



T-MOBILE SITE NAME:WATKINS

T-MOBILE SITE NUMBER:DN01507B

ATC ASSET NUMBER:273970

SITE ADDRESS:24055 E. 6TH AVENUE
AURORA, CO 80018

SITE TYPE:SELF SUPPORT TOWER

NEW SITE BUILD



T-MOBILE WEST
18400 East 22nd Avenue
Aurora, CO 80011

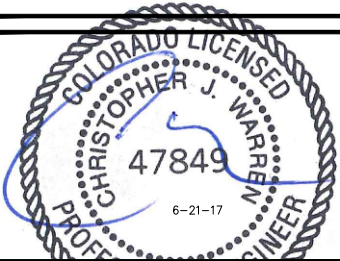
PLANS PREPARED BY:



FROM ZERO TO INFINIGY
the solutions are endless

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JOB NUMBER 317-000



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REVISIONS:			
DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	06/21/17	WNM	0

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SHEET DESCRIPTION:

TITLE SHEET &
PROJECT DATA

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T-1

SITE INFORMATION	AREA MAP	PROJECT DESCRIPTION	DRAWING INDEX																																																						
<p>APPLICANT: T-MOBILE 18400 EAST 22ND AVENUE AURORA, CO 80011</p> <p>CONTACT: JOHN WABISZCZEWICZ (303) 313-6930</p> <p>TOWER OWNER: AMERICAN TOWER CORPORATION 651 CORPORATE CIRCLE, STE 108 GOLDEN, CO 80401</p> <p>ATC ASSET #: 273970</p> <p>CONTACT: JULIAN PERRY (919) 466-5434</p> <p>LATITUDE (NAD83): 39° 43' 34.968" N -104.72638"</p> <p>LONGITUDE (NAD83): 104° 42' 24.516" W -104.70681"</p> <p>COUNTY: ARAPAHOE</p> <p>POWER COMPANY: XCEL ENERGY (303) 571-7511</p> <p>TELCO/BACKHAUL PROVIDER: CENTURYLINK (303) 825-3434</p> <p>T-MOBILE CM: TBD</p>		<p>T-MOBILE PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATION FACILITY:</p> <ul style="list-style-type: none">INSTALL (1) NEW ±10'x12' STEEL EQUIPMENT PLATFORM WITHIN PROPOSED 12'X15' LEASE AREA WITH NEW H-FRAME, NEW PPC, NEW CIENA ENCLOSURE, NEW DELTA SSC, (1) NEW STACKED SLEEVE, & (1) NEW COVP.INSTALL NEW METER & DISCONNECT TO EXISTING UTILITY H-FRAMEINSTALL NEW T-MOBILE ICE BRIDGEINSTALL NEW V-VFRAME SECTOR MOUNT KIT WITH (3) NEW PANEL ANTENNAS, (3) NEW FRBGs, & (2) NEW COVPINSTALL (1) NEW HYBRID CABLEINSTALL (1) NEW UNDERGROUND CONDUIT WITH FEEDERS FROM EXISTING TRANSFORMER TO NEW METER & DISCONNECT <p>THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY T-MOBILE IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY T-MOBILE. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER AND MOUNT.</p> <p>DRIVING DIRECTIONS</p> <p>START: 18400 E. 22ND AVENUE AURORA, CO 80011</p> <ol style="list-style-type: none">DRIVE FROM E. COLFAX AVENUE & I-70 FRONTAGE ROAD TO ARAPAHOE COUNTY.TURN RIGHT ONTO GUN CLUB ROAD.TURN LEFT ONTO E. 6TH AVENUE.IN ±0.2 MILES, CONTINUE LEFT ONTO E. 6TH AVENUE.IN ±0.15 MILES, TURN LEFT INTO ACCESS DRIVE.CONTINUE EAST TO TOWER SITE BEHIND BUILDING. <p>APPLICABLE CODES</p> <p>ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.</p> <ol style="list-style-type: none">INTERNATIONAL BUILDING CODE (2015 IBC)TIA-EIA-222-G OR LATEST EDITIONNFPA 780 - LIGHTNING PROTECTION CODE2014 NATIONAL ELECTRIC CODE OR LATEST EDITIONANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONSCO BUILDING CODELOCAL BUILDING CODECITY/COUNTY ORDINANCES	<table><tr><th>SHEET NO:</th><th>SHEET TITLE</th><th>REV</th></tr><tr><td>T-1</td><td>TITLE SHEET & PROJECT DATA</td><td>0</td></tr><tr><td>SP-1</td><td>T-MOBILE SPECIFICATIONS</td><td>0</td></tr><tr><td>A-1</td><td>OVERALL SITE PLAN</td><td>0</td></tr><tr><td>A-2</td><td>SITE PLAN</td><td>0</td></tr><tr><td>A-3</td><td>ENLARGED SITE PLAN</td><td>0</td></tr><tr><td>A-4</td><td>DETAILED EQUIPMENT PLANS</td><td>0</td></tr><tr><td>A-5</td><td>TOWER ELEVATION & CABLE PLAN</td><td>0</td></tr><tr><td>A-6</td><td>ANTENNA LAYOUT & LOADING CHART</td><td>0</td></tr><tr><td>A-7</td><td>EQUIPMENT & MOUNTING DETAILS</td><td>0</td></tr><tr><td>A-8</td><td>EQUIPMENT & MOUNTING DETAILS</td><td>0</td></tr><tr><td>A-9</td><td>PLUMBING DIAGRAM</td><td>0</td></tr><tr><td>E-1</td><td>SITE UTILITY PLAN</td><td>0</td></tr><tr><td>E-2</td><td>EQUIPMENT UTILITY PLAN</td><td>0</td></tr><tr><td>E-3</td><td>ELECTRICAL DETAILS</td><td>0</td></tr><tr><td>G-1</td><td>GROUNDING PLANS</td><td>0</td></tr><tr><td>G-2</td><td>GROUNDING DETAILS</td><td>0</td></tr><tr><td>G-3</td><td>GROUNDING DETAILS</td><td>0</td></tr></table>	SHEET NO:	SHEET TITLE	REV	T-1	TITLE SHEET & PROJECT DATA	0	SP-1	T-MOBILE SPECIFICATIONS	0	A-1	OVERALL SITE PLAN	0	A-2	SITE PLAN	0	A-3	ENLARGED SITE PLAN	0	A-4	DETAILED EQUIPMENT PLANS	0	A-5	TOWER ELEVATION & CABLE PLAN	0	A-6	ANTENNA LAYOUT & LOADING CHART	0	A-7	EQUIPMENT & MOUNTING DETAILS	0	A-8	EQUIPMENT & MOUNTING DETAILS	0	A-9	PLUMBING DIAGRAM	0	E-1	SITE UTILITY PLAN	0	E-2	EQUIPMENT UTILITY PLAN	0	E-3	ELECTRICAL DETAILS	0	G-1	GROUNDING PLANS	0	G-2	GROUNDING DETAILS	0	G-3	GROUNDING DETAILS	0
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ELECTRICAL NOTES:

- WORK INCLUDED
1. INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE ELECTRICAL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 - A. PREPARE AND SUBMIT SHOP DRAWINGS, DIAGRAMS AND ILLUSTRATIONS.
 - B. PROCURE ALL NECESSARY PERMITS AND APPROVALS AND PAY ALL REQUIRED FEES AND CHARGES IN CONNECTION WITH THE WORK OF THIS CONTRACT.
 - C. SUBMIT AS-BUILT DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS AND MANUALS.
 - D. EXECUTE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING OF EXISTING OR NEWLY INSTALLED CONSTRUCTION REQUIRED FOR THE WORK OF THIS CONTRACT. FOR SLAB PENETRATIONS THROUGH POST TENSION SLABS, X-RAY EXACT AREA OF PENETRATION PRIOR TO PERFORMING WORK. COORDINATE ALL X-RAY WORK WITH BUILDING ENGINEER.
 - E. PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL FRAMING SUPPORTS, AND BASES FOR CONDUIT AND EQUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF HIS CONTRACT. PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.
 - F. MAINTAIN ALL EXISTING ELECTRICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATION DURING THE PROGRESS OF THE WORK INCLUDING PROVIDING ALL TEMPORARY JUMPERS, CONDUITS, CAPS, PROTECTIVE DEVICES, CONNECTIONS AND EQUIPMENT REQUIRED. PROVIDE TEMPORARY LIGHT AND POWER FOR CONSTRUCTION PURPOSES.
 2. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO CALL FOR AN INSTALLATION THAT IS COMPLETE IN EVERY RESPECT. IT IS NOT THE INTENT TO GIVE EVERY DETAIL ON THE DRAWINGS AND IN THE SPECIFICATIONS. IF AN ITEM OF WORK IS INDICATED IN THE DRAWINGS, IT IS CONSIDERED SUFFICIENT FOR INCLUSION IN THE CONTRACT. FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT USUALLY FURNISHED OR NEEDED TO MAKE A COMPLETE INSTALLATION WHETHER OR NOT SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS.

