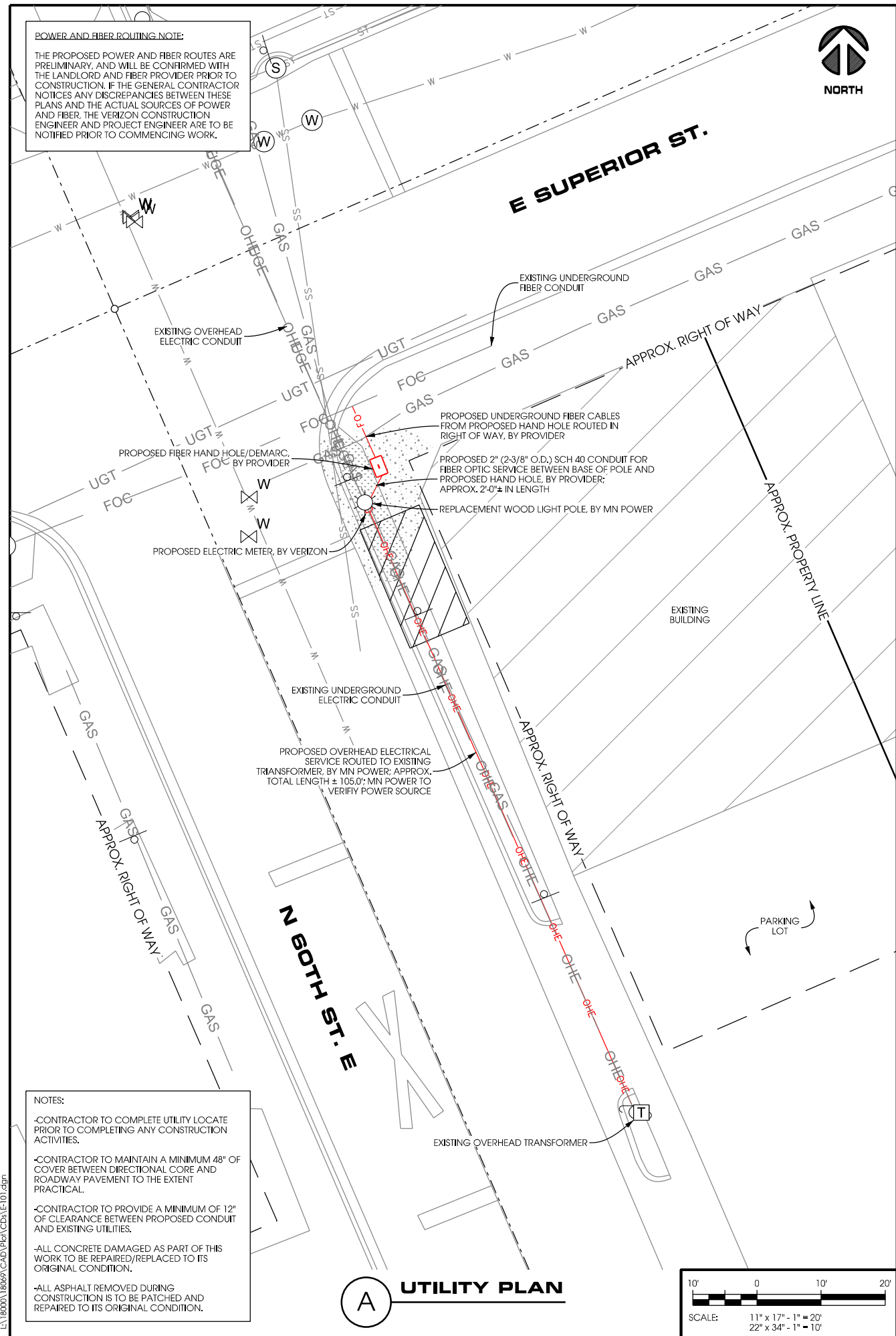
NOTE:
MNDOT CENTER LINE SHOWN WAS OBTAINED FROM ONLINE RIGHT OF WAY MAPPING AND MONITORING TOOL ON 05/02/2018.

RIGHT OF WAY AND LOT LINES SHOWN WERE OBTAINED FROM ONLINE COUNTY GIS MAP ON 05/02/2018.



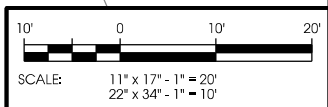
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NOTES:
 -CONTRACTOR TO COMPLETE UTILITY LOCATE PRIOR TO COMPLETING ANY CONSTRUCTION ACTIVITIES.
 -CONTRACTOR TO MAINTAIN A MINIMUM 48" OF COVER BETWEEN DIRECTIONAL CORE AND ROADWAY PAVEMENT TO THE EXTENT PRACTICAL.
 -CONTRACTOR TO PROVIDE A MINIMUM OF 12" OF CLEARANCE BETWEEN PROPOSED CONDUIT AND EXISTING UTILITIES.
 -ALL CONCRETE DAMAGED AS PART OF THIS WORK TO BE REPAIRED/REPLACED TO ITS ORIGINAL CONDITION.
 -ALL ASPHALT REMOVED DURING CONSTRUCTION IS TO BE PATCHED AND REPAIRED TO ITS ORIGINAL CONDITION.

UTILITY PLAN



- SUBMITTAL OF BID INDICATES CONTRACTOR IS AWARE OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
- CONTRACTOR SHALL PERFORM ALL VERIFICATION OBSERVATION TESTS, AND EXAMINE WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ARCHITECT LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
- HEIGHTS SHALL BE VERIFIED WITH OWNER PRIOR TO INSTALLATION.
- THESE PLANS ARE DIAGRAMMATIC ONLY. FOLLOW AS CLOSELY AS POSSIBLE.
- EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANEL BOARD, PULLBOX, J-BOX, SWITCH BOX, ETC. IN COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ACT (O.S.H.A.)
- CONTRACTOR SHALL PROVIDE LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC. FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED AND APPROVED BY THE UNDERWRITER'S LABORATORY AND SHALL BEAR THE INSPECTION LABEL "I" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF THE DIVISION OF INDUSTRIAL SAFETY AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSL, NEMA, AND NBFU.
- CONTRACTOR SHALL CARRY OUT HIS WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND O.S.H.A.
- CONTRACTOR SHALL SECURE ALL NECESSARY BUILDING PERMITS.
- COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF JOB ACCEPTANCE BY OWNER. ANY WORK, MATERIAL OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
- ALL CONDUIT ONLY (C.O.) SHALL HAVE A PULL WIRE OR ROPE.
- PROVIDE CONSTRUCTION ENGINEER WITH ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS, AND CIRCUITS.
- ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC. SHALL BE TURNED OVER TO OWNER AT JOB COMPLETION.
- USE T-TAP CONNECTIONS ON ALL MULTI-CIRCUITS WITH COMMON NEUTRAL CONDUCTOR.
- ALL CONDUCTORS SHALL BE COPPER.
- ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THE MAXIMUM SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.
- THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES AND DRAWINGS.
- RECEPTACLES SHALL BE 20 AMPERE, 125 VOLT A.C., WHITE AS REQUIRED BY THE ARCHITECT OR APPROVED EQUAL.
- WALL SWITCHES SHALL BE SINGLE-POLE, HUBBELL #1201 OR EQUIVALENT, WHITE AS REQUIRED BY THE ARCHITECT.
- PLASTIC PLATES FOR ALL SWITCHES, RECEPTACLES, TELEPHONE AND BLANKED OUTLETS, SHALL HAVE ENGRAVED LETTERING WHERE INDICATED ON THE DRAWINGS. WEATHERPROOF RECEPTACLES SHALL HAVE RACO #800, 1/2" RAISED WORK COVERS.
- WIRE AND CABLE CONDUCTORS SHALL BE COPPER #12 AWG MINIMUM, NO BX OR ROMEX CABLE IS PERMITTED UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS.
- GROUND RODS SHALL BE AS SPECIFIED ON THE GROUNDING DRAWINGS.
- METER SOCKET AMPERES, VOLTAGE, NUMBER OF PHASES SHALL BE AS NOTED ON THE DRAWINGS. MANUFACTURED BY SQUARE D COMPANY OR APPROVED EQUAL. IF HOST FACILITY REQUIRES THE NEW SERVICE TO BE SUB-METERED FROM THE EXISTING SERVICE, SUB-METER SHALL BE OF THE 10x OR 16x TYPE.
- ALL MATERIALS SHALL BE U.L. LISTED.
- CONDUIT:
 A. SERVICE CONDUITS SHALL BE GRAY SCH.40 PVC BURIED MIN. 36", EXCEPT THAT SCH.80 SHALL BE USED UNDER ROADWAYS AND IN LOCATIONS SUBJECT TO CASUAL IMPACTS. BENDS SHALL BE MADE USING "WIDE SWEEP" (12" MIN. RADIUS) ELBOW FITTINGS. ANY CODE-REQUIRED RIGID STEEL CONDUIT SHALL BE U.L. LABEL, GALVANIZED INSIDE AND OUTSIDE. CONDUIT SHALL EXTEND MIN. 36" BELOW GRADE, WITH "SWEEP" ELBOWS (12" R. MIN.) ENDING IN PVC TRANSITION FITTINGS. RIGID CONDUIT IN CONTACT WITH EARTH SHALL BE 1/2 LAP-WRAPPED WITH HUNTS PROCESS NO. 3 EXTENDING MIN. 12" ABOVE GRADE.
 B. INTERIOR CONDUITS SHALL BE ELECTRICAL METALLIC TUBING HAVING U.L. LABEL, FITTINGS SHALL BE GLAND RING COMPRESSION TYPE.
 C. FLEXIBLE METALLIC CONDUIT SHALL HAVE U.L. LISTED LABEL AND MAY BE USED WHERE PERMITTED BY CODE. FITTINGS SHALL BE "JAKE" OR "SQUEEZE" TYPE, SEAL TIGHT FLEXIBLE CONDUIT. NO SUCH CONDUIT SHALL EXCEED SIX FEET IN LENGTH.
- ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS.
- PATCH, REPAIR, AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
- PENETRATIONS IN FIRE RATED WALLS SHALL BE FIRE STOPPED IN ACCORDANCE WITH SECTION 712, PENETRATIONS - INTERNATIONAL BUILDING CODE (IBC)
- DRILLING OR CORING HOLES IN CONCRETE WALLS OR DECKS, WHETHER FOR FASTENING OR ANCHORING PURPOSES, REQUIRES THAT TENDONS OR REINFORCING STEEL MUST BE SEARCHED FOR BY APPROPRIATE METHODS AND EQUIPMENT (X-RAY OR OTHER DEVICE) THAT CAN ACCURATELY LOCATE THEM. TENDONS OR REINFORCING MUST NOT BE DRILLED, CUT OR DAMAGED UNDER ANY CIRCUMSTANCES.
- UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO CONSTRUCTION ENGINEER. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.
- CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF BOTH TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.
- CONTRACTOR SHALL PROVIDE LABOR AND MATERIALS AS NECESSARY TO COMPLETE THE INSTALLATION OF ANY TOWER LIGHTING SYSTEM DESCRIBED IN THE R.F.Q.

