

Construction Narrative – Water Tower Antenna Upgrade and Ground Compound Expansion

The proposed project involves the installation of new wireless communication antennas on the existing water tower structure, along with the expansion of the adjacent ground equipment compound to support upgraded network capacity and reliability. All work will be performed in accordance with applicable building codes and industry standards.

1. Scope of Work – Water Tower Antenna Installation

1.1 Structural Modifications

- The existing water tower will be evaluated by a licensed structural engineer to confirm load capacity and attachment suitability.
- New mounting frames or sector mounts will be installed on the upper portion of the tank or handrail, depending on the approved design.

1.2 Antenna and Equipment Installation

- Antennas will be mounted at the approved centerline height and oriented to provide optimal coverage while minimizing visual impact.
- Coaxial, fiber, and power cabling will be routed along the tower leg or riser using new or existing cable ladders.
- All cables will be secured with UV-rated hardware and grounded per NEC and carrier specifications.

1.3 Safety and Access

- A temporary crane or manlift will be used for antenna installation, coordinated to avoid interference with water utility operations.
- All work at height will follow OSHA fall-protection requirements.
- The tower will remain in service throughout construction unless otherwise coordinated with the owner.

2. Scope of Work – Ground Compound Expansion

2.1 Site Preparation

- The existing fenced compound will be expanded by approximately 285 square feet
- A new gravel base pad will be installed to support the additional equipment.

2.2 Equipment Foundations and Pads

- New concrete equipment pads will be poured to accommodate:
- Equipment cabinet
- Backup generator with integrated fuel tank
- Automatic transfer switch (ATS) and power distribution equipment
- Pads will be reinforced and sized according to manufacturer specifications and local code.

2.3 Electrical and Utility Upgrades

- Conduits will be installed between the tower base, equipment cabinets, and generator.

2.4 Fencing and Access

- The compound fence will be extended using materials matching the existing enclosure.
- A new access gate will be installed for equipment delivery and maintenance.
- All work will maintain required clearances for emergency access and utility personnel.

3. Generator Installation and Integration

- A standby diesel generator will be installed on a dedicated concrete pad.
- An automatic transfer switch (ATS) will be installed to ensure seamless transition to backup power during outages.

4. Restoration and Finalization

- All construction debris will be removed from the site.
- As-built drawings, structural certifications, and close-out documentation will be provided upon completion.
- The upgraded facility will be tested and commissioned to ensure full operational readiness.

Landscaping Narrative – Vegetation Removal and Replacement for Compound Expansion

The proposed site upgrade requires modifications to the existing landscaping surrounding the equipment compound to accommodate the expanded lease area and ensure continued visual screening of telecommunications equipment. The landscaping plan has been designed to maintain or improve the current level of aesthetic buffering while meeting local zoning requirements and site-stealth objectives.

1. Removal of Existing Vegetation

- A total of seven (7) existing landscaping trees located along the perimeter of the current compound will be removed.
- These trees are situated within the footprint of the proposed compound expansion or within areas required for construction access, grading, and installation of new equipment pads.
- Stumps and root systems will be removed or ground down as required to allow proper grading and installation of the expanded compound.

2. Replacement Landscaping and Stealthing Strategy

To maintain effective visual screening and ensure the expanded compound remains unobtrusive, new landscaping that meets or exceeds the density and coverage of the existing vegetation.

2.1 Tree Replacement

- Seven (7) new replacement trees
- Replacement species will be selected for:
 - Evergreen foliage to provide year-round screening
 - Compatibility with local climate and soil conditions
 - Low maintenance and non-invasive growth characteristics

2.2 Placement and Screening Effectiveness

- Replacement trees will be strategically placed along the expanded compound perimeter to recreate the existing vegetative buffer.
- Plantings will be arranged to:
 - Break up sightlines from adjacent properties and public rights-of-way

- Provide continuous screening of equipment cabinets, fencing, and the generator enclosure
- Integrate the expanded compound into the surrounding landscape with minimal visual impact
- Spacing will follow landscape architect recommendations to ensure healthy growth and long-term coverage.



Mobility

SITE NUMBER: IL1110
SITE NAME: VILLAGE OF LIBERTYVILLE
PROJECT: NSB
FA CODE: 10153899
PTN # : 3301A13M3T
PACE ID: MRCHI067612
US ID: 321016
SITE ADDRESS: 810 GARFIELD Ave
 LIBERTYVILLE, IL 60048

DRAWING INDEX

SHEET	DESCRIPTION
IL1110-T01	TITLE SHEET
L-1 & L-2	LAND SURVEY
IL1110-C01	OVERALL SITE PLAN
IL1110-C02	ENLARGED SITE PLAN
IL1110-C03	TOWER ELEVATION
IL1110-C04	ANTENNA LAYOUT
IL1110-A01	WALK UP CABINET
IL1110-A02	WALK UP CABINET PLATFORM DETAILS
IL1110-A03	KOHLER 20RE0ZK-C GENERATOR SPECIFICATIONS-1
IL1110-A04	KOHLER 20RE0ZK-C GENERATOR SPECIFICATIONS-2
IL1110-A05	WOOD FENCE DETAILS
IL1110-A06	CONSTRUCTION DETAILS
IL1110-A07	EQUIPMENT SPECIFICATIONS
IL1110-A08	ANTENNA MATRIX
IL1110-A09	COAX COLOR CODING
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IL1110-A11	CONSTRUCTION NOTES
IL1110-A12	SITE SIGNAGE REQUIREMENTS
IL1110-S01	TOWER ELEVATION & DETAILS
IL1110-S02	WATER TANK SECTIONS
IL1110-S03	WATER TANK DETAILS
IL1110-S04	WATER TANK NOTES
IL1110-S05	NEW ANTENNA MOUNTING DETAILS 1
IL1110-S06	NEW ANTENNA MOUNTING DETAILS 2
IL1110-S07	NEW ANTENNA MOUNTING DETAILS 3
IL1110-E01	UTILITY PLAN & ELECTRICAL DETAILS
IL1110-E02	ENLARGED UTILITY PLAN
IL1110-E03	ELECTRICAL NOTES & DETAILS
IL1110-E04	UTILITY RACK DETAILS
IL1110-G01	GROUNDING PLAN & DETAILS
IL1110-G02	GROUNDING DETAILS & NOTES
IL1110-LS01	LANDSCAPE DETAILS & NOTES

PROJECT INFORMATION

APPLICANT: AT&T
 95 W ALGONQUIN RD
 ARLINGTON HEIGHTS, IL 60005

PROPOSED USE: TELECOMMUNICATIONS FACILITY

STRUCTURE TYPE: WATER TANK

PROPERTY OWNER: VILLAGE OF LIBERTYVILLE
 118 W COOK AVENUE
 LIBERTYVILLE, IL 60048

CONTACT PERSON: ASHLEY R. ENGELMANN
 DEPUTY VILLAGE ADMINISTRATOR
 847-918-2108

JURISDICTION: VILLAGE OF LIBERTYVILLE

COUNTY: LAKE COUNTY

LATITUDE: 42.274175'

LONGITUDE: -87.960103'

LAT/ LONG TYPE: NAD 83

GROUND ELEVATION: ±668 FT AMSL

POWER COMPANY: COMED

PHONE: (800) 334-7661

TELEPHONE COMPANY: AT&T

PHONE: (800) 357-0902

VICINITY MAP

DIRECTIONS:
 DEPART CHICAGO O'HARE INTERNATIONAL AIRPORT. HEAD SOUTHWEST ON I-190 W. TAKE THE BESSIE COLEMAN DR EXIT TOWARD AIRPORT TERMINAL 5/A.R.F.F. STAGING AREA D. TURN RIGHT ONTO BESSIE COLEMAN DR. USE THE RIGHT LANE TO MERGE ONTO I-190 E VIA THE RAMP TO AIRPORT TERMINAL 5/I-90/I-294/CHICAGO. MERGE ONTO I-190 E. USE ANY LANE TO TAKE THE EXIT TOWARD I-294 N. KEEP RIGHT AT THE FORK TO CONTINUE ON EXIT 1C, FOLLOW SIGNS FOR MILWAUKEE/TOLLWAY/I-294 N AND MERGE ONTO I-294 N. CONTINUE ONTO I-94 W. TAKE EXIT 16 TOWARD IL-176 W. TURN RIGHT ONTO IL-176 W. TURN LEFT ONTO GARFIELD AVE. TURN LEFT. TURN RIGHT. TURN RIGHT. DESTINATION WILL BE ON THE RIGHT.



SCOPE OF WORK

NEW EQUIPMENT TO BE INSTALLED:

- INSTALL (3) ANTENNA MOUNTING FRAMES
- INSTALL (9) NEW ANTENNAS (TYP.3 PER SECTOR)
- INSTALL (9) NEW RRUS (TYP.4 PER SECTOR)
- INSTALL (3) NEW RAYCAP DC9-48-60-24-PC16-EV SQUIDS
- INSTALL (9) NEW #6 AWG DC POWER TRUNK CABLES
- INSTALL (3) NEW 24-PAIR FIBER TRUNK CABLES
- INSTALL NEW WOOD FENCE
- INSTALL NEW HELICAL PLATFORM W/ NEW WALK UP CABINET
- INSTALL 20 KW KOHLER DIESEL GENERATOR
- INSTALL D2 SIAD & GPS ANTENNA
- INSTALL (1) 6672
- INSTALL NEW ICE BRIDGE
- INSTALL NEW H-FRAME; NEW METER & NEW FIBER EQUIPMENT
- PLANT NEW EMERALD GREEN ARBORVITAE TREES

CODE COMPLIANCE

- 2018 INTERNATIONAL BUILDING CODE
- 2017 NATIONAL ELECTRICAL CODE
- TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H
- TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 607
- NFPA 780-2000 LIGHTNING PROTECTION CODE
- AMERICAN CONCRETE INSTITUTE (ACI) 318
- AISC MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION
- IEEE 81, IEEE 1100 & IEEE C62.41
- TELCORDIA GR-1275, GENERAL INSTALLATION REQUIREMENTS
- TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS
- ANSI T1.311, FOR TELECOM - DC POWER SYSTEMS - TELECOM, ENVIRONMENTAL PROTECTION

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

REFERENCE MATERIALS

THESE DRAWINGS ARE PREPARED BASED ON SCOPING NOTES DATED 05/29/2025 REVISION # V1.0 GENERAL CONTRACTOR TO VERIFY AND INCORPORATE MOST RECENT VERSION OF RFDS PRIOR TO CONSTRUCTION.

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION AND TO THE BEST OF MY PROFESSIONAL KNOWLEDGE THEY COMPLY WITH THE REQUIREMENT OF ALL APPLICABLE CODES AND ORDINANCES.

DATE: 01/12/26

RAJESH K. GOYAL
 ILLINOIS S.E. LICENSE # 081-005096
 EXPIRES 11-30-2026

PROJECT CONSULTANTS

SITE ACQUISITION: MASTEC NETWORK SOLUTIONS
 1890 SUNCAST LANE,
 BATAVIA, IL 60510
 JACOB STRICKER
 Jacob.Stricker@mastec.com
 PHONE: M: 810-623-3589

ENGINEER: APEX ENGINEERS, INC.
 500 EAST 22ND STREET, SUITE B
 LOMBARD, IL 60148,
 RAJESH K. GOYAL
 PHONE: (630) 627-1800

RF ENGINEER: AT&T MOBILITY
 WILLIAM BERNER, wb1306@att.com
 PHONE: 1-847-330-7592



DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ARCHITECT OR ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

HANDICAPPED REQUIREMENTS

FACILITY IS UNMANNED & NOT FOR HUMAN HABITATION. HANDICAP ACCESS REQUIREMENTS NOT REQUIRED.

PLUMBING REQUIREMENTS

FACILITY HAS NO PLUMBING

FIRE PROTECTION NOTE

NONE

SPECIAL NOTES

- ALL WORK SHALL BE INSTALLED IN CONFORMANCE WITH CURRENT AT&T CONSTRUCTION INSTALLATION GUIDE.
- EXISTING CONDITIONS MUST BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION. IF THERE IS ANY SIGNIFICANT DEVIATION FROM THE DESIGN DRAWINGS, NOTIFY ENGINEER IMMEDIATELY.
- STATEMENT THAT COMPLIANCE WITH THE ENERGY CODE IS NOT REQUIRED.
 - SCOPE OF WORK DOES NOT INVOLVE MODIFICATIONS TO EXTERIOR ENVELOPE OF BUILDING, HVAC SYSTEMS OR ELECTRICAL LIGHTING.



1890 Suncastr Lane,
 Batavia, IL 60510



Apex Engineers, Inc.
 Structural & Civil Engineers
 500 East 22nd Street, Suite B
 Lombard, Illinois 60148
 Ph. (630) 627-1800
 Fax. (630) 627-1165

APEX JOB No. NS22-055

VILLAGE OF LIBERTYVILLE

SITE NO. IL1110

810 GARFIELD AVE
 LIBERTYVILLE, IL 60048



NO.	DATE	REVISIONS	BY	CHK	APP'D
F	01/12/26	90% CDS - REVISED GREEN TREES	PD	PB	RG
E	12/05/25	90% CDS - REVISED PER COMMENTS	PD	PB	RG
D	06/19/25	90% CDS - REVISED PER NEW SCOPINGS	PD	PB	RG
C	06/14/23	90% CDS ISSUED FOR REVIEW	PD	PB	RG
B	09/08/22	REVISED LEASE EXHIBIT/ZONING DRAWING	PD	PB	RG

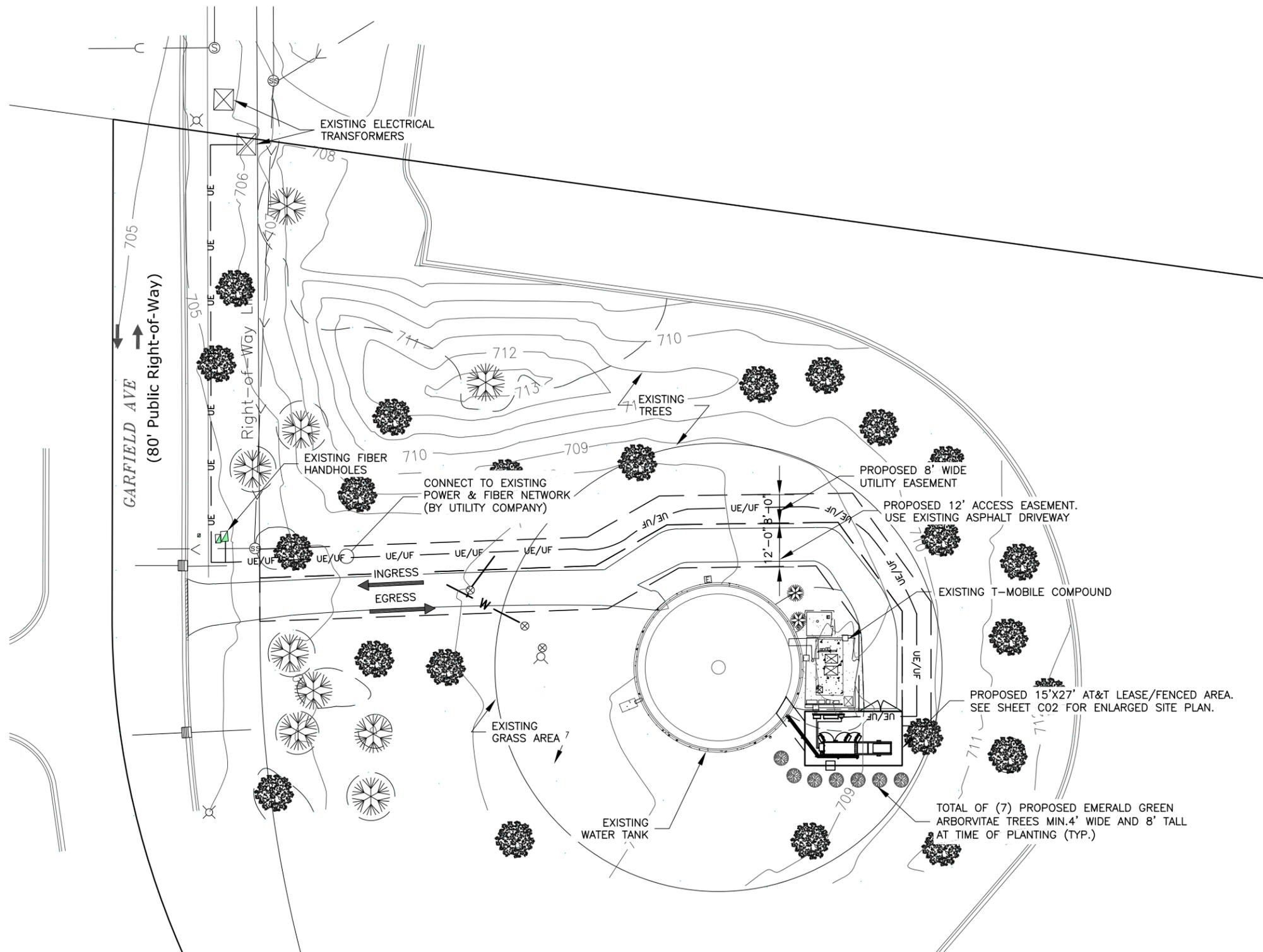
SCALE: AS SHOWN DESIGNED BY: DRAWN BY:

AT&T MOBILITY

TITLE SHEET

DRAWING NUMBER REV

IL1110-T01 F



1 OVERALL SITE PLAN
SCALE: 1/32"=1'-0"



AERIAL OVERVIEW OF SITE



PROPOSED LEASE AREA LOCATION
(LOOKING NORTH)

MasTec
Network Solutions
1890 Suncast Lane,
Batavia, IL 60510

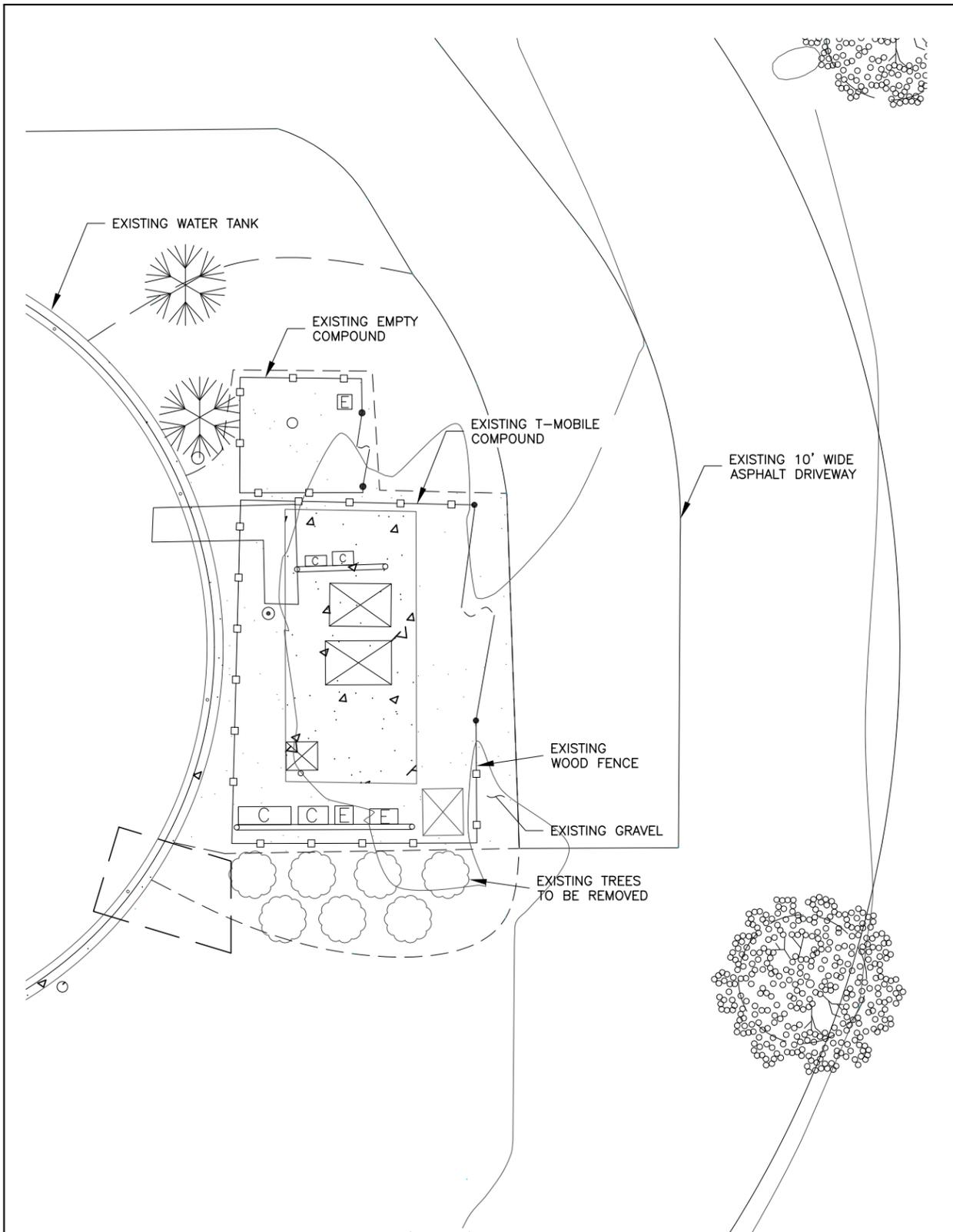
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Lombard, Illinois 60148
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810 GARFIELD AVE
LIBERTYVILLE, IL 60048

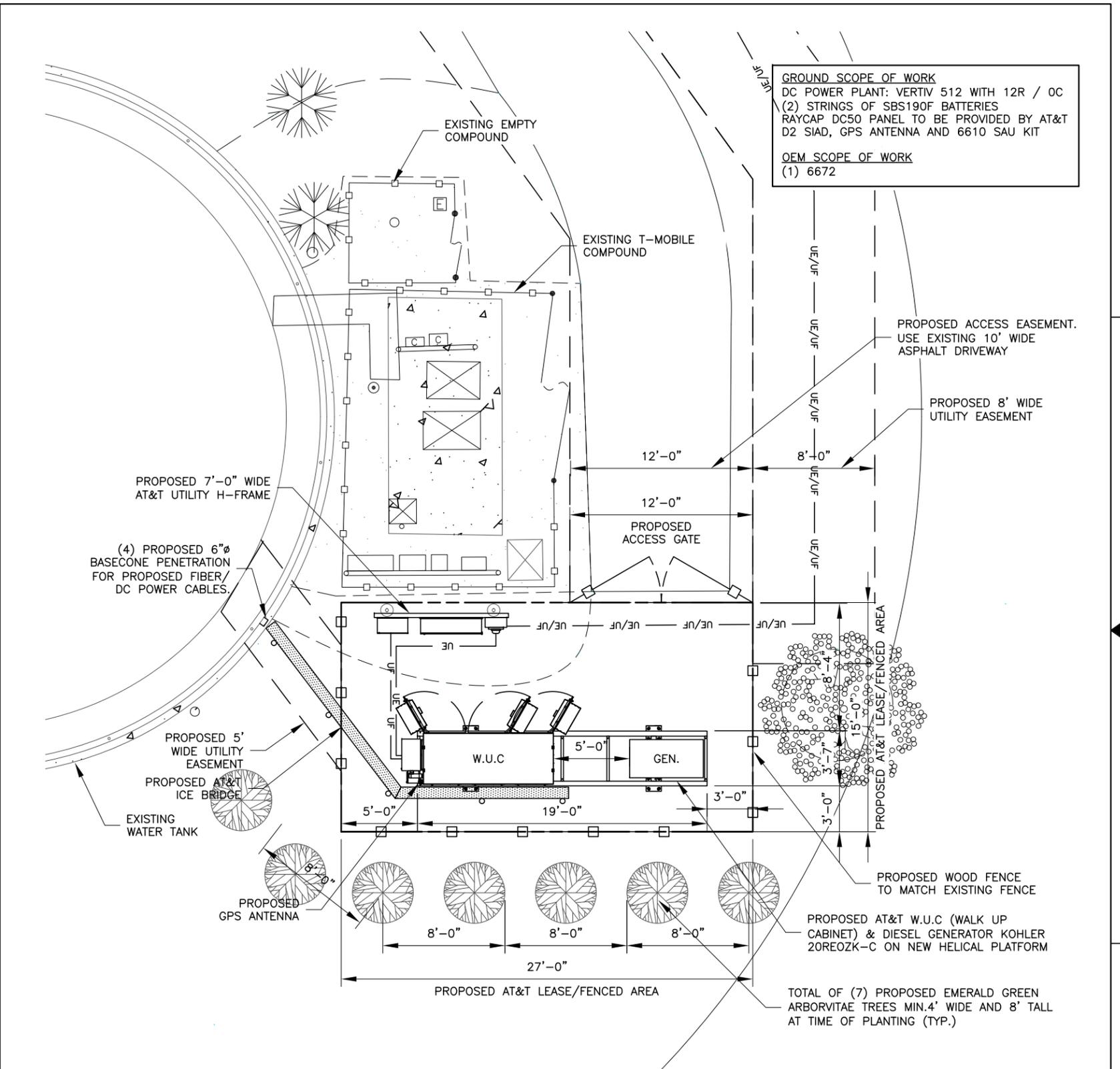


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AT&T MOBILITY	
OVERALL SITE PLAN	
DRAWING NUMBER	REV
IL1110- C01	F



1 EXISTING ENLARGED SITE PLAN
SCALE: 1/8"=1'-0"



1 PROPOSED ENLARGED SITE PLAN
SCALE: 1/8"=1'-0"



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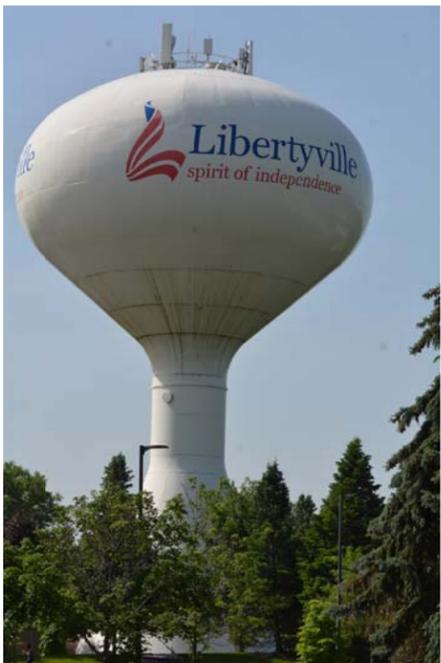
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AT&T MOBILITY	
ENLARGED SITE PLAN	
DRAWING NUMBER	REV
IL1110-C02	F

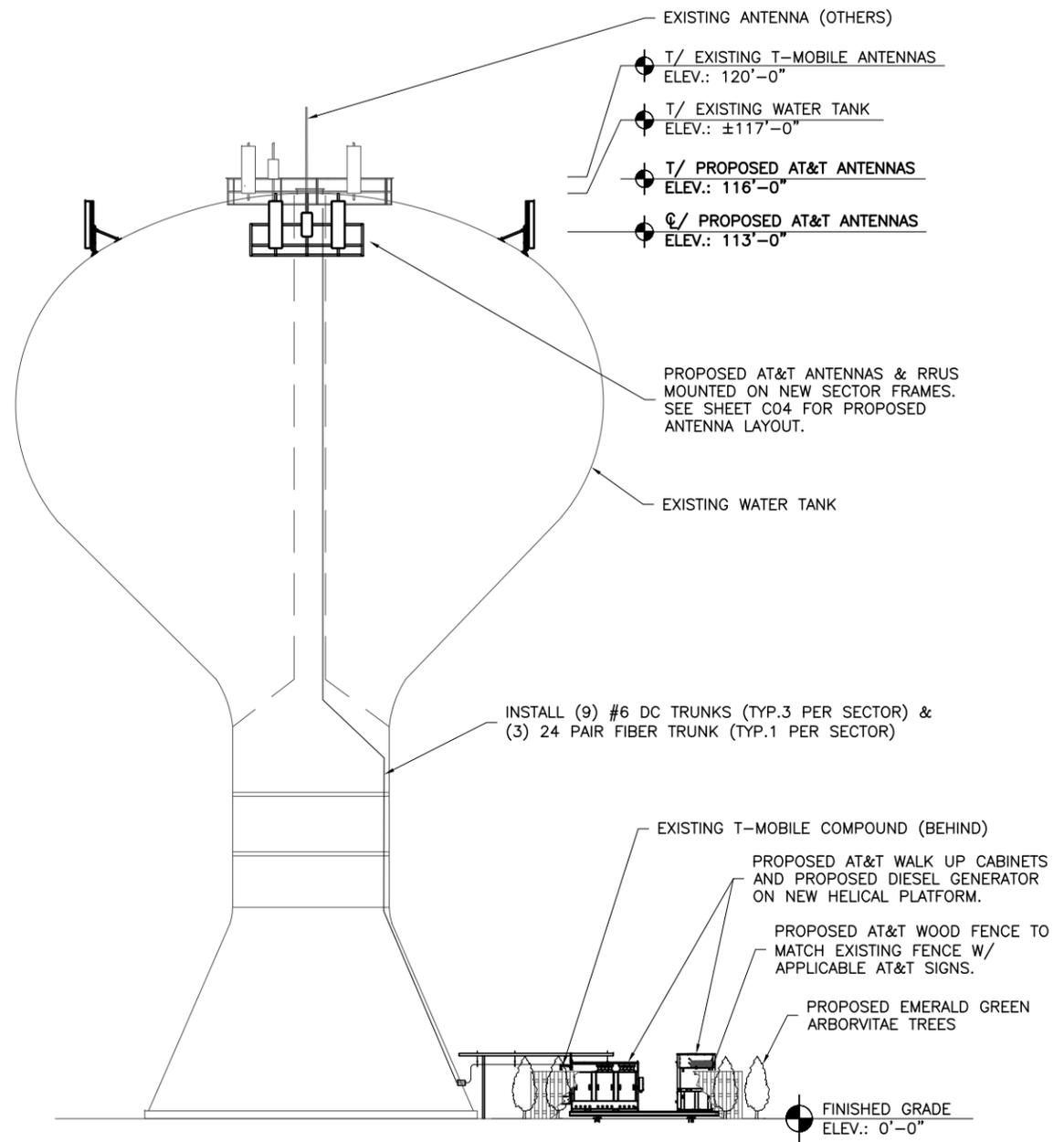
REFER TO ANTENNA MOUNT FRAME ANALYSIS
BY APEX ENGINEERS, INC. DATED 06/14/2023.