GENERAL REQUIREMENTS

1. PROVIDE ALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND LOCAL AND STATE ELECTRICAL CODES.
2. THE ELECTRICAL PLANS ARE DIAGRAMMATIC ONLY. REFER TO THE ARCHITECTURAL PLANS FOR THE EXACT DIMENSIONS OF THE BUILDING.
3. LOAD CALCULATIONS ARE BASED ON EXISTING BUILDING INFORMATION/DRAWINGS PROVIDED TO ENGINEERING. CONTRACTOR IS TO VERIFY ALL EXISTING RATINGS AND LOADS PRIOR TO PURCHASING OF SPECIFIED EQUIPMENT FOR COMPLIANCE TO NEC. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES AND REQUEST FURTHER DIRECTION BY ENGINEER.
4. EXISTING BUILDING EQUIPMENT IS NOTED ON THE DRAWINGS. NEW OR RELOCATED EQUIPMENT IS SHOWN WITH SOLID LINES. FUTURE EQUIPMENT (NOT IN THIS CONTRACT) IS DEPICTED WITH SHADED LINES. REQUEST CLARIFICATION OF DRAWINGS OR OF SPECIFICATIONS PRIOR TO PRICING OR INSTALLATION.
5. GENERAL
 - A. AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THE PROPOSAL, MAKE A MANDATORY SITE VISIT TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK TO BE PERFORMED. NO EXTRA COMPENSATION WILL BE ALLOWED FOR FAILURE TO NOTIFY THE OWNER, IN WRITING, OF ANY DISCREPANCIES THAT MAY HAVE BEEN NOTED BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS AND SPECIFICATIONS.
 - B. VERIFY ALL MEASUREMENTS AT THE SITE AND BE RESPONSIBLE FOR CORRECTNESS OF SAME.
6. QUALITY, WORKMANSHIP, MATERIALS AND SAFETY
 - A. PROVIDE NEW MATERIALS AND EQUIPMENT OF A DOMESTIC MANUFACTURER BY THOSE REGULARLY ENGAGED IN THE PRODUCTION AND MANUFACTURE OF SPECIFIED MATERIALS AND EQUIPMENT. WHERE UL, OR OTHER AGENCY, HAS ESTABLISHED STANDARDS FOR MATERIALS, PROVIDE MATERIALS WHICH ARE LISTED AND LABELED ACCORDINGLY. THE COMMERCIALY STANDARD ITEMS OF EQUIPMENT AND THE SPECIFIC NAMES MENTIONED HEREIN ARE INTENDED FOR THE PROPER FUNCTIONING OF THE WORK.
 - B. WORK SHALL BE PERFORMED BY WORKMEN SKILLED IN THE TRADE REQUIRED FOR THE WORK. INSTALL MATERIALS AND EQUIPMENT TO PRESENT A NEAT APPEARANCE WHEN COMPLETED AND IN ACCORDANCE WITH THE APPROVED RECOMMENDATIONS OF THE MANUFACTURER AND IN ACCORDANCE WITH CONTRACT DOCUMENTS.
 - C. PROVIDE LABOR, MATERIALS, APPARATUS AND APPLIANCES ESSENTIAL TO THE FUNCTIONING OF THE SYSTEMS DESCRIBED OR INDICATED HEREIN, OR WHICH MAY BE REASONABLY IMPLIED AS ESSENTIAL WHENEVER MENTIONED IN THE CONTRACT DOCUMENT OR NOT.
 - D. MAKE WRITTEN REQUESTS FOR SUPPLEMENTARY INSTRUCTIONS TO ARCHITECT/ENGINEER IN CASE OF DOUBT AS TO WORK INTENDED OR IN EVENT OF NEED FOR EXPLANATION THEREOF.
 - E. PERFORMANCE AND MATERIAL REQUIREMENTS SCHEDULED OR SPECIFIED ARE MINIMUM STANDARD ACCEPTABLE. THE RIGHT TO JUDGE THE QUALITY OF EQUIPMENT THAT DEVIATES FROM THE CONTRACT DOCUMENT REMAINS SOLELY WITH ARCHITECT/ENGINEER. CONTRACT DOCUMENT OR NOT.

GUARANTEE

1. GUARANTEE MATERIALS, PARTS AND LABOR FOR WORK FOR ONE YEAR FROM THE DATE OF ISSUANCE OF OCCUPANCY PERMIT. DURING THAT PERIOD, MAKE GOOD FAULTS OR IMPERFECTIONS THAT MAY ARISE DUE TO DEFECTS OR OMISSIONS IN MATERIALS OR WORKMANSHIP WITH NO ADDITIONAL COMPENSATION AND AS DIRECTED BY ARCHITECT.

CLEANING

1. REMOVE ALL CONSTRUCTION DEBRIS RESULTING FROM THE WORK.
2. CLEAN EQUIPMENT AND SYSTEMS FOLLOWING THE COMPLETION OF THE PROJECT TO THE SATISFACTION OF THE ENGINEER.

COORDINATION AND SUPERVISION

1. CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES. WHERE SUCH WORK IS NECESSARY, HOWEVER, PATCH AND REPAIR THE WORK IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER. RENDER FULL COOPERATION TO OTHER TRADES WHERE WORK WILL BE INSTALLED IN CLOSE PROXIMITY TO WORK OF OTHER TRADES. ASSIST IN WORKING OUT SPACE CONDITIONS. IF WORK IS INSTALLED BEFORE COORDINATION WITH OTHER TRADES, OR CAUSES INTERFERENCE, MAKE CHANGES NECESSARY TO CORRECT CONDITIONS WITHOUT EXTRA CHARGE.

SUBMITTALS

1. AS-BUILT DRAWINGS:
 - A. UPON COMPLETION OF THE WORK, FURNISH TO THE OWNER "AS-BUILT" DRAWINGS.
2. SERVICE MANUALS:
 - A. UPON COMPLETION OF THE WORK, FULLY INSTRUCT T-MOBILE AS TO THE OPERATION AND MAINTENANCE OF ALL MATERIAL, EQUIPMENT AND SYSTEMS.
 - B. PROVIDE 3 COMPLETE BOUND SETS OF INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL SYSTEMS AND EQUIPMENT.

CUTTING AND PATCHING

1. PROVIDE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED TO COMPLETE THE WORK.
2. OBTAIN OWNER APPROVAL PRIOR TO CUTTING THROUGH FLOORS OR WALLS FOR PIPING OR CONDUIT.

TESTS, INSPECTION AND APPROVAL

1. BEFORE ENERGIZING ANY ELECTRICAL INSTALLATION, INSPECT EACH UNIT IN DETAIL. TIGHTEN ALL BOLTS AND CONNECTIONS (TORQUE-TIGHTEN WHERE REQUIRED) AND DETERMINE THAT ALL COMPONENTS ARE ALIGNED, AND THE EQUIPMENT IS IN SAFE, OPERATIONAL CONDITION.
2. PROVIDE THE COMPLETE ELECTRICAL SYSTEM FREE OF GROUND FAULTS AND SHORT CIRCUITS SUCH THAT THE SYSTEM WILL OPERATE SATISFACTORILY UNDER FULL LOAD CONDITIONS, WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

SPECIAL REQUIREMENTS

1. DO NOT LEAVE ANY WORK INCOMPLETE NOR ANY HAZARDOUS SITUATIONS CREATED WHICH WILL AFFECT THE LIFE OR SAFETY OF THE PUBLIC AND/OR BUILDING OCCUPANTS. DO NOT INTERFERE WITH OR CUTOFF ANY OF THE EXISTING SERVICES WITHOUT THE OWNER'S WRITTEN PERMISSION.
2. WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING UTILITIES AND SERVICE SYSTEMS, INCLUDING FEEDER OR BRANCH CIRCUITING SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON.
SHUTDOWN NOTE: SCHEDULE AND NOTIFY OWNER 48 HOURS PRIOR TO SHUTDOWN. ALL SHUTDOWN WORK TO BE SCHEDULED AT A TIME CONVENIENT TO OWNER.

GROUNDING

1. ROUTE ALL GROUNDING CONDUCTORS AS SHOWN ON CONDUIT/GROUNDING RISER.
2. ROUTE 500 KCMIL CU. THIN CONDUCTOR FROM THE MGB LOCATION TO BUILDING STEEL. VERIFY BUILDING STEEL IS EFFECTIVELY GROUNDED PER NEC TO THE MAIN SERVICE GROUNDING ELECTRODE CONDUCTOR (GEC).
3. MAKE ALL GROUND CONNECTIONS FROM MGB TO ELECTRICAL EQUIPMENT WITH 2 HOLE, CRIMP TYPE, BURNDY COMPRESSION TERMINATIONS, SIZED AS REQUIRED.
4. USE 1 HOLE, CRIMP TYPE, BURNDY COMPRESSIONS TERMINATIONS, SIZED AS REQUIRED, AT EQUIPMENT GROUND CONNECTIONS.
5. HIRE AN INDEPENDENT LAB TO PERFORM THE SPECIFIED OHMS TESTING. PROVIDE 4 SETS OF THE CERTIFIED DOCUMENTS TO THE OWNER FOR VERIFICATION PRIOR TO THE PROJECT COMPLETION.

RACEWAYS

1. ALL WIRING TO BE INSTALLED IN CONDUIT SYSTEMS IN ACCORDANCE WITH THE FOLLOWING:
 - A. EXTERIOR FEEDERS AND CONTROL, WHERE UNDERGROUND, TO BE IN SCH 40 PVC.
 - B. EXTERIOR, ABOVE GROUND POWER CONDUITS TO BE GALVANIZED RIGID STEEL (RGS).
 - C. ALL TELECOMMUNICATION CONDUITS, INTERIOR/EXTERIOR, TO BE EMT.
- ON THIS PROJECT.
- E. ALL TELECOM CONDUITS AND PULL BOXES INSTALLED ON THIS PROJECT TO BE LABELED "T-MOBILE". OWNER WILL PROVIDE LABELS FOR CONTRACTOR TO INSTALL.
- F. INTERIOR FEEDERS TO BE INSTALLED IN E.M.T. WITH STEEL COMPRESSION FITTINGS.
- G. MINIMUM SIZE CONDUIT TO BE ¾" TRADE SIZE UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- H. FINAL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT TO BE INSTALLED IN LIQUID-TIGHT FLEXIBLE METAL CONDUIT.