GENERAL ELECTRICAL NOTES



PROJECT NO:	20171735330
LOCATION CODE:	484029
EDGE PROJECT NO:	18069
CHECKED BY:	OGD

REV.	DATE	DESCRIPTION	INT.
A	05/03/2018	PRELIM SMALL CELL DWGS	ZRS
B	05/15/2018	PRELIM SMALL CELL DWGS	MWH
C	05/17/2018	PRELIM SMALL CELL DWGS	KJM
D	08/16/2018	FINAL SMALL CELL DWGS	MWH

- APPROVED -
 SEE SHEET G-001 FOR
 ENGINEER SEAL

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.

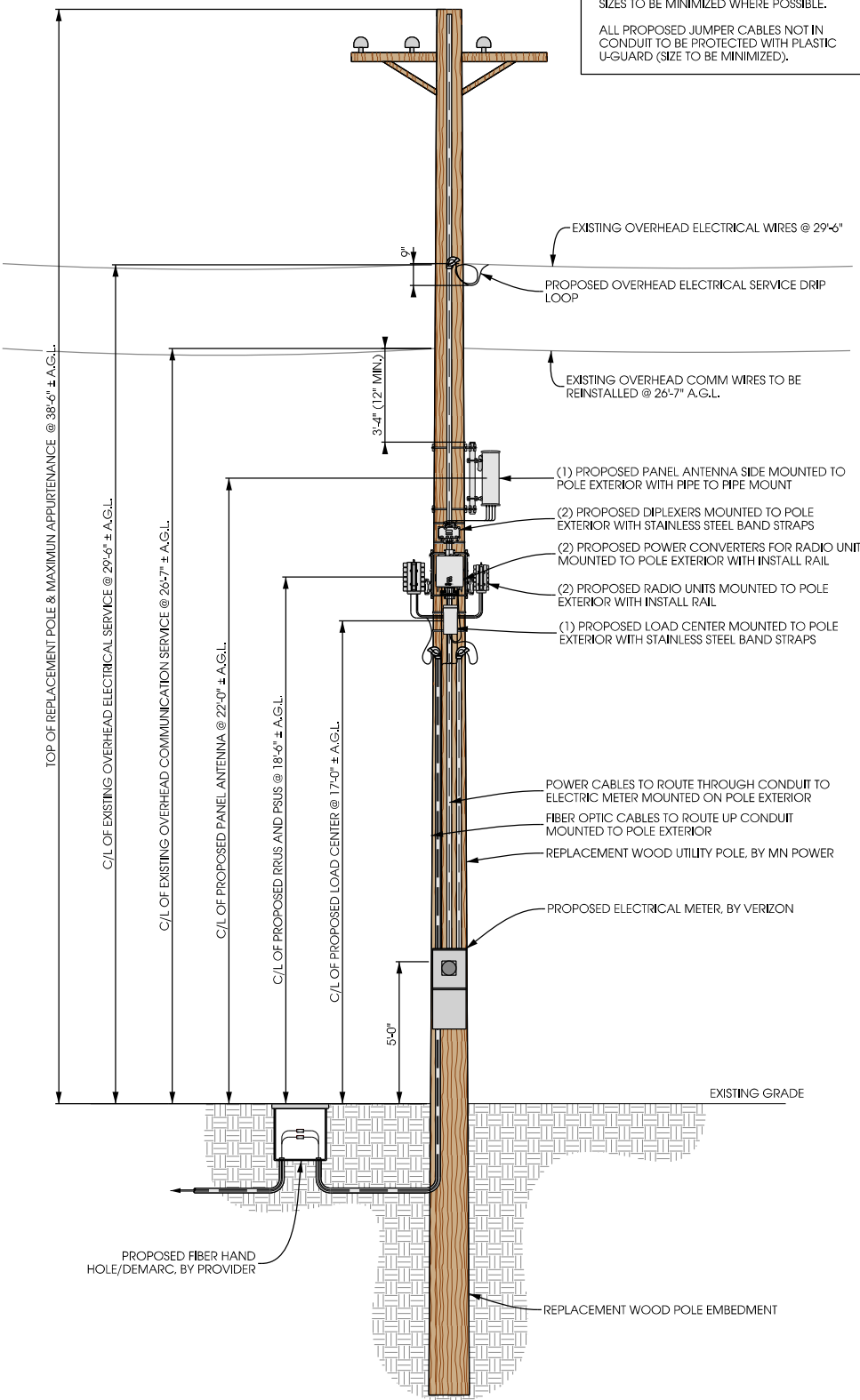
DUL SUPER ONE SC1 1
 DULUTH, MINNESOTA
 REPLACEMENT LIGHT POLE
 SMALL CELL DRAWINGS

SHEET TITLE
UTILITY PLAN

SHEET NUMBER
E-101

EXISTING POLE	
POLE HEIGHT:	38'-6" A.G.L.
MAXIMUM APPURTENANCE HEIGHT:	38'-6" A.G.L.
PROPOSED POLE	
POLE HEIGHT:	38'-6" A.G.L.
ANTENNA TIP HEIGHT:	23'-0" A.G.L.
MAXIMUM APPURTENANCE HEIGHT:	38'-6" A.G.L.

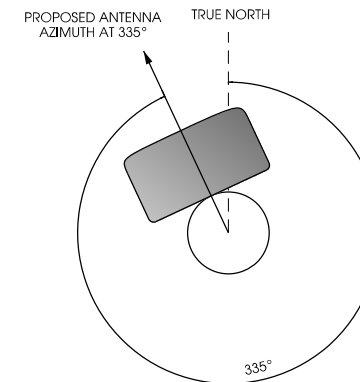
NOTES:
 TYPICAL INSTALLATION SHOWN.
 ALL ELEVATIONS ARE ASSUMED TO BE MEASURED FROM ABOVE GRADE LEVEL.
 ALL PROPOSED POLE-MOUNTED EQUIPMENT TO BE PAINTED TO MATCH POLE.
 PROPOSED POWER AND FIBER RISE CONDUITS TO BE GROUPED TOGETHER TO MAXIMIZE AVAILABLE FREE SPACE ON POLE.
 PROPOSED POWER AND FIBER RISE CONDUIT SIZES TO BE MINIMIZED WHERE POSSIBLE.
 ALL PROPOSED JUMPER CABLES NOT IN CONDUIT TO BE PROTECTED WITH PLASTIC U-GUARD (SIZE TO BE MINIMIZED).



