

For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.



2000 COMMONWEALTH AVENUE BWE

Site No.: MA2016
A.T.C. Site No.: MA-0110
DEWBERRY NO. 50083655
(Page 1 of 9)



Dewberry Engineers Inc. 280 Summer St. 10th Floor Boston, MA 02210

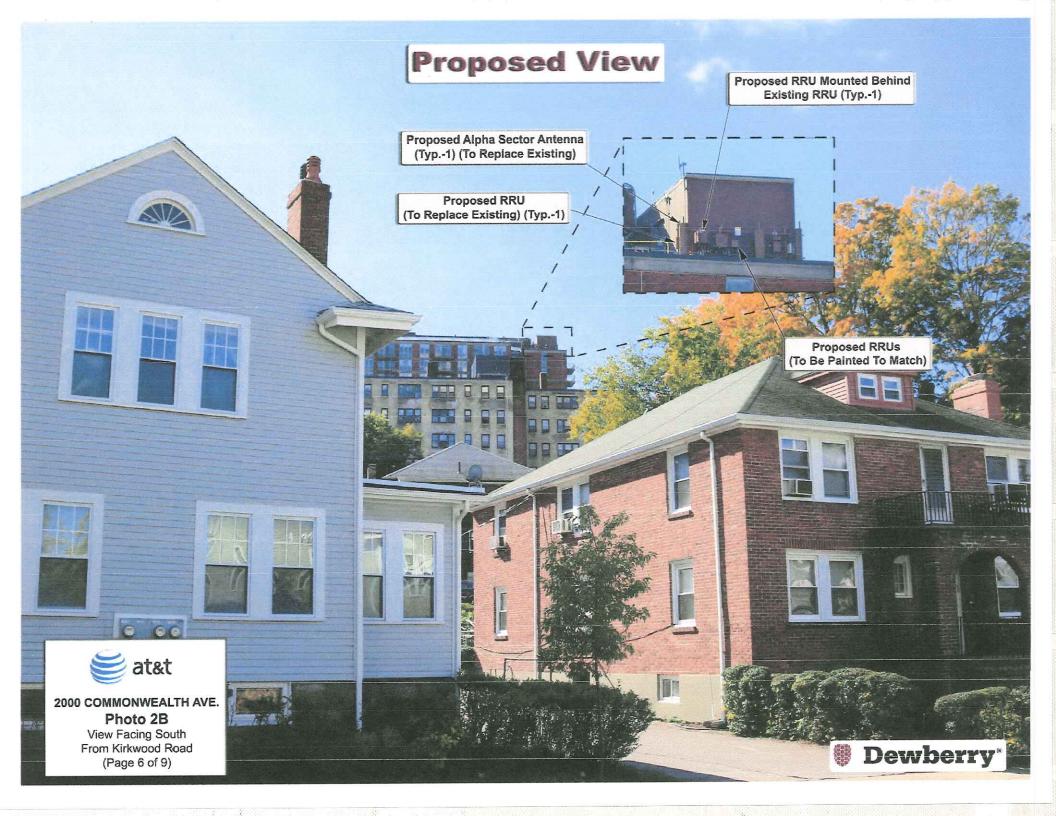


# **Actual View at&t** 2000 COMMONWEALTH AVE. Photo 1A View Facing East From Gerald Rd. (Page 3 of 9)

# **Proposed View**

























# NOTES:

- 1. NORTH SHOWN AS APPROXIMATE.
- 2. SOME PROPOSED & EXISTING INFORMATION NOT SHOWN FOR CLARITY.
- 3. ROOF PLAN BASED ON FIELD RECONNAISSANCE BY DEWBERRY ENGINEERS.
- REUSE EXISTING PIPE MOUNTS FOR PROPOSED ANTENNAS UNLESS NOTED OTHERWISE. INSPECT MOUNTS FOR DAMAGE OR DETERIORATION & REPLACE AS NECESSARY.
- 5. ALL JUMPERS TO BE NEATLY BUNDLED BEHIND THE ANTENNAS & RRUS.
- INSTALL ALL PROPOSED EQUIPMENT PER MANUFACTURERS RECOMMENDATIONS & IN ACCORDANCE WITH STRUCTURAL ANALYSIS BY DEWBERRY ENGINEERS INC. DATED 10/10/16.
- 7. ALL EXISTING AND PROPOSED RRUS & ANTENNAS SHALL BE PAINTED TO MATCH.