EXISTING HANDRAIL ON TOP



EXISTING WATER TOWER



1 TOWER ELEVATION
SCALE: 3/64"=1'-0"

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Batavia, IL 60510

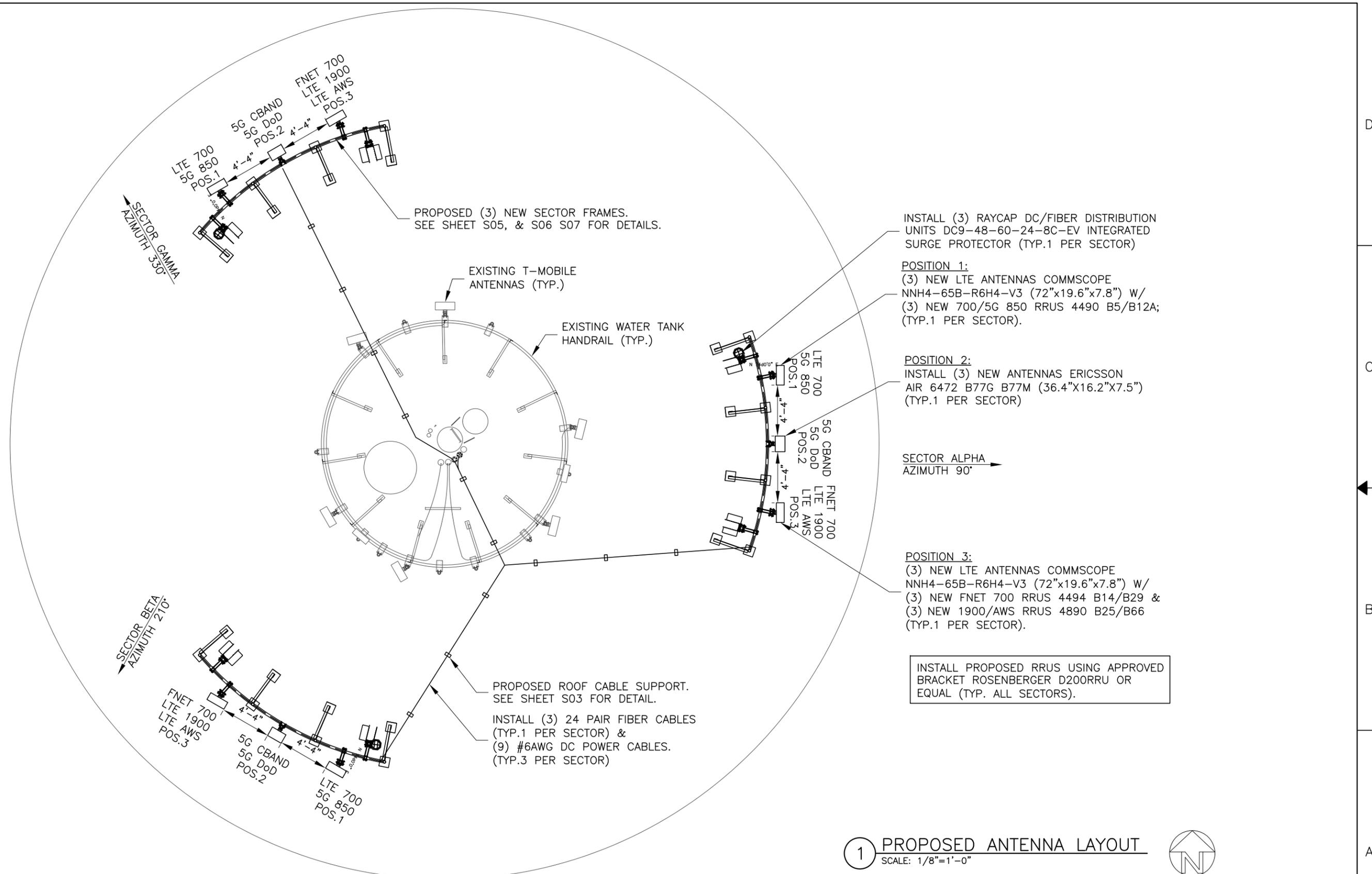
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TOWER ELEVATION	
DRAWING NUMBER	REV
IL1110-C03	F



1 PROPOSED ANTENNA LAYOUT
SCALE: 1/8"=1'-0"



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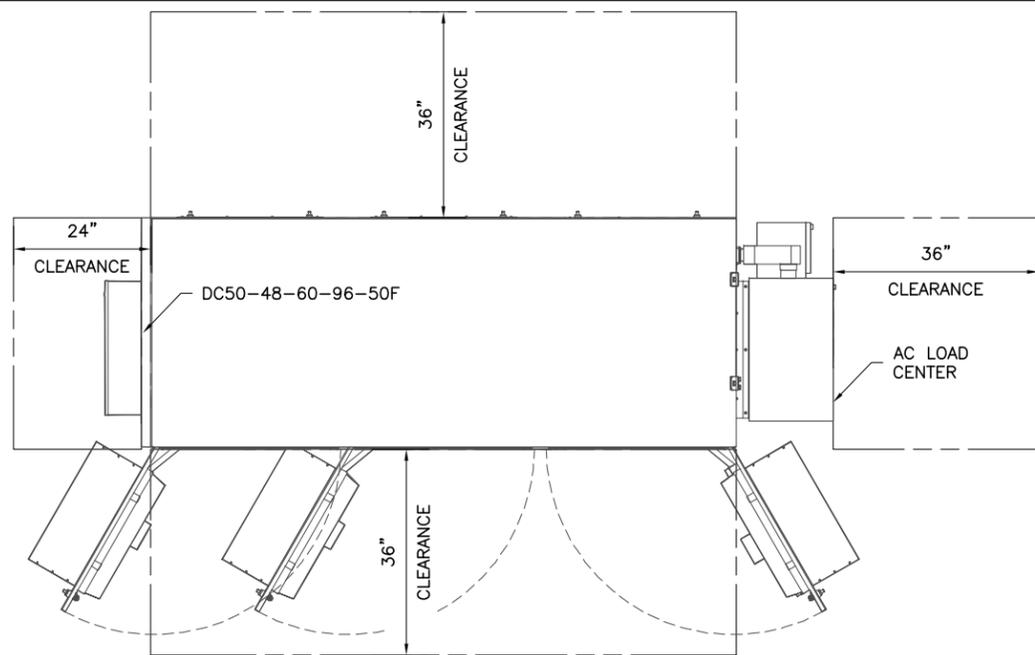
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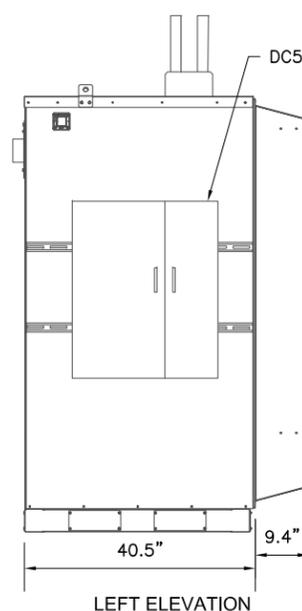
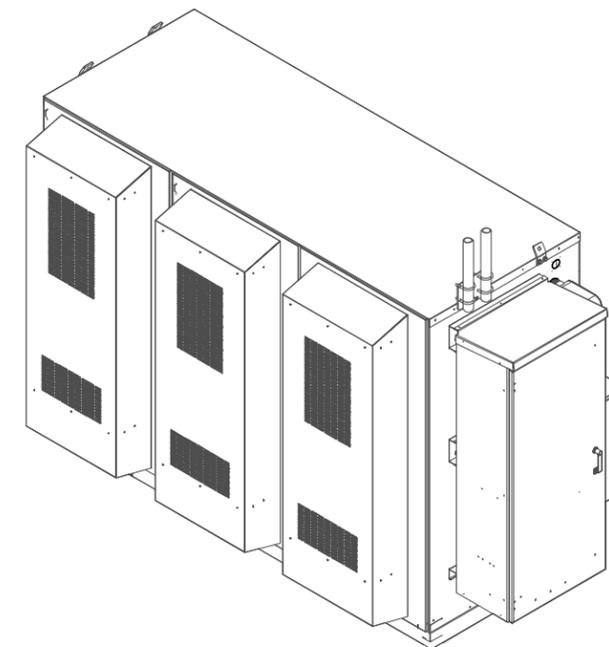


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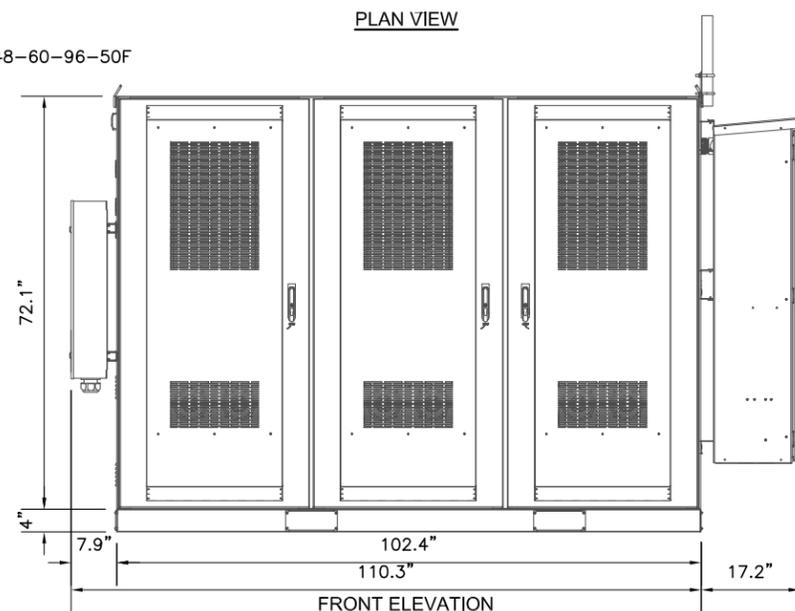
AT&T MOBILITY	
ANTENNA LAYOUT	
DRAWING NUMBER	REV
IL1110-C04	F



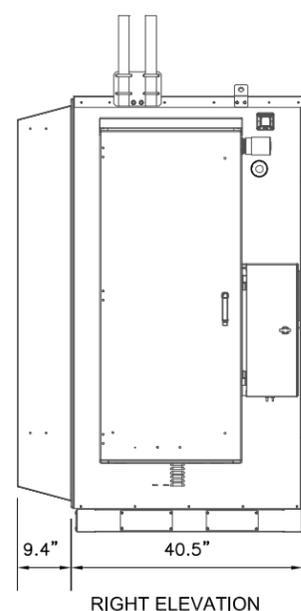
PLAN VIEW



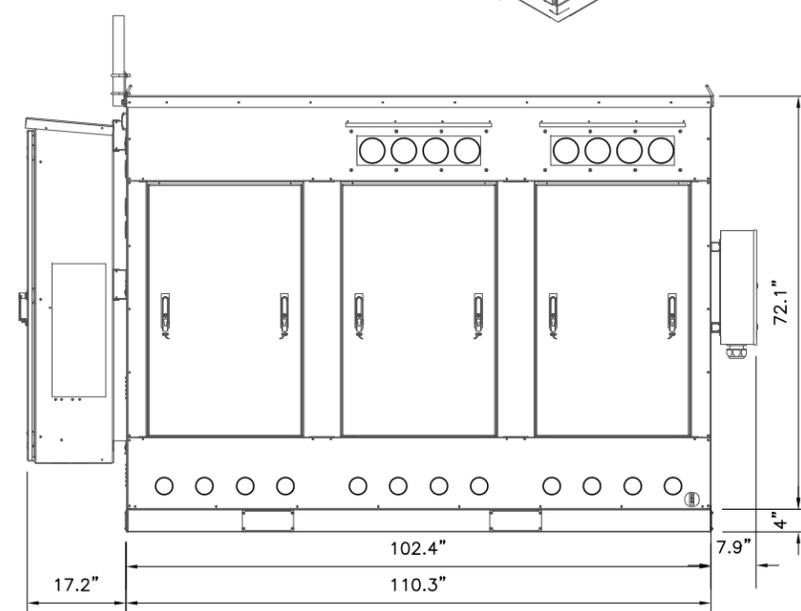
LEFT ELEVATION



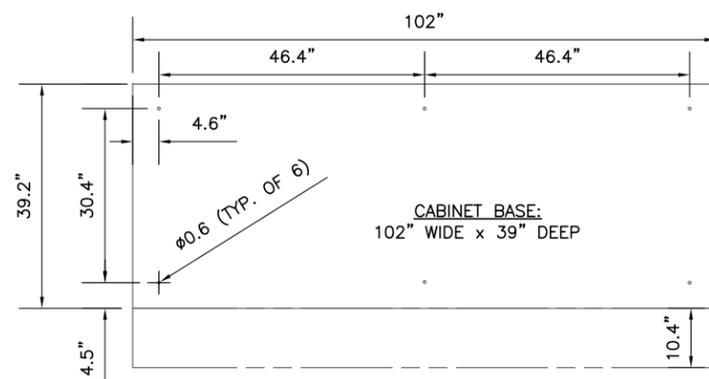
FRONT ELEVATION



RIGHT ELEVATION



REAR ELEVATION



CABINET BASE

WEIGHT = 2,270 LB (EXCLUDING BATTERIES, POWER SUPPLY & LOAD EQUIPMENT)

1 WALK UP CABINET ELEVATIONS (FOR REPRESENTATIONAL PURPOSES ONLY)
SCALE: 3/8"=1'-0"

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AT&T MOBILITY

WALK UP CABINET

DRAWING NUMBER
IL1110-A01

KOHLER.

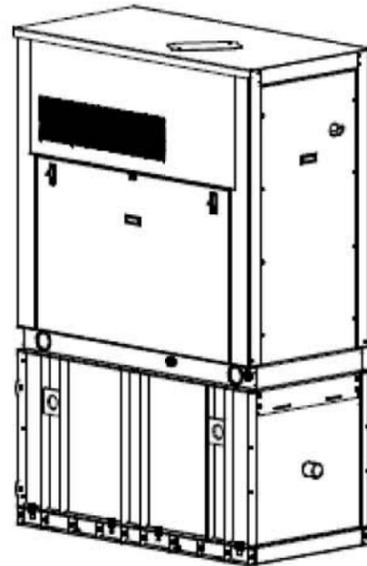
Model: **20REOZK-C**

240 V Telecom Diesel

ISO 9001 EPA-Certified for Stationary
Emergency Applications
NATIONALLY REGISTERED

Ratings Range

		60 Hz
Standby:	kW	20.0
	kVA	20.0



Unit Shown with Standard Subbase Fuel Tank

Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set has a UL 2200 listing.
- The generator set accepts rated load in one step.
- The 60 Hz generator set meets NFPA 110.
- The generator set engine is certified to meet the Environmental Protection Agency (EPA) emergency stationary emissions requirements.
- A five-year limited warranty covers all generator set systems and components.
- Alternator features:
 - Kohler's wound field excitation system with its unique PowerBoost™ design delivers great voltage response and short-circuit capability.
- Other features:
 - Kohler designed controller for one-source system integration and remote communication.
 - The low coolant level shutdown prevents overheating.
 - Integral vibration isolation eliminates the need for under-unit vibration spring isolators.
 - Sound attenuated enclosure has a sound pressure level of 65 dB(A) log average at 7 m (23 ft.) with full load.

Generator Set Ratings

				130°C Rise	
				Standby Rating	
Alternator	Voltage	Ph	Hz	kW/kVA	Amps
4E3.8	120/240	1	60	20.0/20.0	83.3

RATINGS: All single-phase units are rated at 1.0 power factor. Standby Rating: Standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Prime Power Rating: At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. Obtain the technical information bulletin (719-101) for ratings guidelines, complete ratings definitions, and site condition details. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

05-448 (20REOZK-C) 11/19c

Alternator Specifications

Specifications	Alternator
Manufacturer	Kohler
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Wound Field
Leads: quantity, type	4, 120/240 V
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H
Temperature rise	130°C, Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	±0.5%
One-step load acceptance	100% of Rating
Unbalanced load capability	100% of Rated Standby Current
Peak motor starting kVA:	(33% dip for voltage below)
240 V	4E3.8 (4 lead)
	31

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Capable of sustained line-to-neutral short-circuit current of up to 300% of the rated current for up to 2 seconds. (IEC 60092-301 short-circuit performance.)
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Windings are vacuum-impregnated with epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.

Application Data

Engine

Engine Specifications	
Manufacturer	Kohler Diesel
Engine model	KD1204M
Engine type	4-Cycle, Naturally Aspirated
Cylinder arrangement	4 In-line
Displacement, L (cu. in.)	2.5 (158)
Bore and stroke, mm (in.)	88 x 102 (3.48 x 4.02)
Compression ratio	18:1
Piston speed, m/min. (ft./min.)	367 (1206)
Main bearings: quantity, type	5, Sleeve
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	29.7 (39.9)
Cylinder head material	Cast Iron
Crankshaft material	Cast Iron
Valve material:	
Intake	Stainless Steel
Exhaust	Stainless Steel
Governor: type, make/model	Electronic
Frequency regulation, no-load to full-load	Isosynchronous
Frequency regulation, steady state	±0.3%
Air cleaner type, all models	Dry

Engine Electrical

Engine Electrical System	
Battery charging alternator:	
Ground (negative/positive)	Negative
Volts (DC)	12
Ampere rating	50
Starter motor rated voltage (DC)	12
Battery, recommended cold cranking amps (CCA):	
Quantity, CCA rating	One, 650
Battery voltage (DC)	12

Fuel

Fuel System	
Fuel supply line, min. ID, mm (in.)	8.0 (0.31)
Fuel return line, min. ID, mm (in.)	8.0 (0.25)
Max. lift, electric fuel pump, m (ft.)	3.0 (10.0)
Max. fuel flow, Lph (gph)	46.0 (12.2)
Max. return line restriction, kPa (in. Hg)	20 (5.9)
Fuel filter:	
Prefilter	74 Microns
Primary/Water Separator	5 Microns @ 98% Efficiency
Recommended fuel	#2 Ultra Low Sulfur Diesel

Exhaust

Exhaust System	
Exhaust manifold type	Dry
Exhaust flow at rated kW, m³/min. (cfm)	6 (212)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	570 (1058)
Maximum allowable back pressure, kPa (in. Hg)	8.5 (2.5)

Lubrication

Lubricating System	
Type	Full Pressure
Oil pan capacity, L (qt.) §	10.7 (11.3)
Oil pan capacity with filter, L (qt.) §	11 (11.8)
Oil filter: quantity, type §	1, Cartridge
§ Kohler recommends the use of Kohler Genuine oil and filters.	

05-448 (20REOZK-C) 11/19c

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APEX JOB No. NS22-055

VILLAGE OF LIBERTYVILLE
SITE NO. IL1110
810 GARFIELD AVE
LIBERTYVILLE, IL 60048



F	01/12/26	90% CDS -- REVISED GREEN TREES	PD	PB	RG
E	12/05/25	90% CDS -- REVISED PER COMMENTS	PD	PB	RG
D	06/19/25	90% CDS -- REVISED PER NEW SCOPINGS	PD	PB	RG
C	06/14/23	90% CDS ISSUED FOR REVIEW	PD	PB	RG
B	09/08/22	REVISED LEASE EXHIBIT/ZONING DRAWING	PD	PB	RG
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY

KOHLER 20REOZK-C GENERATOR
SPECIFICATIONS-1

DRAWING NUMBER
IL1110-A03

6

5

4

3

2

1

11 x 17" B SIZE

Application Data

Cooling

Radiator System	
Ambient temperature, °C (°F)	45 (113)
Radiator system capacity, including engine, L (gal.)	9.46 (2.5)
Heat rejected to cooling water at rated kW, dry exhaust kW (Btu/min.)	21.6 (1228)

Operation Requirements

Air Requirements	
Radiator-cooled cooling air, m ³ /min. (cfm) †	44.9 (1585)
Combustion air, m ³ /min. (cfm)	2.1 (74.2)
Heat rejected to ambient air:	
Engine, kW (Btu/min.)	20.4 (1160)
Alternator, kW (Btu/min.)	5.1 (290)

† Air density = 1.20 kg/m³ (0.075 lbm/ft³)

Fuel Consumption	
Diesel, Lph (gph) at % load	Standby Rating
100%	7.3 (1.9)
75%	5.5 (1.5)
50%	3.9 (1.0)
25%	2.4 (0.6)

Controller

APM402 Controller

Provides advanced control, system monitoring, and system diagnosis for optimum performance and compatibility.

- Digital display and menu control provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or serial configuration
- Controller supports Modbus[®] protocol
- Integrated hybrid voltage regulator with ±0.5% regulation
- Built-in alternator thermal overload protection
- NPPA 110 Level 1 capability

Refer to G6-161 for additional controller features and accessories.

Modbus[®] is a registered trademark of Schneider Electric.

Sound Enclosure

- Steel construction, single-side service with lift-off key and padlockable doors.
- Internal-mounted silencer and flexible exhaust connector.
- Stainless steel hardware.
- Fade-, scratch-, and corrosion-resistant Kohler Power Armor[™] automotive-grade textured finish.
- Acoustic insulation that meets UD94 HF1 flammability classification and repels moisture absorption.
- Sound enclosure uses acoustic insulation.
- High wind bracing, 241 kph (150 mph).
- Meets snow load of 70 lbs. per sq. foot.

Additional Standard Features

- Air cleaner, heavy duty with restriction indicator
- Alternator protection
- Battery
- Battery charger, equalize/float type 6 amp
- Battery rack and cables
- Block heater (600 W, 120 V)
- Closed coolant recovery
- Closed crankcase ventilation
- Coolant and engine oil in generator set.
- Critical silencer with stainless steel flex exhaust
- Electronic governor
- Factory installed radiator
- Fan guards
- Flexible fuel lines (fire resistant)
- Line circuit breaker with shunt trip (NEMA type 1 enclosure), 100 amp, 80% rated, thermal magnetic with auxiliary contact and alarm switch.
- Oil drain and coolant drain with hose barb
- Oil drain extension
- Operation and installation literature
- Rodent guards

Standard Subbase Fuel Tank Package

- Fuel tank has a Power Armor[™] Plus textured epoxy-based rubberized coating.
- UL listed. Secondary containment generator set base tank meeting UL 142 requirements.
- Both the inner and outer tanks have emergency relief vents.
- NPPA compliant. Designed to comply with the installation standards of NPPA 30 and NPPA 37.
- 110% engine fluid containment.
- Fuel tank capacity, 397 L (105 gal.).
- 48-hour run time.
- Fuel level gauge with sender.
- Mechanical fuel level gauge.
- Leak detection switch. Annunciates a contained primary tank fuel leak condition at generator set control.
- Fire safety valve (fusible link).
- Fork lift pockets on bottom of fuel tank.

KOHLER.