(A) POLE ELEVATION
 SCALE: 11" x 17" - 1" = 8'-0"
 22" x 34" - 1" = 4'-0"



(B) SITE ELEVATION



(C) ANTENNA ORIENTATION
 SCALE: NTS

ANTENNAS					
QUANTITY	MAKE	MODEL	CENTERLINE	TIP HEIGHT	AZIMUTH
1	JMA	X7CQAP-FRO-260	22'-0" AGL	23'-0" AGL	335°

EQUIPMENT			
QUANTITY	TYPE	MAKE	MODEL
1	RRU	ERICSSON	RRU 8843
1	RRU	ERICSSON	RRU 4449
2	PSU	ERICSSON	PSU 6302
2	DIPLEXER	COMMSCOPE	CBC1923T-4310 E11F13PO6

CABLING			
QUANTITY	TYPE	MAKE	MODEL
14	COAX	COMMSCOPE	F4-HMDM-1M-D

(D) ANTENNA AND CABLING
 SCALE: NTS



Jacobs Engineering Group, Inc.
 2727 Patton Road
 Roseville, Minnesota 55113
 www.jacobs.com



2101 Highway 13 W
 Burnsville, MN 55337
 608.644.1449 voice
 608.644.1549 fax
 www.edgeconsult.com

PROJECT NO: 20171735331
 LOCATION CODE: 484030
 EDGE PROJECT NO: 18070
 CHECKED BY: OGD

REV.	DATE	DESCRIPTION	INT.
A	05/07/2018	PRELIM SMALL CELL DWGS	ZRS
B	05/14/2018	PRELIM SMALL CELL DWGS	MWH
C	05/17/2018	PRELIM SMALL CELL DWGS	KJM
0	08/21/2018	FINAL SMALL CELL DWGS	MWH
1	08/22/2018	FINAL SMALL CELL DWGS	MWH

- APPROVED -
 SEE SHEET G-001 FOR
 ENGINEER SEAL

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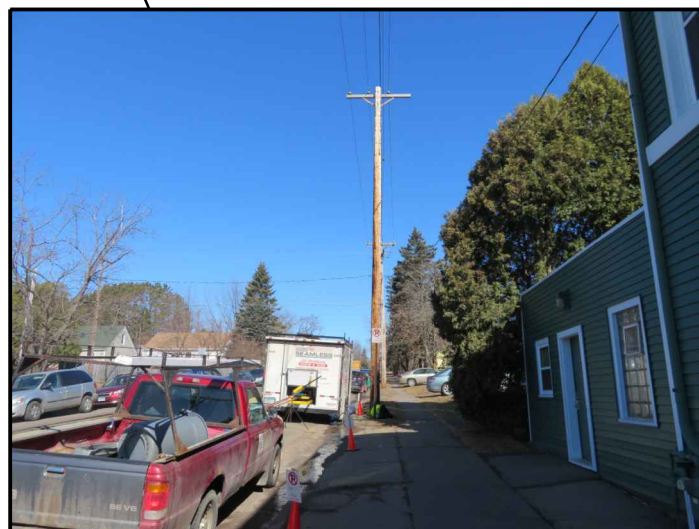
DUL SUPER ONE SC1 2
 DULUTH, MINNESOTA
 REPLACEMENT UTILITY POLE
 SMALL CELL DRAWINGS

SHEET TITLE
SITE ELEVATION

SHEET NUMBER
T-201



A AERIAL OVERVIEW

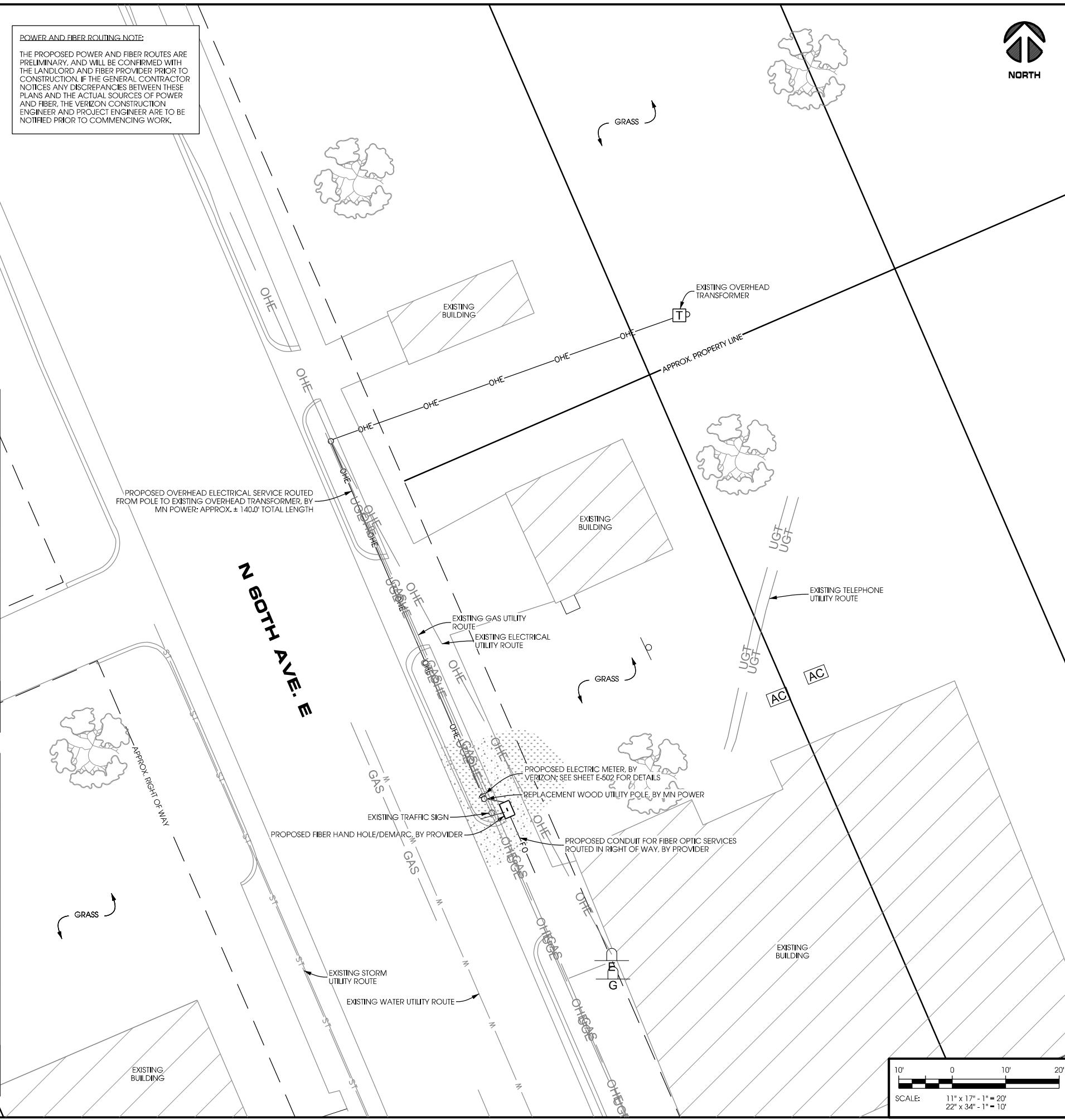


B SITE OVERVIEW [LOOKING NORTHWEST]



C SITE OVERVIEW [LOOKING NORTHWEST]

POWER AND FIBER ROUTING NOTE:
 THE PROPOSED POWER AND FIBER ROUTES ARE PRELIMINARY, AND WILL BE CONFIRMED WITH THE LANDLORD AND FIBER PROVIDER PRIOR TO CONSTRUCTION. IF THE GENERAL CONTRACTOR NOTICES ANY DISCREPANCIES BETWEEN THESE PLANS AND THE ACTUAL SOURCES OF POWER AND FIBER, THE VERIZON CONSTRUCTION ENGINEER AND PROJECT ENGINEER ARE TO BE NOTIFIED PRIOR TO COMMENCING WORK.