- AREAS OR DRYWALL PARTITIONS, UNLESS OTHERWISE NOTED.
- J. THE ROUTING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC. BEFORE INSTALLING ANY WORK, EXAMINE THE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER TRADES TO DETERMINE THE EXACT LOCATIONS AND CLEARANCES.
 - K. ALL EXTERIOR MOUNTING HARDWARE TO BE GALVANIZED STEEL. COORDINATE WITH BUILDING ENGINEER PRIOR TO ATTACHING TO BUILDING STRUCTURE.

RACEWAYS CONT'D

- L. PENETRATIONS OF WALLS, FLOORS AND ROOFS, FOR THE PASSAGE OF ELECTRICAL RACEWAYS, TO BE PROPERLY SEALED AFTER INSTALLATION OF RACEWAYS SO AS TO MAINTAIN THE STRUCTURAL OR WATERPROOF INTEGRITY OF THE WALL, FLOOR OR ROOF SYSTEM TO BE PENETRATED. SEAL ALL CONDUIT PENETRATIONS THROUGH FIRE OR SMOKE RATED WALLS, CEILINGS OR SMOKE TIGHT CORRIDOR PARTITIONS TO MAINTAIN PROPER RATING OF WALL OR CEILING.
- M. PROVIDE ALL CONDUIT ENDS WITH INSULATED METALLIC GROUNDING BUSHINGS.
- N. CONDUIT TO BE SUPPORTED AT MAXIMUM DISTANCE OF 8'-0", OR AS REQUIRED BY NEC, IN HORIZONTAL AND VERTICAL DIRECTIONS.
- O. PROVIDE STAINLESS STEEL BLANK COVER PLATES FOR ALL JUNCTION BOXES AND/OR OUTLET BOXES NOT USED IN EXPOSED AREAS. PROVIDE ALL OTHER UNUSED BOXES WITH STANDARD STEEL COVER PLATES.
- P. WHERE APPLICABLE, PROVIDE ROOFTOP CONDUIT SUPPORT SYSTEM, CONFORMING TO ROOFTOP WARRANTY REQUIREMENTS, PER BUILDING.

WIRES AND CABLES

1. CONTRACTOR TO COORDINATE WITH EQUIPMENT SUPPLIER AND VENDOR FOR EXACT EQUIPMENT OVER-CURRENT PROTECTION VOLTAGE, WIRE SIZE AND PLUG CONFIGURATION, IF APPLICABLE, PRIOR TO BID.
2. ALL EQUIPMENT/DEVICES TO BE PROVIDED WITH INSULATED GROUND CONDUCTOR.
3. ALL WIRE AND CABLE TO BE 600VOLT, COPPER, WITH THWN/ THHN INSULATION, EXCEPT AS NOTED.
4. WIRE FOR POWER AND LIGHTING WILL NOT BE LESS THAN NO. 12AWG. ALL WIRE NO. 8 AND LARGER TO BE STRANDED.
5. CONTROL WIRING IS NOT TO BE LESS THAN NO. 14AWG, FLEXIBLE IN SINGLE CONDUCTORS OR MULTI-CONDUCTOR CABLES. CONTROL WIRING WILL CONSIST OF MULTI-CONDUCTOR CABLES WHEREVER POSSIBLE. CABLES TO BE PROVIDED WITH AN OVERALL FLAME-RETARDANT, EXTRUDED JACKET AND RATED FOR PLENUM USE. ALL CONTROL WIRE TO BE 600VOLT RATED.
6. WIRE PREVIOUSLY PULLED INTO CONDUIT IS CONSIDERED USED AND IS NOT TO BE RE-PULLED.
7. HOME RUNS AND BRANCH CIRCUIT WIRING FOR 20A, 120V CIRCUITS:

LENGTH (FT.)	HOME RUN WIRE SIZE
0 TO 50	NO. 12
51 TO 100	NO. 10
101 TO 150	NO. 8
8. VOLTAGE DROP IS NOT TO EXCEED 3%.
9. MAKE ALL CONNECTIONS WITH UL APPROVED, SOLDERLESS, PRESSURE TYPE INSULATED CONNECTORS: SCOTCHLOK OR AND APPROVED EQUAL.

WIRING DEVICES

1. ALL RECEPTACLES INSTALLED IN THIS PROJECT TO BE GROUNDING TYPE, WITH GROUNDING PIN SLOT CONNECTED TO DEVICE GROUND SCREW FOR GROUND WIRE CONNECTION.
- DISCONNECT SWITCHES AND FUSES
1. DISCONNECT SWITCHES TO BE VOLTAGE-RATED TO SUIT THE CHARACTERISTICS OF THE SYSTEM FROM WHICH THEY ARE SUPPLIED.
 2. PROVIDE HEAVY-DUTY, METAL-ENCLOSED, EXTERNALLY-OPERATED DISCONNECT SWITCHES, FUSED OR UNFUSED, OF SUCH TYPE AND SIZE AS REQUIRED TO PROPERLY PROTECT OR DISCONNECT THE LOAD FOR WHICH THEY ARE INTENDED.
 3. PROVIDE NEMA 1 DISCONNECT SWITCHES FOR INTERIOR INSTALLATION, NEMA 3R FOR EXTERIOR INSTALLATION.
 4. DISCONNECT SWITCHES TO BE MANUFACTURED BY:
 - A. GENERAL ELECTRIC COMPANY
 - B. SQUARE-D
 5. PROVIDE RK-1 TYPE FUSES, UNLESS NOTED OTHERWISE.

INSTALLATION

1. INSTALL DISCONNECT SWITCHES WHERE INDICATED ON DRAWINGS.
2. INSTALL FUSES IN FUSIBLE DISCONNECT SWITCHES. FUSES MUST MATCH IN TYPE AND RATING.
3. FUSES TO BE MOUNTED SO THAT THE LABELS SHOWING THEIR RATINGS CAN BE READ WITHOUT REQUIRING FUSE REMOVAL.
4. FURNISH AND DEPOSIT SPARE FUSES AT THE JOB SITE AS FOLLOWS:
 - A. THREE SPARES FOR EACH TYPE AND SIZE, IN EXCESS OF 60A, USED FOR INITIAL FUSING.
 - B. TEN PERCENT SPARES FOR EACH TYPE AND SIZE, UP TO AND INCLUDING 60A, USED FOR INITIAL FUSING. IN NO CASE WILL LESS THAN THREE FUSES OF ONE PARTICULAR TYPE AND SIZE BE FURNISHED.

CONFLICTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATIONS OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE OWNER FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
2. THE BIDDER, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY MATTER OR THING CONCERNING SUCH BIDDER MIGHT HAVE FULLY INFORMED THEMSELVES PRIOR TO THE BIDDING.
3. NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST, OR OF DIFFICULTIES OR CONDITIONS THAT MAY BE ENCOUNTERED, OR OF ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS GOVERNING THE WORK.

CONTRACTS AND WARRANTIES

1. CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF CONTRACTOR LICENSES AND BONDS.
2. SEE MASTER CONTRACTION SERVICES AGREEMENT FOR ADDITIONAL DETAILS.

STORAGE

1. ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION AND IN A MANNER THAT DOES NOT NECESSARILY OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.

CLEANUP

1. THE CONTRACTORS SHALL, AT ALL TIMES, KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK. THEY SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS AND SHALL LEAVE THEIR WORK CLEAN AND READY TO USE.
2. EXTERIOR
 - A. VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
 - B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
 - C. IF NECESSARY, TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.
3. INTERIOR
 - A. VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS, FLOOR, AND CEILING.
 - B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
 - C. REMOVE PAINT DROPPINGS, SPOTS, STAINS, AND DIRT FROM FINISHED SURFACES.

CHANGE ORDER PROCEDURE:

1. REFER TO SECTION 17 OF SIGNED MCSA: SEE PROFESSIONAL SERVICE AGREEMENT FOR MCSA.

RELATED DOCUMENTS AND COORDINATION

1. GENERAL CARPENTRY, ELECTRICAL AND ANTENNA DRAWINGS ARE INTERRELATED. IN PERFORMANCE OF THE WORK, THE CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

SHOP DRAWINGS

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR APPROVAL.
2. ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE OWNER.

PRODUCTS AND SUBSTITUTIONS

1. SUBMIT 3 COPIES OF EACH REQUEST FOR SUBSTITUTION. IN EACH REQUEST, IDENTIFY THE PRODUCT OR FABRICATION OR INSTALLATION METHOD TO BE REPLACED BY THE SUBSTITUTION. INCLUDE RELATED SPECIFICATION SECTION AND DRAWING NUMBERS AND COMPLETE DOCUMENTATION SHOWING COMPLIANCE WITH THE REQUIREMENTS FOR SUBSTITUTIONS.
2. SUBMIT ALL NECESSARY PRODUCT DATA AND CUT SHEETS WHICH PROPERLY INDICATE AND DESCRIBE THE ITEMS, PRODUCTS AND MATERIALS BEING INSTALLED. THE CONTRACTOR SHALL, IF DEEMED NECESSARY BY THE OWNER, SUBMIT ACTUAL SAMPLES TO THE OWNER FOR APPROVAL IN LIEU OF CUT SHEETS.

QUALITY ASSURANCE

1. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THESE SHALL INCLUDE, BUT NOT BE LIMITED TO THE APPLICABLE CODES SET FORTH BY THE LOCAL GOVERNING BODY. SEE "CODE COMPLIANCE" T-1.