KOHLER CO., Kohler, Wisconsin 53044 USA
Phone 920-437-4441, Fax 920-439-1646
For the nearest sales and service outlet in the US and Canada, phone 1-800-544-2444
KOHLERPower.com

State Subbase Fuel Tank Package

- Has all of features of the standard subbase fuel tank option.
- 18.9 L (5 gallon) spill containment
- High fuel level switch with alarm

Additional Loose Options Available for the State Subbase Fuel Tank Package

Fuel Supply Options

- Ball valve (installed on fuel supply line)

Fuel Fill Options

- 18.9 L (5 gallon) spill containment with 95% shutoff
- 18.9 L (5 gallon) spill containment fill to within 152 mm (6 in.) of bottom of fuel tank

High Fuel Level Switch

- Fuel tank panel, 3 alarm

Normal Vent Options

- 3.7 m (12 ft.) above grade (with spill containment)

Tank Marking Options

- Decal, combustible liquids - Keep Fire Away (qty. 2)
- Decal, NFPA 704 identification (qty. 2)
- Decal, tank number and safe fuel fill height (qty. 2)

Available Options

Approvals and Listings

- CSA certified

Fuel System

- Fuel pressure gauge

Electrical System

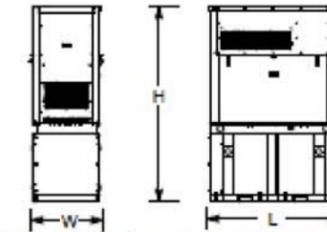
- Alternator strip heater
- Cold weather kit with battery heater, battery wrap, and temperature switch
- Battery heater

Literature

- General maintenance
- NPPA 110
- Overhaul
- Production

Dimensions and Weights (Standard Tank)

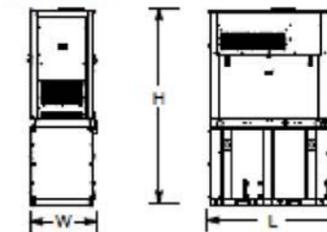
Overall Size, L x W x H, mm (in.): 1473.2 x 762.0 x 2252.2
Standard Tank
Weight, kg (lb.): 982 (2164)



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

Dimensions and Weights (State Tank)

Overall Size, L x W x H, mm (in.): 1848 x 812.8 x 2430
State Tank
Tank Foot Print
Weight, kg (lb.): 1473 x 762 (36.0 x 30.0)
1021 (2250)



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

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05-448 (20R)02K-C 11/19c

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APEX JOB No. NS22-055

VILLAGE OF LIBERTYVILLE

SITE NO. IL1110

810 GARFIELD AVE
LIBERTYVILLE, IL 60048



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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY

KOHLER 20RE02K-C GENERATOR
SPECIFICATIONS-2

DRAWING NUMBER

IL1110-A04

REV

F

6

5

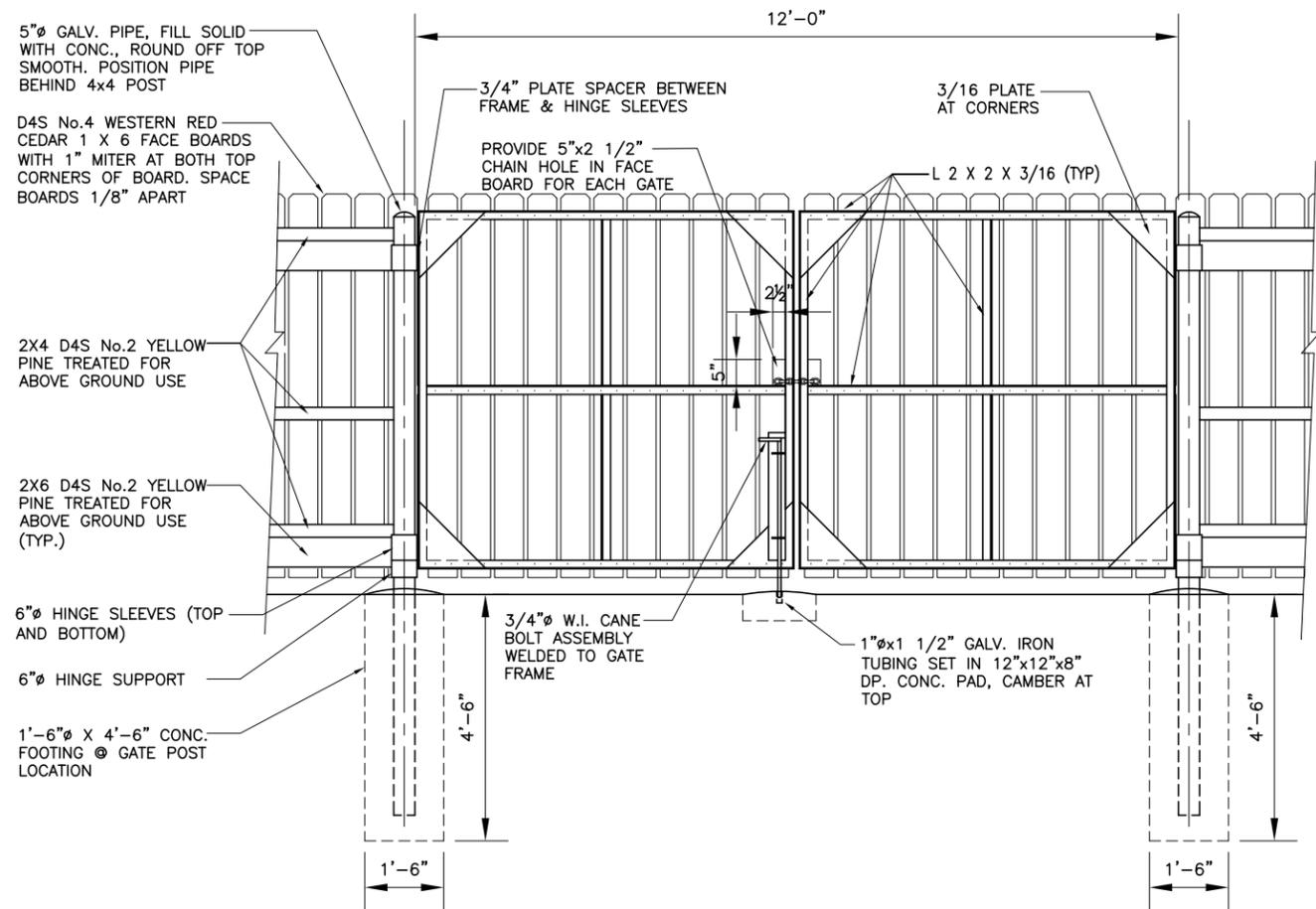
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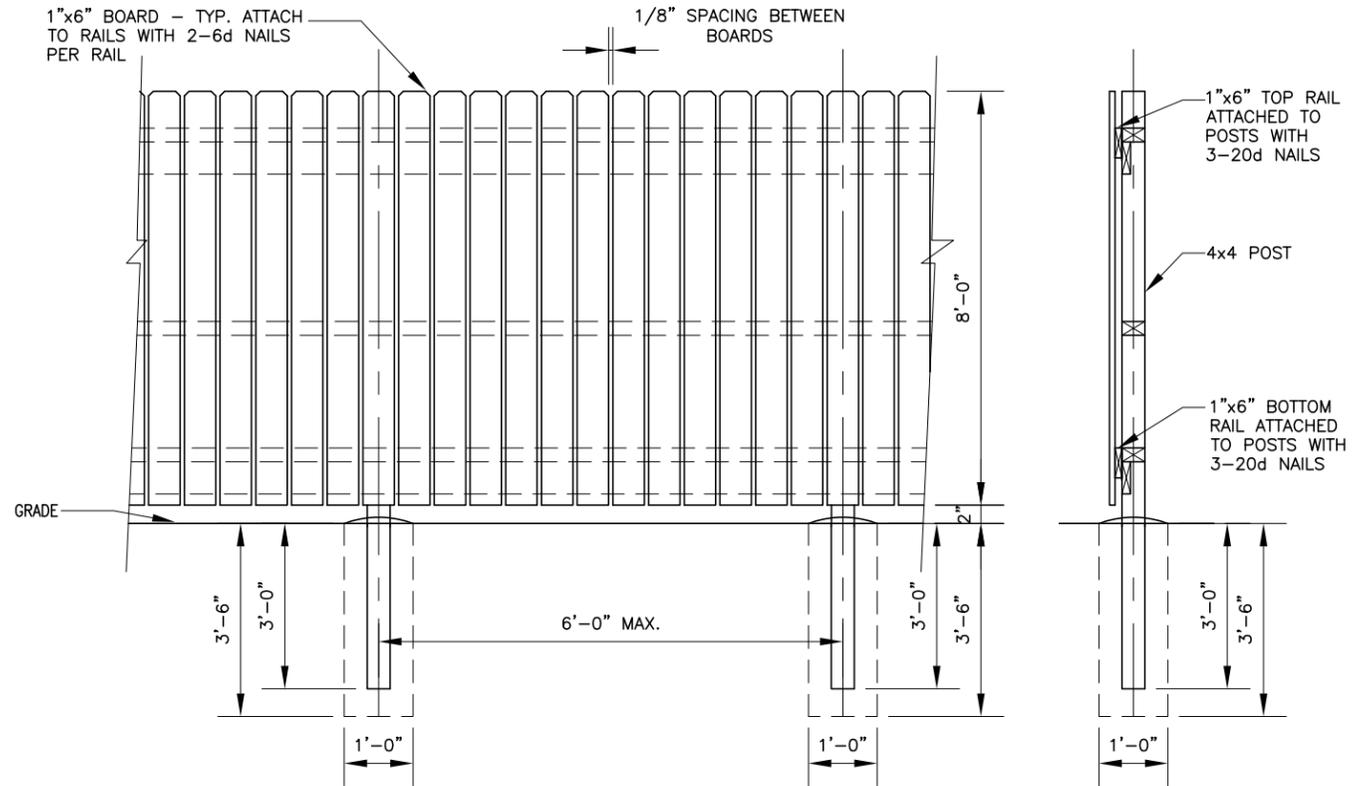
2

1

11 x 17" B SIZE



1 VEHICULAR GATES (VIEW FROM INSIDE COMPOUND)
SCALE: N.T.S.



2 TYPICAL FRONT ELEVATION
SCALE: N.T.S.

2 SIDE VIEW
SCALE: N.T.S.

- NOTES:
1. ALL MATERIALS AND HARDWARE FOR THE GATE POSTS SHALL BE MALLEABLE CASTING. (ASTM A153)
 2. POSTS TO BE SET IN 3000 PSI CONCRETE.
 3. ALL WOOD SHALL BE TREATED BY 'OSMOSE' OR APPROVED EQUAL, CLASS 2, BUILDER'S GRADE.
 4. PAINT ALL EXPOSED WOOD WITH SEARS WEATHERBEATER REDWOOD STAIN, OR APPROVED EQUAL.
 5. ALL NAILS AND FASTENERS SHALL BE GALVANIZED.
 6. FENCE GATE HINGE HARDWARE BOLTS TO FACE THE INSIDE OF THE COMPOUND.
 7. PROVIDE TWO HOLD OPEN DEVICES FOR SWING GATES.
 8. PROVIDE TWO FEET LENGTH IRON CHAIN AND SECURITY LOCK SYSTEM FOR MULTI-TENANT ACCESS. LOCK SYSTEM TO BE APPROVED BY OWNER.

WOOD FENCE DETAILS
SCALE: N.T.S.

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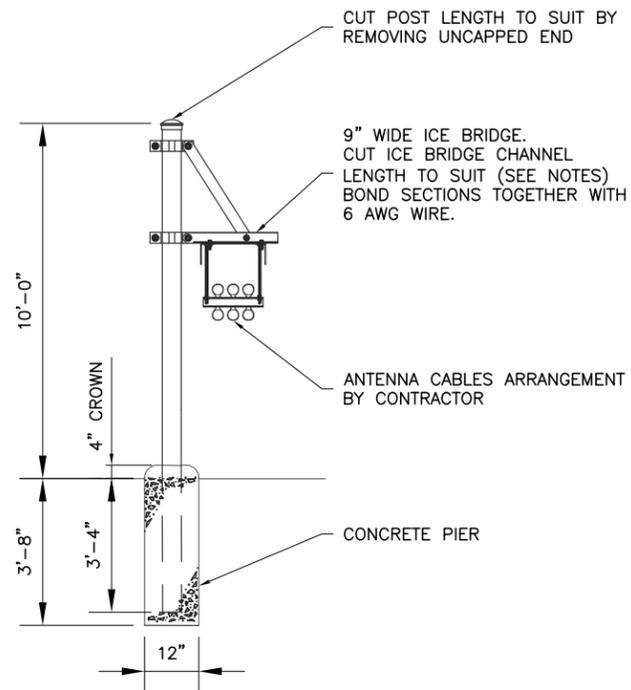
VILLAGE OF LIBERTYVILLE
SITE NO. IL1110
810 GARFIELD AVE
LIBERTYVILLE, IL 60048



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SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY
WOOD FENCE DETAILS
DRAWING NUMBER
IL1110- A05
REV
F

* INSTALL DRIP LOOP ON ANTENNA CABLES AT BOTTOM OF TOWER/MONOPOLE. BENDING RADIUS PER MANUFACTURER'S STANDARDS

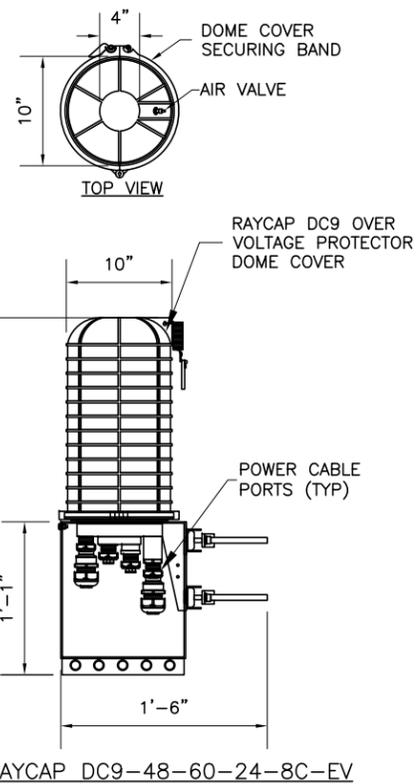


PIROD 852163
9" WIDE X 10' LONG
SUPPORTING ICE BRIDGE KIT

NOTES:

1. WHEN USING COMPONENTS AS SHOWN IN STANDARD DETAILS, MAXIMUM ALLOWABLE SPAN BETWEEN SUPPORTS ON A CONTINUOUS SINGLE SECTION OF BRIDGE CHANNEL SHALL BE 9 FEET FOR 10 FEET BRIDGE CHANNEL.
2. WHEN USING COMPONENTS FOR SPLICING BRIDGE CHANNEL SECTIONS, THE SPLICE SHOULD BE PROVIDED AT THE SUPPORT, IF POSSIBLE, OR AT A MAXIMUM OF 2 FEET FROM THE SUPPORT.
3. WHEN USING COMPONENTS, SUPPORT SHOULD BE PROVIDED AS CLOSE AS POSSIBLE TO THE ENDS OF ICE BRIDGES, WITH A MAXIMUM CANTILEVER DISTANCE OF 2 FEET FROM THE SUPPORT TO THE FREE END OF THE ICE BRIDGE.
4. CUT BRIDGE CHANNEL SECTIONS SHALL HAVE RAW EDGES TREATED WITH A MATERIAL TO RESTORE THESE EDGES TO THE ORIGINAL CHANNEL, OR EQUIVALENT, FINISH.
5. ICE BRIDGES MAY BE CONSTRUCTED WITH COMPONENTS FROM OTHER MANUFACTURERS, PROVIDED THE MANUFACTURER'S INSTALLATION GUIDELINES ARE FOLLOWED.
6. DEVIATIONS FROM STANDARDS FOR COMPONENT INSTALLATIONS ARE PERMITTED WITH THE RESPECTIVE MANUFACTURER'S APPROVAL.
7. DEVIATIONS FROM ICE BRIDGE FOUNDATIONS REQUIRE ENGINEERING APPROVAL.

① ICE BRIDGE PIROD 852163
SCALE: N.T.S.



② RAYCAP
DC9-48-60-24-8C-EV
SCALE: N.T.S.



SSH-158
STACKABLE SNAP-IN HANGERS



HG-091241-158
GROMMETS

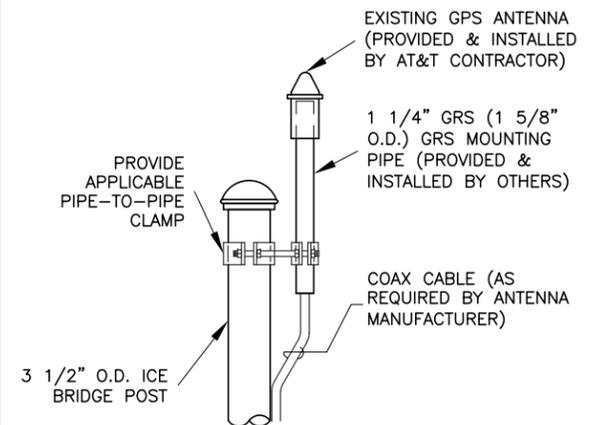
COMMSCOPE PART NUMBER:

SSH-158
STACKABLE SNAP-IN HANGERS
WITH HG-091241-158 GROMMETS

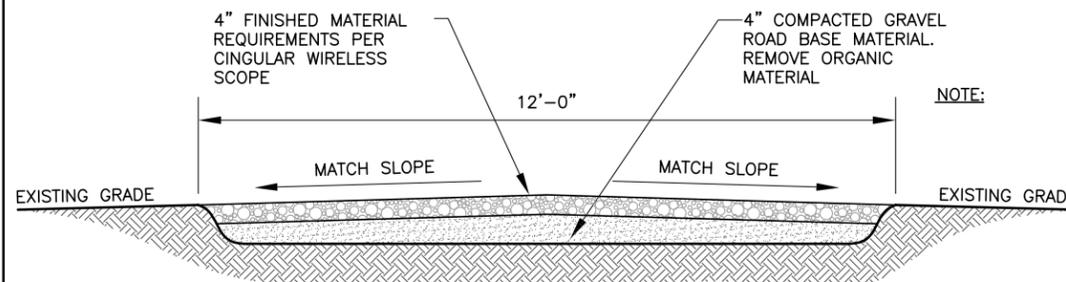
NOTES:

1. REFER TO JSA DOCUMENT FOR EXACT CABLE MODEL NUMBERS AND MANUFACTURER SPECIFICATIONS FOR PROPER GROMMETS AND HANGERS TO SUPPORT THE FIBER AND DC CABLE BUNDLES.
2. REFER TO STRUCTURAL ANALYSIS FOR EXACT CABLE ROUTING AND MOUNTING CONFIGURATION.

③ STACKABLE SNAP-IN HANGERS
SCALE: N.T.S.



④ GPS ANTENNA
MOUNTING DETAIL
SCALE: N.T.S.

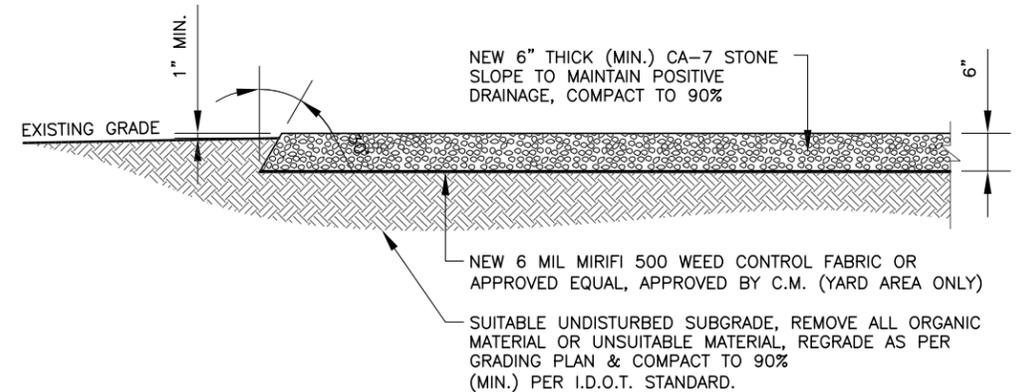


EARTH WORK SUBGRADE COMPACTION & SELECT GRANULAR FILL

- (A) CONTRACTOR SHALL BE RESPONSIBLE FOR CLEARING & GRUBBING THE CONSTRUCTION SITE AND ROADWAY AREAS. THE CONTRACTOR SHALL COMPLY WITH THE RECOMMENDATIONS CONTAINED WITHIN THE GEOTECHNICAL REPORT.
- (B) ALL SELECT GRANULAR FILL SHALL BE COMPACTED TO A 95% COMPACTION AT A MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557 OR WITHIN PLUS OR MINUS 3% OF OPTIMUM MOISTURE CONTENT.

⑤ TYP. ACCESS ROAD CROSS SECTION
SCALE: N.T.S.

WEED CONTROL FABRIC SHALL BE USED UNDER ALL AREAS OF THE YARD, AS NOTED ON SITE PLAN.



⑥ YARD PAVEMENT DETAIL
SCALE: N.T.S.

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APEX JOB No. NS22-055

VILLAGE OF LIBERTYVILLE
SITE NO. IL1110
810 GARFIELD AVE
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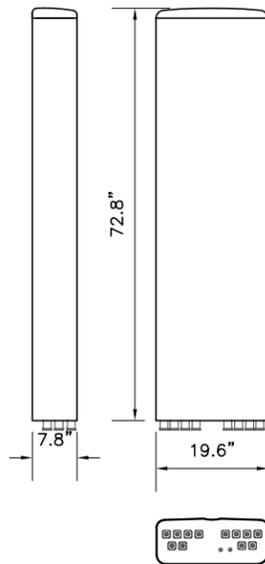
F	01/12/26	90% CDS - REVISED GREEN TREES	PD	PB	RG
E	12/05/25	90% CDS - REVISED PER COMMENTS	PD	PB	RG
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SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY
CONSTRUCTION DETAILS

DRAWING NUMBER		REV
IL1110-A06		F

COMMSCOPE ANTENNAS NNH4-65B-R6H4-V3

DIMENSIONS, HXWXD: 72.8"x19.6"x7.8"
 WIND SPEED, MAXIMUM: 150 mph (241.4 km/h)
 WEIGHT, WITHOUT MOUNTING: 78.705 LBS. (35.7 kg)
 CONNECTOR: FEMALE 8-PIN DIN
 MALE 8-PIN DIN
 CONNECTOR POSITION: BOTTOM
 MOUNTING POLE: 2.4"-4.5"
 MOUNTING BRACKET: BSAMNT-2F



1 COMMSCOPE - NNH4-65B-R6H4-V3
 SCALE: N.T.S.

AIR 6472 B77G B77M, WIDE BAND ANTENNA

DIMENSIONS, HXWXD: ~36.4"x16.2"x7.5"
 WEIGHT, WITHOUT MOUNTING: ~77.2 LBS. (35 kg)
 TRX BRANCHES: 64T64R
 ANTENNA ELEMENTS: 256
 OPERATION BAND: B77G (3450-3550 MHz)
 IBW: 530 MHz
 MAX 200 MHz
 TCBW: 400 W (CONFIGURABLE FOR TWO BANDS IN TOTAL, 4W/MHz PSD)
 OUTPUT POWER: 80.8 dBm (SAME EIRP AS FROM 480W WITH 192AE)
 EIRP: 2*25G
 -40 TO +55°C
 POWER SUPPLY: -48VDC 3-WIRES, SINGLE CONNECTOR
 POWER CONSUMPTION: ~700W, ETSI AVG.
 MULTI-LAYER MU MIMO: 16/8 DL/UL LAYER



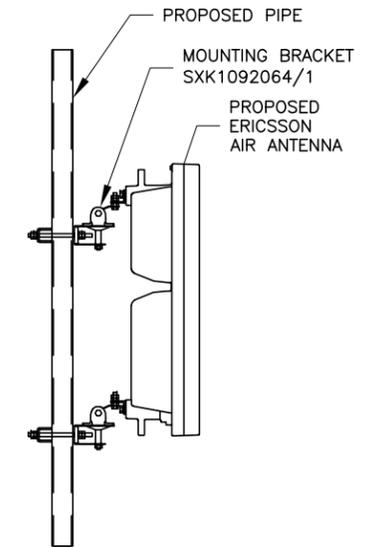
2 AIR 6472 B77G B77M ANTENNA
 SCALE: N.T.S.

RADIO 4490HP 44B5 44B12AC

SPECIFICATION:
 - 4 COMMON RF PORTS
 - B5: 4X60W
 - B12A: 4X60W
 - 480W TOTAL WITHOUT FAN (-40 TO +55 °C)
 - L (≥5MHZ), NR, ESS, NB-IOT (IB AND GB)
 - 2X 2.5/4.9/9.8/10.1/24.3 GBPS CPRI
 - ECPRI
 - FRONT AREA: 384MM X 444MM (15.1X17.5 INCHES)
 - DEPTH: 172MM (6.8 INCHES) -> 29.3 LITER
 - 31KG (68 LBS)
 - INTERNAL PIMC*
 - IMPROVED ENERGY EFFICIENCY
 - AISG TMA & RET SUPPORT VIA RS-485 OR RF CONNECTORS
 - 2 EXTERNAL ALARM
 - CONVECTIONAL COOLING
 - OPTIONAL FAN FOR INCREASED SITE FLEXIBILITY
 - IP 65, -40 TO +55 °C



3 ERICSSON RRUS 4490 B5/B12
 SCALE: N.T.S.



4 ANTENNA MOUNTING DETAIL



RADIO 4890HP 48B2/B25 48B66 M01

SPECIFICATION:
 - PORTS, 4T8R PER BAND
 - B2/B25: 4X60W
 - B66: 4X60W
 - UP TO 480W IN TOTAL WITHOUT FAN (-40 TO +55 °C)
 - L (≥5MHZ), NR, ESS, NB-IOT (IB AND GB)
 - 2X 2.5/4.9/9.8/10.1/24.3 GBPS CPRI
 - ECPRI
 - FRONT AREA: 384MM X 444MM (15.1X17.5 INCHES)
 - DEPTH: 176MM (6.9 INCHES) -> 30.0 LITER (ESTIMATE)
 - DUAL LAYER FILTER, ONE LAYER RX-ONLY
 - 31KG (68 LBS)
 - INTERNAL PIMC*
 - -48 VDC 3-WIRE OR 2-WIRE (SINGLE DC-CONNECTOR)
 - IMPROVED ENERGY EFFICIENCY
 - AISG TMA & RET SUPPORT VIA RS-485 OR RF CONNECTORS
 - 2 EXTERNAL ALARM
 - CONVECTIONAL COOLING
 - OPTIONAL FAN FOR INCREASED SITE FLEXIBILITY
 - IP 65, -40 TO +55 °C

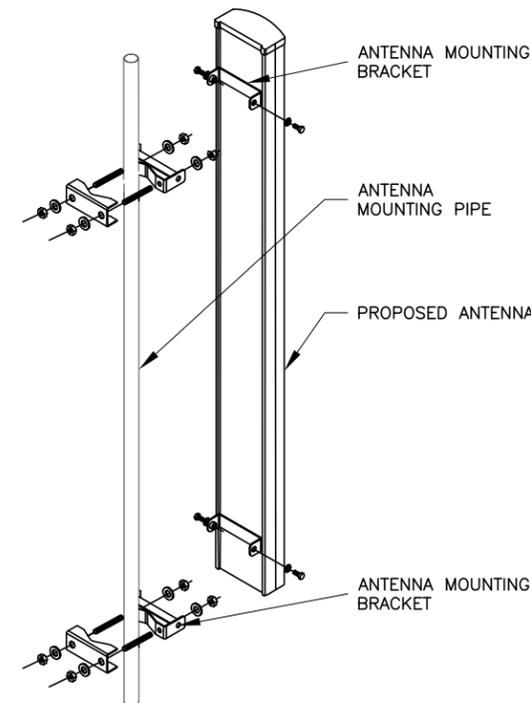
5 ERICSSON RRUS 4890 B25/B66
 SCALE: N.T.S.



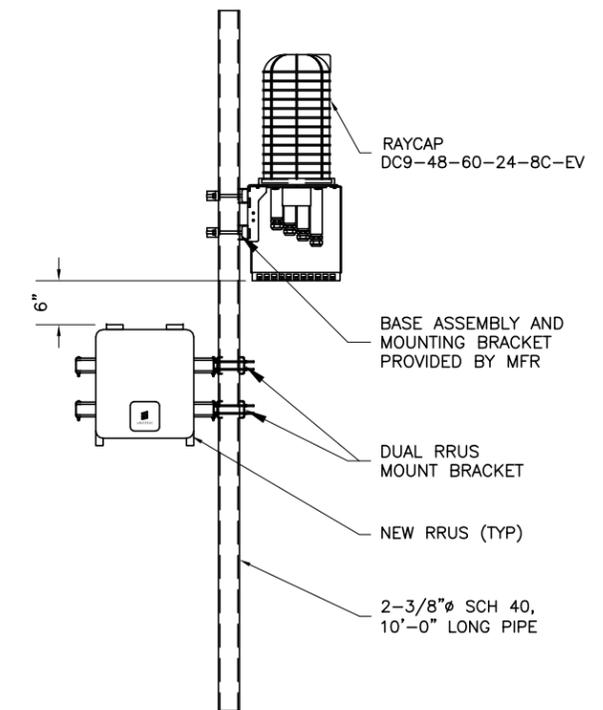
RADIO 4494 44B14 20B29

SPECIFICATION:
 - DUAL BAND 4T4R/2T
 - PA POWER:
 B14: 4x40W
 B29: 2x40W
 - B14: L5, L10, N5, N10, ESS10, NB-IoT (IB, GB & SA) WEGHT
 - B29: L3, L5, L10
 - CPRI 2x2.5/4.9/9.8/10.1/24.3 GBPS
 - eCPRI 2x10.3/25.8 GBPS
 - FRONT AREA: 384MM X 444MM (15.1X17.5 INCHES)
 - DEPTH: 143MM (5.6 INCHES); (24.0 LITER)
 - WEIGHT: 26KG
 - -48 VDC 3-WIRE OR 2-WIRE (SINGLE DC-CONNECTOR)
 - AISG TMA & RET SUPPORT VIA RS-485 OR RF CONNECTORS
 - 2 EXTERNAL ALARM
 - OPTIONAL FAN FOR INCREASED SITE FLEXIBILITY
 - IP 65, -40° C TO +55° C
 - POWER CONSUMPTION: 15% REDUCTION COMPARED TO 4478B14 + 2012 B29 FOR THE SAME CONFIGURATION.