PROJECT NO: 20171735331
 LOCATION CODE: 484030
 EDGE PROJECT NO: 18070
 CHECKED BY: OGD

REV.	DATE	DESCRIPTION	INT.
A	05/07/2018	PRELIM SMALL CELL DWGS	ZRS
B	05/14/2018	PRELIM SMALL CELL DWGS	MWH
C	05/17/2018	PRELIM SMALL CELL DWGS	KJM
0	08/21/2018	FINAL SMALL CELL DWGS	MWH
1	08/22/2018	FINAL SMALL CELL DWGS	MWH

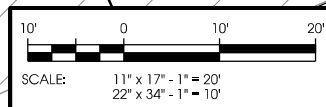
- APPROVED -
 SEE SHEET G-001 FOR
 ENGINEER SEAL

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DUL SUPER ONE SC1 2
 DULUTH, MINNESOTA
 REPLACEMENT UTILITY POLE
 SMALL CELL DRAWINGS

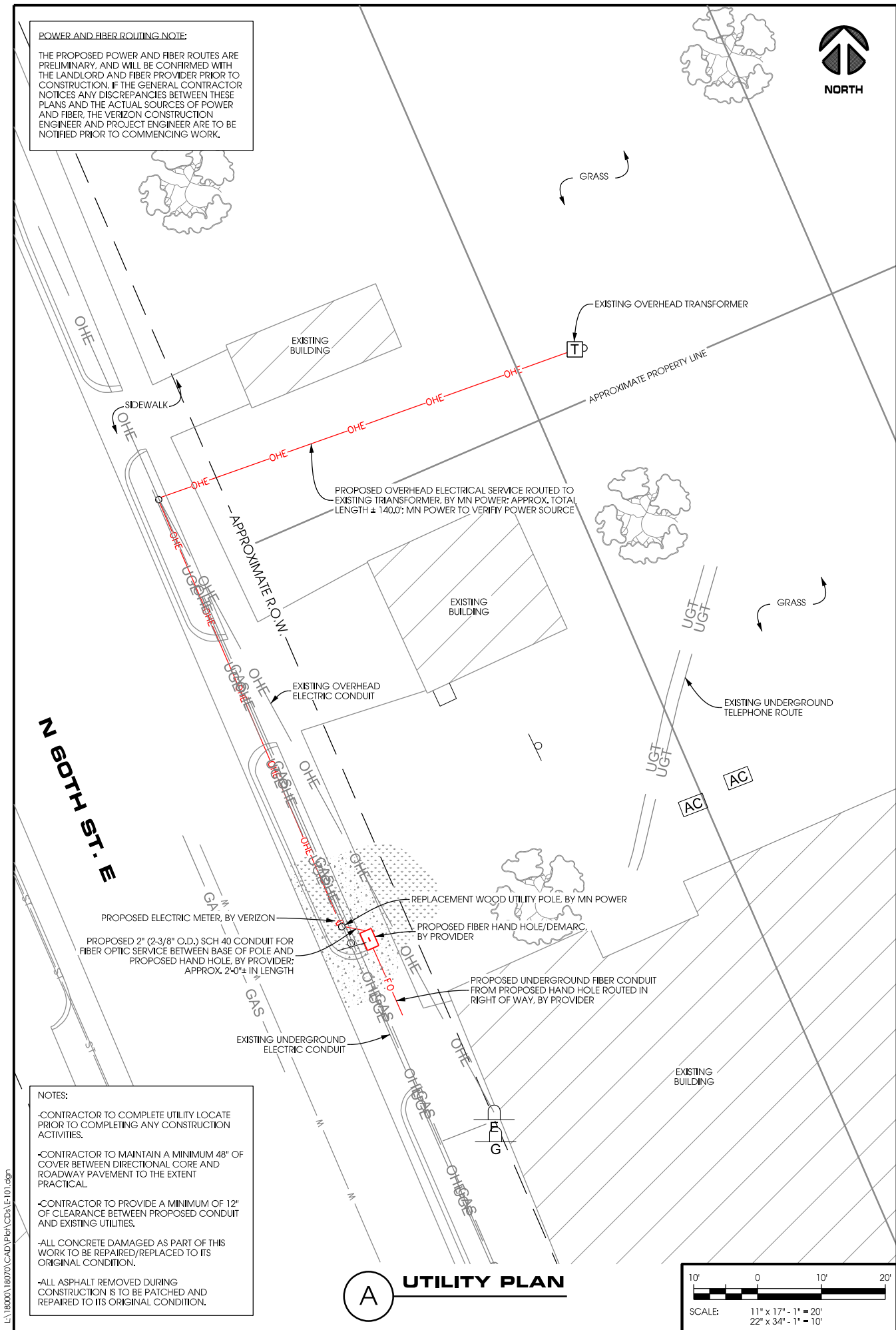
SHEET TITLE
SITE PLAN

SHEET NUMBER
C-101



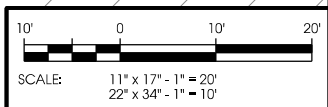
LA:18000\18070\CAD\PLT\CDA\C-101.dgn

POWER AND FIBER ROUTING NOTE:
 THE PROPOSED POWER AND FIBER ROUTES ARE PRELIMINARY, AND WILL BE CONFIRMED WITH THE LANDLORD AND FIBER PROVIDER PRIOR TO CONSTRUCTION. IF THE GENERAL CONTRACTOR NOTICES ANY DISCREPANCIES BETWEEN THESE PLANS AND THE ACTUAL SOURCES OF POWER AND FIBER, THE VERIZON CONSTRUCTION ENGINEER AND PROJECT ENGINEER ARE TO BE NOTIFIED PRIOR TO COMMENCING WORK.



NOTES:
 -CONTRACTOR TO COMPLETE UTILITY LOCATE PRIOR TO COMPLETING ANY CONSTRUCTION ACTIVITIES.
 -CONTRACTOR TO MAINTAIN A MINIMUM 48" OF COVER BETWEEN DIRECTIONAL CORE AND ROADWAY PAVEMENT TO THE EXTENT PRACTICAL.
 -CONTRACTOR TO PROVIDE A MINIMUM OF 12" OF CLEARANCE BETWEEN PROPOSED CONDUIT AND EXISTING UTILITIES.
 -ALL CONCRETE DAMAGED AS PART OF THIS WORK TO BE REPAIRED/REPLACED TO ITS ORIGINAL CONDITION.
 -ALL ASPHALT REMOVED DURING CONSTRUCTION IS TO BE PATCHED AND REPAIRED TO ITS ORIGINAL CONDITION.

UTILITY PLAN
 A



- SUBMITTAL OF BID INDICATES CONTRACTOR IS AWARE OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
- CONTRACTOR SHALL PERFORM ALL VERIFICATION OBSERVATION TESTS, AND EXAMINE WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ARCHITECT LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
- HEIGHTS SHALL BE VERIFIED WITH OWNER PRIOR TO INSTALLATION.
- THESE PLANS ARE DIAGRAMMATIC ONLY. FOLLOW AS CLOSELY AS POSSIBLE.
- EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANEL BOARD, PULLBOX, J-BOX, SWITCH BOX, ETC. IN COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ACT (O.S.H.A.)
- CONTRACTOR SHALL PROVIDE LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC. FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED AND APPROVED BY THE UNDERWRITER'S LABORATORY AND SHALL BEAR THE INSPECTION LABEL "U" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF THE DIVISION OF INDUSTRIAL SAFETY AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSL, NEMA, AND NBFU.
- CONTRACTOR SHALL CARRY OUT HIS WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND O.S.H.A.
- CONTRACTOR SHALL SECURE ALL NECESSARY BUILDING PERMITS.
- COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF JOB ACCEPTANCE BY OWNER. ANY WORK, MATERIAL OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
- ALL CONDUIT ONLY (C.O.) SHALL HAVE A PULL WIRE OR ROPE.
- PROVIDE CONSTRUCTION ENGINEER WITH ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS, AND CIRCUITS.
- ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC. SHALL BE TURNED OVER TO OWNER AT JOB COMPLETION.
- USE T-TAP CONNECTIONS ON ALL MULTI-CIRCUITS WITH COMMON NEUTRAL CONDUCTOR.
- ALL CONDUCTORS SHALL BE COPPER.
- ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THE MAXIMUM SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.
- THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES AND DRAWINGS.
- RECEPTACLES SHALL BE 20 AMPERE, 125 VOLT A.C., WHITE AS REQUIRED BY THE ARCHITECT OR APPROVED EQUAL.
- WALL SWITCHES SHALL BE SINGLE-POLE, HUBBELL #1201 OR EQUIVALENT, WHITE AS REQUIRED BY THE ARCHITECT.
- PLASTIC PLATES FOR ALL SWITCHES, RECEPTACLES, TELEPHONE AND BLANKED OUTLETS, SHALL HAVE ENGRAVED LETTERING WHERE INDICATED ON THE DRAWINGS. WEATHERPROOF RECEPTACLES SHALL HAVE RACO #800, 1/2" RAISED WORK COVERS.
- WIRE AND CABLE CONDUCTORS SHALL BE COPPER #12 AWG MINIMUM, NO BX OR ROMEX CABLE IS PERMITTED UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS.
- GROUND RODS SHALL BE AS SPECIFIED ON THE GROUNDING DRAWINGS.
- METER SOCKET AMPERES, VOLTAGE, NUMBER OF PHASES SHALL BE AS NOTED ON THE DRAWINGS. MANUFACTURED BY SQUARE D COMPANY OR APPROVED EQUAL. IF HOST FACILITY REQUIRES THE NEW SERVICE TO BE SUB-METERED FROM THE EXISTING SERVICE, SUB-METER SHALL BE OF THE 10x OR 16x TYPE.
- ALL MATERIALS SHALL BE U.L. LISTED.
- CONDUIT:
 A. SERVICE CONDUITS SHALL BE GRAY SCH.40 PVC BURIED MIN. 36", EXCEPT THAT SCH.80 SHALL BE USED UNDER ROADWAYS AND IN LOCATIONS SUBJECT TO CASUAL IMPACTS. BENDS SHALL BE MADE USING "WIDE SWEEP" (12" MIN. RADIUS) ELBOW FITTINGS. ANY CODE-REQUIRED RIGID STEEL CONDUIT SHALL BE U.L. LABEL, GALVANIZED INSIDE AND OUTSIDE. CONDUIT SHALL EXTEND MIN. 36" BELOW GRADE, WITH "SWEEP" ELBOWS (12" R. MIN.) ENDING IN PVC TRANSITION FITTINGS. RIGID CONDUIT IN CONTACT WITH EARTH SHALL BE 1/2 LAP-WRAPPED WITH HUNTS PROCESS NO. 3 EXTENDING MIN. 12" ABOVE GRADE.
 B. INTERIOR CONDUITS SHALL BE ELECTRICAL METALLIC TUBING HAVING U.L. LABEL, FITTINGS SHALL BE GLAND RING COMPRESSION TYPE.
 C. FLEXIBLE METALLIC CONDUIT SHALL HAVE U.L. LISTED LABEL AND MAY BE USED WHERE PERMITTED BY CODE. FITTINGS SHALL BE "JAKE" OR "SQUEEZE" TYPE, SEAL TIGHT FLEXIBLE CONDUIT. NO SUCH CONDUIT SHALL EXCEED SIX FEET IN LENGTH.
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- PATCH, REPAIR, AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
- PENETRATIONS IN FIRE RATED WALLS SHALL BE FIRE STOPPED IN ACCORDANCE WITH SECTION 712, PENETRATIONS - INTERNATIONAL BUILDING CODE (IBC)
- DRILLING OR CORING HOLES IN CONCRETE WALLS OR DECKS, WHETHER FOR FASTENING OR ANCHORING PURPOSES, REQUIRES THAT TENDONS OR REINFORCING STEEL MUST BE SEARCHED FOR BY APPROPRIATE METHODS AND EQUIPMENT (X-RAY OR OTHER DEVICE) THAT CAN ACCURATELY LOCATE THEM. TENDONS OR REINFORCING MUST NOT BE DRILLED, CUT OR DAMAGED UNDER ANY CIRCUMSTANCES.
- UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO CONSTRUCTION ENGINEER. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.
- CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF BOTH TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.
- CONTRACTOR SHALL PROVIDE LABOR AND MATERIALS AS NECESSARY TO COMPLETE THE INSTALLATION OF ANY TOWER LIGHTING SYSTEM DESCRIBED IN THE RFG.