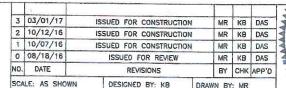
Dewberry Engineers Inc. 280 SUMMER STREET 10TH FLOOR BOSTON, MA 02210 PHONE: 617.695.5400 FAX: 617.695.3310



# 2000 COMMONWEALTH AVENUE BWE **SITE NO. 2016**

A.T.C. SITE NO. MA-0110 2000 COMMONWEALTH AVENUE BRIGHTON, MA 02135





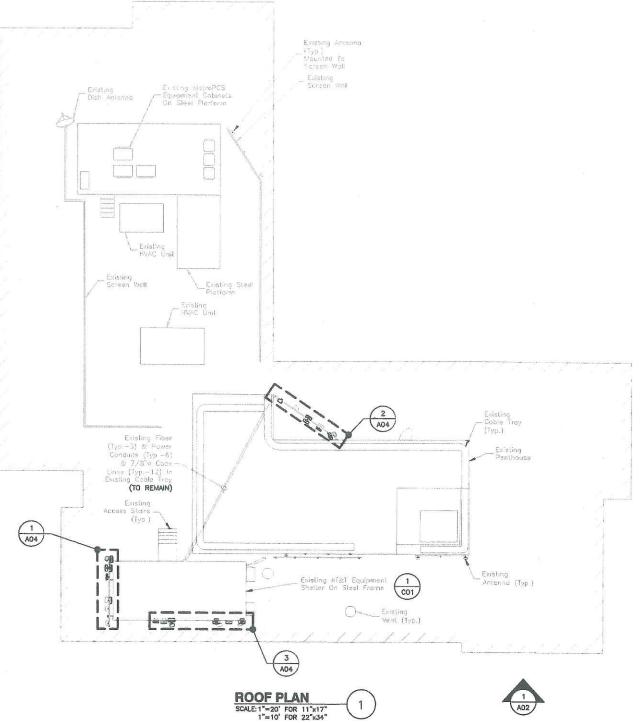
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