6 ERICSSON RRUS 4494 B14/B29
 SCALE: N.T.S.



7 ANTENNA MOUNTING DETAIL
 SCALE: NTS



8 RRUS/ DC9 MOUNTING DETAIL
 SCALE: NTS

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D	06/19/25	90% CDS - REVISED PER NEW SCOPINGS	PD	PB	RG
C	06/14/23	90% CDS ISSUED FOR REVIEW	PD	PB	RG
B	09/08/22	REVISED LEASE EXHIBIT/ZONING DRAWING	PD	PB	RG
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY
 EQUIPMENT SPECIFICATIONS

DRAWING NUMBER	REV
IL1110-A07	F

SECTOR	ANTENNA NUMBER	POLARITY/PORT	ANTENNA MODEL NUMBER	ANTENNA VENDOR	TMA/ RRU MODEL NUMBER	AZIMUTH	ANTENNA CENTERLINE FROM GROUND	TOP OF ANTENNA FROM GROUND	ANTENNA TYPE	DC SURGE AND DISTRIBUTION	COAX/ FIBER/ DC POWER CABLES					
											COAX CABLE	OTHER CABLES	LENGTH			
A	A1	700	NNH4-65B-R6H4-V3	COMMSCOPE	RRUS 4490 B5/B12A	90°	113'-0"	116'-0"	LTE 700	(3) RAYCAP DC9-48-60-24-8C-EV	NONE	(9) #6AWG DC POWER CABLES (3) 24 PAIRS FIBER CABLES	±180'-0"			
		850							5G 850							
	A2	5G CBAND 5G DOD	AIR 6472 B77G B77M	ERICSSON	INTEGRATED WITHIN ANTENNA	90°	113'-0"	114'-6"	5G CBAND 5G DOD							
		A3	FNET 700	NNH4-65B-R6H4-V3	COMMSCOPE	RRUS 4494 B14/B29 RRUS 4890 B25/B66	90°	113'-0"	116'-0"					FNET 700		
1900 AWS	LTE 1900 LTE AWS															
A4																
B	B1	700	NNH4-65B-R6H4-V3	COMMSCOPE	RRUS 4490 B5/B12A	210°	113'-0"	116'-0"	LTE 700				(3) RAYCAP DC9-48-60-24-8C-EV	NONE	(9) #6AWG DC POWER CABLES (3) 24 PAIRS FIBER CABLES	±180'-0"
		850							5G 850							
	B2	5G CBAND 5G DOD	AIR 6472 B77G B77M	ERICSSON	INTEGRATED WITHIN ANTENNA	210°	113'-0"	114'-6"	5G CBAND 5G DOD							
		B3	FNET 700	NNH4-65B-R6H4-V3	COMMSCOPE	RRUS 4494 B14/B29 RRUS 4890 B25/B66	210°	113'-0"	116'-0"							
1900 AWS	LTE 1900 LTE AWS															
B4																
C	C1	700	NNH4-65B-R6H4-V3	COMMSCOPE	RRUS 4490 B5/B12A	330°	113'-0"	116'-0"	LTE 700	(3) RAYCAP DC9-48-60-24-8C-EV	NONE	(9) #6AWG DC POWER CABLES (3) 24 PAIRS FIBER CABLES				±180'-0"
		850							5G 850							
	C2	5G CBAND 5G DOD	AIR 6472 B77G B77M	ERICSSON	INTEGRATED WITHIN ANTENNA	330°	113'-0"	114'-6"	5G CBAND 5G DOD							
		C3	FNET 700	NNH4-65B-R6H4-V3	COMMSCOPE	RRUS 4494 B14/B29 RRUS 4890 B25/B66	330°	113'-0"	116'-0"							
1900 AWS	LTE 1900 LTE AWS															
C4																

THIS ANTENNA MATRIX TABLE IS PREPARED BASED ON SCOPING NOTES DATED 05/29/2025 REVISION # V1.0 GENERAL CONTRACTOR TO VERIFY AND INCORPORATE MOST RECENT VERSION OF RFDS PRIOR TO CONSTRUCTION.

1 ANTENNA MATRIX
NTS



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VILLAGE OF LIBERTYVILLE
SITE NO. IL1110
810 GARFIELD AVE
LIBERTYVILLE, IL 60048



F	01/12/26	90% CDS - REVISED GREEN TREES	PD	PB	RG
E	12/05/25	90% CDS - REVISED PER COMMENTS	PD	PB	RG
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SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY

ANTENNA MATRIX

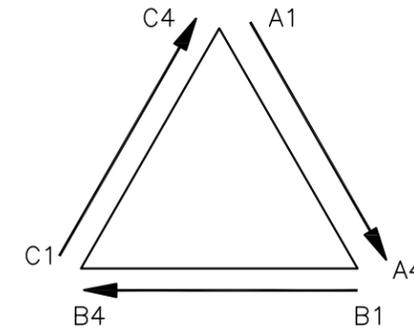
DRAWING NUMBER
IL1110-A08

REV
F

CABLE MARKING COLOR CONVENTION TABLE

ALPHA, A, X, #1	A1-1 +45	A1-2 -45	A2-1 +45	A2-2 -45	A3-1 +45	A3-2 -45	A4-1 +45	A4-2 -45
SECTOR ANTENNA PORT (+/-)	RED							
BAND (LOW/HI) *SEE NOTES 13 AND 15	WHITE	WHITE	ORANGE	ORANGE	BROWN	BROWN	VIOLET	VIOLET
BEAM (LEFT/RIGHT) *SEE NOTE 14 BELOW	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN
	ORANGE / VIOLET							
	SLATE / YELLOW							
BETA, B, Y, #2	B1-1 +45	B1-2 -45	B2-1 +45	B2-2 -45	B3-1 +45	B3-2 -45	B4-1 +45	B4-2 -45
SECTOR ANTENNA PORT	BLUE							
BAND (LOW/HI) *SEE NOTES 13 AND 15	WHITE	WHITE	ORANGE	ORANGE	BROWN	BROWN	VIOLET	VIOLET
BEAM (LEFT/RIGHT) *SEE NOTE 14 BELOW	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN
	ORANGE / VIOLET							
	SLATE / YELLOW							
GAMMA, C, Z, #3	C1-1 +45	C1-2 -45	C2-1 +45	C2-2 -45	C3-1 +45	C3-2 -45	C4-1 +45	C4-2 -45
SECTOR ANTENNA PORT	GREEN							
BAND (LOW/HI) *SEE NOTES 13 AND 15	WHITE	WHITE	ORANGE	ORANGE	BROWN	BROWN	VIOLET	VIOLET
BEAM (LEFT/RIGHT) *SEE NOTE 14 BELOW	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN
	ORANGE / VIOLET							
	SLATE / YELLOW							
DELTA, D, #4	D1-1 +45	D1-2 -45	D2-1 +45	D2-2 -45	D3-1 +45	D3-2 -45	D4-1 +45	D4-2 -45
SECTOR ANTENNA PORT	YELLOW							
BAND (LOW/HI) *SEE NOTES 13 AND 15	WHITE	WHITE	ORANGE	ORANGE	BROWN	BROWN	VIOLET	VIOLET
BEAM (LEFT/RIGHT) *SEE NOTE 14 BELOW	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN
	ORANGE / VIOLET							
	SLATE / YELLOW							

FIGURE 1: ANTENNA ORIENTATION



NOTE: ALPHA STARTS AT 0 (NORTH) OR FIRST AZIMUTH AFTER 0
 NOTE: BETA IS FIRST AZIMUTH AFTER ALPHA IN CLOCK-WISE DIRECTION
 NOTE: GAMMA IS FIRST AZIMUTH AFTER BETA IN CLOCK-WISE DIRECTION
 NOTE: DELTA IS FIRST AZIMUTH AFTER GAMMA IN CLOCK-WISE DIRECTION
 NOTE: AZIMUTH IS IDENTIFIED BY THE PANEL, NOT THE ELEMENTS INSIDE



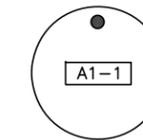
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Version 2.8 – Updated 5/28/2014

CABLE MARKING TAGS

TO PROVIDE ADDITIONAL IDENTIFICATION RF CABLES SHALL BE IDENTIFIED WITH A METAL TAG MADE OF STAINLESS STEEL OR BRASS AND STAMPED WITH THE SECTOR, ANTENNA POSITION, AND CABLE NUMBER. THE ID MARKING LOCATIONS SHOULD BE AS PER "CABLE MARKING LOCATIONS TABLE". THE TAG SHOULD BE ATTACHED WITH CORROSIVE PROOF WIRE OR WAX STRING AROUND THE CABLE. THE TAG SHOULD BE LABELED AS SHOWN BELOW IN FIGURE 2.

FIGURE 2: TAG DETAIL EXAMPLE



NOTE 1*: ALL COLOR CODE TAPE SHALL BE 3M-35 AND SHALL BE INSTALLED USING A MINIMUM OF (3) WRAPS OF TAPE.
 NOTE 2*: ALL COLOR BANDS INSTALLED AT THE TOWER TOP SHALL BE A MINIMUM OF 3" WIDE AND SHALL HAVE A MINIMUM OF 3/8" OF SPACING BETWEEN EACH COLOR.
 NOTE 3*: ALL COLOR BANDS INSTALLED AT OR NEAR THE GROUND MAY BE ONLY 3/8" WIDE. EACH TOP-JUMPER SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS.
 NOTE 4*: EACH MAIN COAX SHALL BE COLOR CODED WITH (1) SET OF 3" BANDS NEAR THE TOP-JUMPER CONNECTION AND WITH 3/8" COLOR BANDS JUST PRIOR TO ENTERING THE BTS OR TRANSMITTER BUILDING.
 NOTE 5*: ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/8" BANDS ON EACH END OF THE BOTTOM JUMPER.
 NOTE 6*: ALL COLOR CODES SHALL BE INSTALLED SO AS TO ALIGN NEATLY WITH ONE ANOTHER FROM SIDE-TO-SIDE.
 NOTE 7*: EACH COLOR BAND SHALL HAVE A MINIMUM OF (3) WRAPS AND SHALL BE NEATLY TRIMMED AND SMOOTHED OUT SO AS TO AVOID UNRAVELING.
 NOTE 8*: X-POLE ANTENNAS SHOULD USE "XX-1" FOR THE "+45" PORT, "XX-2" FOR THE "-45" PORT.
 NOTE 9*: COLORBAND #4 REFERS TO THE FREQUENCY BAND: ORANGE=850, VIOLET=1900. USED ON JUMPERS ONLY.
 NOTE 10*: RF FEEDLINE SHALL BE IDENTIFIED WITH A METAL TAG (STAINLESS OR BRASS) AND STAMPED WITH THE SECTOR, ANTENNA POSITION, AND CABLE NUMBER.
 NOTE 11*: ANTENNAS MUST BE IDENTIFIED, USING THE SECTOR LETTER AND ANTENNA NUMBER, WITH A BLACK MARKER PRIOR TO INSTALLATION.
 NOTE 12*: ONLY "SECTOR-SPLIT" ANTENNA COAX SHALL CONTAIN A 5TH COLORBAND TO INDICATE "LEFT" OR "RIGHT" BEAM.
 NOTE 13*: "SECTOR-SPLIT" ANTENNA COAX SHALL USE BLACK TAPE AS A PLACEHOLDER ON MAINLINE FOR COLORBAND #4 (FREQ BAND)
 NOTE 14*: "SECTOR-SPLIT" ANTENNAS SLATE FOR THE LEFT BEAM, AND YELLOW FOR THE RIGHT BEAM
 NOTE 15*: "LOW" BAND REFERS TO 700MHZ OR 850MHZ, "HI" BAND REFERS TO 1900MHZ OR 2100MHZ

CABLE MARKING LOCATIONS TABLE		
TAPE	TAG	LOCATIONS
X		EACH TOP JUMPER SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS.
X		EACH MAIN COAX SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS NEAR THE TOP-JUMPER CONNECTION AND WITH (1) SET OF 3/4" WIDE COLOR BANDS JUST PRIOR TO ENTERING THE BTS OR TRANSMITTER BUILDING.
	X	MARKING TAGS SHALL BE ATTACHED AT CABLE ENTRY PORT ON THE INTERIOR OF THE SHELTER
X		ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/4 " WIDE BANDS ON EACH END OF BOTTOM JUMPER.

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VILLAGE OF LIBERTYVILLE
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 810 GARFIELD AVE
 LIBERTYVILLE, IL 60048

NO.	DATE	REVISIONS	BY	CHK	APP'D
F	01/12/26	90% CDS - REVISED GREEN TREES	PD	PB	RG
E	12/05/25	90% CDS - REVISED PER COMMENTS	PD	PB	RG
D	06/19/25	90% CDS - REVISED PER NEW SCOPINGS	PD	PB	RG
C	06/14/23	90% CDS ISSUED FOR REVIEW	PD	PB	RG
B	09/08/22	REVISED LEASE EXHIBIT/ZONING DRAWING	PD	PB	RG

SCALE: AS SHOWN DESIGNED BY: DRAWN BY:

AT&T MOBILITY
 COAX COLOR CODING
 DRAWING NUMBER: IL1110-A09
 REV: F

MIDWEST FIBER-OPTIC JUMPER COLOR CODE STANDARD (Version 2.8 – Updated 5/28/2014)

SECTOR	TECHNOLOGY	BAND	RADIO NAME	COLOR CODE				NOTES
A	LTE	700	LTE-700-A1	RED	ORANGE	BROWN	VIOLET	
A	LTE	2100	LTE-2100-A2	RED	ORANGE	WHITE	VIOLET	
A	LTE	2100	LTE-2100-A3	RED	ORANGE	WHITE	BROWN	"A2" MODULE, SEE NOTE 1 BELOW
A	UMTS	850	UMTS-850-A4	RED	SLATE	VIOLET	VIOLET	
A	LTE	850	LTE-850-A4S	RED	ORANGE	VIOLET	YELLOW	"TECHNOLOGY-SPLIT"
A	UMTS	1900	UMTS-1900-A5	RED	SLATE	ORANGE	VIOLET	
A	LTE	1900	LTE-1900-A5S	RED	ORANGE	ORANGE	YELLOW	"TECHNOLOGY-SPLIT"
A	LTE	1900	LTE-1900-A6	RED	ORANGE	ORANGE	SLATE	"A2" MODULE, SEE NOTE 1&2 BELOW
A	LTE	700D/E	LTE-700DE-A7	RED	ORANGE	YELLOW	VIOLET	
A	LTE	WCS	LTE-WCS-A8	RED	ORANGE	SLATE	VIOLET	
A	LTE	850	LTE-850-A9	RED	ORANGE	VIOLET	VIOLET	
A	LTE	1900	LTE-1900-A10	RED	ORANGE	ORANGE	VIOLET	
A	LTE	1900	LTE-1900-A11	RED	ORANGE	ORANGE	BROWN	"A2" MODULE, SEE NOTE 1 BELOW
B	LTE	700	LTE-700-B1	BLUE	ORANGE	BROWN	VIOLET	
B	LTE	2100	LTE-2100-B2	BLUE	ORANGE	WHITE	VIOLET	
B	LTE	2100	LTE-2100-B3	BLUE	ORANGE	WHITE	BROWN	"A2" MODULE, SEE NOTE 1 BELOW
B	UMTS	850	UMTS-850-B4	BLUE	SLATE	VIOLET	VIOLET	
B	LTE	850	LTE-850-B4S	BLUE	ORANGE	VIOLET	YELLOW	"TECHNOLOGY-SPLIT"
B	UMTS	1900	UMTS-1900-B5	BLUE	SLATE	ORANGE	VIOLET	
B	LTE	1900	LTE-1900-B5S	BLUE	ORANGE	ORANGE	YELLOW	"TECHNOLOGY-SPLIT"
B	LTE	1900	LTE-1900-B6	BLUE	ORANGE	ORANGE	SLATE	"A2" MODULE, SEE NOTE 1&2 BELOW
B	LTE	700D/E	LTE-700DE-B7	BLUE	ORANGE	YELLOW	VIOLET	
B	LTE	WCS	LTE-WCS-B8	BLUE	ORANGE	SLATE	VIOLET	
B	LTE	850	LTE-850-B9	BLUE	ORANGE	VIOLET	VIOLET	
B	LTE	1900	LTE-1900-B10	BLUE	ORANGE	ORANGE	VIOLET	
B	LTE	1900	LTE-1900-B11	BLUE	ORANGE	ORANGE	BROWN	"A2" MODULE, SEE NOTE 1 BELOW
C	LTE	700	LTE-700-C1	GREEN	ORANGE	BROWN	VIOLET	
C	LTE	2100	LTE-2100-C2	GREEN	ORANGE	WHITE	VIOLET	
C	LTE	2100	LTE-2100-C3	GREEN	ORANGE	WHITE	BROWN	"A2" MODULE, SEE NOTE 1 BELOW
C	UMTS	850	UMTS-850-C4	GREEN	SLATE	VIOLET	VIOLET	
C	LTE	850	LTE-850-C4S	GREEN	ORANGE	VIOLET	YELLOW	"TECHNOLOGY-SPLIT"
C	UMTS	1900	UMTS-1900-C5	GREEN	SLATE	ORANGE	VIOLET	
C	LTE	1900	LTE-1900-C5S	GREEN	ORANGE	ORANGE	YELLOW	"TECHNOLOGY-SPLIT"
C	LTE	1900	LTE-1900-C6	GREEN	ORANGE	ORANGE	SLATE	"A2" MODULE, SEE NOTE 1&2 BELOW
C	LTE	700D/E	LTE-700DE-C7	GREEN	ORANGE	YELLOW	VIOLET	
C	LTE	WCS	LTE-WCS-C8	GREEN	ORANGE	SLATE	VIOLET	
C	LTE	850	LTE-850-C9	GREEN	ORANGE	VIOLET	VIOLET	
C	LTE	1900	LTE-1900-C10	GREEN	ORANGE	ORANGE	VIOLET	
C	LTE	1900	LTE-1900-C11	GREEN	ORANGE	ORANGE	BROWN	"A2" MODULE, SEE NOTE 1 BELOW

NOTE 1: A SECONDARY JUMPER TO A2 MODULES IS REQUIRED WHEN A CARRIER BANDWIDTH EXCEEDS 10x10MHZ. A2 COLOR CODE IS REQUIRED.
 NOTE 2: WHEN DEPLOYING 2 LTE CARRIERS WITHIN THE SAME BAND, F1 IS IDENTIFIED BY BROWN, F2 IS IDENTIFIED BY SLATE.

SECTORS	ALPHA	RED
	BETA	BLUE
	GAMMA	GREEN
TECH	UMTS	SLATE
	LTE	ORANGE
FREQBAND	700	BROWN
	850	VIOLET
	1900	ORANGE
	2100	WHITE
	WCS	YELLOW
	700DE	SLATE
PORT	MASTER	VIOLET
	SPLIT/SLAVE	YELLOW
	>10MHZ A2 MODULE F1	BROWN
	>10MHZ A2 MODULE F2	SLATE

NOTE: "RED", "BLUE", AND "GREEN" ARE NOT USED ON ANY OTHER COLOR BAND AND ALWAYS DE-NOTE THE 1st COLOR BAND

WISIL STANDARD FIBER-OPTIC DEPLOYMENT PLANS (Version 2.8 – Updated 5/28/2014)

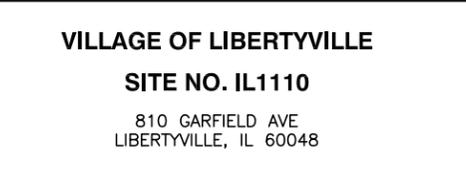
NOTE: ** DENOTES SPECIAL DEPLOYMENT WHERE RRH IS TECHNOLOGY SPLIT WITH UMTS AND LTE
 NOTE: RRH'S DICTICTED IN PARENTHESES AND ITALICS INDICATE ERICSSON "A2" MODULES

FIBER TRUNK #1

RRH NAME	SECTOR	TECHNOLOGY	BAND	FIBER TRAY ID	FIBER TRAY PORT	SQUID/TRUNK PAIR
LTE-700-A1	A	LTE	700	A	1	1
LTE-700-B1	B	LTE	700	A	2	2
LTE-700-C1	C	LTE	700	A	3	3
LTE-2100-A2 (LTE-2100-A3)	A	LTE	2100	A	4	4
LTE-2100-B2 (LTE-2100-B3)	B	LTE	2100	A	5	5
LTE-2100-C2 (LTE-2100-C3)	C	LTE	2100	A	6	6
LTE-1900-A10 (LTE-1900-A11)						
**LTE-1900-A5s (LTE-1900-A6)	A	LTE	1900	A	7	7
LTE-1900-B10 (LTE-1900-B11)						
**LTE-1900-B5s (LTE-1900-B6)	B	LTE	1900	A	8	8
LTE-1900-C10 (LTE-1900-C11)						
**LTE-1900-C5s (LTE-1900-C6)	C	LTE	1900	A	9	9
LTE-850-A9/LTE-850-A4s	A	LTE	850	A	10	10
LTE-850-B9/LTE-850-B4s	B	LTE	850	A	11	11
LTE-850-C9/LTE-850-C4s	C	LTE	850	A	12	12
SPARE				B	7	13
SPARE				B	8	14
SPARE				B	9	15
SPARE				B	10	16
SPARE				B	11	17
SPARE				B	12	18

FIBER TRUNK #2

RRH NAME	SECTOR	TECHNOLOGY	BAND	FIBER TRAY ID	FIBER TRAY PORT	SQUID/TRUNK PAIR
UMTS-850-A4	A	UMTS	850	C	1	1
UMTS-850-B4	B	UMTS	850	C	2	2
UMTS-850-C4	C	UMTS	850	C	3	3
UMTS-1900-A5	A	UMTS	1900	C	4	4
UMTS-1900-B5	B	UMTS	1900	C	5	5
UMTS-1900-C5	C	UMTS	1900	C	6	6
UMTS-1900-A6	A	UMTS	1900	C	7	7
UMTS-1900-B6	B	UMTS	1900	C	8	8
UMTS-1900-C6	C	UMTS	1900	C	9	9
LTE-700-DE-A7	A	LTE	700DE	C	10	10
LTE-700-DE-B7	B	LTE	700DE	C	11	11
LTE-700-DE-C7	C	LTE	700DE	C	12	12
LTE-WCS-A8	A	LTE	WCS	B	1	13
LTE-WCS-B8	B	LTE	WCS	B	2	14
LTE-WCS-C8	C	LTE	WCS	B	3	15
SPARE				B	4	16
SPARE				B	5	17
SPARE				B	6	18



F	01/12/26	90% CDS – REVISED GREEN TREES	PD	PB	RG
E	12/05/25	90% CDS – REVISED PER COMMENTS	PD	PB	RG
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AT&T MOBILITY	
FIBER-OPTIC JUMPER COLOR CODING	
DRAWING NUMBER	REV
IL1110-A10	F

SITE WORK GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.
3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
5. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
6. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
7. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
8. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
9. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
10. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED IN THE PROJECT SPECIFICATIONS.
11. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND IN ACCORDANCE WITH ASTM A36 UNLESS OTHERWISE NOTED.
2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". PAINTED SURFACES SHALL BE TOUCHED UP.
3. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"Ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
4. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
5. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
OWNER – AT&T
CONTRACTOR – MASTEC
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
OEM – ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR/OWNER.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.

ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO SCALE AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE OWNER.
8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING.
9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF CONTRACTOR/OWNER.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. PRIOR TO START OF CONSTRUCTION, SUBCONTRACTOR SHALL SURVEY THE CONDITION IN ALL AREAS WHERE NEW CONSTRUCTION WILL BE CARRIED OUT. ANY EXISTING DEFECTS DISCOVERED SHALL BE REPORTED IMMEDIATELY TO THE BUILDING OWNER AND PROJECT MANAGER.
13. SUBCONTRACTOR SHALL PROTECT ALL EXISTING ROOF INSTALLATIONS INCLUDING ALL MECHANICAL FASTENING THROUGHOUT ENTIRE CONSTRUCTION DURATION. REPAIR ALL DAMAGES AS REQUIRED.
14. SUBCONTRACTOR SHALL ENSURE THAT ALL ROOF DRAINS WILL NOT BE OBSTRUCTED THROUGHOUT THE ENTIRE CONSTRUCTION DURATION.
15. RE-CERTIFICATION OF EXISTING ROOF WARRANTIES IS PART OF THE WORKSCOPE OF THIS PROJECT. SUBCONTRACTOR SHALL VERIFY WITH BUILDING OWNER REGARDING VALIDITY OF EXISTING ROOF WARRANTIES AND WORK WITH EXISTING ROOF MANUFACTURER TO REACTIVATE ANY EXISTING WARRANTIES THAT WOULD OTHERWISE BE VOIDED BY NEW CONSTRUCTION.

CONCRETE AND REINFORCING STEEL NOTES:

- 1.0 ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
- 2.0 ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE.
- 3.0 REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
- 4.0 THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

CONCRETE CAST AGAINST EARTH.....3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 AND LARGER2 IN.
#5 AND SMALLER & WWF1 ½ IN.

CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
SLAB AND WALL3/4 IN.
BEAMS AND COLUMNS1 ½ IN.
- 5.0 A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- 6.0 INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL WHEN DRILLING HOLES IN CONCRETE. EXPANSION BOLTS SHALL BE PROVIDED BY HILTI OR APPROVED EQUAL.



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APEX JOB No. NS22-055

VILLAGE OF LIBERTYVILLE

SITE NO. IL1110

810 GARFIELD AVE
LIBERTYVILLE, IL 60048



F	01/12/26	90% CDS – REVISED GREEN TREES	PD	PB	RG
E	12/05/25	90% CDS – REVISED PER COMMENTS	PD	PB	RG
D	06/19/25	90% CDS – REVISED PER NEW SCOPINGS	PD	PB	RG
C	06/14/23	90% CDS ISSUED FOR REVIEW	PD	PB	RG
B	09/08/22	REVISED LEASE EXHIBIT/ZONING DRAWING	PD	PB	RG
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY

CONSTRUCTION NOTES

DRAWING NUMBER	REV
IL1110- A11	F

NOTICE



Beyond This Point you are entering a controlled area where RF emissions *may exceed* the FCC General Population Exposure Limits.

Follow all posted signs and site guidelines for working in a RF environment.



Ref: 47CFR 1.1307(b)

8" x 12"

CAUTION



Beyond This Point you are entering a controlled area where RF emissions *may exceed* the FCC Occupational Exposure Limits.

Obey all posted signs and site guidelines for working in a RF environment.



Ref: 47CFR 1.1307(b)

8" x 12"



12" x 12"

ALERTING SIGN
(FOR CELL SITE BATTERIES)



12" x 12"

ALERTING SIGN
(FOR DIESEL FUEL)



12" x 12"

ALERTING SIGN
(FOR PROPANE)

ALERTING SIGNS

WARNING!

DANGER DO NOT TOUCH TOWER!
SERIOUS "RF" BURN HAZARD!

MAINTAIN AN ADEQUATE CLEARANCE BETWEEN TOWER SUPPORTS AND GUY WIRES

FAILURE TO OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN A RADIO FREQUENCY ENVIRONMENT COULD RESULT IN SERIOUS INJURY. CONTACT CURRENT MAY EXCEED LIMITS PRESCRIBED IN ANSI/IEEE C95.1-1992 FOR CONTROLLED ENVIRONMENTS.



8" x 12"

ALERTING SIGN

PROPERTY OF AT&T



AUTHORIZED PERSONNEL ONLY

IN CASE OF EMERGENCY, OR PRIOR TO PERFORMING MAINTENANCE ON THIS SITE, CALL 800-638-2822 AND REFERENCE CELL SITE NUMBER _____

12" x 8"

INFO SIGN #4

NOTICE
GUIDELINES FOR WORKING IN RADIOFREQUENCY ENVIRONMENTS

- All personnel should have electromagnetic energy (EME) awareness training.
- All personnel entering this site must be authorized.
- Obey all posted signs.
- Assume all antennas are active.
- Before working on antennas, notify owners and disable appropriate transmitters.
- Maintain minimum 3 feet clearance from all antennas.
- Do not stop in front of antennas.
- Use personal RF monitors while working near antennas.
- Never operate transmitters without shields during normal operation.
- Do not operate base station antennas in equipment room.

INFO SIGN #5 12" x 8"

INFORMATION

AT&T operates telecommunications antennas at this location. Remain at least 3 feet away from any antenna and obey all posted signs.

Contact the owner(s) of the antenna(s) before working closer than 3 feet from the antenna.

Contact AT&T at _____ prior to performing any maintenance or repairs near AT&T antennas. This is Site # _____

Contact the management office if this door/hatch/gate is found unlocked.

8" x 12"

INFO SIGN #1

INFORMACION

En esta propiedad se ubican antenas de telecomunicaciones operadas por AT&T. Favor mantener una distancia de no menos de 3 pies y obedecer todos los avisos.

Comuníquese con el propietario o los propietarios de las antenas antes de trabajar o caminar a una distancia de menos de 3 pies de la antena.

Comuníquese con AT&T _____ antes de realizar cualquier mantenimiento o reparaciones cerca de la antena de AT&T.

Esta es la estación base número: _____

Favor comunicarse con la oficina de la administración del edificio si esta puerta o comporta se encuentra sin cuidado.

INFORMATION

ACTIVE ANTENNAS ARE MOUNTED

ON THE OUTSIDE OF THIS BUILDING

BEHIND THIS PANEL

ON THIS STRUCTURE

STAY BACK A MINIMUM OF 3 FEET FROM THESE ANTENNAS

Contact AT&T at _____ and follow their instructions prior to performing any maintenance or repairs closer than 3 feet from the antenna.