GENERAL ELECTRICAL NOTES



PROJECT NO:	20171735331
LOCATION CODE:	484030
EDGE PROJECT NO:	18070
CHECKED BY:	OGD

REV.	DATE	DESCRIPTION	INT.
A	05/07/2018	PRELIM SMALL CELL DWGS	ZRS
B	05/14/2018	PRELIM SMALL CELL DWGS	MWH
C	05/17/2018	PRELIM SMALL CELL DWGS	KJM
0	08/21/2018	FINAL SMALL CELL DWGS	MWH
1	08/22/2018	FINAL SMALL CELL DWGS	MWH

- APPROVED -
 SEE SHEET G-001 FOR
 ENGINEER SEAL

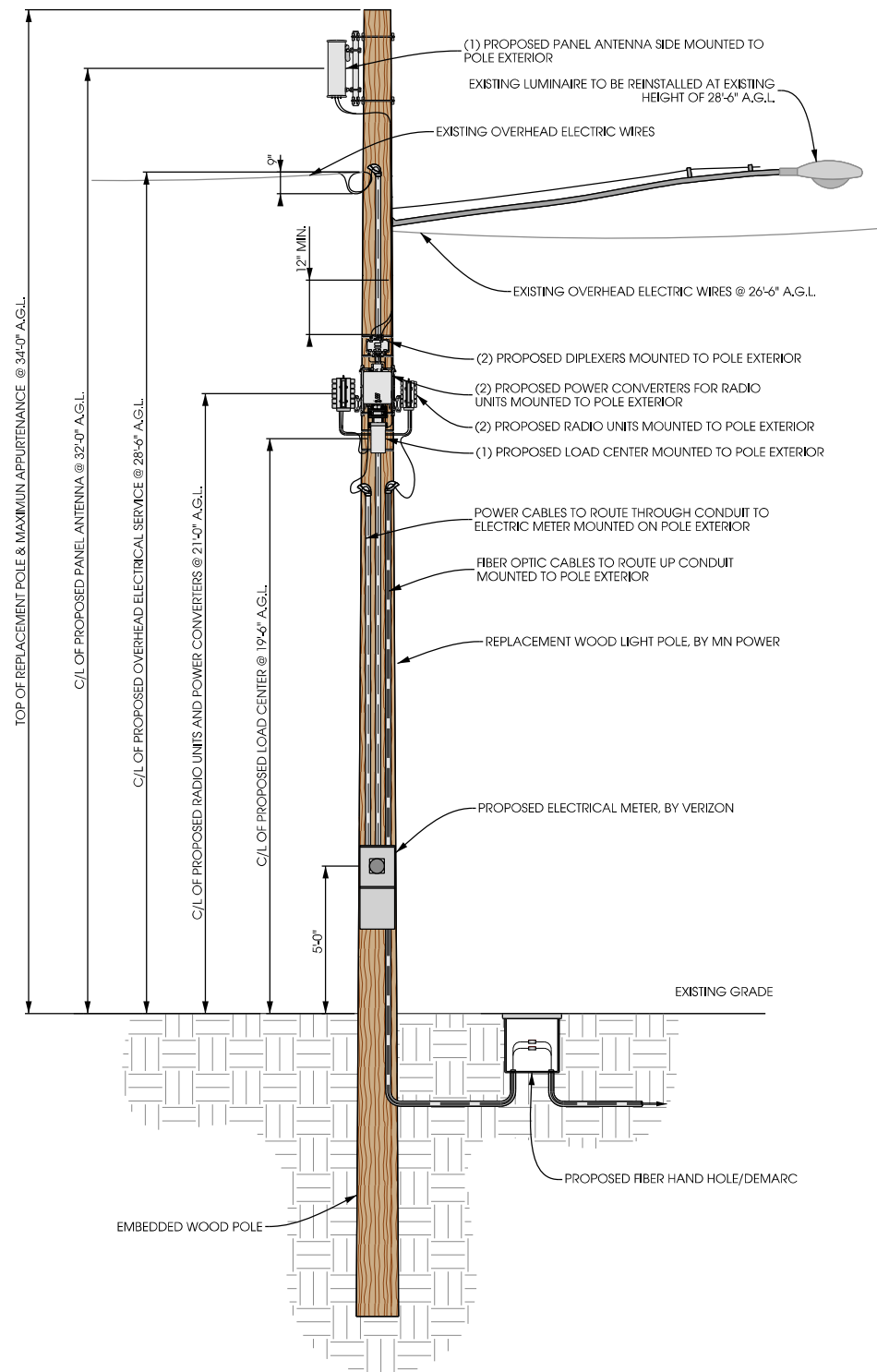
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DUL SUPER ONE SC1 2
 DULUTH, MINNESOTA
 REPLACEMENT UTILITY POLE
 SMALL CELL DRAWINGS

SHEET TITLE
UTILITY PLAN

SHEET NUMBER
E-101

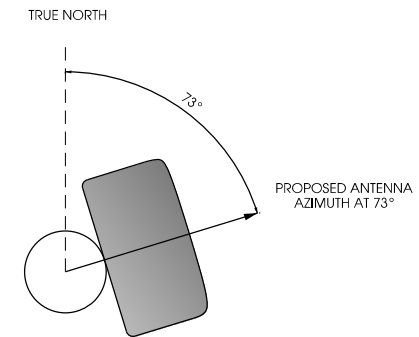
EXISTING POLE	
POLE HEIGHT:	29'-00" A.G.L.
MAXIMUM APPURTENANCE HEIGHT:	29'-00" A.G.L.
PROPOSED POLE	
POLE HEIGHT:	34'-00" A.G.L.
ANTENNA TIP HEIGHT:	33'-02" A.G.L.
MAXIMUM APPURTENANCE HEIGHT:	34'-00" A.G.L.