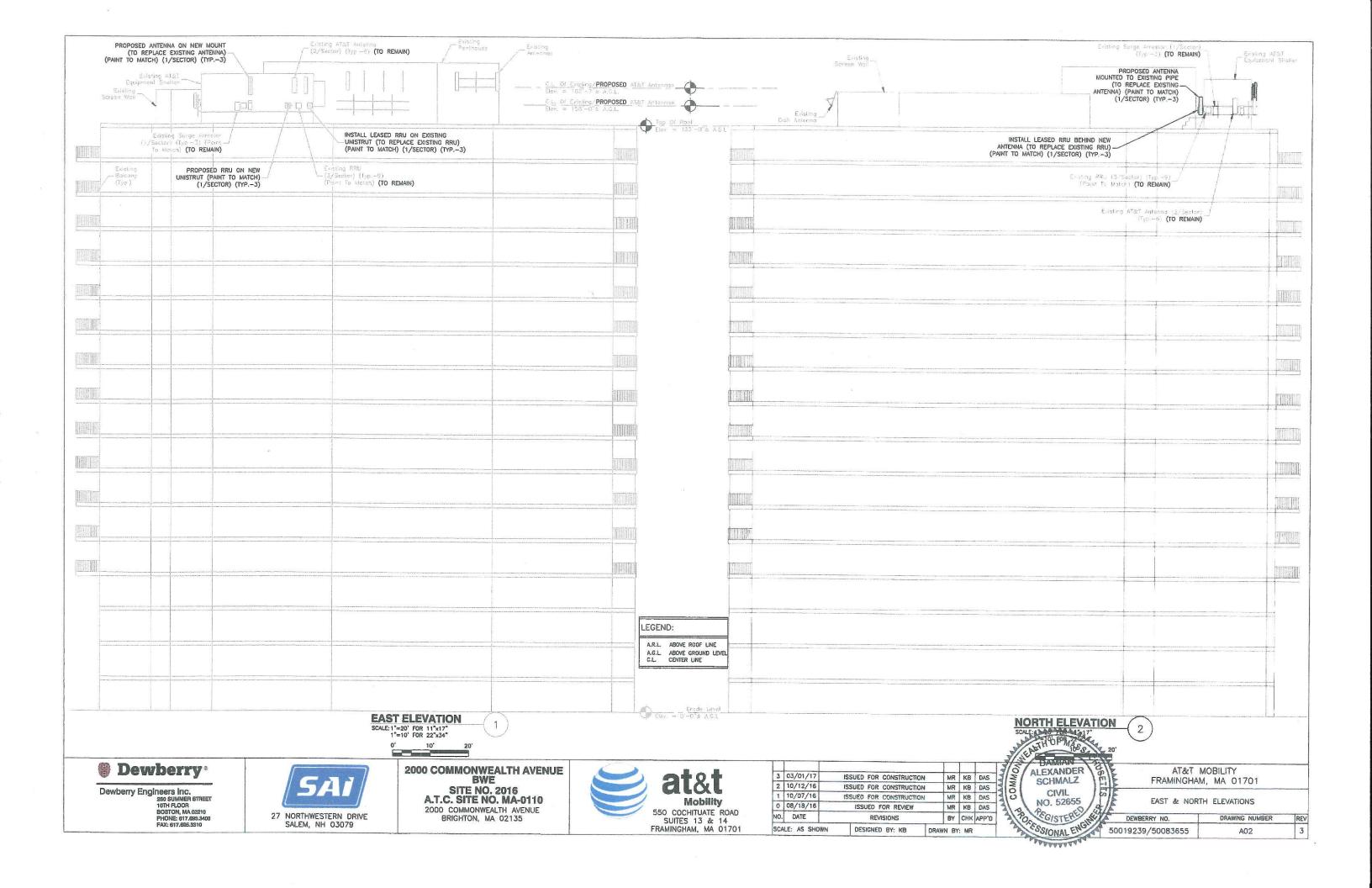
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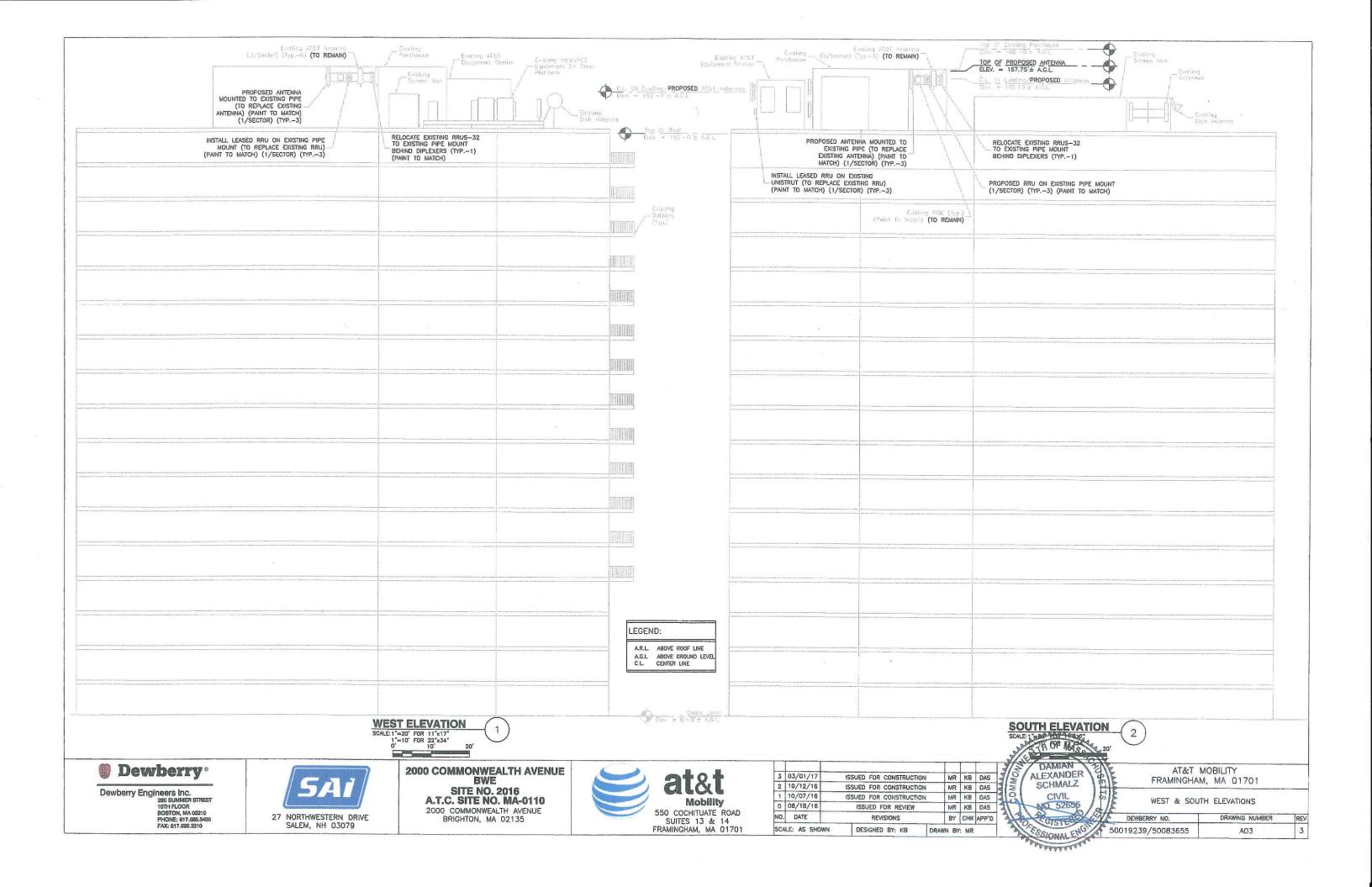
AT&T MOBILITY FRAMINGHAM, MA 01701