This is AT&T site # _____



8" x 12"

INFO SIGN #2

STAY BACK 3 FEET FROM ANTENNA

INFO SIGN #3

GENERAL SIGNAGE GUIDELINES

Structure Type	INFO SIGN #1	INFO SIGN #2	INFO SIGN #3	INFO SIGN #4	Striping	NOTICE SIGN	CAUTION SIGN
Towers							
Monopole/Monopine/Monopalm	entrance gates, shelter doors OR on the outdoor cabinets	climbing side of the Tower	On backside of Antennas	entrance gates, shelter doors OR on the outdoor cabinets			At the height of the first climbing step, min. 9ft above ground
SCE Towers/ Towers with high voltage	entrance gates, shelter doors OR on the outdoor cabinets	climbing side of the Tower	On backside of Antennas	entrance gates, shelter doors OR on the outdoor cabinets			At the height of the first climbing step, min. 9ft above ground
Light Poles / Flag Poles	entrance gates, shelter doors OR on the outdoor cabinets	on the pole, no less than 3ft below the Antenna and no less than 9ft above ground	On backside of Antennas	entrance gates, shelter doors OR on the outdoor cabinets			
Utility Wood Poles (JFA)	entrance gates, shelter doors OR on the outdoor cabinets	on the pole, no less than 3ft below the Antenna and no less than 9ft above ground	On backside of Antennas	entrance gates, shelter doors OR on the outdoor cabinets		If GP max value of MPE at antenna level is: 0-99%: Notice sign; over 99%: Caution sign at no less than 3ft below antenna and 9ft above ground	
Microcells mounted on non-JFA poles	entrance gates, shelter doors OR on the outdoor cabinets	on the pole, no less than 3ft below the Antenna and no less than 9ft above ground	On backside of Antennas	entrance gates, shelter doors OR on the outdoor cabinets		Notice or Caution sign at no less than 9ft above ground; only if the exposure exceeds 90% of the General Public exposure at 6ft above ground or at outside surface of adjacent buildings	
Roof Tops							
At all access points to the roof	X			X			
On Antennas	X		X	X			
Concealed Antennas	X	X		X			
antennas mounted facing outside the building	X	X		X			
antennas on support structure	X	X		X			
Roofview Graph:							
Radiation area is within 3ft from antenna	X	adjacent to each antenna		X			either Notice or Caution sign (based on Roofview results) at antennas/barrier
Radiation area is beyond 3ft from antenna	X	adjacent to each antenna		X	diagonal, yellow striping as to Roofview graph		
Church Steeples							
Access to steeple		adjacent to antennas if antennas are concealed	On backside of Antennas	Access to steeple			Caution sign at the antennas
Water Stations							
Access to ladder		adjacent to antennas if antennas are concealed	On backside of Antennas	Access to ladder			Caution sign beside Info sign #1, min. 9ft above ground

Notes for Rooftop sites:

- Either NOTICE or CAUTION signs need to be posted at each sector as close as possible to: the outer edge of the striped off area or the outer antennas of the sector.
- If Roofview show s: only blue = Notice Sign, blue and yellow = Caution Sign, only yellow = Caution Sign to be installed.
- Should the required striping area interfere with any structures or equipment (A/C, vents, roof hatch, doors, other antennas, dishes, etc.), please notify AT&T to modify the striping area, prior to starting the work

SIGNAGE GUIDELINES CHART

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APEX JOB No. NS22-055

VILLAGE OF LIBERTYVILLE
SITE NO. IL1110
810 GARFIELD AVE
LIBERTYVILLE, IL 60048

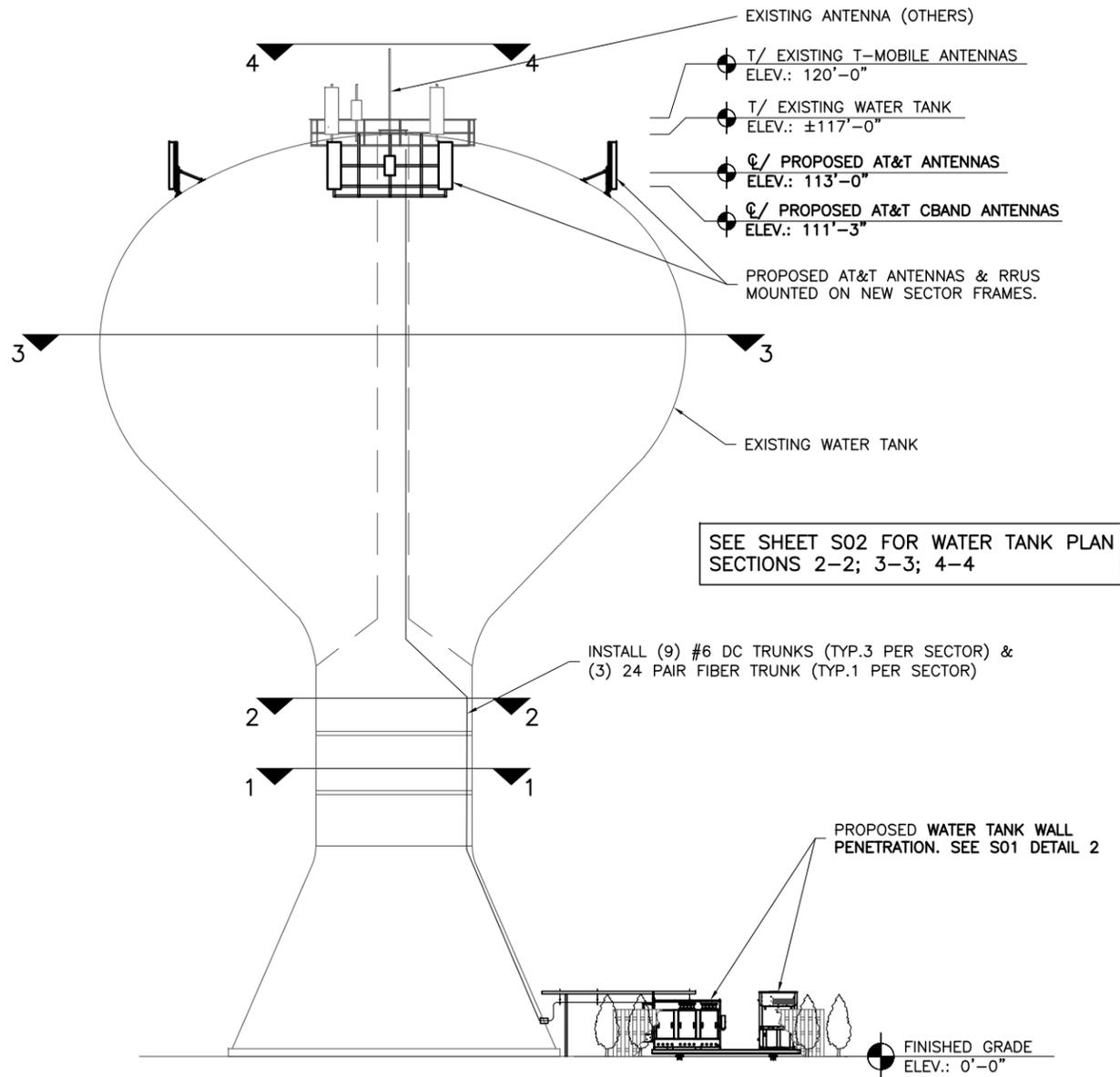
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E	12/05/25	90% CDS - REVISED PER COMMENTS	PD	PB	RG
D	06/19/25	90% CDS - REVISED PER NEW SCOPINGS	PD	PB	RG
C	06/14/23	90% CDS ISSUED FOR REVIEW	PD	PB	RG
B	09/08/22	REVISED LEASE EXHIBIT/ZONING DRAWING	PD	PB	RG
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY

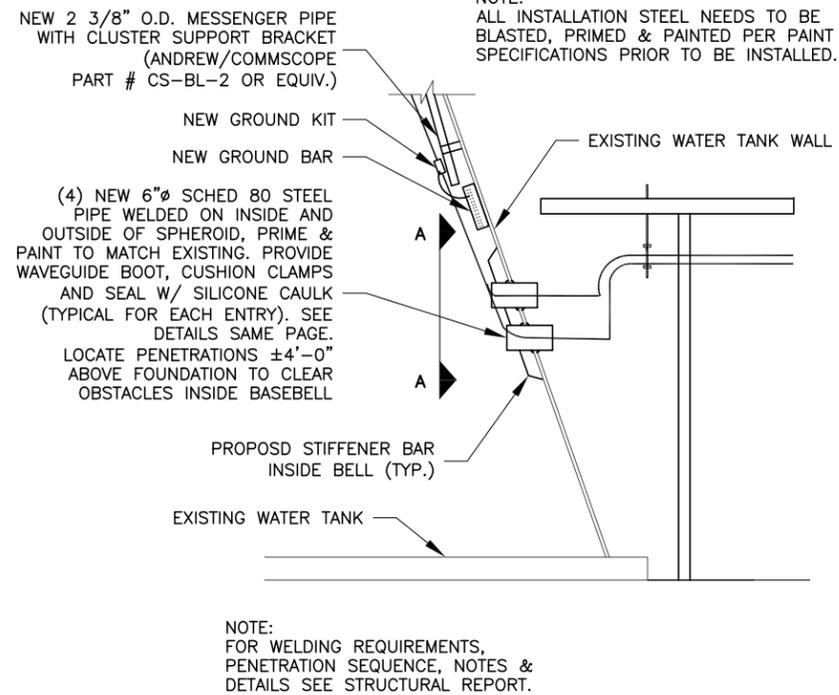
SITE SIGNAGE REQUIREMENTS

DRAWING NUMBER: IL1110- A12

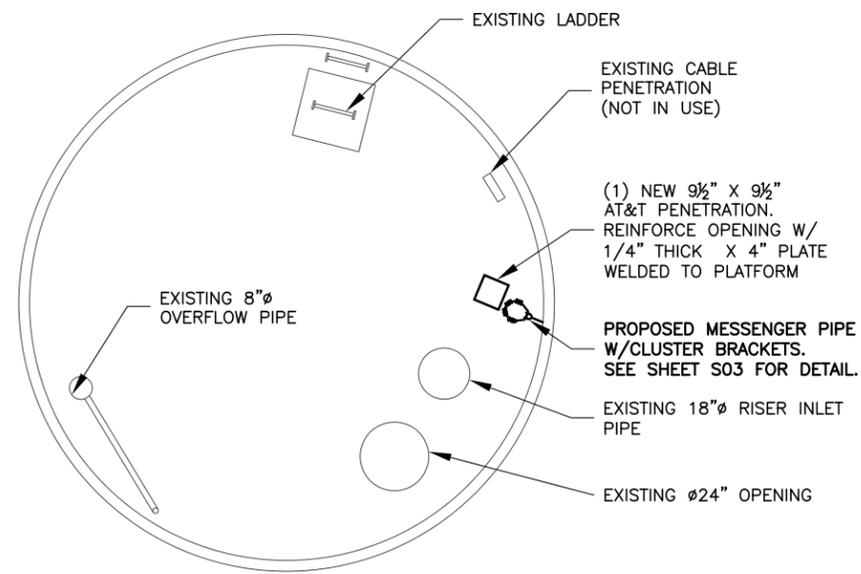
REV: F



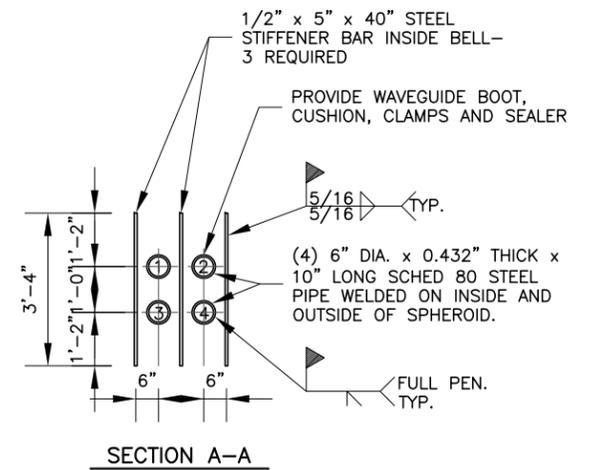
1 WATER TANK ELEVATION
SCALE: 3/64"=1'-0"



2 WATER TANK WALL PENETRATION DETAIL



3 SECTION 1-1
CONDENSATE PLATFORM



SEQUENCE: REDUCE TANK CAPACITY 50% OR MORE BEFORE CUTTING SHELL FOR PENETRATIONS WELD IN PLACE 1/2" X 5" BARS CUT HOLE
1. WELD IN PIPE NECK. CUT HOLE
2. WELD IN PIPE NECK. CUT HOLE
3. WELD IN PIPE NECK. REPEAT FOR HOLE 4

NOTE: BEFORE CUTTING SHELL FOR PENETRATIONS, INSPECT FOR LEAD PAINT AND TAKE APPROPRIATE SAFETY MEASURES

NOTE: CONTRACTOR SHALL SPOT REPAINT TO REPAIR INTERIOR AND EXTERIOR COATINGS DAMAGED AS A RESULT OF THE PROPOSED WORK. DISINFECT TANK AS REQUIRED IN ACCORDANCE WITH AWWA C652.

NOTE: AFTER CABLE INSTALLATION ALL COUPLINGS SHALL BE SEALED WITH A WEATHERPROOF FOAM SEALER



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APEX JOB No. NS22-055

VILLAGE OF LIBERTYVILLE
SITE NO. IL1110
810 GARFIELD AVE
LIBERTYVILLE, IL 60048



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B	09/08/22	REVISED LEASE EXHIBIT/ZONING DRAWING	PD	PB	RG
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY	
TOWER ELEVATION & DETAILS	
DRAWING NUMBER	REV
IL1110- S01	F

6

5

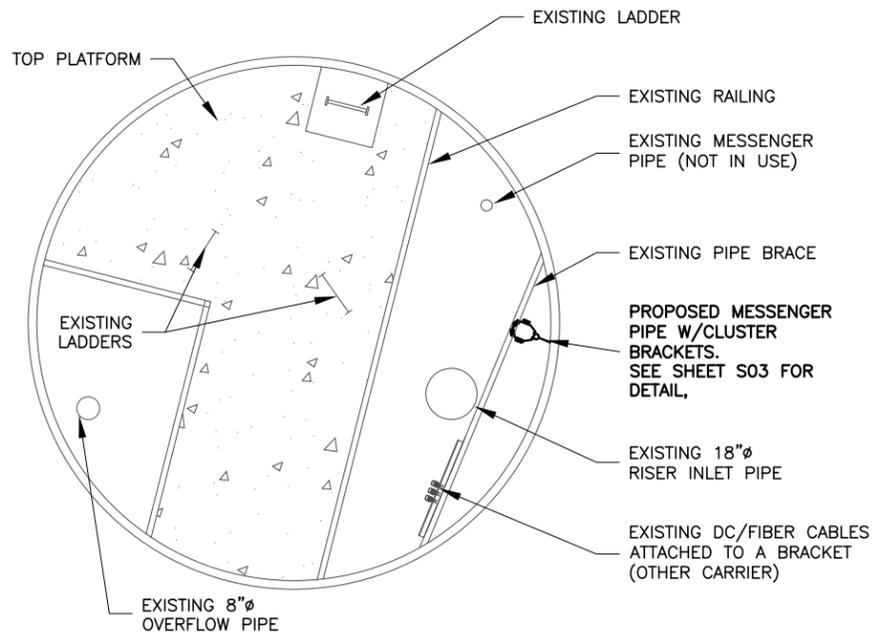
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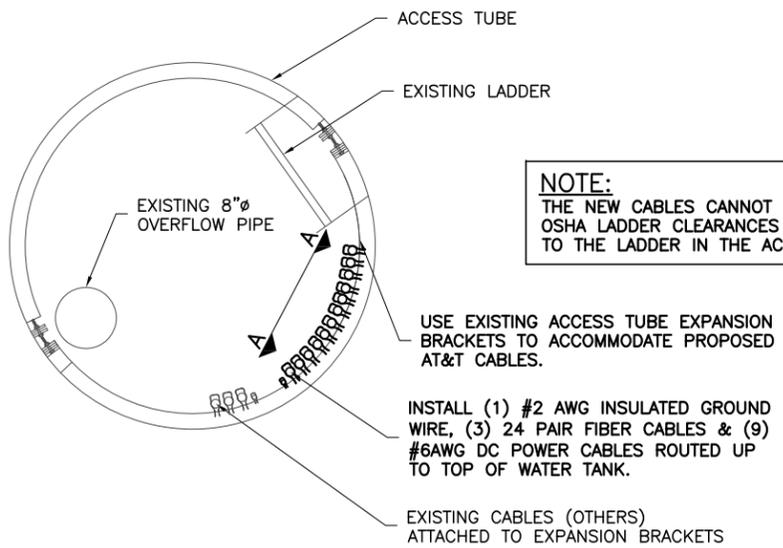
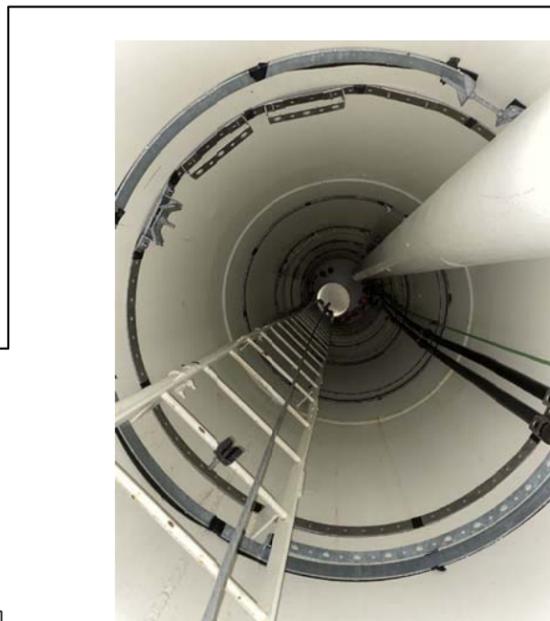
2

1

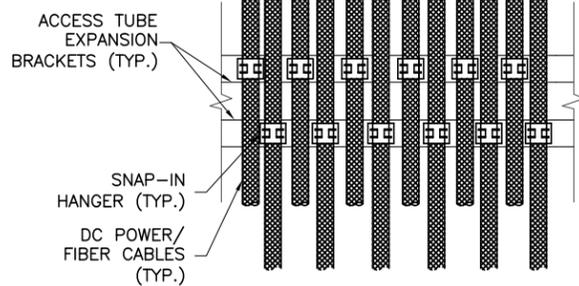
11 x 17" B SIZE



2 SECTION 2-2
TOP PLATFORM



NOTE:
THE NEW CABLES CANNOT INTERFERE WITH OSHA LADDER CLEARANCES OR BE ATTACH TO THE LADDER IN THE ACCESS TUBE.

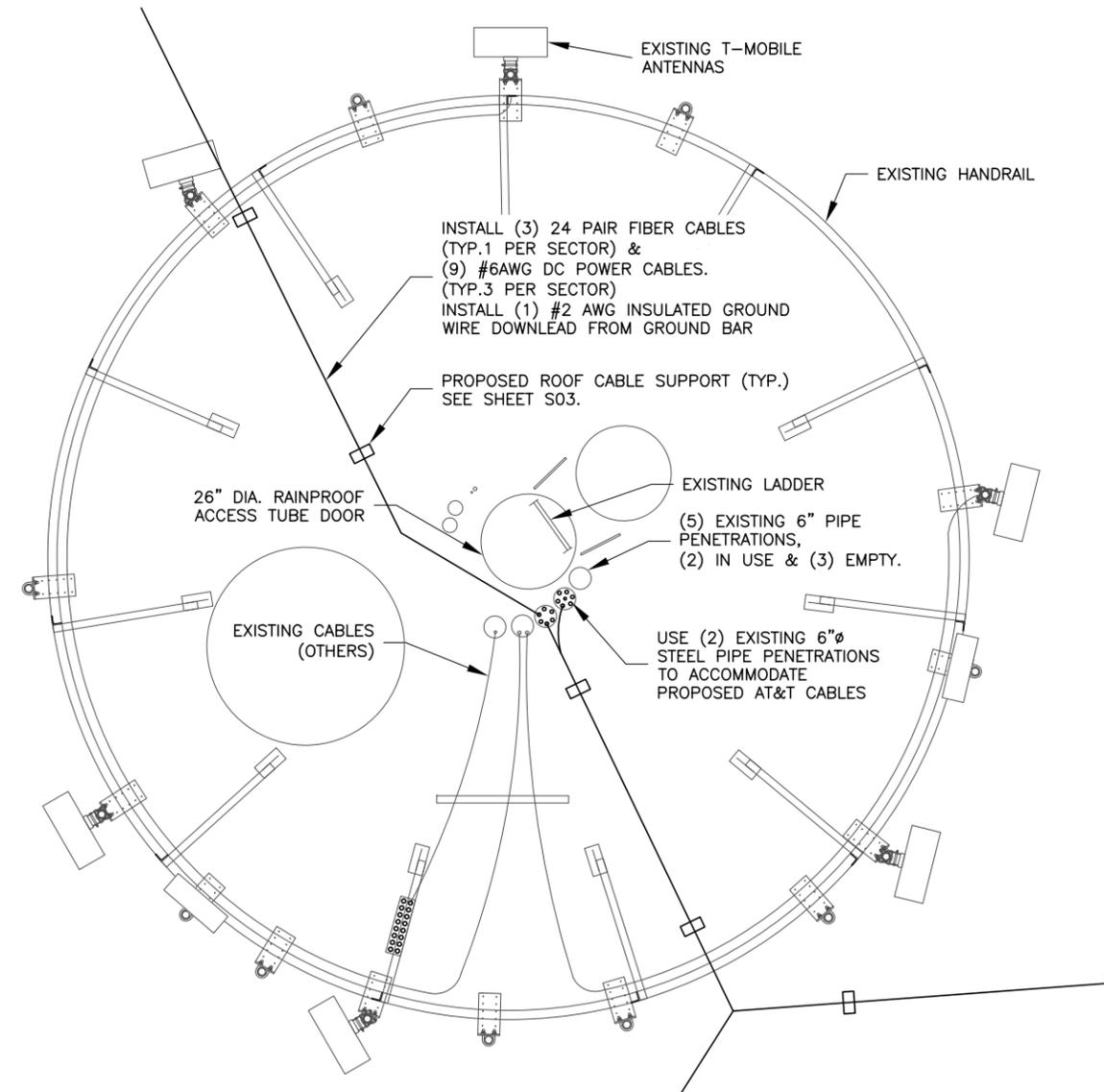


VIEW A-A

3 SECTION 3-3
COAX CABLE SUPPORT @ ACCESS TUBE



NOTE:
GC TO SEAL PROPERLY EXISTING PENETRATIONS ON ROOF. ADD NEW RUBBER BOOT ASSEMBLIES ON THE EXTERIOR AND DRY INTERIOR ENDS. IF THERE ARE NO RUBBER BOOTS THAT FIT, THE PIPES NEED TO BE SEALED TO A DEPTH OF 2" WITH WEATHER RESISTANT CLEAR SILICONE AULK (ON BOTH ENDS).



4 SECTION 4-4
WATER TOWER ROOFTOP PENETRATIONS

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APEX JOB No. NS22-055

VILLAGE OF LIBERTYVILLE
SITE NO. IL1110
810 GARFIELD AVE
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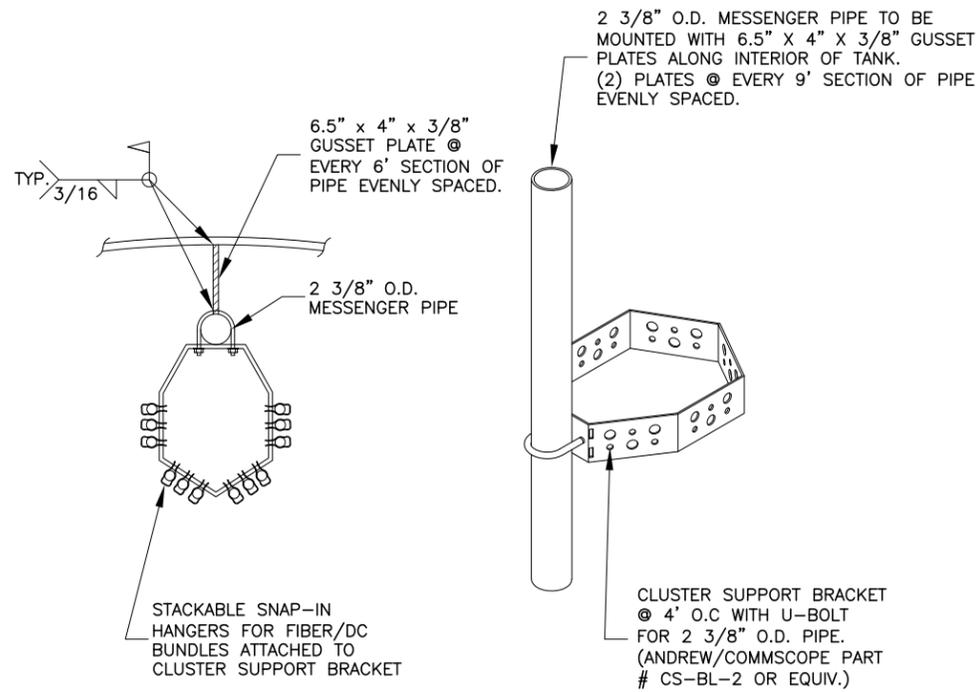
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B	09/08/22	REVISED LEASE EXHIBIT/ZONING DRAWING	PD	PB	RG
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY
WATER TANK SECTIONS

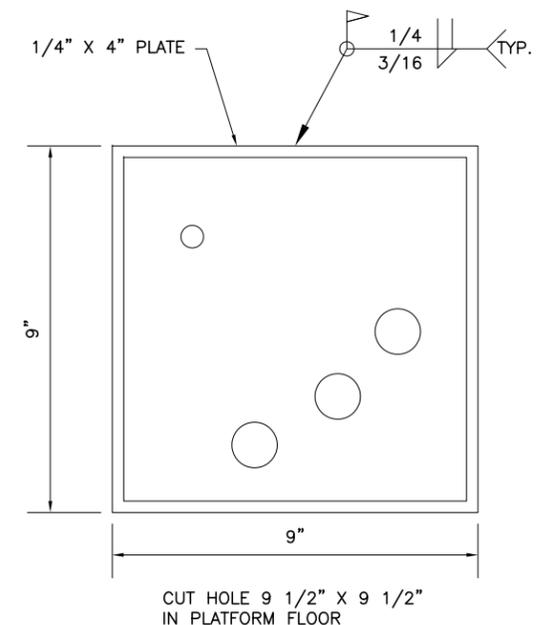
DRAWING NUMBER
IL1110-S02

REV
F

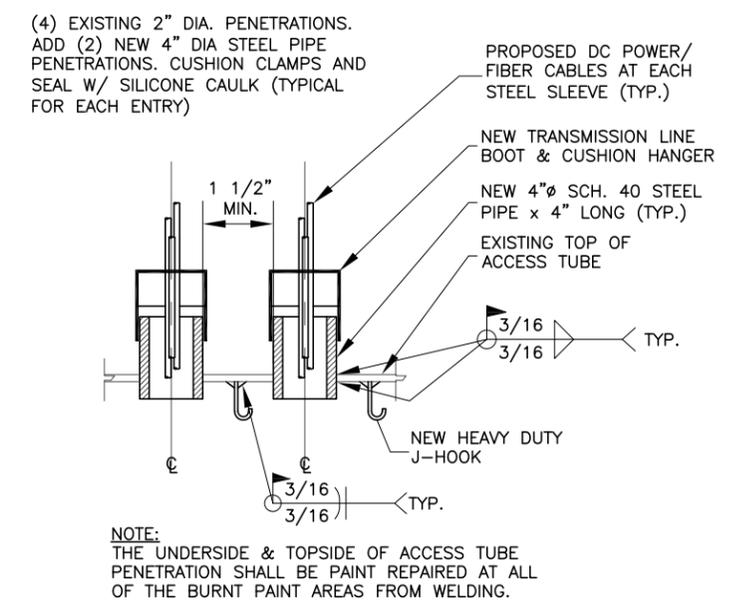
11 x 17" B SIZE



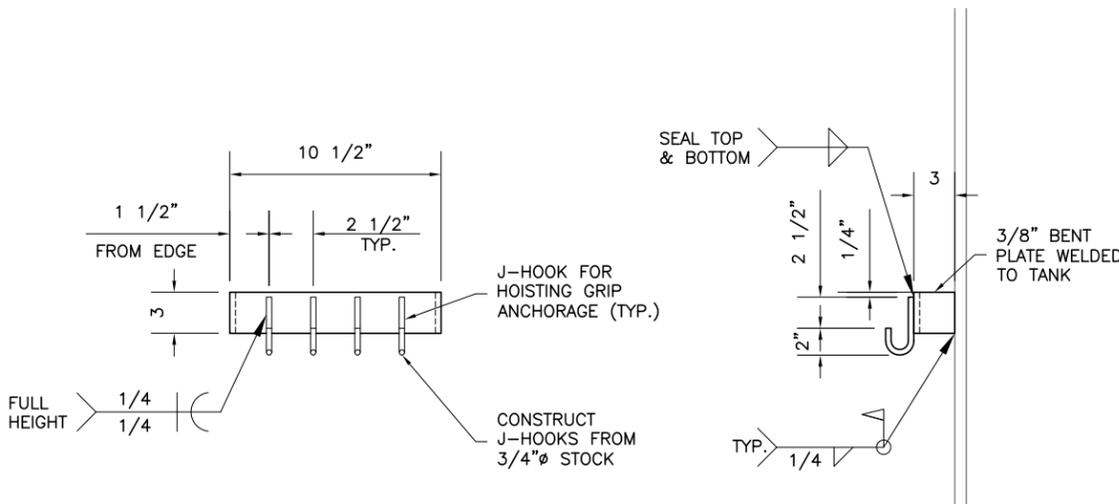
1 CLUSTER BRACKET DETAIL
NOT TO SCALE



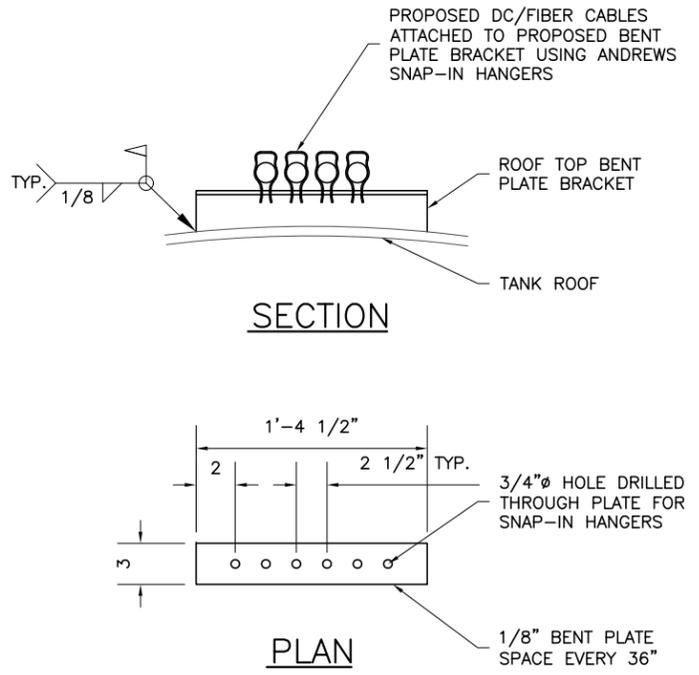
2 PLATFORM PENETRATION
SCALE: N.T.S.