A POLE ELEVATION
SCALE: 11" x 17" - 1" = 8'-0"
22" x 34" - 1" = 4'-0"



B SITE ELEVATION



C ANTENNA ORIENTATION
SCALE: NTS

ANTENNAS					
QUANTITY	MAKE	MODEL	CENTERLINE	TIP HEIGHT	AZIMUTH
1	JMA	X7CQAP-FRO-260	32' AGL	33'-02" AGL	73°

EQUIPMENT			
QUANTITY	TYPE	MAKE	MODEL
1	RRU	ERICSSON	RRUS8843
1	RRU	ERICSSON	RRUS4449
2	PSU	ERICSSON	PSU 6302
2	DIPLEXER	COMMSCOPE	CBC1923T-4310 E11F13PO6

CABLING			
QUANTITY	TYPE	MAKE	MODEL
16	COAX	COMMSCOPE	F4HMDM-1M-D

D ANTENNA AND CABLING
SCALE: NTS



Jacobs Engineering Group, Inc
2727 Patton Road
Roseville, Minnesota 55113
www.jacobs.com



2101 Highway 13 W
Burnsville, MN 55337
608.644.1449 voice
608.644.1549 fax
www.edgeconsult.com

PROJECT NO: 20171735332
LOCATION CODE: 484031
EDGE PROJECT NO: 18071
CHECKED BY: OGD

REV.	DATE	DESCRIPTION	INT.
A	05/07/2018	PRELIM SMALL CELL DWGS	ZRS
B	05/15/2018	PRELIM SMALL CELL DWGS	MWH
0	08/13/2018	FINAL SMALL CELL DWGS	MWH

- APPROVED -
SEE SHEET G-001 FOR
ENGINEER SEAL

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DUL SUPER ONE SC1 3
DULUTH, MINNESOTA
REPLACEMENT LIGHT POLE
SMALL CELL DRAWINGS

SHEET TITLE
SITE ELEVATION

SHEET NUMBER

T-201



PROJECT NO: 20171735332
 LOCATION CODE: 484031
 EDGE PROJECT NO: 18071
 CHECKED BY: OGD

REV.	DATE	DESCRIPTION	INT.
A	05/07/2018	PRELIM SMALL CELL DWGS ZFS	
B	05/15/2018	PRELIM SMALL CELL DWGS MWH	
0	08/13/2018	FINAL SMALL CELL DWGS MWH	

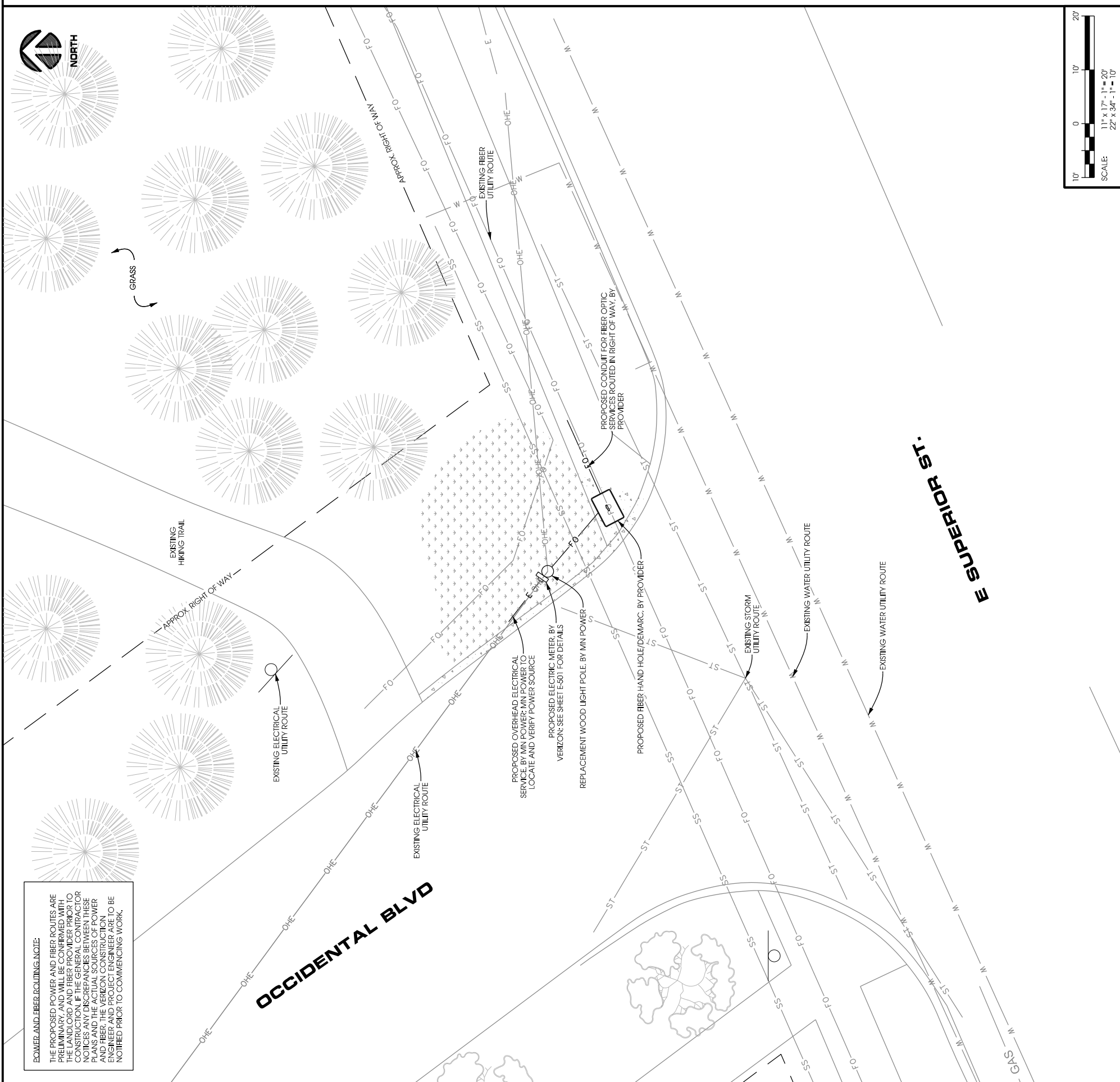
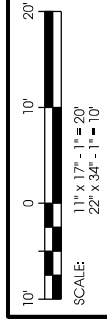
- APPROVED -
 SEE SHEET G-01 FOR
 ENGINEER SEAL

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DUL SUPER ONE SC1 3
 DULUTH, MINNESOTA
 REPLACEMENT LIGHT POLE
 SMALL CELL DRAWINGS

SHEET TITLE
SITE PLAN

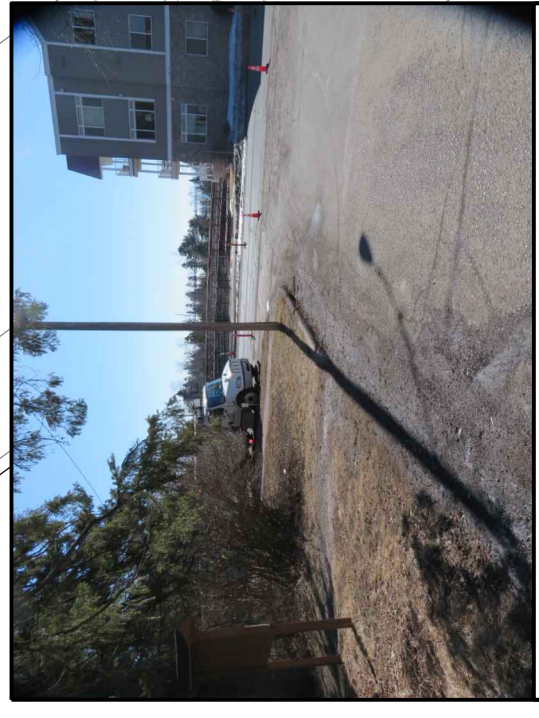
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C-101



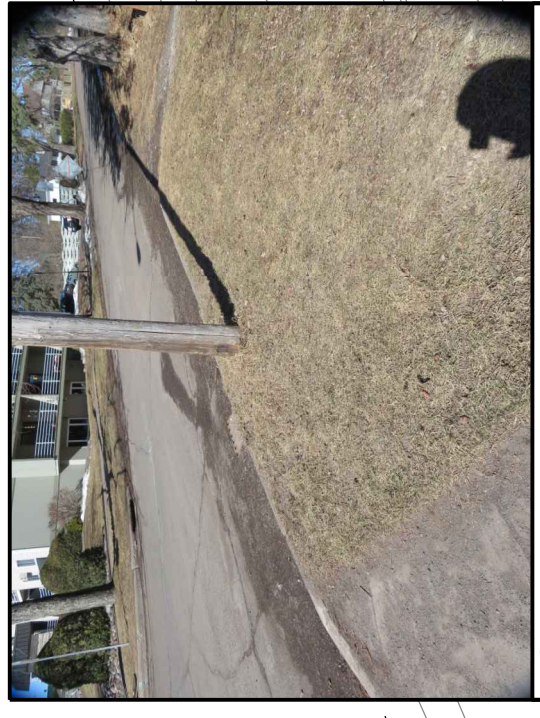
POWER AND FIBER ROUTING NOTE:
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A
AERIAL OVERVIEW