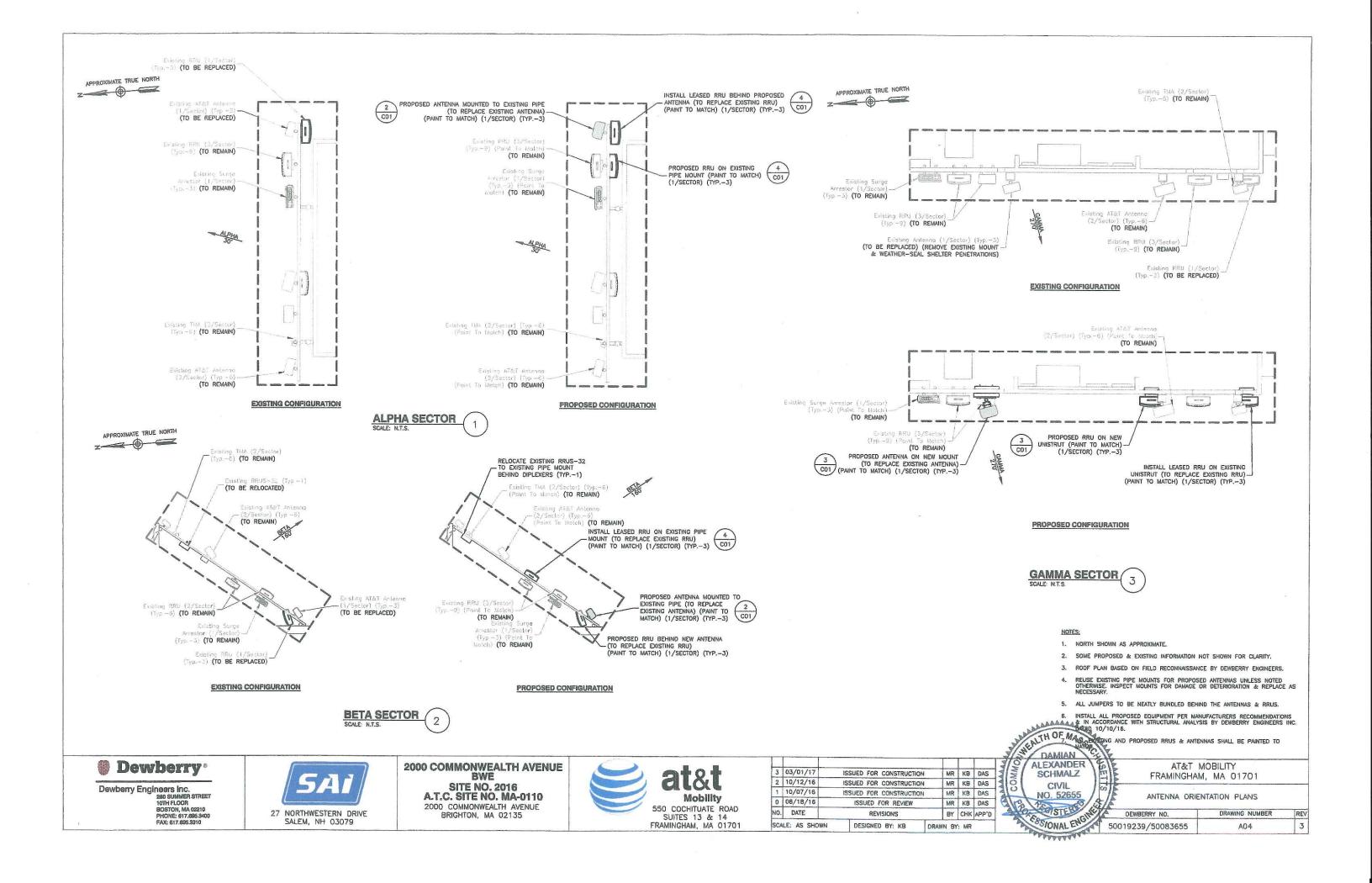
ROOF PLAN

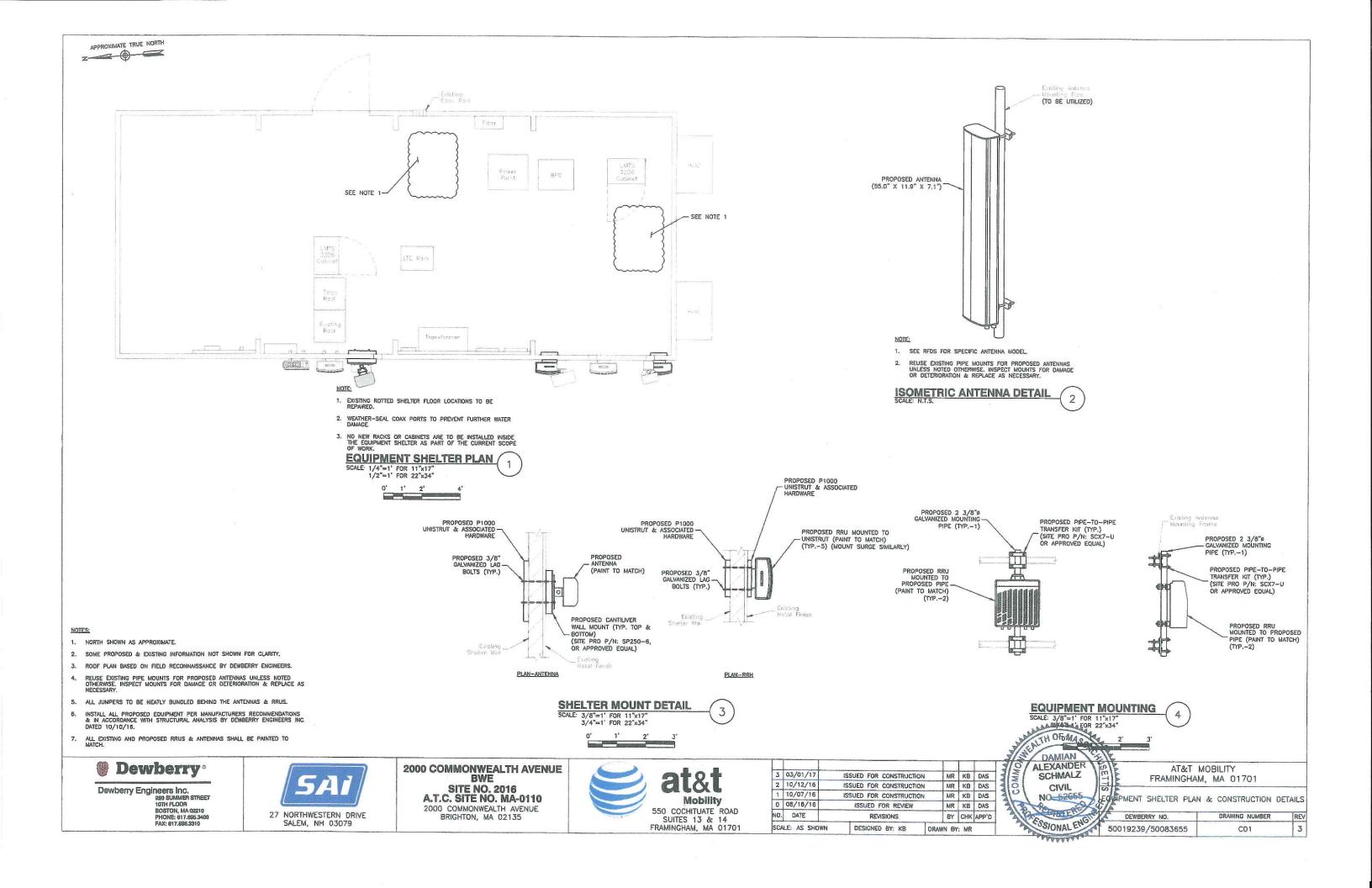
DRAWING NUMBER DEWBERRY NO. 50019239/50083655 A01