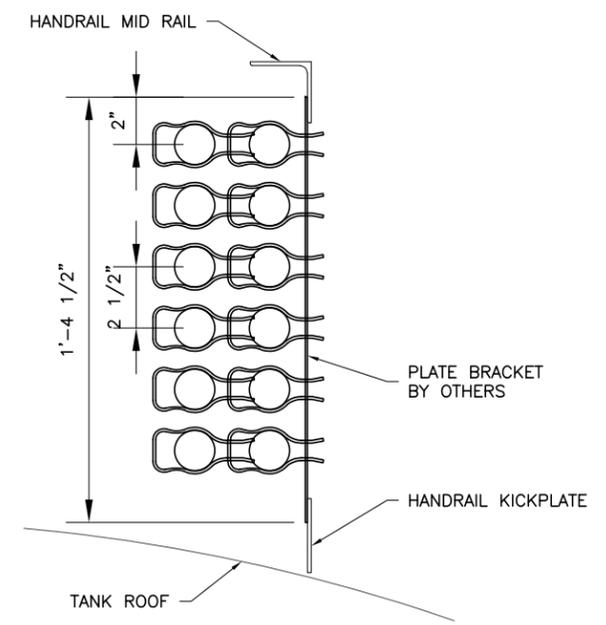
5 TOP OF ACCESS TUBE PENETRATION DETAILS



4 J-HOOK DETAIL
SCALE: N.T.S.



5 ROOF COAX SUPPORT
SCALE: N.T.S.



6 COAX SUPPORT AT HANDRAIL ON ROOF
SCALE: N.T.S.

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SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY	
WATER TANK DETAILS	
DRAWING NUMBER	REV
IL1110-S03	F

GENERAL NOTES

OBSERVATIONS:

1. THE ORIGINAL TANK PAINT SYSTEM MAY CONTAIN LEAD OR OTHER HEAVY METALS. THE PAINT SYSTEM SHOULD BE CHECKED AS AN ENVIRONMENTAL PRECAUTION AND DUST CONTROL MEASURES TAKEN IF NECESSARY FOR THE PROTECTION OF WORKERS.
2. ON NEWER TANKS, CORROSION OF THE TANK IS GENERALLY NOT A PROBLEM. POORLY MAINTAINED TANKS HAVE BEEN FOUND TO BE SEVERELY CORRODED AFTER 25 YEARS OF SERVICE. THE TOP OF THE ACCESS TUBE, THE CONDENSATE CEILING AREA AND THE ANCHOR BOLTS ARE USUAL AREAS OF CORROSION CONCERN.

HEALTH AND SAFETY

1. PRECAUTIONS CONCERNING RADIO FREQUENCY EXPOSURE OF PERSONNEL SHOULD BE CONSIDERED. PRECAUTIONS SHOULD BE TAKEN TO PREVENT CONTAMINATION OF THE STORED WATER DURING THE INSTALLATION AND MAINTENANCE OF ANTENNA AND RELATED EQUIPMENT. ACCESS TO THE TANK INTERIOR SHOULD NOT BE PERMITTED DURING INSTALLATION AND MAINTENANCE OF ANTENNAS AND RELATED EQUIPMENT UNLESS PROPER DISINFECTION AND SAFETY PROCEDURES ARE FOLLOWED.
2. THE COATING SYSTEM ON EXISTING TANKS SHOULD BE CHECKED FOR HAZARDOUS METALS SUCH AS LEAD. WHERE HAZARDOUS METALS ARE FOUND, THE ENVIRONMENT, STORED WATER, AND WORKERS SHOULD BE PROTECTED FROM CONTAMINATION DURING INSTALLATION AND MAINTENANCE OF ANTENNAS AND RELATED EQUIPMENT.
3. ACCESS TO ANTENNAS AND RELATED EQUIPMENT SHOULD COMPLY WITH OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION (OSHA) REGULATIONS. THIS MAY REQUIRE A SAFETY RAIL AROUND THE INSTALLATION, ANCHOR POINTS ON THE TANK ROOF FOR PERSONNEL TIE-OFF, LADDERS, OR OTHER FALL-PREVENTION DEVICES.
4. ANTENNA CABLES SHOULD BE SUPPORTED AT REGULAR INTERVALS (ABOUT 4 FT [1.2 M]) ON CENTER) IN EXPOSED LOCATIONS. ANTENNAS AND RELATED EQUIPMENT SHOULD NOT INTERFERE WITH OSHA-DEFINED ACCESS. FOR INSTANCE, CABLES SHOULD NOT BE ATTACHED TO LADDERS OR OBSTRUCT MANHOLES AND PLATFORMS. CABLE LADDERS OR OTHER COMMERCIALY AVAILABLE CABLE SUPPORT SYSTEMS SHOULD BE USED.
5. WHERE SPACE IS LIMITED, SUCH AS IN SMALL-DIAMETER ACCESS TUBES, CABLES SHOULD BE FITTED TO THE ACCESS TUBE WALL TO MAXIMIZE CLEARANCE.
6. CONSIDERATION SHOULD BE GIVEN TO PROVIDING ADDITIONAL PAINT SCAFFOLD SUPPORTS IF THE ANTENNA INSTALLATION RENDERS THE EXISTING SYSTEM UNUSABLE.

GENERAL WELDING:

1. ALL WELDING SHALL BE PERFORMED BY A CERTIFIED WELDER.
2. COMPLY WITH THE AWS D1.1 STRUCTURAL WELDING CODE, ANSI/AWWA D100-11 (LATEST EDITION THEREOF), "AWWA STANDARD FOR WELDED STEEL TANKS FOR WATER STORAGE" AND FEDERAL, STATE, AND LOCAL CODES, DURING CONSTRUCTION DESIGN AND FABRICATION.
3. USE ASTM A-36 CARBON STEEL FOR ALL STRUCTURAL STEEL; USE A-307 BOLTS UNLESS OTHERWISE SPECIFIED.
4. FIELD FIT UP PROBLEMS OR CHANGES TO THE PLAN SHEETS ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
5. WELDING SHOULD BE IN ACCORDANCE WITH ANSI/AWWA D100 SEC. 8, WELDING; SEC. 10, ERECTION; AND SEC. 11, INSPECTION AND TESTING.
6. WELDS SHOULD BE MADE WITH E7018 ELECTRODES OR OTHER LOW-HYDROGEN WELDING PROCESS AND SHOULD BE FREE OF BURRS AND UNDERCUTS. WELDS SHOULD MEET THE REQUIREMENTS OF ANSI/AWWA D100, SEC. 11.
7. NO WELDING SHOULD BE PERFORMED WHEN THE AMBIENT TEMPERATURE IS BELOW 32°F (0°C) UNLESS THE COLD WEATHER WELDING REQUIREMENTS OF ANSI/AWWA D100, SEC. 10 ARE FOLLOWED.
8. WELDED ATTACHMENTS TO EXTERIOR SURFACES AND INTERIOR SURFACES EXPOSED TO CONDENSATION SHOULD BE SEAL WELDED TO PREVENT RUST STREAKING.
9. PENETRATIONS SHOULD NOT INTERSECT WELD SEAMS. PENETRATIONS SHOULD CLEAR EXISTING WELD SEAMS BY AT LEAST 6 IN. (152 MM). IF THIS CLEARANCE IS NOT POSSIBLE, AN INSPECTION SHOULD BE MADE OF ADJACENT WELD SEAMS THAT MAY BE AFFECTED BY LOCAL WELDING.
10. WELDING TO THE TANK OR ACCESS TUBE SHOULD NOT BE PERFORMED WITH WATER DIRECTLY OPPOSITE THE WELD. THE WATER LEVEL SHOULD BE LOWERED AT LEAST 2 FT (0.6 M) BELOW THE POINT OF WELDING TO AVOID WELDING PROBLEMS.
11. WELDING ON THE EXTERIOR MAY DAMAGE THE INTERIOR COATING OPPOSITE THE WELD. DAMAGE TO THE INTERIOR COATING SYSTEM SHOULD BE REPAIRED DURING INSTALLATION, OR WHEN THE TANK IS TAKEN OUT OF SERVICE. DAMAGE TO THE EXTERIOR COATING SYSTEM SHOULD BE REPAIRED AFTER COMPLETION OF THE ANTENNA INSTALLATION AND SHOULD BE COMPATIBLE WITH THE EXISTING COATING SYSTEM. IT IS RECOMMENDED THAT A ONE-YEAR ANNIVERSARY INSPECTION BE MADE TO EVALUATE THE PERFORMANCE OF THE COATING REPAIRS. ANSI/AWWA D102 SHOULD BE CONSULTED FOR COATING REQUIREMENTS.
12. GALVANIZED COMPONENTS SHOULD NOT BE WELDED DIRECTLY TO THE TANK OR SUPPORT STRUCTURE. GALVANIZED SURFACES MUST BE GROUND FREE OF GALVANIZING BEFORE WELDING.

SURFACE PREPARATION (EXTERIOR & DRY INTERIOR):

1. ABRASIVE BLAST CLEAN ALL NEW STEEL COMPONENTS TO AN SSPC-SP6 "COMMERCIAL BLAST CLEANING" CONDITION PRIOR TO APPLICATION OF PRIMER COAT.
2. AFTER WELDING OR CUTTING, CLEAN ALL DAMAGED SURFACES IN ACCORDANCE WITH SSPC-SP3 "POWER TOOL CLEANING" CONDITION PRIOR TO APPLICATION OF PRIME COAT.

GENERAL PAINTING INSTRUCTIONS:

1. SHOP PAINTING:
 ABRASIVE BLAST CLEAN ALL NEW STEEL TO COMMERCIAL GRADE (SSPC-SP6) CONDITION AND APPLY A THREE COAT EPOXY/URETHANE SYSTEM AS FOLLOWS:

COAT	TNEMEC SERIES	MINIMUM DFT	MAXIMUM DFT
PRIMER	27	2.0	3.0
INTERMEDIATE	27	2.0	3.0
TOP COAT*	1074	2.0	3.0

2. EDGES TO BE WELDED IN THE FIELD SHALL NOT BE COATED (LEAVE A MINIMUM OF TWO INCHES BARE METAL).

3. FIELD PAINTING:
 EXTERIOR-SOLVENT CLEAN, SPOT POWER TOOL CLEAN ALL ABRADED AND WELDED AREAS TO A SSPC-SP11 GRAY METAL CONDITION AND SPOT COAT IN ACCORDANCE WITH COATINGS AS SPECIFIED ABOVE.

DRY INTERIOR-SPOT POWER TOOL CLEAN ALL AREAS OF BURNED COATING TO A SSPC-SP11 GRAY METAL CONDITION AND APPLY A TWO COAT EPOXY POLYAMIDE SYSTEM AS FOLLOWS:

COAT	TNEMEC SERIES	MINIMUM DFT	MAXIMUM DFT
PRIMER	FC20	3.0	5.0
TOP COAT*	FC20	3.0	5.0

WET INTERIOR-SPOT POWER TOOL CLEAN ALL AREAS OF BURNED COATING TO A SSPC-SP11 GRAY METAL CONDITION AND COAT IN ACCORDANCE WITH COATINGS AS SPECIFIED BELOW:

COAT	RAVEN SERIES	MINIMUM DFT	MAXIMUM DFT
PRIMER	AQUATAPOXY	3.0	5.0
TOP COAT	AQUATAPOXY	3.0	5.0
TOTAL		6.0	10.0

4. PREPARATION OF GALVANIZED MATERIAL:
 APPLY ONE COAT OF CLEAN 'N' ETCH AS PER MANUFACTURER'S RECOMMENDATIONS AND COAT IN ACCORDANCE WITH COATINGS AS SPECIFIED BELOW:

COAT	TNEMEC SERIES	MINIMUM DFT	MAXIMUM DFT
PRIMER	66 HI-BUILD EPOXOLINE	2.0	3.0
TOP COAT*	1074 ENDURA-SHIELD	2.0	3.0
TOTAL		4.0	6.0

5. PREPARATION OF ALL MISCELLANEOUS ANTENNA EQUIPMENT:
 (ANTENNAS, COAX, MOUNTING BRACKETS)

COAT	TNEMEC SERIES	MINIMUM DFT	MAXIMUM DFT
PRIMER	135 CHEMBUILD EPOXY	3.0	4.0
TOP COAT*	1074 ENDURA-SHIELD	2.0	3.0
TOTAL		5.0	7.0

6. APPLY ALL COATINGS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

*TOP COAT COLOR TO MATCH EXISTING COLOR. (SEE TANK OWNER FOR RECORDS).

COLD WEATHER INSTRUCTIONS -- WEATHER AND TEMPERATURE CONDITIONS

WELDING SHALL NOT BE PERFORMED WHEN THE SURFACES OF THE PARTS TO BE WELDED ARE WET FROM RAIN, SNOW, OR ICE; WHEN RAIN OR SNOW IS FALLING ON SUCH SURFACES; OR DURING PERIODS OF HIGH WINDS, UNLESS THE WELDER OR WELDING OPERATOR AND THE WORK ARE PROPERLY PROTECTED. SEE SEC. 10.3 FOR PREHEAT REQUIREMENTS AND SEC. 10.4 FOR LOW-HYDROGEN REQUIREMENTS.



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APEX JOB No. NS22-055

VILLAGE OF LIBERTYVILLE

SITE NO. IL1110

810 GARFIELD AVE
LIBERTYVILLE, IL 60048



F	01/12/26	90% CDS -- REVISED GREEN TREES	PD	PB	RG
E	12/05/25	90% CDS -- REVISED PER COMMENTS	PD	PB	RG
D	06/19/25	90% CDS -- REVISED PER NEW SCOPINGS	PD	PB	RG
C	06/14/23	90% CDS ISSUED FOR REVIEW	PD	PB	RG
B	09/08/22	REVISED LEASE EXHIBIT/ZONING DRAWING	PD	PB	RG
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY

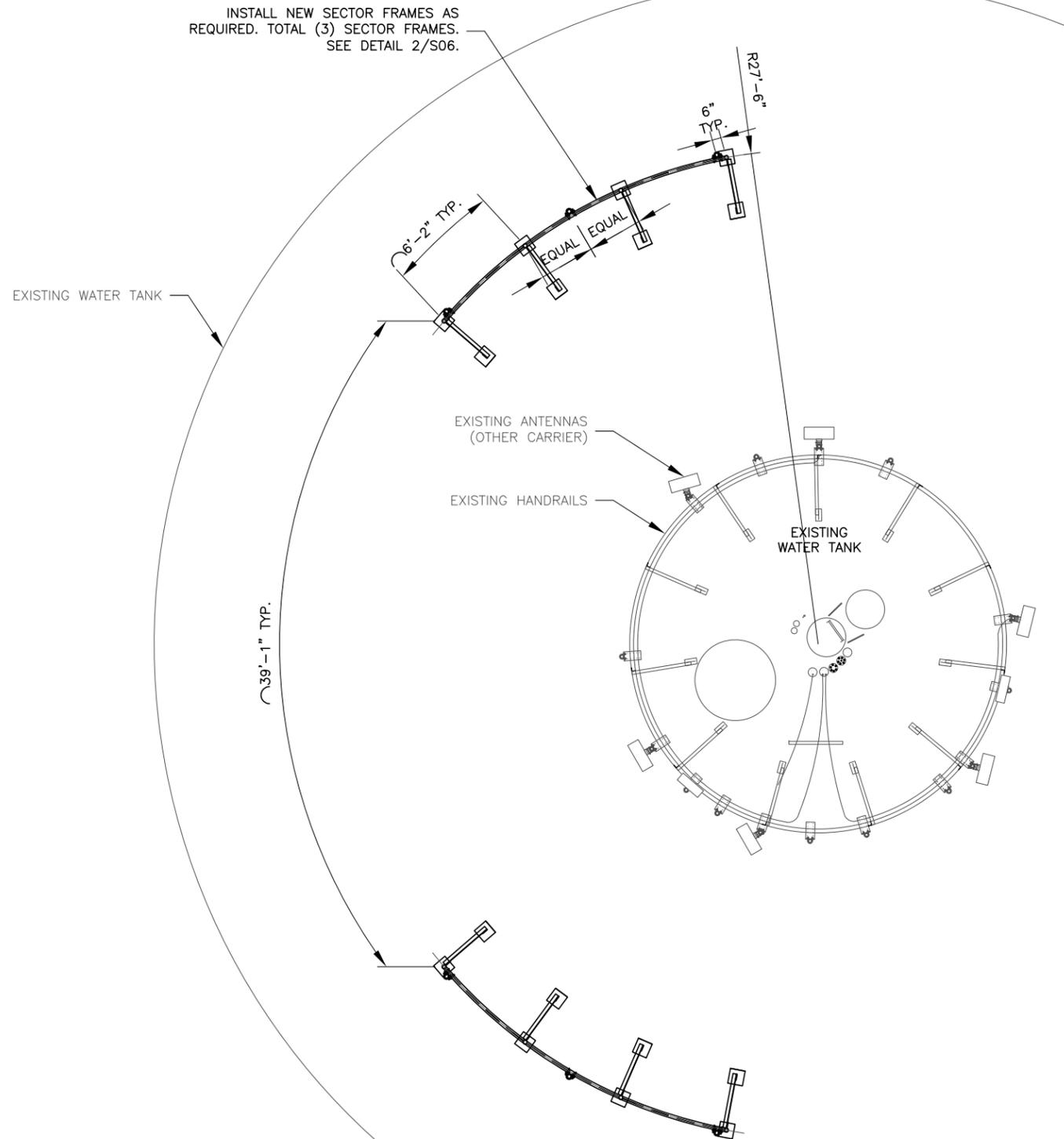
WATER TANK NOTES

DRAWING NUMBER

IL1110-S04

REV

F



PLAN VIEW W/ NEW SECTOR FRAMES
(AT&T ON NEW 55'-0"Ø FRAMES)
S05 SCALE: 1/4"=1'-0"

D
C
B
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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY	
NEW ANTENNA MOUNTING DETAILS 1	
DRAWING NUMBER	REV
IL1110-S05	F

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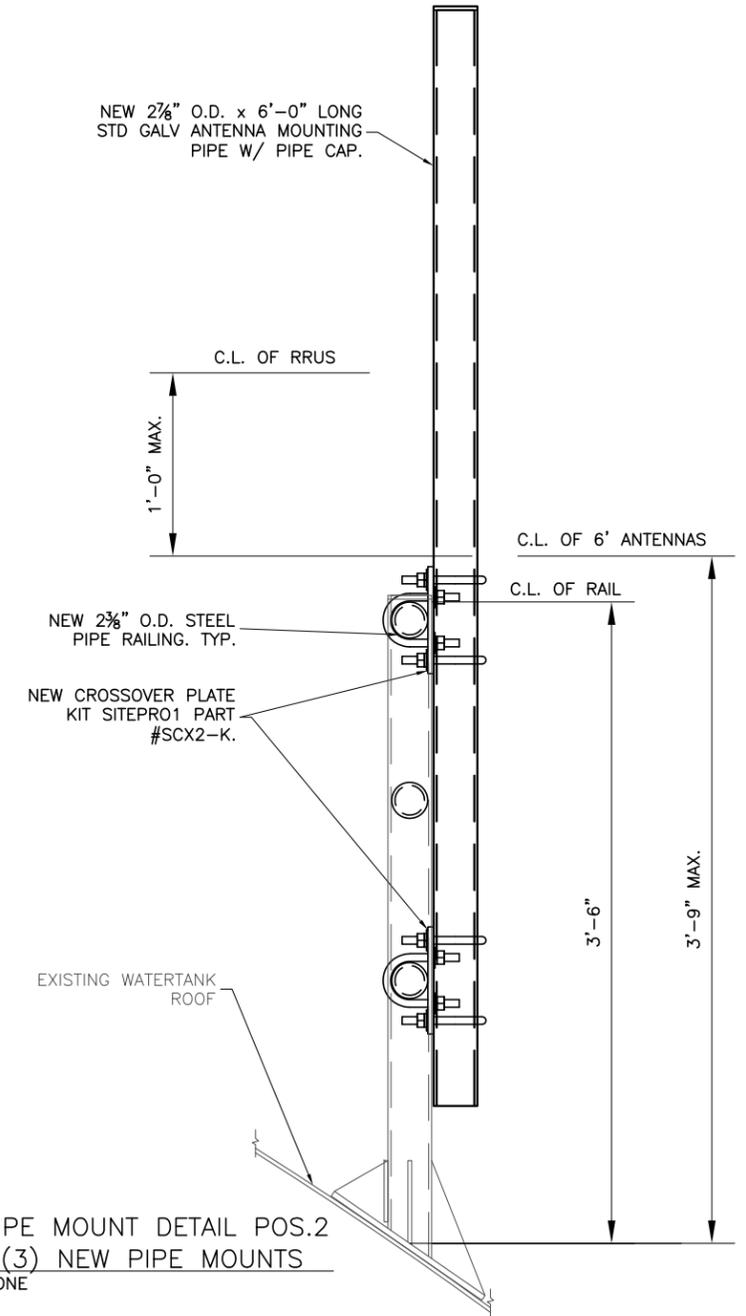
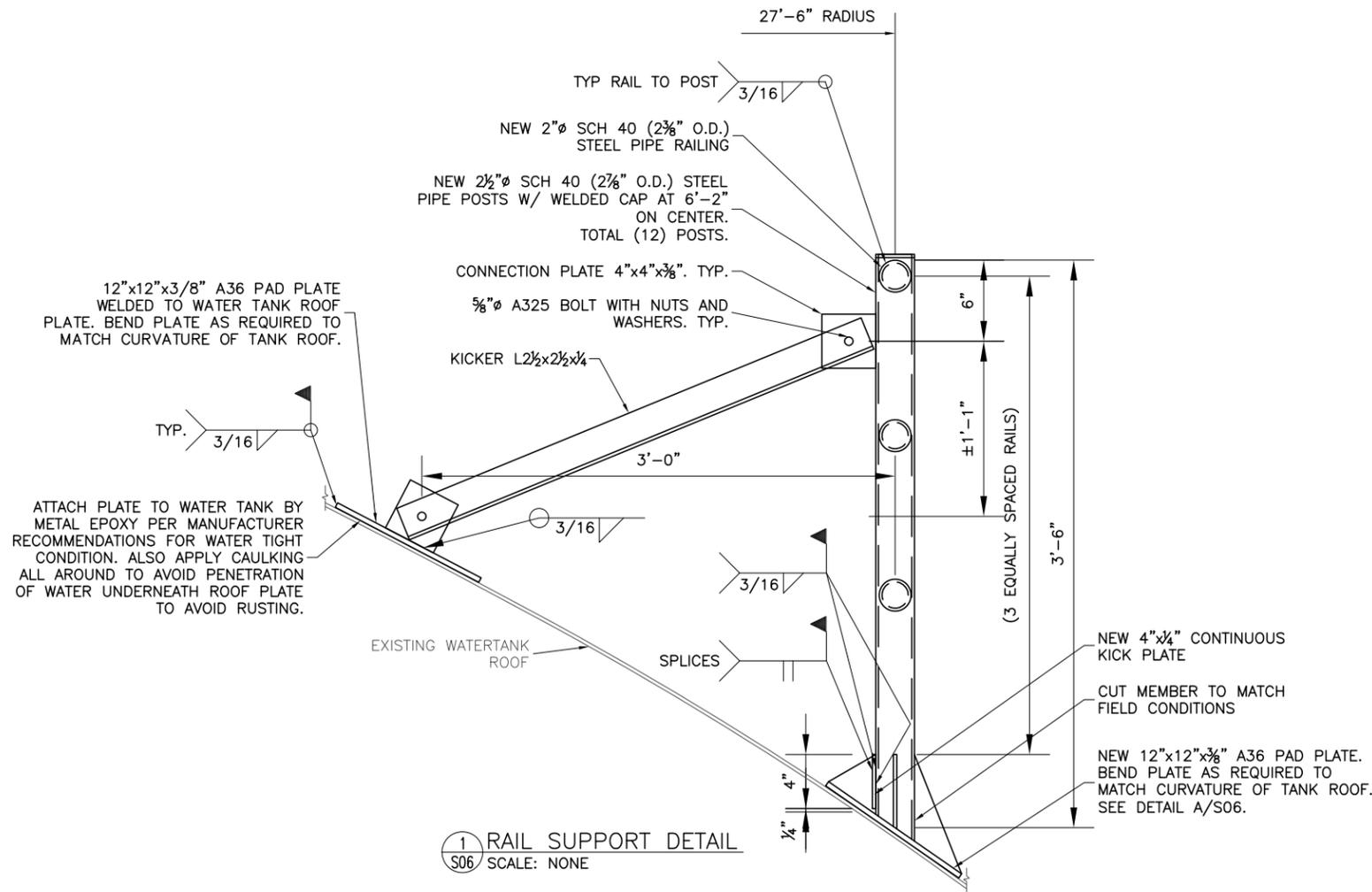
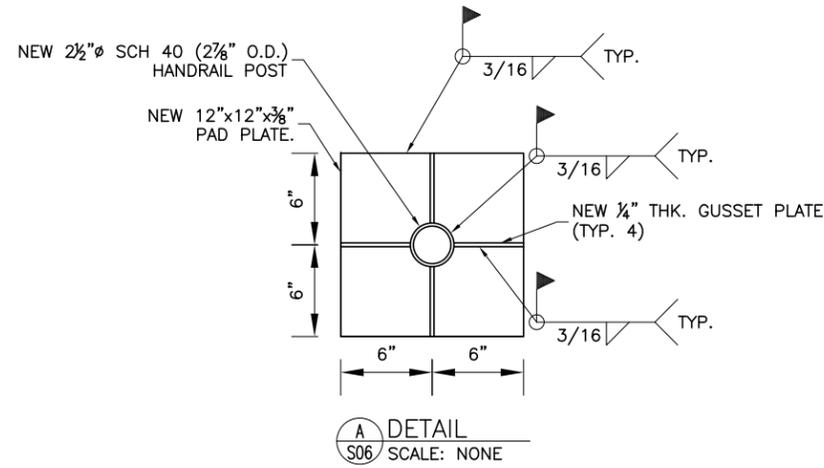
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11 x 17" B SIZE

NOTES:

- ALL WELDING TO BE DONE WITH E70XX ELECTRODES
- FABRICATE HANDRAIL STRUCTURE ON THE GROUND AND INSTALL ON HANDRAIL BASE PLATES AS A COMPLETE UNIT.
- WELD A36 SHIMS TO HANDRAIL POST BASE PLATE AS REQUIRED IF BASE PLATE IS LOCATED AT ROOF PLATE LAP.
- ALL ADJACENT SURFACES MUST BE PROTECTED FROM EFFECTS OF WELDING, WELDING DEBRIS, SLAG AND METAL SHAVINGS PRODUCED BY THE WELDING FOR THE PROPOSED HANDRAIL MODIFICATIONS, NOT LIMITED TO THE USE OF WELD BLANKETS. ALL METAL SHAVINGS AND DEBRIS ARE TO BE CLEANED UP AND PROPERLY DISPOSED OF.