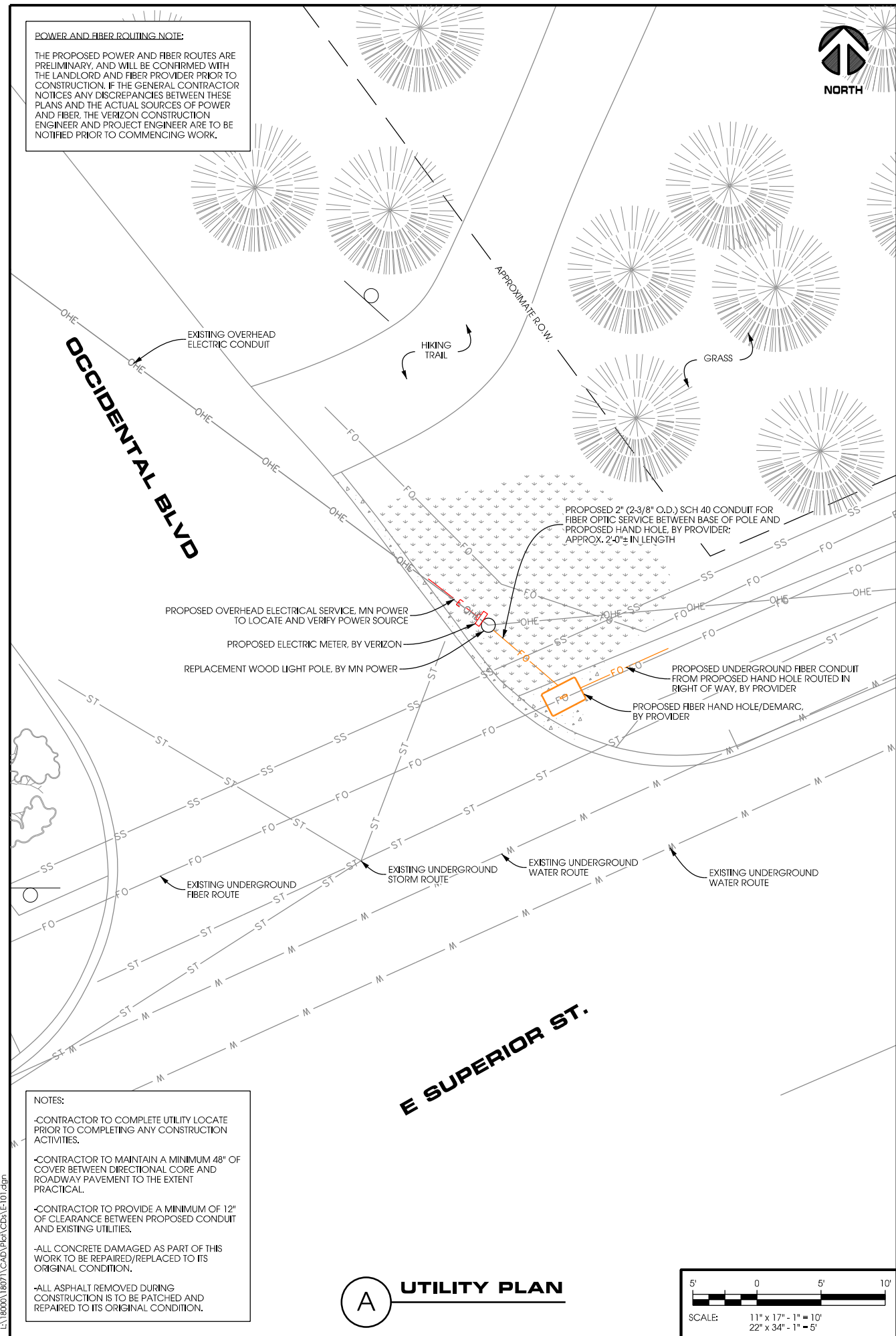


B
SITE OVERVIEW [LOOKING SOUTHEAST]



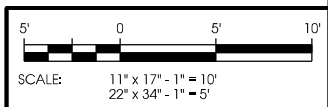
C
SITE OVERVIEW [LOOKING NORTHWEST]

POWER AND FIBER ROUTING NOTE:
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NOTES:
 -CONTRACTOR TO COMPLETE UTILITY LOCATE PRIOR TO COMPLETING ANY CONSTRUCTION ACTIVITIES.
 -CONTRACTOR TO MAINTAIN A MINIMUM 48" OF COVER BETWEEN DIRECTIONAL CORE AND ROADWAY PAVEMENT TO THE EXTENT PRACTICAL.
 -CONTRACTOR TO PROVIDE A MINIMUM OF 12" OF CLEARANCE BETWEEN PROPOSED CONDUIT AND EXISTING UTILITIES.
 -ALL CONCRETE DAMAGED AS PART OF THIS WORK TO BE REPAIRED/REPLACED TO ITS ORIGINAL CONDITION.
 -ALL ASPHALT REMOVED DURING CONSTRUCTION IS TO BE PATCHED AND REPAIRED TO ITS ORIGINAL CONDITION.

A UTILITY PLAN



1. SUBMITTAL OF BID INDICATES CONTRACTOR IS AWARE OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
2. CONTRACTOR SHALL PERFORM ALL VERIFICATION OBSERVATION TESTS, AND EXAMINE WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ARCHITECT LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
3. HEIGHTS SHALL BE VERIFIED WITH OWNER PRIOR TO INSTALLATION.
4. THESE PLANS ARE DIAGRAMMATIC ONLY. FOLLOW AS CLOSELY AS POSSIBLE.
5. EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANEL BOARD, PULLBOX, J-BOX, SWITCH BOX, ETC. IN COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ACT (O.S.H.A.)
6. CONTRACTOR SHALL PROVIDE LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC. FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
7. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED AND APPROVED BY THE UNDERWRITER'S LABORATORY AND SHALL BEAR THE INSPECTION LABEL "U" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF THE DIVISION OF INDUSTRIAL SAFETY AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSL NEMA, AND NBFU.
8. CONTRACTOR SHALL CARRY OUT HIS WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND O.S.H.A.
9. CONTRACTOR SHALL SECURE ALL NECESSARY BUILDING PERMITS.
10. COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF JOB ACCEPTANCE BY OWNER. ANY WORK, MATERIAL OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
11. ALL CONDUIT ONLY (C.O.) SHALL HAVE A PULL WIRE OR ROPE.
12. PROVIDE CONSTRUCTION ENGINEER WITH ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS, AND CIRCUITS.
13. ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC. SHALL BE TURNED OVER TO OWNER AT JOB COMPLETION.
14. USE T-TAP CONNECTIONS ON ALL MULTI-CIRCUITS WITH COMMON NEUTRAL CONDUCTOR.
15. ALL CONDUCTORS SHALL BE COPPER.
16. ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THE MAXIMUM SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.
17. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES AND DRAWINGS.
18. RECEPTACLES SHALL BE 20 AMPERE, 125 VOLT A.C., WHITE AS REQUIRED BY THE ARCHITECT OR APPROVED EQUAL.
19. WALL SWITCHES SHALL BE SINGLE-POLE, HUBBELL #1201 OR EQUIVALENT, WHITE AS REQUIRED BY THE ARCHITECT.
20. PLASTIC PLATES FOR ALL SWITCHES, RECEPTACLES, TELEPHONE AND BLANKED OUTLETS, SHALL HAVE ENGRAVED LETTERING WHERE INDICATED ON THE DRAWINGS. WEATHERPROOF RECEPTACLES SHALL HAVE RACO #800, 1/2" RAISED WORK COVERS.
21. WIRE AND CABLE CONDUCTORS SHALL BE COPPER #12 AWG MINIMUM, NO BX OR ROMEX CABLE IS PERMITTED UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS.
22. GROUND RODS SHALL BE AS SPECIFIED ON THE GROUNDING DRAWINGS.
23. METER SOCKET AMPERES, VOLTAGE, NUMBER OF PHASES SHALL BE AS NOTED ON THE DRAWINGS. MANUFACTURED BY SQUARE D COMPANY OR APPROVED EQUAL. IF HOST FACILITY REQUIRES THE NEW SERVICE TO BE SUB-METERED FROM THE EXISTING SERVICE, SUB-METER SHALL BE OF THE 10x OR 16x TYPE.
24. ALL MATERIALS SHALL BE U.L. LISTED.
25. CONDUIT:
 A. SERVICE CONDUITS SHALL BE GRAY SCH.40 PVC BURIED MIN. 36", EXCEPT THAT SCH.80 SHALL BE USED UNDER ROADWAYS AND IN LOCATIONS SUBJECT TO CASUAL IMPACTS. BENDS SHALL BE MADE USING "WIDE SWEEP" (12" MIN. RADIUS) ELBOW FITTINGS. ANY CODE-REQUIRED RIGID STEEL CONDUIT SHALL BE U.L. LABEL, GALVANIZED INSIDE AND OUTSIDE. CONDUIT SHALL EXTEND MIN. 36" BELOW GRADE, WITH "SWEEP" ELBOWS (12" R. MIN.) ENDING IN PVC TRANSITION FITTINGS. RIGID CONDUIT IN CONTACT WITH EARTH SHALL BE 1/2 LAP-WRAPPED WITH HUNTS PROCESS NO. 3 EXTENDING MIN. 12" ABOVE GRADE.
 B. INTERIOR CONDUITS SHALL BE ELECTRICAL METALLIC TUBING HAVING U.L. LABEL, FITTINGS SHALL BE GLAND RING COMPRESSION TYPE.
 C. FLEXIBLE METALLIC CONDUIT SHALL HAVE U.L. LISTED LABEL AND MAY BE USED WHERE PERMITTED BY CODE. FITTINGS SHALL BE "JAKE" OR "SQUEEZE" TYPE, SEAL TIGHT FLEXIBLE CONDUIT. NO SUCH CONDUIT SHALL EXCEED SIX FEET IN LENGTH.
26. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS.
27. PATCH, REPAIR, AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
28. PENETRATIONS IN FIRE RATED WALLS SHALL BE FIRE STOPPED IN ACCORDANCE WITH SECTION 712, PENETRATIONS - INTERNATIONAL BUILDING CODE (IBC)
29. DRILLING OR CORING HOLES IN CONCRETE WALLS OR DECKS, WHETHER FOR FASTENING OR ANCHORING PURPOSES, REQUIRES THAT TENDONS OR REINFORCING STEEL MUST BE SEARCHED FOR BY APPROPRIATE METHODS AND EQUIPMENT (X-RAY OR OTHER DEVICE) THAT CAN ACCURATELY LOCATE THEM. TENDONS OR REINFORCING MUST NOT BE DRILLED, CUT OR DAMAGED UNDER ANY CIRCUMSTANCES.
30. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO CONSTRUCTION ENGINEER. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.
31. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF BOTH TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.
32. CONTRACTOR SHALL PROVIDE LABOR AND MATERIALS AS NECESSARY TO COMPLETE THE INSTALLATION OF ANY TOWER LIGHTING SYSTEM DESCRIBED IN THE RFQ.