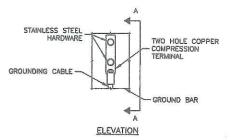


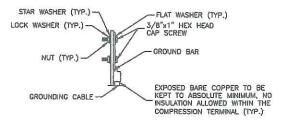




## **GROUNDING NOTES:**

- 1. THE CONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ). THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TA GROUNDING STANDARDS, THE CONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
- ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER CES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS. ALL AVAILABLE GROUNDING ELECTRODES SHALL BE CONNECTED TOGETHER IN ACCORDANCE WITH THE NEC.
- THE CONTRACTOR SHALL PERFORM IEEE FALL—OF—POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. USE OF OTHER METHODS MUST BE PRE—APPROVED BY CONTRACTOR IN WRITING.
- 4. THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS ON TOWER SITES AND 10 OHMS OR LESS ON ROOFFOR SITES WHEN ADDING ELECTRODES, CONTRACTOR SHALL MAINTAIN A MINIMUM DISTANCE BETWEEN THE ADDED ELECTRODE AND ANY OTHER EXISTING ELECTRODE EQUAL TO THE BURIED LENGTH OF THE ROD. IDEALLY, CONTRACTOR SHALL STRIVE TO KEEP THE SEPARATION DISTANCE EQUAL TO TWICE THE BURIED LENGTH OF THE RODS.
- THE CONTRACTOR 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.
- METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE AND UL APPROVED GROUNDING TYPE CONDUIT CLAUDE
- 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 TRANSMISSION EQUIPMENT.
- 8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK—TO—BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE DEPOSITED.
- 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. IN ALL CASES, BENDS SHALL BE MADE WITH A MINIMUM BEND RADIUS OF 8 INCHES.
- 11. EACH INTERIOR TRANSMISSION CABINET FRAME/PUNTH SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH 6 AWG STRANDED, GREEN INSULATED SUPPLEMENTAL EDUIPMENT GROUND WIRE UNLESS NOTED OTHERWISE IN THE DETAILS. EACH OUTDOOR CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE BURIED GROUND RING WITH 2 AWG SOUD TIN-PLATED COPPER WIRE UNLESS NOTED OTHERWISE IN THE DETAILS.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE 2 AWG SOLID TIN-PLATED COPPER UNLESS OTHERWISE INDICATED.
- 13. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE. CONNECTIONS TO ABOVE GRADE UNITS SHALL BE MADE WITH EXOTHERMIC WELDS WHERE PRACTICAL OR WITH 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS. HIGH PRESSURE CRIMP CONNECTORS MAY ONLY BE USED WITH WRITTEN PERMISSION FROM SAI COMMUNICATIONS MARKET REPRESSPRIATIVE.
- EXOTHERMIC WELDS SHALL GE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTORS STRUCTURAL ENGINEER.
- ALL WIRE TO WIRE GROUND CONNECTIONS TO THE INTERIOR GROUND RING SHALL BE FORMED USING HIGH PRESS CRIMPS OR SPLIT BOLT CONNECTORS WHERE INDICATED IN THE DETAILS.
- 16. ON ROOFTOP SITES WHERE EXOTHERMIC WELDS ARE A FIRE HAZARD COPPER COMPRESSION CAP CONNECTORS MAY BE USED FOR WIRE TO WIRE CONNECTORS. 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS SHALL BE USED FOR CONNECTION TO ALL ROOFTOP TRANSMISSION EQUIPMENT AND STRUCTURAL STEEL.
- CDAX BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR USING TWO—HOLE MECHANICAL TYPE BRASS CONNECTORS AND STAINLESS STEEL HARDWARE.
- 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.
- 21. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER GROUND CONDUCTOR. DURING EXCAVATION FOR NEW GROUND CONDUCTORS, IF EXISTING GROUND CONDUCTORS ARE ENCOUNTERED, BOND EXISTING GROUND CONDUCTORS TO NEW CONDUCTORS.
- 22. 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 CONDUITORS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNIVERSIDATED AND CALL CONDUIT IS UNIVERSIDATED TO CARD.

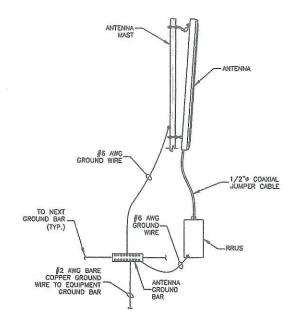




## NOTES:

- 1. DOUBLING UP OR STACKING OF CONNECTIONS IS NOT PERMITTED.
- 2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

TYPICAL GROUND BAR
MECHANICAL CONNECTION DETAIL
SCALE: N.T.S.



TYPICAL ANTENNA GROUNDING DETAIL

ANTENNA COAX TOF GND KIT CABLE ANTENNA COAX TOP GND KIT CABLE ANTENNA COAX TOP GND KIT CABLE RRU GROUND SURGE PROTECTOR RRU GROUND SURGE SURGE GND BAR GND BAR GND BAR #2 AWG LOWER MGB . . . . . . . . #2 BCW 0

# NOTES:

- 1. BOND ANTENNA GROUNDING KIT CABLE TO TOP CIGBE.
- 2. BOND ANTENNA GROUNDING KIT CABLE TO BOTTOM CIGBE.

SCHEMATIC GROUNDING DIAGRAM
SCALE: N.T.S.





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SALEM, NH 03079

2000 COMMONWEALTH AVENUE BWE SITE NO. 2016 A.T.C. SITE NO. MA-0110 2000 COMMONWEALTH AVENUE

BRIGHTON, MA 02135



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| 3 03/01/17 ISSUED FOR CONSTRUCTION MR KE  | DAS        |



AT&T MOBILITY FRAMINGHAM, MA 01701

GROUNDING NOTES & DETAILS

 DEWBERRY NO.
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