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VILLAGE OF LIBERTYVILLE
SITE NO. IL1110
810 GARFIELD AVE
LIBERTYVILLE, IL 60048

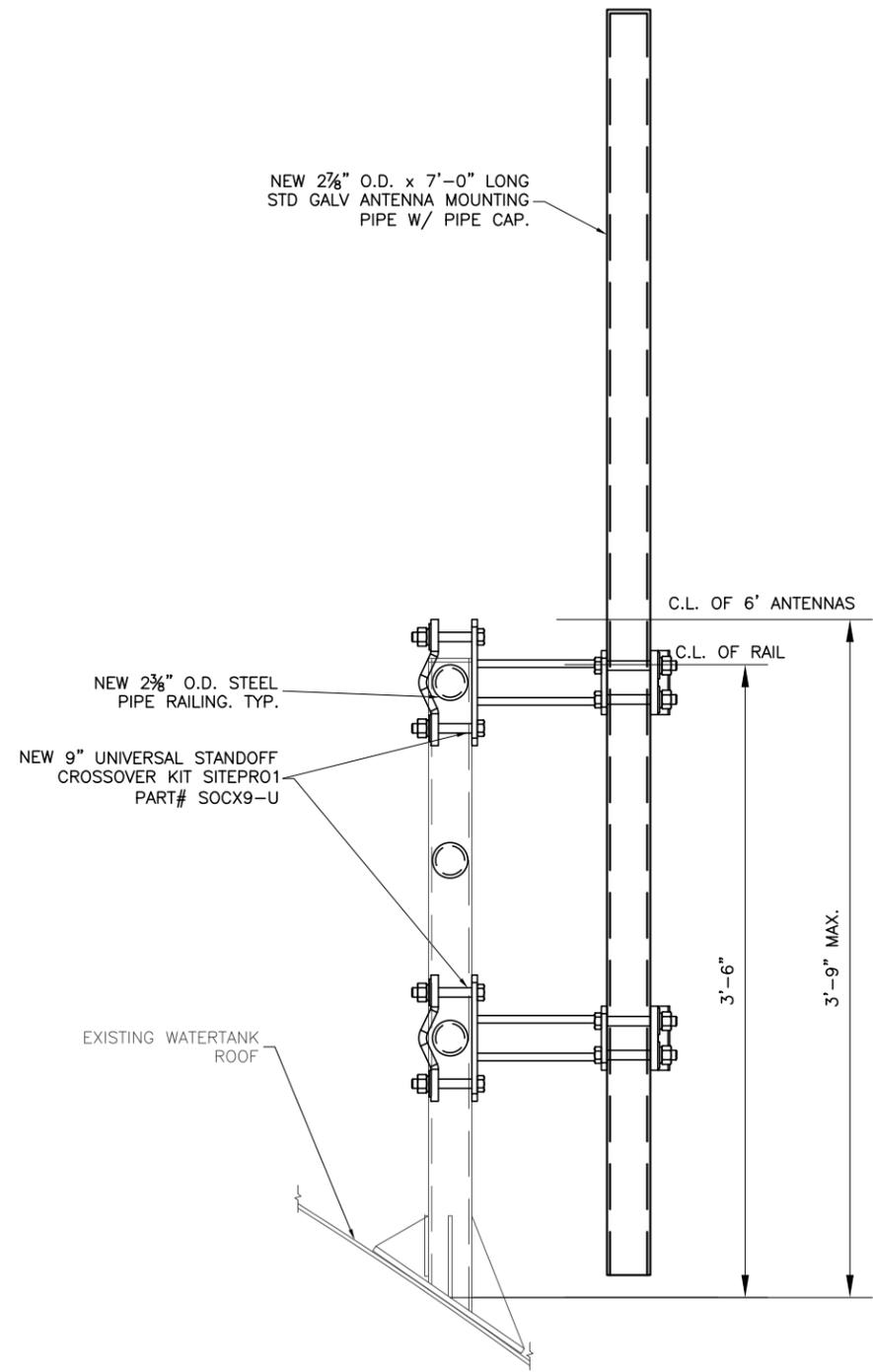


F	01/12/26	90% CDS - REVISED GREEN TREES	PD	PB	RG
E	12/05/25	90% CDS - REVISED PER COMMENTS	PD	PB	RG
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B	09/08/22	REVISED LEASE EXHIBIT/ZONING DRAWING	PD	PB	RG
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SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

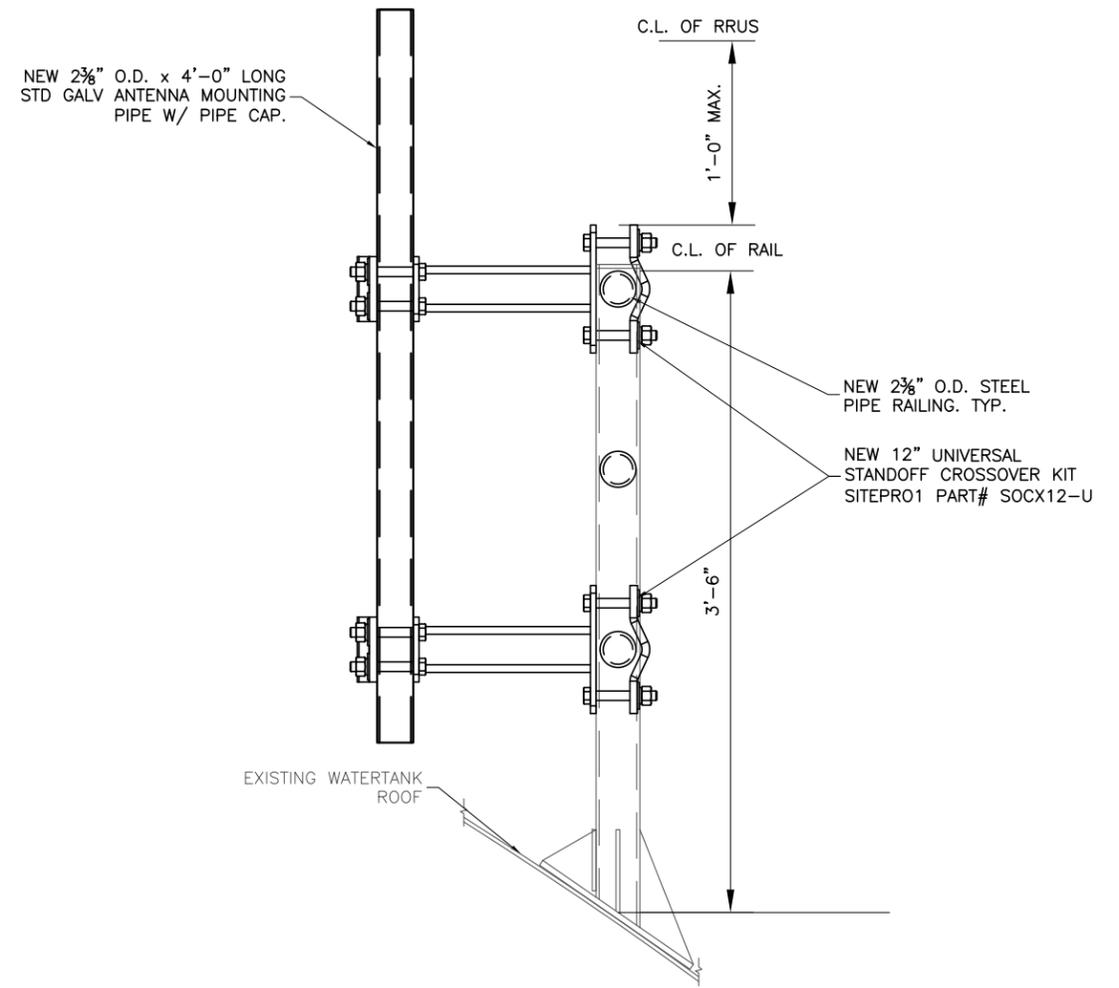
AT&T MOBILITY	
NEW ANTENNA MOUNTING DETAILS 2	
DRAWING NUMBER	REV
IL1110-S06	F

NOTES:

- ALL WELDING TO BE DONE WITH E70XX ELECTRODES
- FABRICATE HANDRAIL STRUCTURE ON THE GROUND AND INSTALL ON HANDRAIL BASE PLATES AS A COMPLETE UNIT.
- WELD A36 SHIMS TO HANDRAIL POST BASE PLATE AS REQUIRED IF BASE PLATE IS LOCATED AT ROOF PLATE LAP.
- ALL ADJACENT SURFACES MUST BE PROTECTED FROM EFFECTS OF WELDING, WELDING DEBRIS, SLAG AND METAL SHAVINGS PRODUCED BY THE WELDING FOR THE PROPOSED HANDRAIL MODIFICATIONS, NOT LIMITED TO THE USE OF WELD BLANKETS. ALL METAL SHAVINGS AND DEBRIS ARE TO BE CLEANED UP AND PROPERLY DISPOSED OF.



NEW ANTENNA PIPE MOUNT DETAIL, POS.1
 1 & POS.3, TOTAL (6) NEW PIPE MOUNTS
 S07 SCALE: NONE



NEW RRUS PIPE MOUNT DETAIL
 2 TOTAL (6) NEW PIPE MOUNTS
 S07 SCALE: NONE

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 APEX JOB No. NS22-055

VILLAGE OF LIBERTYVILLE
 SITE NO. IL1110
 810 GARFIELD AVE
 LIBERTYVILLE, IL 60048



F	01/12/26	90% CDS - REVISED GREEN TREES	PD	PB	RG
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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY	
NEW ANTENNA MOUNTING DETAILS 3	
DRAWING NUMBER	REV
IL1110-S07	F

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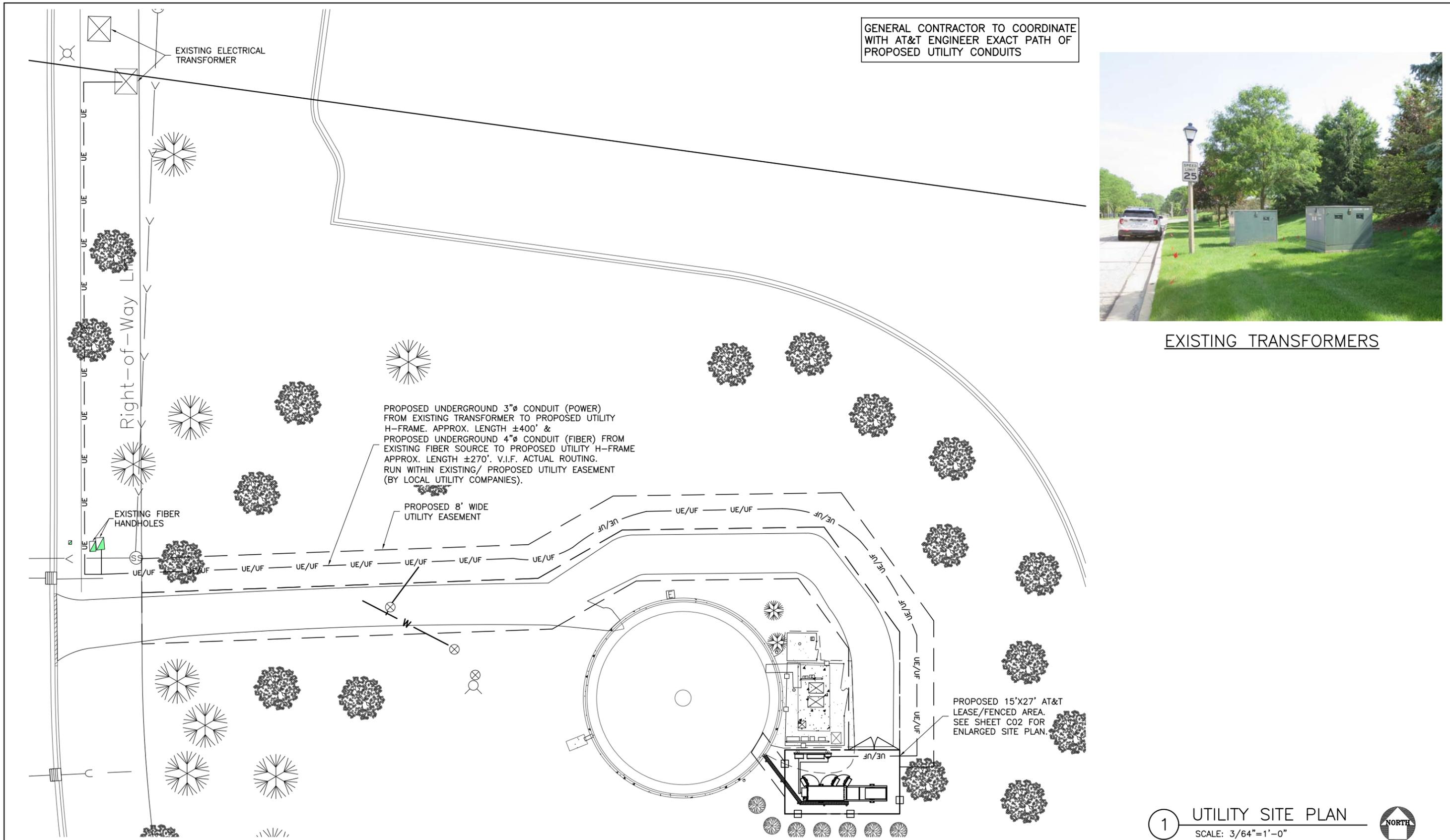
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11 x 17" B SIZE



GENERAL CONTRACTOR TO COORDINATE WITH AT&T ENGINEER EXACT PATH OF PROPOSED UTILITY CONDUITS



EXISTING TRANSFORMERS

PROPOSED UNDERGROUND 3"Ø CONDUIT (POWER) FROM EXISTING TRANSFORMER TO PROPOSED UTILITY H-FRAME. APPROX. LENGTH ±400' & PROPOSED UNDERGROUND 4"Ø CONDUIT (FIBER) FROM EXISTING FIBER SOURCE TO PROPOSED UTILITY H-FRAME APPROX. LENGTH ±270'. V.I.F. ACTUAL ROUTING. RUN WITHIN EXISTING/ PROPOSED UTILITY EASEMENT (BY LOCAL UTILITY COMPANIES).

PROPOSED 15'X27' AT&T LEASE/FENCED AREA. SEE SHEET C02 FOR ENLARGED SITE PLAN.

1 UTILITY SITE PLAN
SCALE: 3/64"=1'-0"



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VILLAGE OF LIBERTYVILLE
SITE NO. IL1110
810 GARFIELD AVE
LIBERTYVILLE, IL 60048



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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY	
UTILITY PLAN & ELECTRICAL DETAILS	
DRAWING NUMBER	REV
IL1110-E01	F

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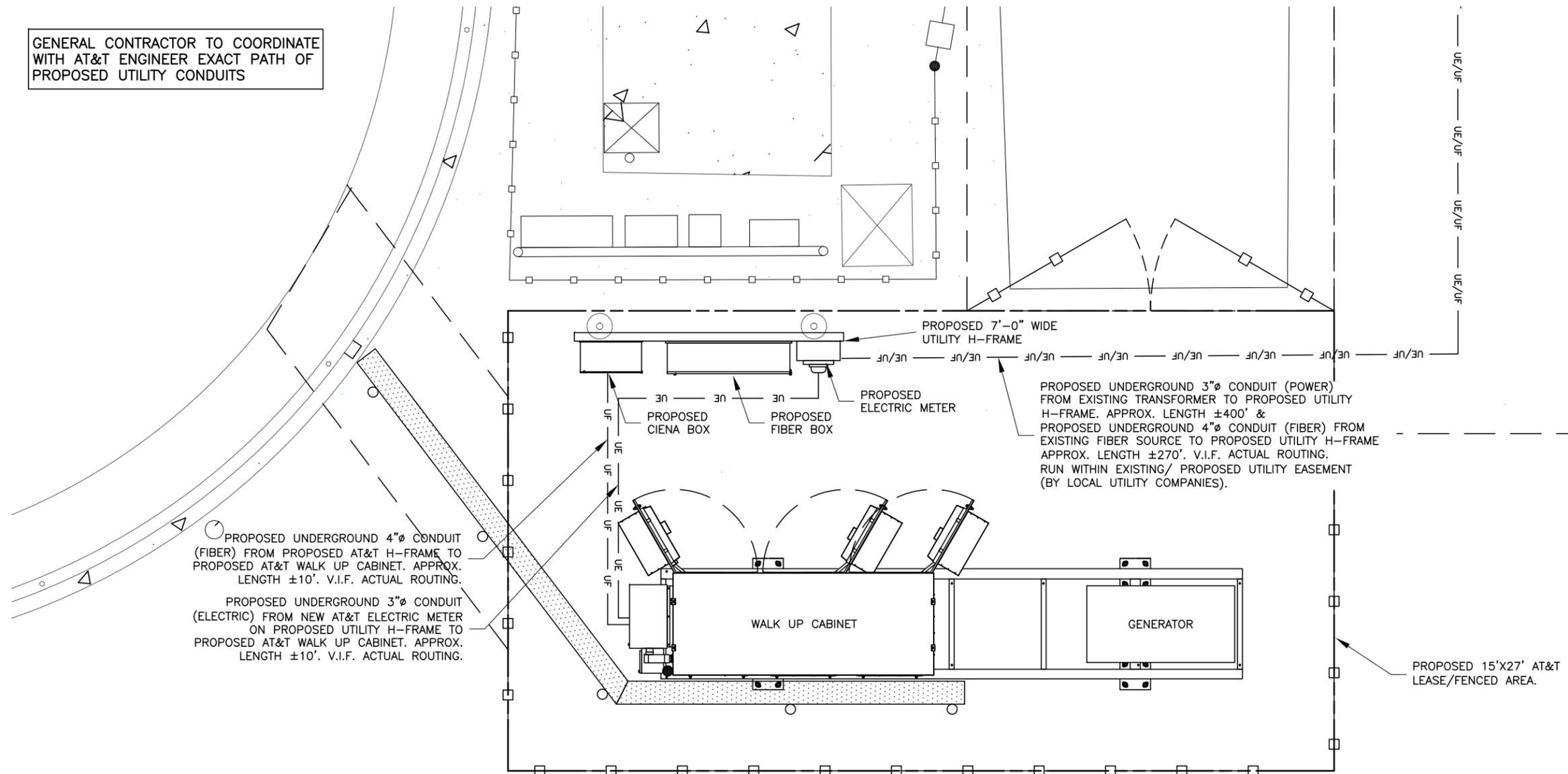
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11 x 17" B SIZE

GENERAL CONTRACTOR TO COORDINATE WITH AT&T ENGINEER EXACT PATH OF PROPOSED UTILITY CONDUITS



1 ENLARGED UTILITY PLAN
SCALE: 1/4"=1'-0"



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VILLAGE OF LIBERTYVILLE
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B	09/08/22	REVISED LEASE EXHIBIT/ZONING DRAWING	PD	PB	RG

SCALE: AS SHOWN DESIGNED BY: DRAWN BY:

AT&T MOBILITY	
ENLARGED UTILITY PLAN	
DRAWING NUMBER	REV
IL1110-E02	F

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11 x 17" B SIZE

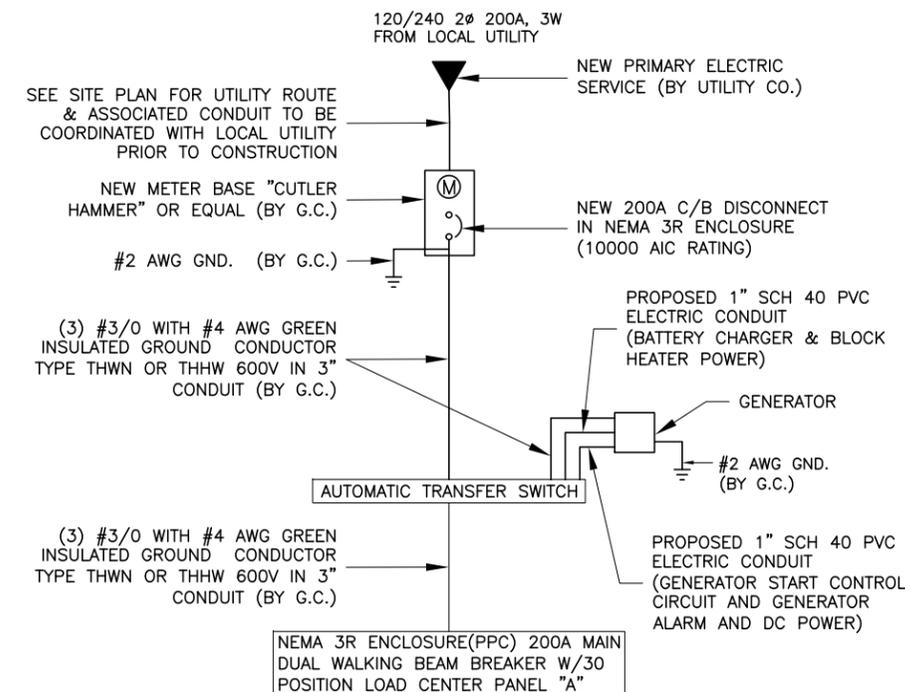
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ELECTRICAL INSTALLATION NOTES:

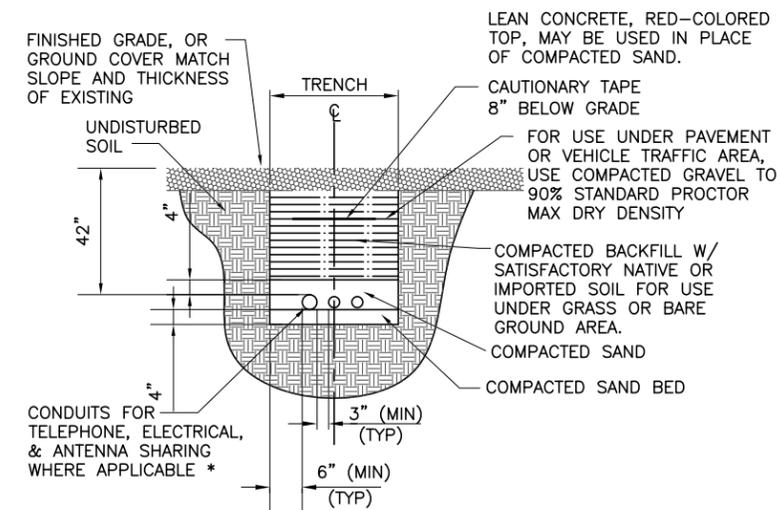
- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
- CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
- EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA.
- ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).
- PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.
- ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
- POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
- ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
- ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
- ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
- RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
- WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.

ELECTRICAL INSTALLATION NOTES (CONT.):

- EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS OR NEMA 3R (OR BETTER) OUTDOORS
- METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) BETTER INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR/OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
- THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.



1 ONE-LINE DIAGRAM
SCALE: N.T.S.



PRIOR TO DIGGING...CALL LOCAL UTILITY COMPANY



NOTES:

- CONTRACTOR TO VERIFY LOCAL UTILITY REQUIREMENTS FOR DEPTH, SIZE & SEPARATION OF CONDUITS PRIOR TO INSTALLATION. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES.
- CONTRACTOR TO CALL LOCAL UTILITY COMPANY 48 HRS PRIOR TO EXCAVATING FOR UNDERGROUND UTILITY LOCATIONS. LOCATION SURROUNDING EXCAVATED AREA MUST BE PRIVATELY LOCATED FOR NON-PUBLIC UTILITIES.