GENERAL ELECTRICAL NOTES



PROJECT NO:	20171735332
LOCATION CODE:	484031
EDGE PROJECT NO:	18071
CHECKED BY:	OGD

REV.	DATE	DESCRIPTION	INT.
A	05/07/2018	PRELIM SMALL CELL DWGS	ZRS
B	05/15/2018	PRELIM SMALL CELL DWGS	MWH
0	08/13/2018	FINAL SMALL CELL DWGS	MWH

- APPROVED -
 SEE SHEET G-001 FOR
 ENGINEER SEAL

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.

DUL SUPER ONE SC1 3
 DULUTH, MINNESOTA
 REPLACEMENT LIGHT POLE
 SMALL CELL DRAWINGS

SHEET TITLE
UTILITY PLAN

SHEET NUMBER
E-101



September 7, 2018

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

via FedEx: 7731 6661 9587

Re: Concurrent Use of Streets Permit Application
Verizon Small Cell Sites: DUL Super One SC1-SC3

Dear Mr. Robertson,

Enclosed please find a Concurrent Use of Streets Permit Application for three Verizon Wireless small wireless facility installations. Two are collocations on Minnesota Power wood utility power poles in the right-of-way near the intersection of E. Superior St. and N. 60th Ave. E., and the third is a proposed collocation on a Minnesota Power wood light pole located near the intersection of E. Superior St. and Occidental Blvd. The purpose of these proposed small wireless facility installations is to address the data capacity and coverage in the area as well as addressing capacity issues during Grandma's Marathon and surrounding area that has heavy traffic during that event. Due to the equipment limitations for small wireless facility installations, three individual locations are required to achieve the necessary coverage objectives. A set of the design drawings for each of the proposed installation has been included. The elevation sheet in the design drawings for each of the proposed location contains the proposed distance between the antenna and the remote radio units to meet the Minnesota Power separation requirements.

It is important that cities like the City of Duluth encourage well-developed networks so that cellphones, tablets, and other "smart" devices will work properly when they are needed most. More than 50% of adults in the United States have only a wireless telephone with no traditional landline telephone service at all. That percentage will only rise as the next generation moves into adulthood, since more than 60% of children live in households that have a wireless phone as the only telephone. Here in the Midwest, 52.5% of adults live in households with no landline.¹ With these trends at work, wireless telephone users everywhere – including those in Duluth – require more cell sites to support the voice & data capabilities of their devices.

We look forward to working with the City to improve Verizon Wireless' wireless coverage in the community.

Sincerely,

Amy Dresch

JACOBS | TELECOM | P: (612) 802-0452 | E: amy.dresch@jacobs.com

Enclosure

¹See U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, *Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, January-June 2017*(Dec. 2017) at p.1 available at <https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201712.pdf>



DUL Super One SC1-SC3
Proposed Site Candidate Locations
Verizon Small Cell





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August 28, 2018

Mr. Steven Robertson
City Planner | Community Planning
City of Duluth
411 W. 1st Street, room 208
Duluth, MN 55802

Re: Verizon Wireless Small Cell Projects
DUL Spirit Mountain SC1 | MN Power Pole ID 14647195 | Alden Conversation
655239
DUL Super One SC1 | MN Power Pole ID 11329030 | Alden Conversation
655274
DUL Super One SC2 | MN Power Pole ID 11406260 | Alden Conversation
655286
DUL Super One SC3 | MN Power Pole ID 11329005 | Alden Conversation
655291

Dear Mr. Robertson,

As owner of the above referenced utility poles, we consent to allowing Verizon Wireless to apply for City permits for small cell wireless antennas and equipment on these poles.

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

Sincerely,

A handwritten signature in cursive script that reads "Jodi Corrow".

Jodi Corrow
Distribution Assets Coordinator Sr.
Minnesota Power



August 14, 2018

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

Optional Local Government Checklist (page 2)

EVALUATION OF CATEGORICAL EXCLUSION

- 12. Licensed Radio Service (see attached Table 1): Cellular Radiotelephone Service & Personal Communications Svc.
- 13. Structure Type (free-standing or building/roof-mounted): Utility Pole
- 14. Antenna Type [omnidirectional or directional (includes sectored)]: Panel/directional
- 15. Height above ground of the lowest point of the antenna (in meters): 6.7056 meters (22 ft.)
- 16. Check if all of the following are true:
 - (a) This facility will be operated in the Multipoint Distribution Service, Paging and Radiotelephone Service, Cellular Radiotelephone Service, Narrowband or Broadband Personal Communications Service, Private Land Mobile Radio Services Paging Operations, Private Land Mobile Radio Service Specialized Mobile Radio, Local Multipoint Distribution Service, or service regulated under Part 74, Subpart I (see question 12).
 - (b) This facility will not be mounted on a building (see question 13).
 - (c) The lowest point of the antenna will be at least 10 meters above the ground (see question 15).

If box 16 is checked, this facility is categorically excluded and is unlikely to cause exposure in excess of the FCC's guidelines. The remainder of the checklist need not be completed. If box 16 is not checked, continue to question 17.

- 17. Enter the power threshold for categorical exclusion for this service from the attached Table 1 in watts ERP or EIRP* (note: EIRP = (1.64) X ERP): (see below)
- 18. Enter the total number of channels if this will be an omnidirectional antenna, or the maximum number of channels in any sector if this will be a sectored antenna: (see below)
- 19. Enter the ERP or EIRP per channel (using the same units as in question 17): (see below)
- 20. Multiply answer 18 by answer 19: (see below)
- 21. Is the answer to question 20 less than or equal to the value from question 17 (yes or no)? (see below)

If the answer to question 21 is YES, this facility is categorically excluded. It is unlikely to cause exposure in excess of the FCC's guidelines.

If the answer to question 21 is NO, this facility is not categorically excluded. Further investigation may be appropriate to verify whether the facility may cause exposure in excess of the FCC's guidelines.

- 17. 1000 ERP (700 MHz), 2000W ERP (1900 MHz/PCS, 2100 MHz/AWS)
- 18. 2 bands per block (LTE & AWS)
- 19. 365.72 ERP + 437.67 ERP (700 MHz + 850 MHz LTE) and 377.59 ERP + 377.59 ERP (2100 MHz AWS1 + AWS3)
- 20. 803.39 ERP (700 MHz + 850 MHz LTE) + 755.18 ERP (2100 MHz AWS1 + AWS3) = 1558.57 W ERP
- 21. Yes

*"ERP" means "effective radiated power" and "EIRP" means "effective isotropic radiated power"