2 UTILITY TRENCH DETAIL
SCALE: N.T.S.



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APEX JOB No. NS22-055

VILLAGE OF LIBERTYVILLE

SITE NO. IL1110

810 GARFIELD AVE
LIBERTYVILLE, IL 60048



F	01/12/26	90% CDS - REVISED GREEN TREES	PD	PB	RG
E	12/05/25	90% CDS - REVISED PER COMMENTS	PD	PB	RG
D	06/19/25	90% CDS - REVISED PER NEW SCOPINGS	PD	PB	RG
C	06/14/23	90% CDS ISSUED FOR REVIEW	PD	PB	RG
B	09/08/22	REVISED LEASE EXHIBIT/ZONING DRAWING	PD	PB	RG
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

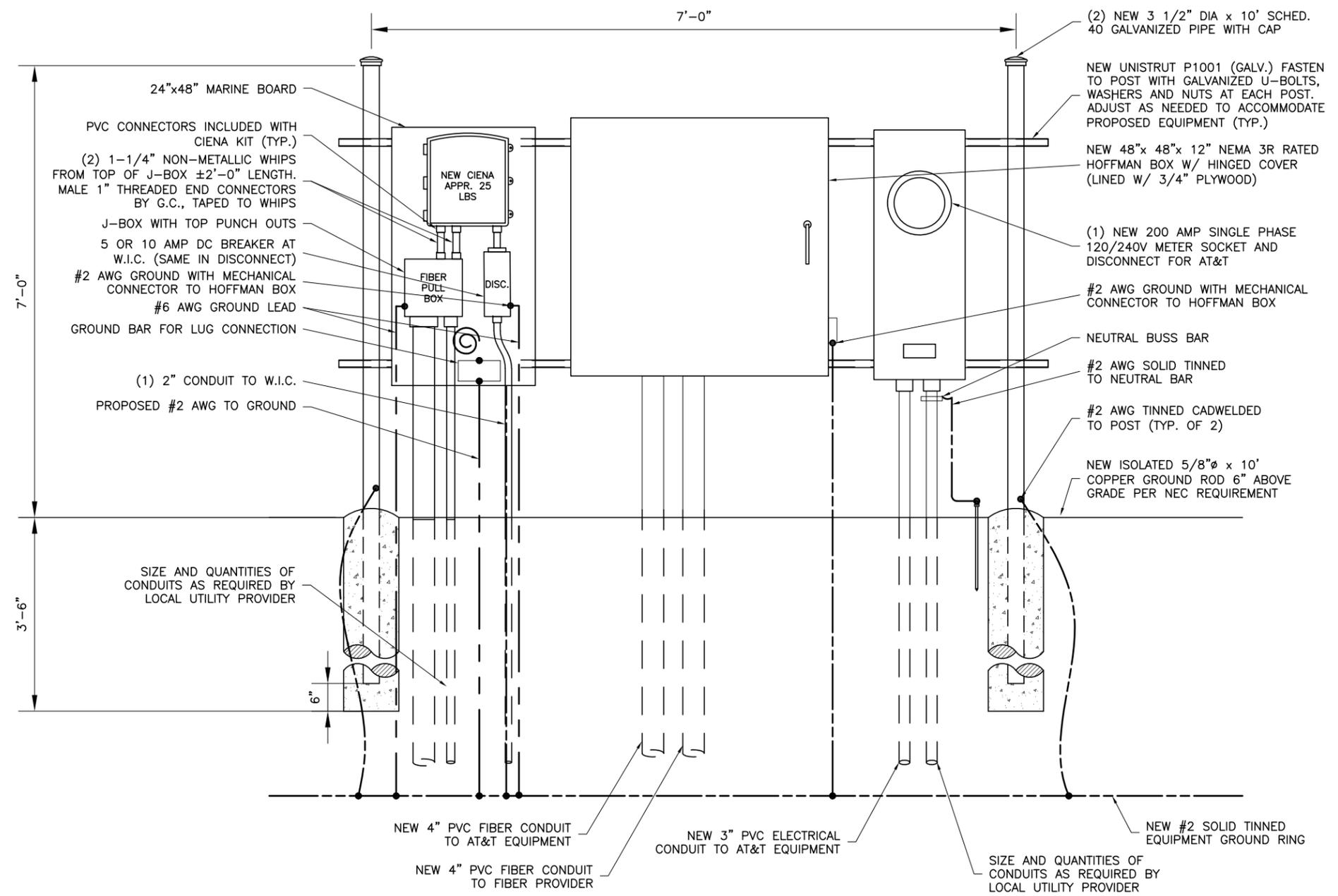
AT&T MOBILITY

ELECTRICAL NOTES & DETAILS

DRAWING NUMBER	REV
IL1110-E03	F



PLAN VIEW



1 UTILITY RACK DETAILS
SCALE: N.T.S.

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AT&T MOBILITY	
UTILITY RACK DETAILS	
DRAWING NUMBER	REV
IL1110-E04	F

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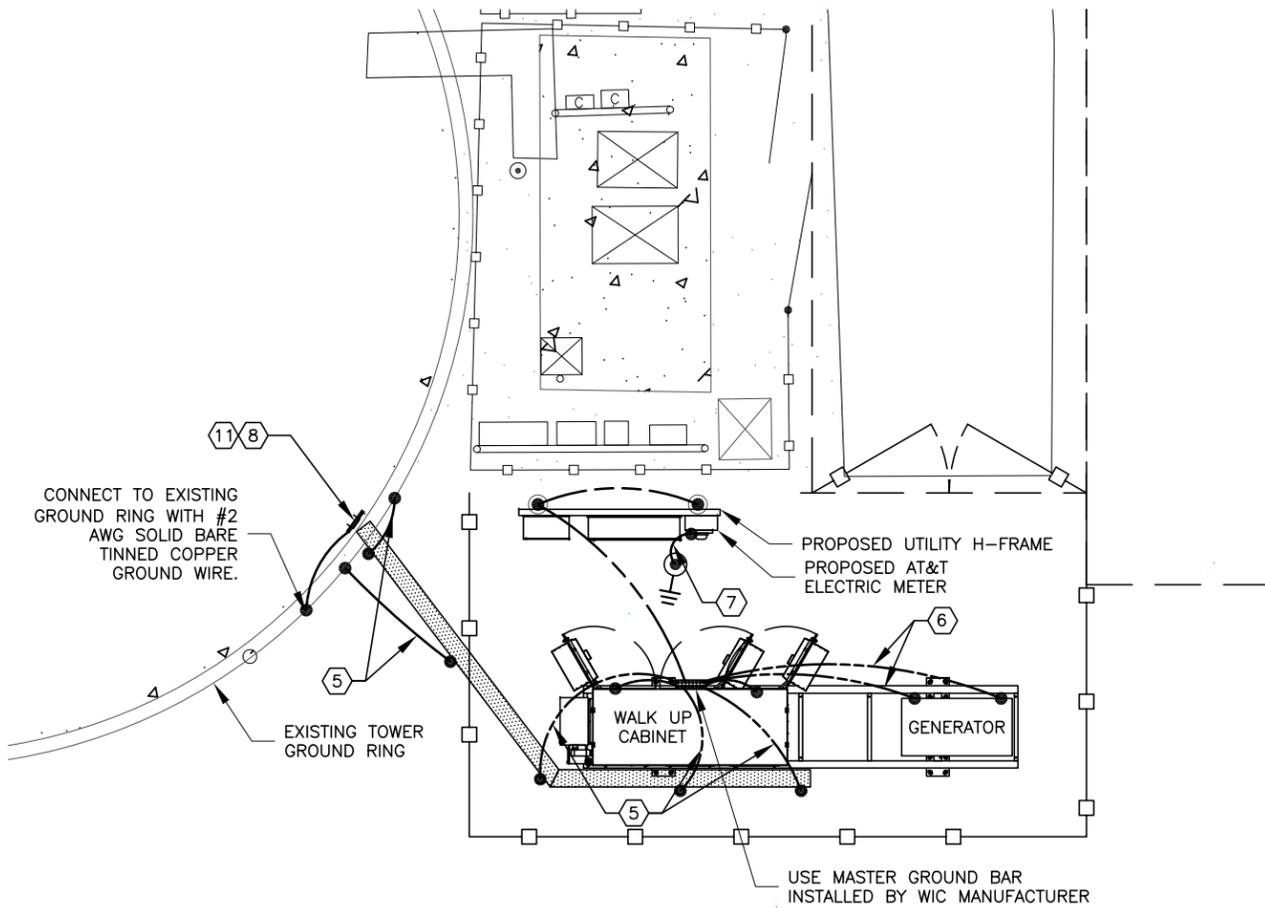
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3

2

1

11 x 17" B SIZE



1 GROUNDING PLAN
SCALE: 1/16"=1'-0"

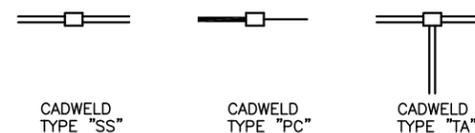
GROUNDING LEGEND	
SYMBOL	DESCRIPTION
⊖	5/8" x 10' COPPER CLAD STEEL GROUND ROD
⊖	5/8" x 10' COPPER CLAD STEEL GROUND ROD WITH INSPECTION SLEEVE
●	EXOTHERMIC WELD (CADWELD) (UNLESS OTHERWISE NOTED)
⊖	EXOTHERMIC WELD (CADWELD) WITH INSPECTION SLEEVE

GROUNDING NOTES:

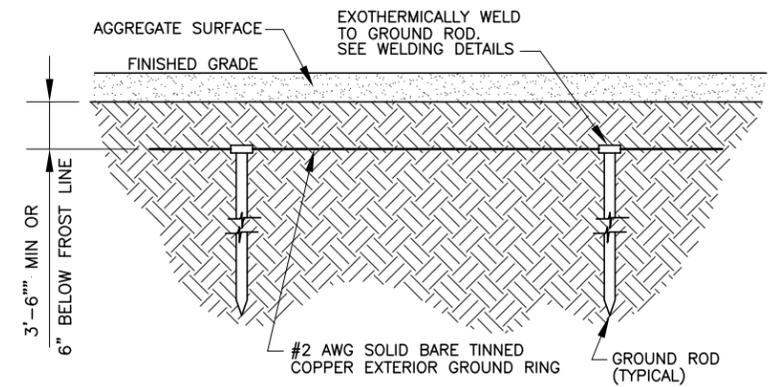
- TOWER GROUND BAR:** EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING UP TO THE TOWER GROUND BAR AND MAKE A MECHANICAL CONNECTION. SECURE GROUND BAR DIRECTLY TO TOWER WITH STAINLESS STEEL MOUNTING MATERIAL.
- ANTENNA GROUND BAR:** MOUNT GROUND BAR DIRECTLY TO TOWER AT TOP OF COAX RUNS. SECURE TO TOWER WITH STAINLESS STEEL MOUNTING MATERIAL.
- FENCE GROUNDING:** IF FENCE IS WITHIN 6' OF GROUND RING, EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING TO FENCE CORNER POSTS AND EXOTHERMICALLY WELD. BOND INTERMEDIATE POST IF REQUIRED TO MAINTAIN 25' MAX SPACING.
- GATE GROUNDING:** EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING TO GATE POSTS AND EXOTHERMICALLY WELD.
- ICE BRIDGE SUPPORT POST GROUNDING:** EXTEND #2 TINNED CU WIRE FROM WIC MASTER GROUND BAR TO ALL ICE BRIDGE SUPPORT POSTS AND EXOTHERMICALLY WELD.
- GENERATOR GROUNDING:** EXTEND #2 AWG SOLID BARE TINNED COPPER GROUND WIRE TO WIC MASTER GROUND BAR. GROUND GENERATOR AND BASE TANK PER MANUFACTURER'S RECOMMENDATIONS.
- METER GROUND ROD:** COPPERCLAD STEEL, 5/8" DIA. TEN (10) FEET LONG



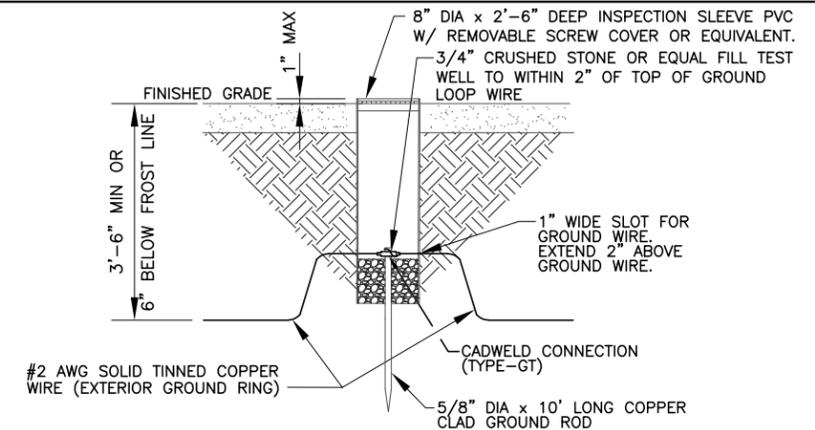
CABLE TO GROUND ROD COMBINATIONS



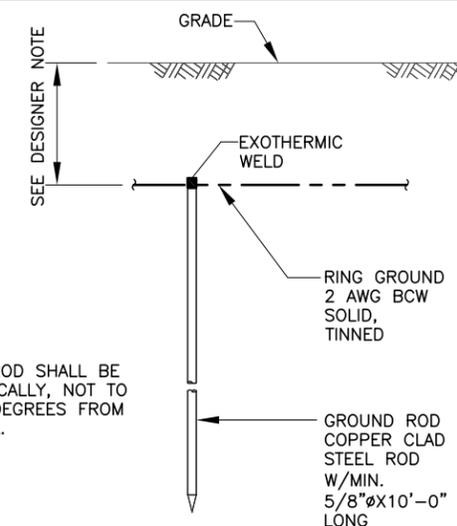
CABLE TO CABLE COMBINATIONS EXOTHERMIC WELDING DETAILS



2 GROUND RING DETAIL
SCALE: N.T.S.



3 GROUND ROD W/ INSPECTION SLEEVE
SCALE: N.T.S.



NOTES:

- GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 15 DEGREES FROM THE VERTICAL.

4 GROUND ROD
SCALE: N.T.S.

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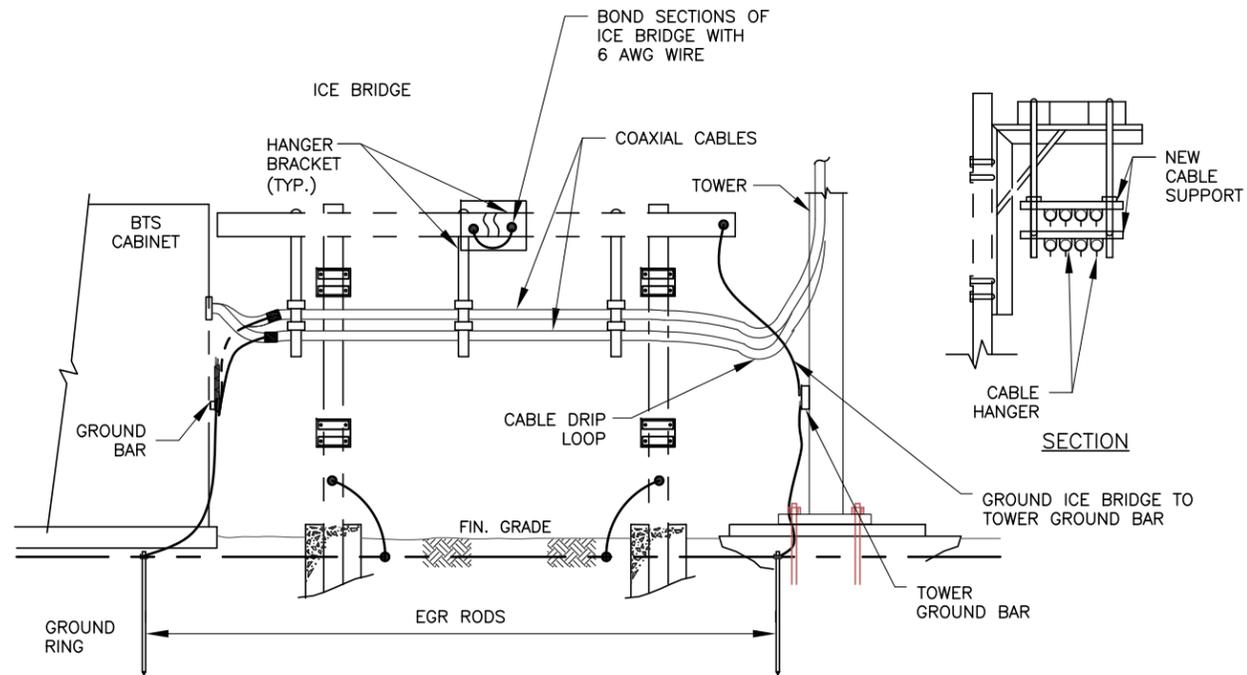
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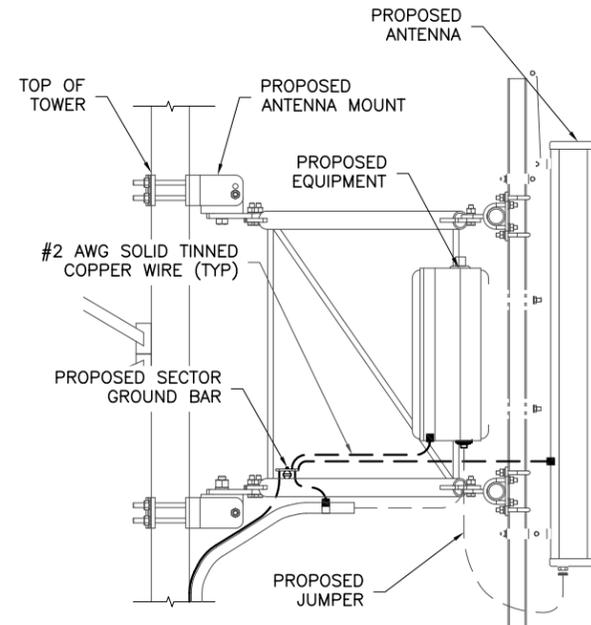


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AT&T MOBILITY	
GROUNDING PLAN & DETAILS	
DRAWING NUMBER	REV
IL1110-G01	F



1 ICE BRIDGE DETAIL
SCALE: N.T.S.



2 ANTENNA & CABLE GROUNDING
SCALE: N.T.S.

GROUNDING NOTES:

- ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
- THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
- THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT & PROVIDE TESTING RESULTS.
- METAL CONDUIT AND TRAY SHALL BE GROUNDING AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
- EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 AWG STRANDED COPPER FOR OUTDOOR BTS.
- CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED, BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR & EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
- COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
- APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- BOND ALL METALLIC OBJECTS WITHIN 6 FT. OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
- GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
- ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222-H. THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE MIN 2/0 AWG.

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

NEWTON INSTRUMENT COMPANY, INC. BUTNER, N.C. OR APPROVED EQUAL			
NO.	REQ.	PART NO.	DESCRIPTION
①	1	1/4"x4"x30"	SOLID GND. BAR
②	2	A-6056	WALL MTG. BRKT.
③	2	3061-4	INSULATORS
④	4	3012-1	5/8"-11x1" H.H.C.S.
⑤	4	3015-8	5/8 LOCKWASHER

SECTION "P" - SURGE PROTECTORS

- CABLE ENTRY PORTS (HATCH PLATES) (2 AWG)
- GENERATOR FRAMEWORK (IF AVAILABLE) (2 AWG)
- TELCO GROUND BAR (2 AWG)
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (2 AWG)
- +24V POWER SUPPLY RETURN BAR (2 AWG)
- 48V POWER SUPPLY RETURN BAR (2 AWG)
- RECTIFIER FRAMES.
- COAX SUPPRESSION

SECTION "A" - SURGE ABSORBERS

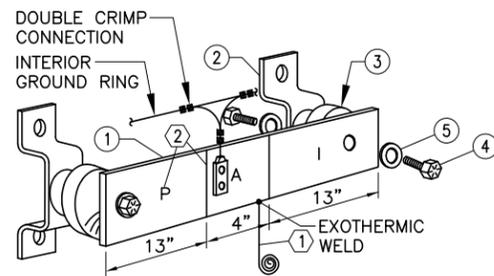
- INTERIOR GROUND RING (2 AWG)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (2 AWG)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (2 AWG)
- BUILDING STEEL (IF AVAILABLE) (2 AWG)

SECTION "I" - ISOLATED GROUND ZONE

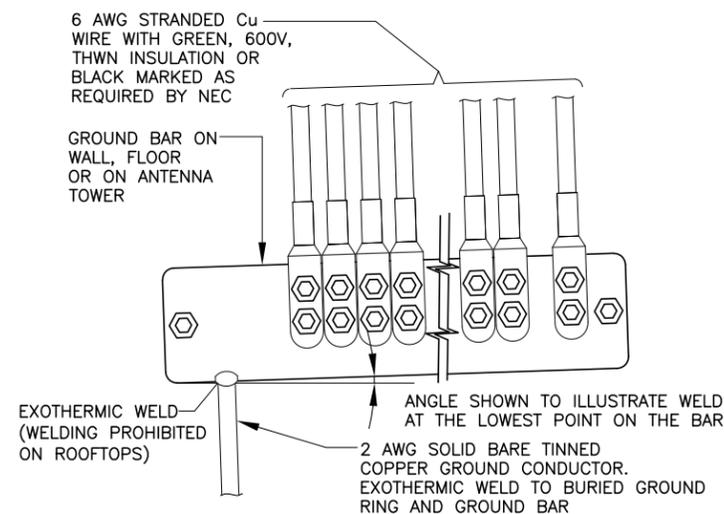
- ALL COMMUNICATIONS EQUIPMENT FRAMES.
- ISOLATED GROUND BAR - IGB (2 AWG)

DETAIL NOTES:

- EXOTHERMICALLY WELD 2 AWG BARE TINNED SOLID COPPER CONDUCTOR TO GROUND BAR. ROUTE CONDUCTOR TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
- USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "I") WITH 1" HIGH LETTERS.



2 (RGB) REFERENCE GROUND BAR - DETAIL
SCALE: N.T.S.



3 INSTALLATION OF GROUND WIRE TO COAX CABLE GROUND BAR
SCALE: N.T.S.

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AT&T MOBILITY

GROUNDING DETAILS & NOTES

DRAWING NUMBER
IL1110-G02

REV
F

NOTE:
DO NOT HEAVILY PRUNE THE TREE AT PLANTING. PRUNE ONLY CROSSOVER LIMES, CO-DOMINANT LEADERS, AND BROKEN OR DEAD BRANCHES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED, HOWEVER DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN

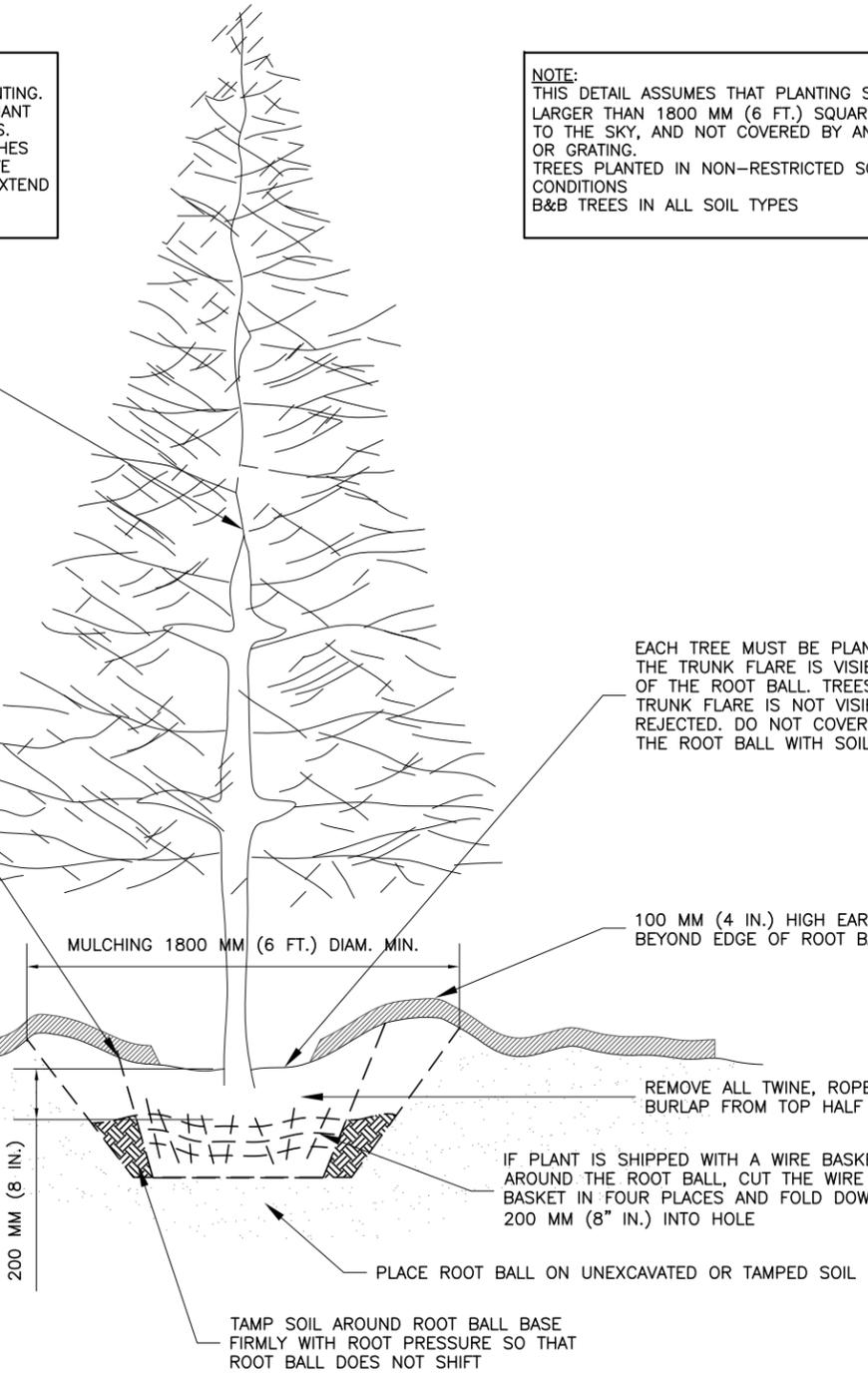
NOTE:
THIS DETAIL ASSUMES THAT PLANTING SPACE IS LARGER THAN 1800 MM (6 FT.) SQUARE OPEN TO THE SKY, AND NOT COVERED BY ANY PAVING OR GRATING. TREES PLANTED IN NON-RESTRICTED SOIL CONDITIONS B&B TREES IN ALL SOIL TYPES

MARK THE NORTH SIDE OF THE TREE IN THE NURSERY, AND ROTATE TREE TO FACE NORTH AT THE SITE WHEN EVER POSSIBLE

SET TOP OF ROOT BALL FLUSH TO GRADE OR 25-50 MM (1-2 IN.) HIGHER IN SLOWLY DRAINING SOILS

50 MM (2 IN.) MULCH. DO NOT PLACE MULCH IN CONTACT WITH TREE TRUNK MAINTAIN THE MULCH WEED-FREE FOR A MINIMUM OF THREE YEARS AFTER PLATING

NOTE: FOR DIMENSIONS OF PLATING AREAS TYPES OF SOIL AMENDMENTS OR SOIL REPLACEMENT SEE "SOIL IMPROVEMENT DETAILS"



EACH TREE MUST BE PLANTED SUCH THAT THE TRUNK FLARE IS VISIBLE AT THE TOP OF THE ROOT BALL. TREES WHERE THE TRUNK FLARE IS NOT VISIBLE SHALL BE REJECTED. DO NOT COVER THE TOP OF THE ROOT BALL WITH SOIL

100 MM (4 IN.) HIGH EARTH SAUCER BEYOND EDGE OF ROOT BALL

REMOVE ALL TWINE, ROPE AND WIRE, AND BURLAP FROM TOP HALF OF ROOT BALL

IF PLANT IS SHIPPED WITH A WIRE BASKET AROUND THE ROOT BALL, CUT THE WIRE BASKET IN FOUR PLACES AND FOLD DOWN 200 MM (8" IN.) INTO HOLE

PLACE ROOT BALL ON UNEXCAVATED OR TAMPED SOIL

TAMP SOIL AROUND ROOT BALL BASE FIRMLY WITH ROOT PRESSURE SO THAT ROOT BALL DOES NOT SHIFT

NOTE:
PLANT CONTAINER OR BALLED-AND-BURLAPED PLANTS IN SPRING OR FALL PLANT ON A RAISED BED TO ENSURE GOOD DRAINAGE ALL EXPOSED AREAS SHALL BE PROTECTED AGAINST WASHOUTS AND SOIL EROSION

PLANTING SCHEDULE
COMMON NAME: EMERALD GREEN ARBORVITAE
SCIENTIFIC NAME: THUJA OCCIDENTALIS
QUANTITY: 7
SPACING: 6'

1 TREE PLANTING DIAGRAM
SCALE: N.T.S.

GENERAL NOTES

1. PLANT MATERIAL SHALL BE NURSERY GROWN AND BE BALLED AND BURLAPPED OR CONTAINER GROWN. SIZES AND SPREADS ON PLANT LIST REPRESENT MINIMUM REQUIREMENTS.
2. SIZE AND GRADING STANDARDS OF PLANT MATERIALS SHALL CONFORM TO THE LATEST ADDITION OF ANSI Z60.1 AMERICAN STANDARD OF NURSERY STOCK, BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION.
3. ANY MATERIALS WITH DAMAGED OR CROOKED/ DISFIGURED LEADER, BARK ABRASION, SUNSCALD, INSECT DAMAGE, ETC. ARE NOT ACCEPTABLE AND WILL BE REJECTED.
4. GRADING SHALL PROVIDE SLOPES WHICH ARE SMOOTH AND CONTINUOUS. POSITIVE DRAINAGE SHOULD BE PROVIDED IN ALL AREAS.
5. ALL PLANT SPECIES SPECIFIED ARE SUBJECT TO AVAILABILITY. MATERIAL SHORTAGES IN THE LANDSCAPE INDUSTRY MAY REQUIRE SUBSTITUTIONS.
6. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING. FOR LOCATION INSIDE CITY OF MISHAWAKA; CALL INDIANA UNDERGROUND (JULIE) AT 1-800-382-5544.
7. CONTRACTOR SHALL REPORT ANY DISCREPANCIES.
8. PLANT SYMBOLS ILLUSTRATED ON THE LANDSCAPE PLAN ARE A GRAPHIC REPRESENTATION OF PROPOSED PLANT MATERIAL TYPES AND ARE INTENDED TO PROVIDE FOR VISUAL CLARITY. HOWEVER, THE SYMBOLS DO NOT NECESSARILY REPRESENT ACTUAL PLANT SPREAD AT THE TIME OF INSTALLATION.
9. ALL PLANTING BEDS SHALL BE MULCHED WITH A MINIMUM OF 3" OF SHREDDED WOOD MULCH, WITH THE EXCEPTION OF EVERGREEN TREES WHICH SHALL RECEIVE 1" OF SHREDDED HARDWOOD MULCH OVER 2" OF SOUTHERN PINE BARK.
10. SOD SHALL BE MINERAL BASE ONLY.
11. ALL PLANTS MATERIAL SHALL BE GUARANTEED FOR ONE YEAR FROM THE DATE OF ACCEPTANCE.
12. ALL LANDSCAPING HAS BEEN DESIGNED AND WILL BE INSTALLED, MAINTAINED, REPLACED, AND REQUIRED BY CURRENT AND SUBSEQUENT OWNERS IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPROVED USE VARIANCE (APPEAL 19-13) AND CHAPTER 137, DIVISION 5 OF THE CITY OF MISHAWAKA MUNICIPAL CODE, THE MINIMUM LANDSCAPING AND SCREENING REGULATIONS OF THE ZONING ORDINANCE.

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11 x 17" B SIZE

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