ADMINISTRATION

1. BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT. THIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.
2. SUBMIT A BAR TYPE PROGRESS CHART, NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR EACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT THE SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK AND SHOWING COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED FOR SUBSTANTIAL COMPLETION OF THE WORK.
3. PRIOR TO COMMENCING CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE, BUT NOT LIMITED TO, THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED).
4. CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER, NOR WILL WIRELESS SERVICE BE ARRANGED.
5. DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES. CONTRACTOR WILL COMPLY WITH ALL WPCS SAFETY REQUIREMENTS IN THEIR AGREEMENT.
6. PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE OWNER.
7. COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.
8. NOTIFY THE OWNER/PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

INSURANCE AND BONDS

1. CONTRACTOR, AT THEIR OWN EXPENSE, SHALL CARRY AND MAINTAIN, FOR THE DURATION OF THE PROJECT, ALL INSURANCE, AS REQUIRED AND LISTED, AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER. REFER TO THE MASTER AGREEMENT FOR REQUIRED INSURANCE LIMITS.
2. THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES.
3. CONTRACTOR MUST PROVIDE PROOF OF INSURANCE.

GENERAL NOTES:

INTENT

1. THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED, OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH
3. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
4. THE PURPOSE OF THE SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.
5. MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT ISSUING A CHANGE ORDER.

ABBREVIATIONS	
ADJ	ADJUSTABLE
AGL	ABOVE GROUND LINE
&	AND
APPROX	APPROXIMATE
Ø	AT
BTS	BASE TRANSMISSION STATION
CAB	CABINET
CLG	CEILING
CONC	CONCRETE
CONT	CONTINUOUS
DIA OR Ø	DIAMETER
DWG	DRAWING
EACH	EACH
ELEC	ELECTRICAL
ELEV	ELEVATION
EQ	EQUAL
EQUIP	EQUIPMENT
EGB	EQUIPMENT GROUND BAR
(E)	EXISTING
EXT	EXTERIOR
FF	FINISHED FLOOR
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GRND	GROUND
LG	LONG
MAX	MAXIMUM
MECH	MECHANICAL
MW	MICROWAVE DISH
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTL	METAL
(N)	NEW
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OPP	OPPOSITE
(P)	PROPOSED
PCS	PERSONAL COMMUNICATION SYSTEM
PPC	POWER PROTECTION CABINET
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SS	STAINLESS STEEL
STL	STEEL
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TYP	TYPICAL
VIF	VERIFY IN FIELD
UON	UNLESS OTHERWISE NOTED
WWF	WELDED WIRE FABRIC
W/	WITH

PLANS PREPARED FOR:



T-MOBILE WEST
18400 East 22nd Avenue
Aurora, CO 80011

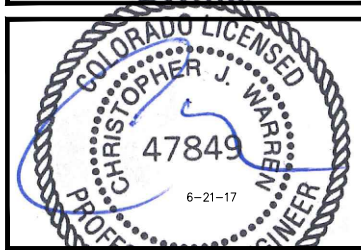
PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

7301 Federal Blvd, Suite 301
Westminster, CO 80030
Office # (303) 219-1178
Fax # (303) 242-8636

JOB NUMBER 317-000

AMERICAN TOWER CORPORATION



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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	06/21/17	WNM	0

T-MOBILE SITE NAME:

WATKINS

T-MOBILE SITE #:

DN01507B

SITE ADDRESS:

24055 E. 6TH AVENUE
AURORA, CO 80018

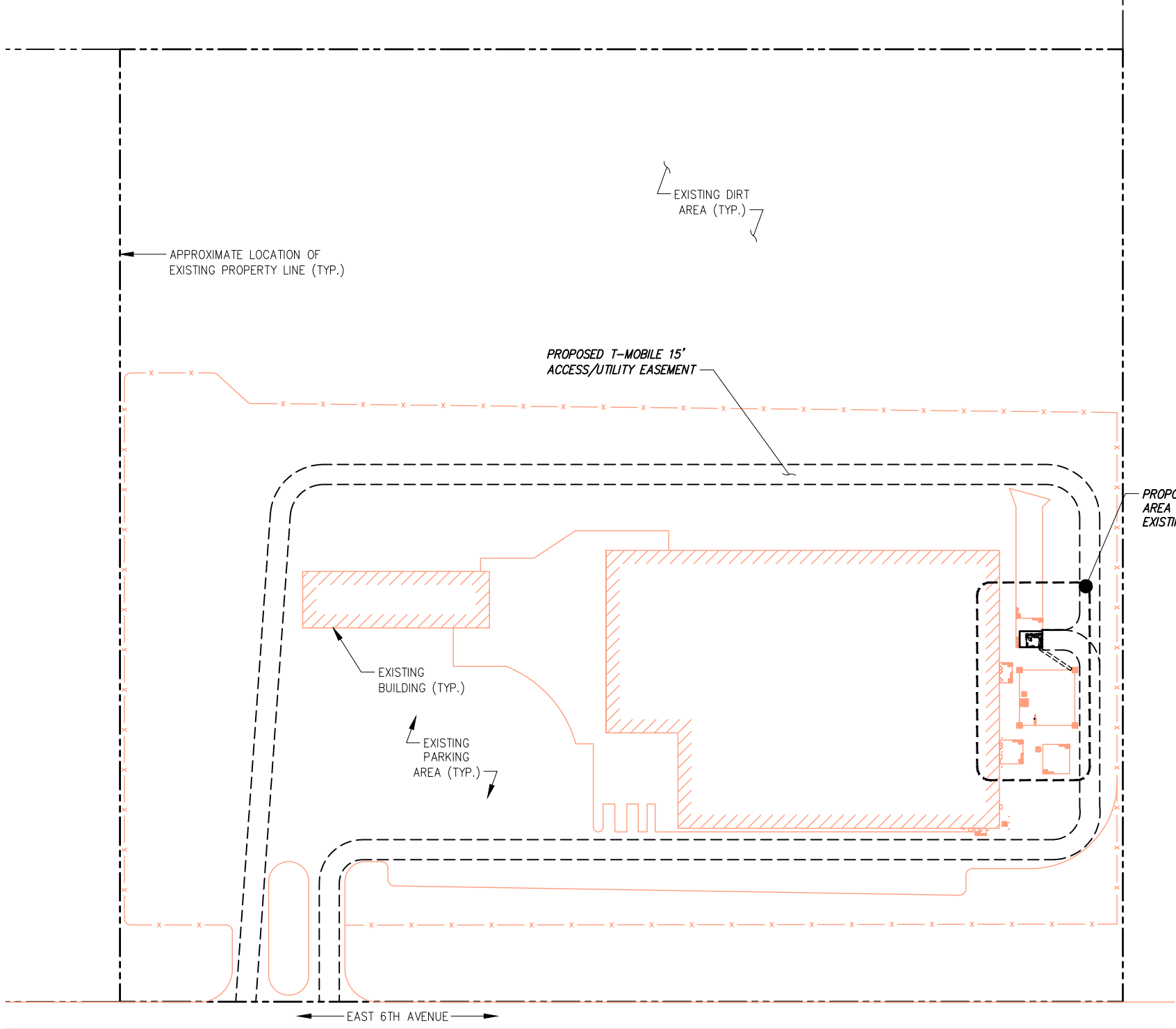
SHEET DESCRIPTION:

T-MOBILE SPECIFICATIONS

SHEET NUMBER:

SP-1

INFORMATION CONTAINED WITHIN DRAWINGS IS
BASED ON PROVIDED INFORMATION AND IS NOT
THE RESULT OF A FIELD SURVEY. CONTRACTOR
TO VERIFY PRIOR TO CONSTRUCTION



GRAPHIC SCALE
100' 50' 0 50' 100'
SCALE: 22"x34" SHEET 1"= 50'
SCALE: 11"x17" SHEET 1"= 100'

PLANS PREPARED FOR:



T-MOBILE WEST
18400 East 22nd Avenue
Aurora, CO 80011

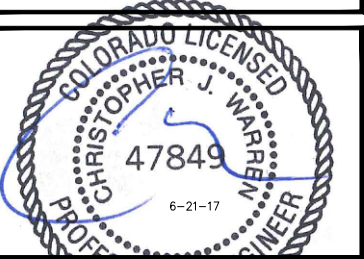
PLANS PREPARED BY:



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REVISIONS:			
DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	06/21/17	WNM	0

T-MOBILE SITE NAME:

WATKINS

T-MOBILE SITE #:

DN01507B

SITE ADDRESS:

24055 E. 6TH AVENUE
AURORA, CO 80018

SHEET DESCRIPTION:

OVERALL SITE PLAN

SHEET NUMBER:

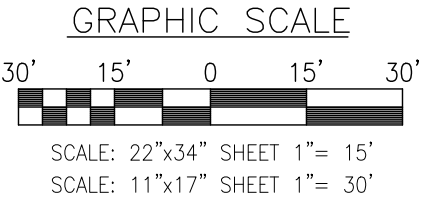
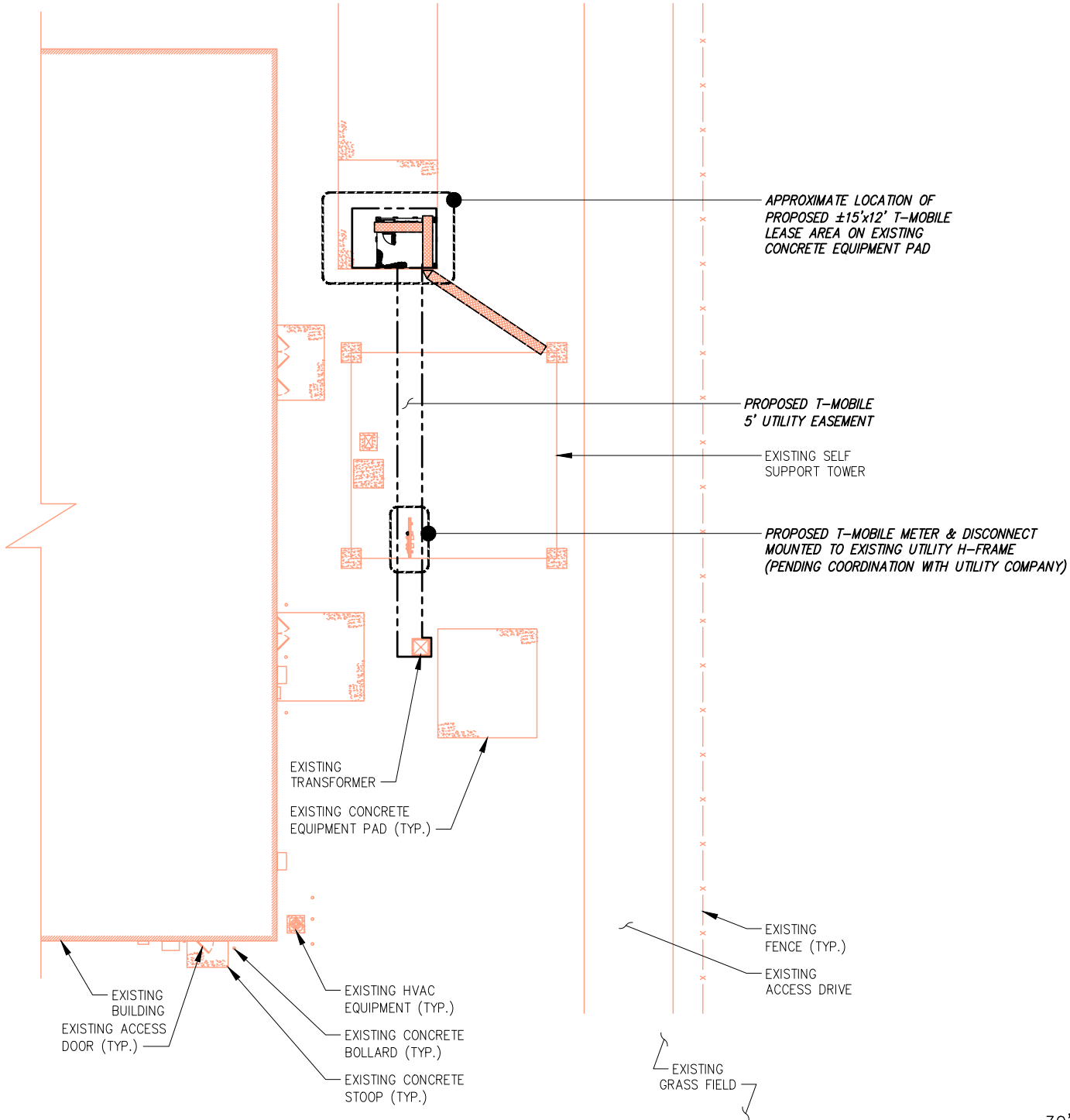
A-1

OVERALL SITE PLAN

SCALE: AS NOTED

1

INFORMATION CONTAINED WITHIN DRAWINGS IS
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TO VERIFY PRIOR TO CONSTRUCTION



SITE PLAN

SCALE: AS NOTED

1

PLANS PREPARED FOR:



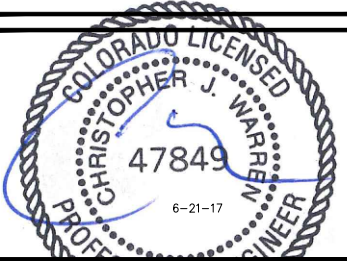
T-MOBILE WEST
18400 East 22nd Avenue
Aurora, CO 80011

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REVISIONS:			
DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	06/21/17	WNM	0

T-MOBILE SITE NAME:

WATKINS

T-MOBILE SITE #:

DN01507B

SITE ADDRESS:

24055 E. 6TH AVENUE
AURORA, CO 80018

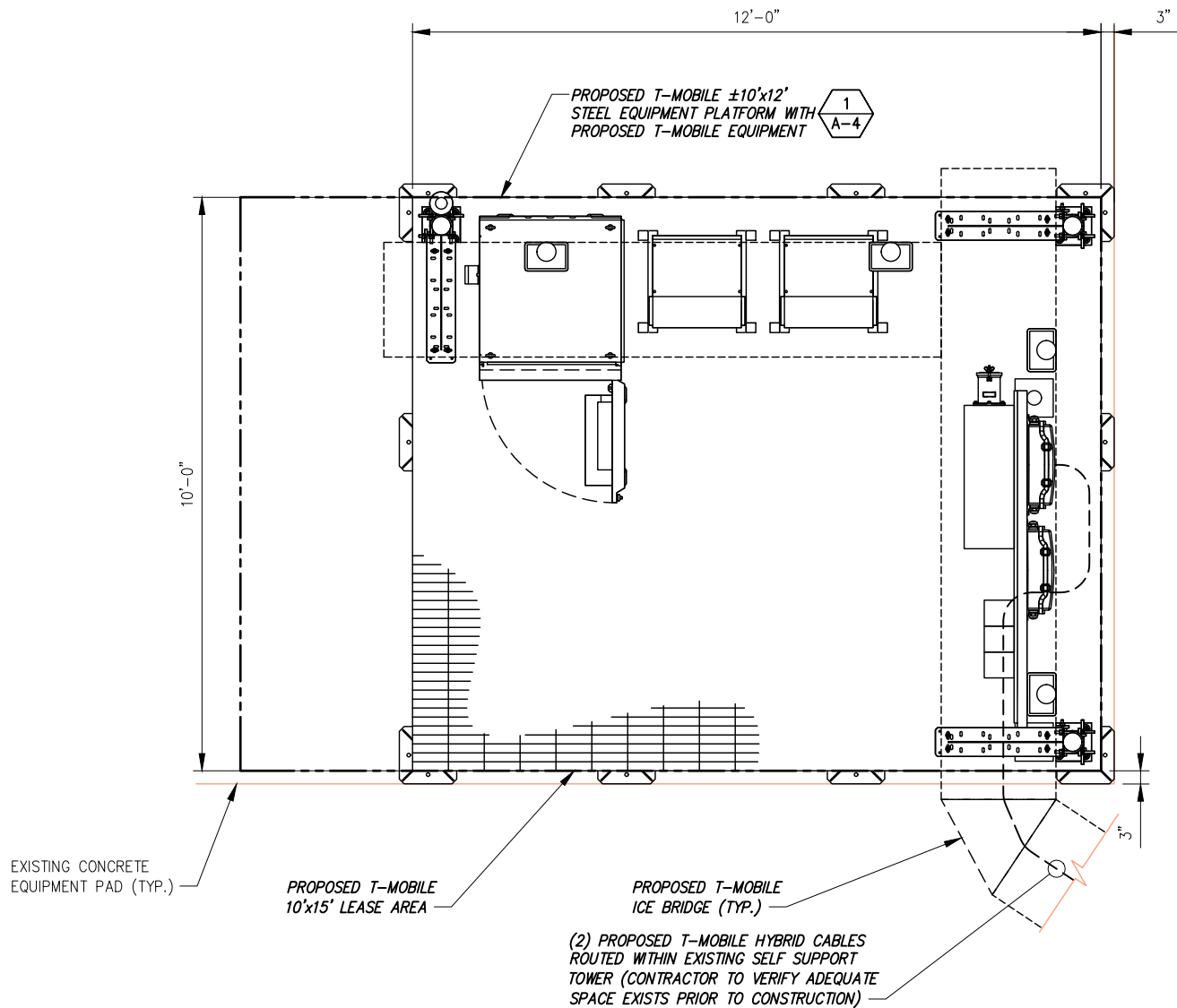
SHEET DESCRIPTION:

SITE PLAN

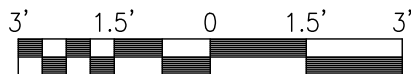
SHEET NUMBER:

A-2

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GRAPHIC SCALE



SCALE: 22"x34" SHEET 1"= 1'-6"

SCALE: 11"x17" SHEET 1"= 3'-0"

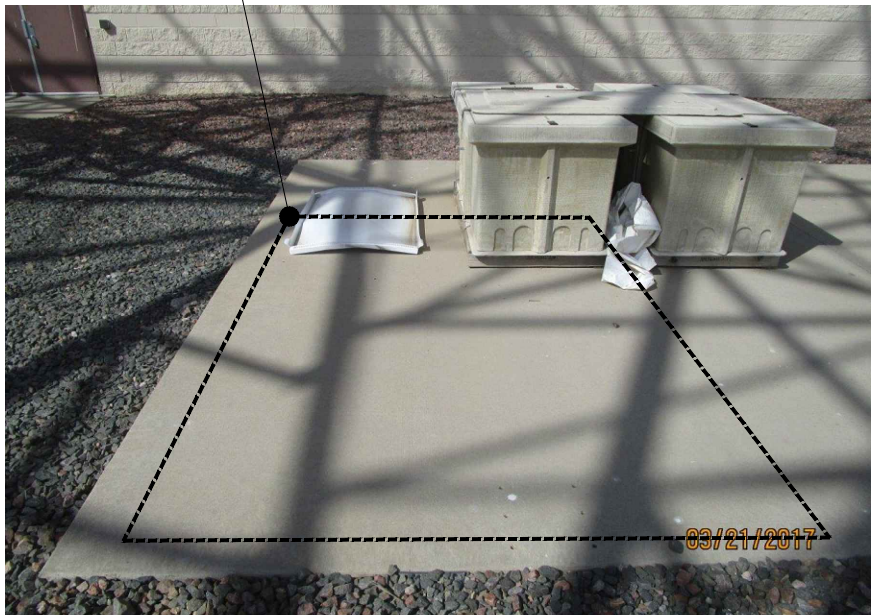
ENLARGED SITE PLAN

SCALE: AS NOTED

1



SITE PHOTO #1



SITE PHOTO #2

SITE PHOTOS

NO SCALE

2

PLANS PREPARED FOR:

T-Mobile

T-MOBILE WEST
18400 East 22nd Avenue
Aurora, CO 80011

PLANS PREPARED BY:

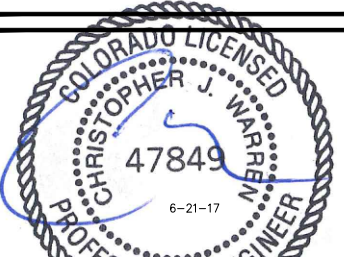
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REVISIONS:			
DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	06/21/17	WNM	0

T-MOBILE SITE NAME:

WATKINS

T-MOBILE SITE #:

DN01507B

SITE ADDRESS:

24055 E. 6TH AVENUE
AURORA, CO 80018

SHEET DESCRIPTION:

ENLARGED
SITE PLAN

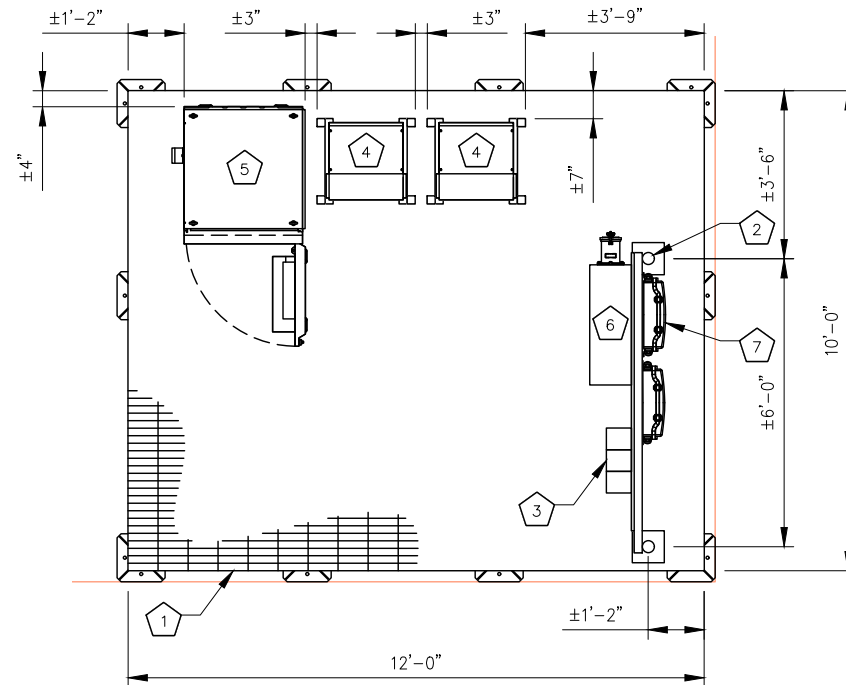
SHEET NUMBER:

A-3

CODED DRAWING NOTES:

- 1 PROPOSED T-MOBILE 10'x12' STEEL EQUIPMENT PLATFORM
(SITEPOR1 P/N: MEP1012-6SI OR APPROVED EQUAL)
- 2 PROPOSED T-MOBILE H-FRAME
- 3 PROPOSED CIENA ENCLOSURE
- 4 PROPOSED T-MOBILE STACKED SLEEVE (TYP. OF (2))
- 5 PROPOSED T-MOBILE DELTA SITE SUPPORT CABINET
- 6 PROPOSED T-MOBILE PPC CABINET
- 7 PROPOSED T-MOBILE COVP (TYP. OF (2))

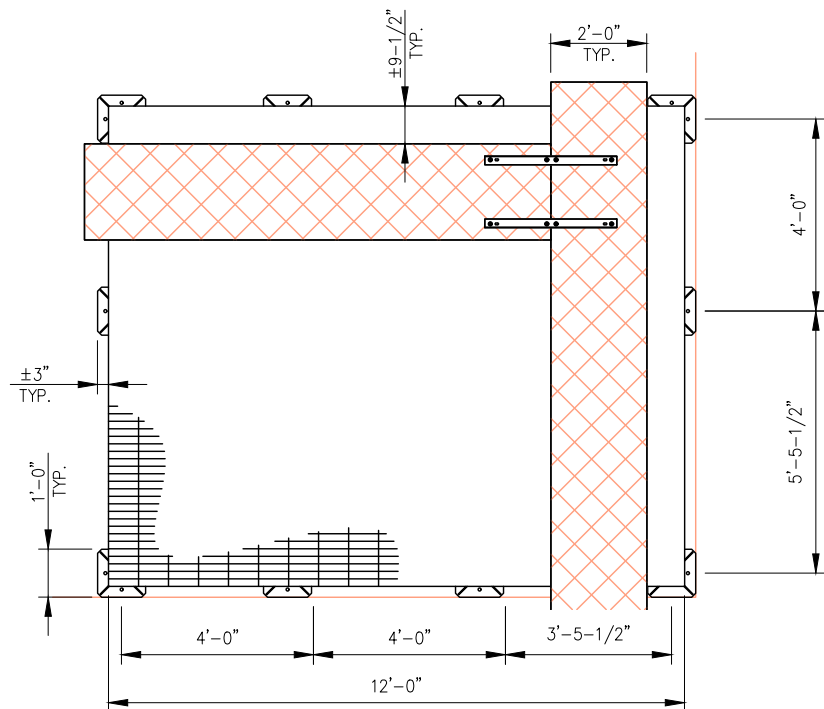
NOTE:
ICE BRIDGE NOT
SHOWN FOR CLARITY.



PLATFORM EQUIPMENT LAYOUT

NO SCALE

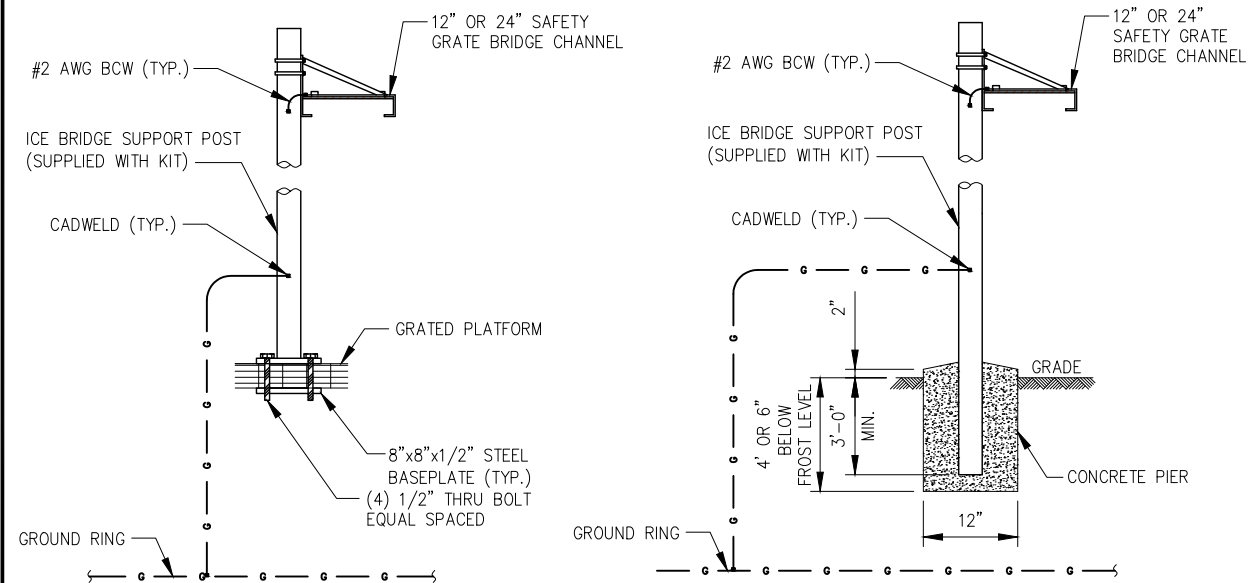
1



STEEL EQUIPMENT CABINET PLATFORM

NO SCALE

2



NOTES:

1. USE SITE PRO PARTS OR APPROVED EQUIVALENT.
2. SUPPORT POSTS SHALL BE LOCATED ON ALTERNATING SIDES OF ICE BRIDGE SPACED NO MORE THAN 6'-0".
3. ANY SPLICES OR CANTILEVERED SECTIONS OF THE ICE BRIDGE SHALL BE LOCATED WITHIN 2'-0" OF A SUPPORT POST.
4. CONTRACTOR SHALL PROVIDE ADEQUATE ICE BRIDGE TO COVER ALL EQUIPMENT CABINETS
5. CONCRETE SHALL BE 3000 PSI

TYPICAL ICE BRIDGE DETAILS

NO SCALE

3

PLANS PREPARED FOR:

T-Mobile

T-MOBILE WEST
18400 East 22nd Avenue
Aurora, CO 80011

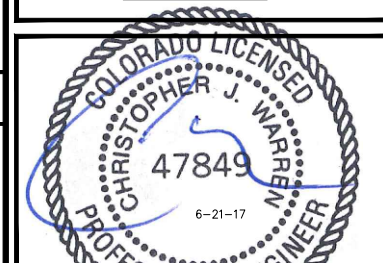
PLANS PREPARED BY:

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JOB NUMBER 317-000

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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	06/21/17	WNM	0

T-MOBILE SITE NAME:

WATKINS

T-MOBILE SITE #:

DN01507B

SITE ADDRESS:

24055 E. 6TH AVENUE
AURORA, CO 80018

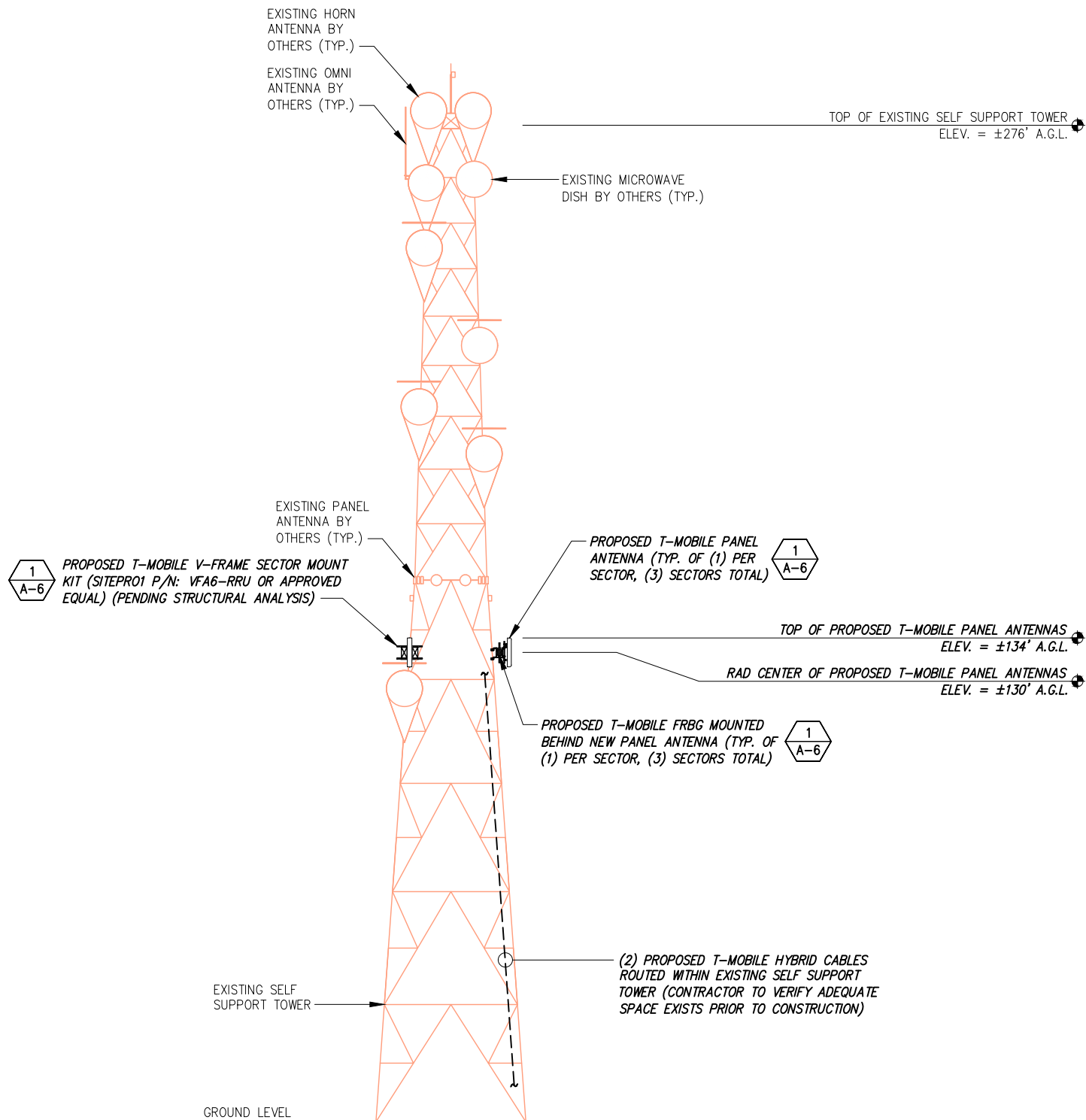
SHEET DESCRIPTION:

DETAILED
EQUIPMENT PLANS

SHEET NUMBER:

A-4

INFINIGY ENGINEERING HAS NOT EVALUATED THE TOWER OR MOUNT FOR THIS SITE AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. REFER TO STRUCTURAL ANALYSIS PRIOR TO CONSTRUCTION.



INFORMATION CONTAINED WITHIN DRAWINGS IS BASED ON PROVIDED INFORMATION. CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION

PROPOSED ELEVATION

NO SCALE

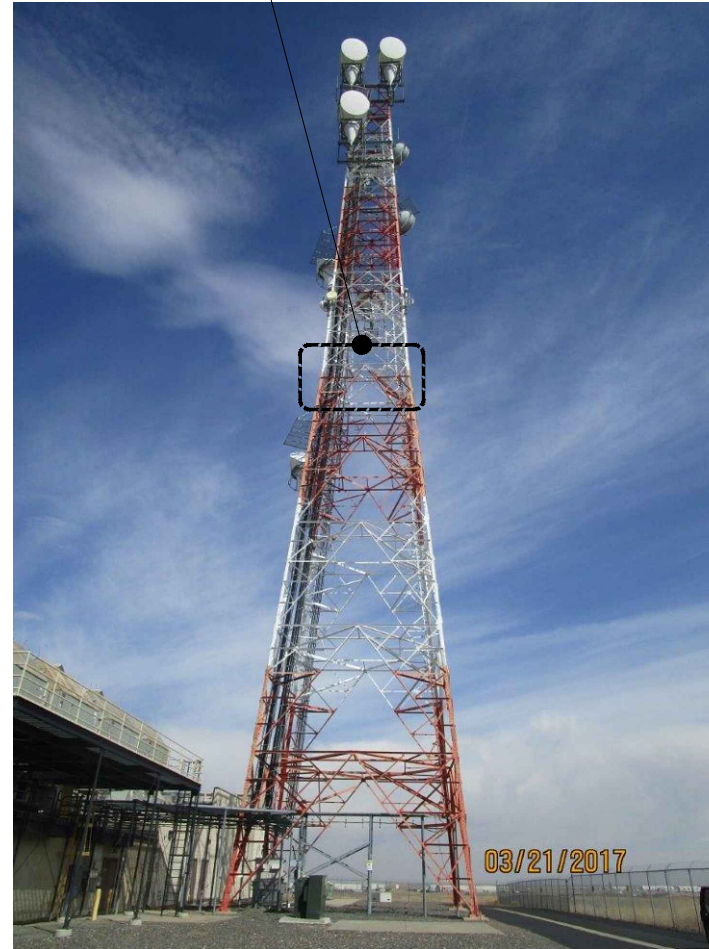
1

TOWER PHOTOS

NO SCALE

2

APPROXIMATE LOCATION OF PROPOSED T-MOBILE ARRAY



TOWER PHOTO (SOUTH FACE)

PLANS PREPARED FOR:

T-Mobile

T-MOBILE WEST
18400 East 22nd Avenue
Aurora, CO 80011

PLANS PREPARED BY:

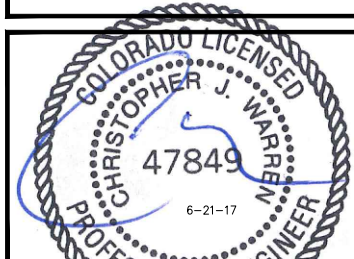
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REVISIONS:				
DESCRIPTION	DATE	BY	REV	
ISSUED FOR CONSTRUCTION	06/21/17	WNM	0	

T-MOBILE SITE NAME:

WATKINS

T-MOBILE SITE #:

DN01507B

SITE ADDRESS:

24055 E. 6TH AVENUE
AURORA, CO 80018

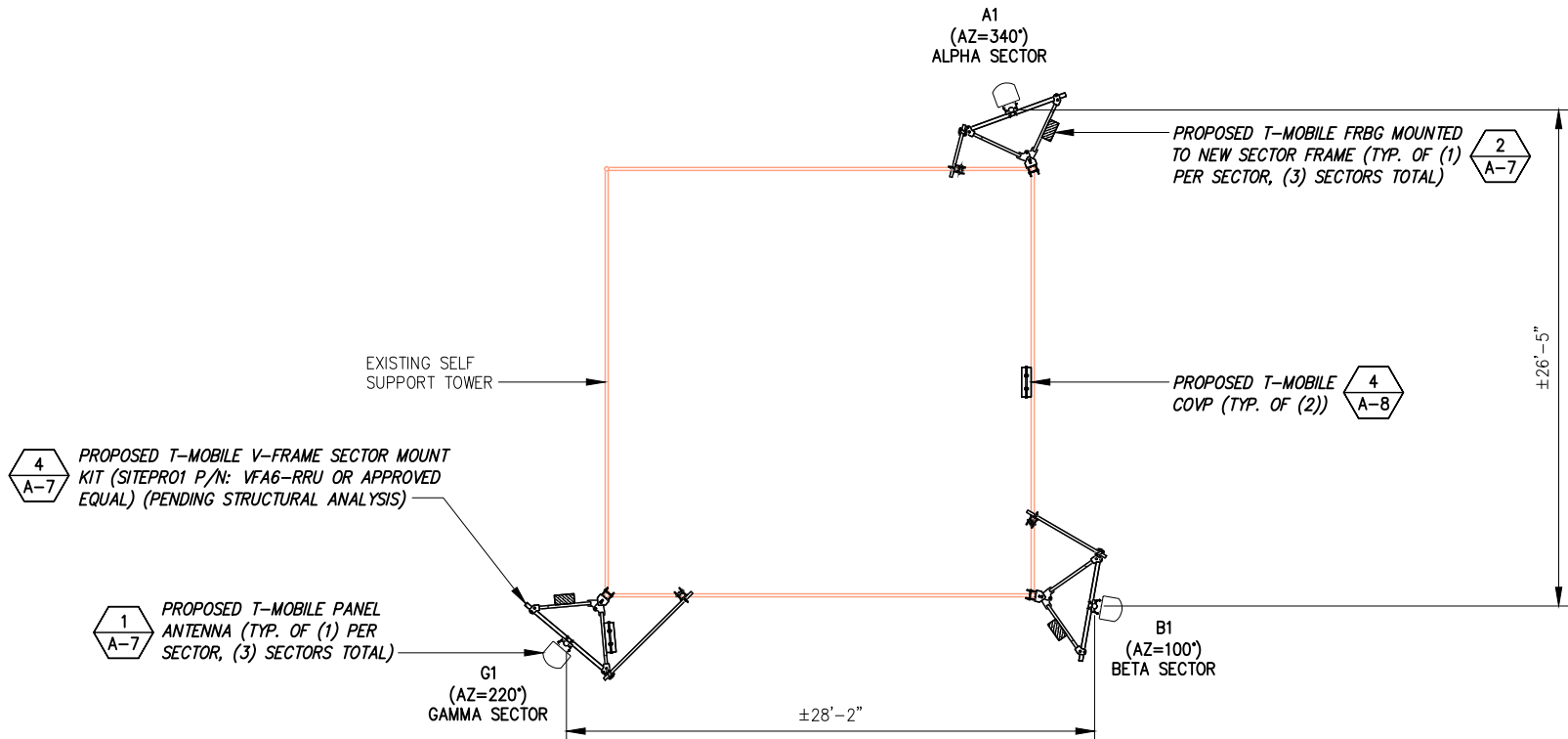
SHEET DESCRIPTION:

TOWER ELEVATION
& CABLE PLAN

SHEET NUMBER:

A-5

NOTE:
CONTRACTOR TO PROVIDE NEW
MOUNTING HARDWARE AS NECESSARY
PRIOR TO THE INSTALLATION OF
PROPOSED EQUIPMENT. CONTRACTOR
TO VERIFY PRIOR TO CONSTRUCTION



THE CONFIGURATION PLAN IS BASED
ON PROVIDED INFORMATION AND IS
FOR CONCEPTUAL PURPOSES ONLY.
CONTRACTOR TO VERIFY FIELD
CONDITIONS PRIOR TO CONSTRUCTION.

PROPOSED ANTENNA LAYOUT

NO SCALE

1

PROPOSED ANTENNA SCHEDULE													
SECTOR	POSITION	SECTOR COLOR	TECHNOLOGY	ANTENNA MODEL #	VENDOR	QTY. (REMOVED)	QTY. (NEW)	TMA (QTY/MODEL)	AZIMUTH	DOWNTILT		RAD CENTER	FEED LINE TYPE/LENGTH (FEET + 20%)
										MECHANICAL	ELECTRICAL		
ALPHA	A1	RED	LTE 700/LTE 1900/ LTE 2100/ UMTS 2100	FASB	NOKIA	--	1	--	340°	N/A	2/6	±130' AGL	(1) NEW HYBRID CABLE LENGTH = ±240'
BETA	B1	BLUE	LTE 700/LTE 1900/ LTE 2100/ UMTS 2100	FASB	NOKIA	--	1	--	100°	N/A	2/6	±130' AGL	NEW HYBRID SHARED WITH ABOVE (ALPHA)
GAMMA	G1	WHITE	LTE 700/LTE 1900/ LTE 2100/ UMTS 2100	FASB	NOKIA	--	1	--	220°	N/A	2/6	±130' AGL	(1) NEW HYBRID CABLE LENGTH = ±290'

NOTE:
CABLE LENGTHS ARE APPROXIMATED BASED ON
PROVIDED INFORMATION. CONTRACTOR TO VERIFY
REQUIRED CABLE LENGTHS PRIOR TO CONSTRUCTION.

LOADING CHART

NO SCALE

2

PLANS PREPARED FOR:

T-Mobile

T-MOBILE WEST
18400 East 22nd Avenue
Aurora, CO 80011

PLANS PREPARED BY:

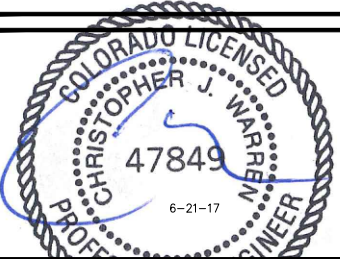
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JOB NUMBER 317-000

**AMERICAN
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CORPORATION**



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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	06/21/17	WNM	0

T-MOBILE SITE NAME:

WATKINS

T-MOBILE SITE #:

DN01507B

SITE ADDRESS:

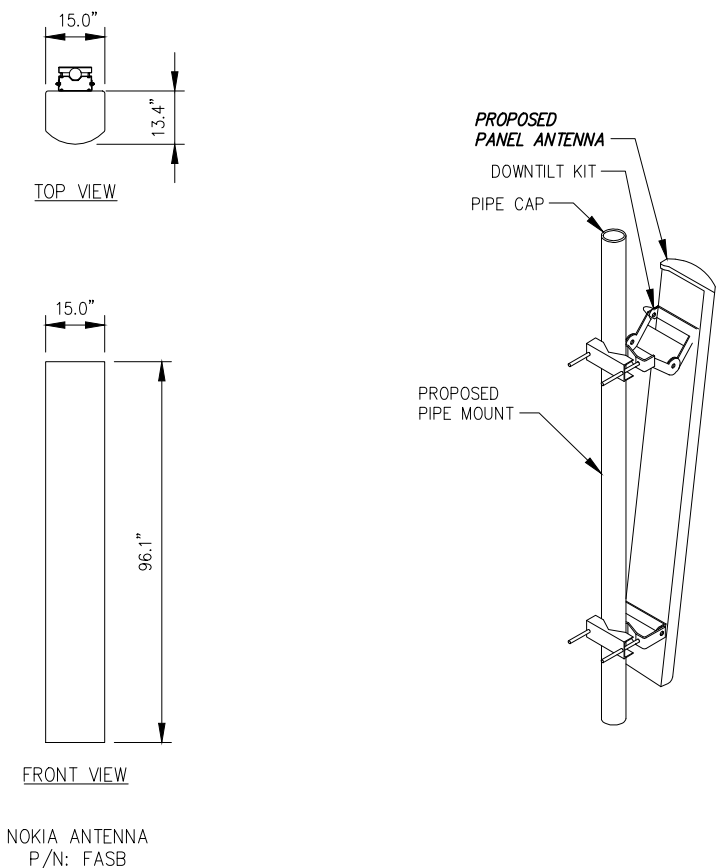
24055 E. 6TH AVENUE
AURORA, CO 80018

SHEET DESCRIPTION:

ANTENNA LAYOUT &
LOADING CHART

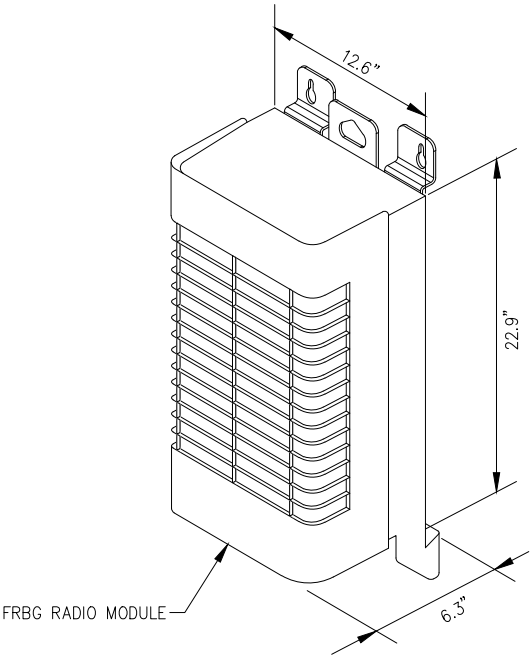
SHEET NUMBER:

A-6



DIMENSIONS (WxHxD) W/O SOLAR COVER OR MOUNTING	12.6"x22.9"x6.3"
RADIO MODULE UNIT WEIGHT	24.0 kg/53.0 lbs
MOUNTING BRACKET WEIGHT	2.0 kg/4.4 lbs
TOTAL WEIGHT	26.0 kg/57.4 lbs

NOTE:
RADIO MODULE TO BE
MOUNTED VERTICALLY ONLY.



PANEL ANTENNA DETAILS

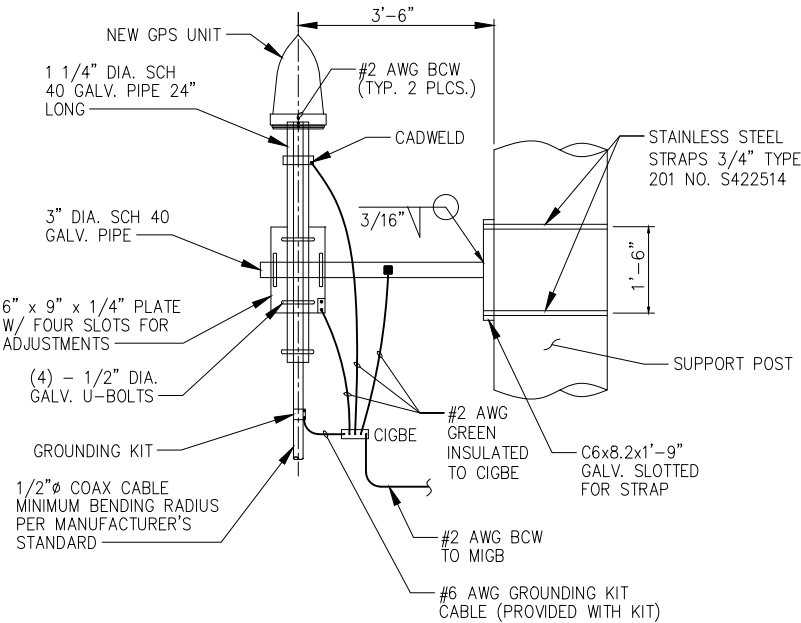
NO SCALE

1

FRBG DETAIL

NO SCALE

2



THE ELEVATION AND LOCATION OF THE GPS UNIT SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORTS.

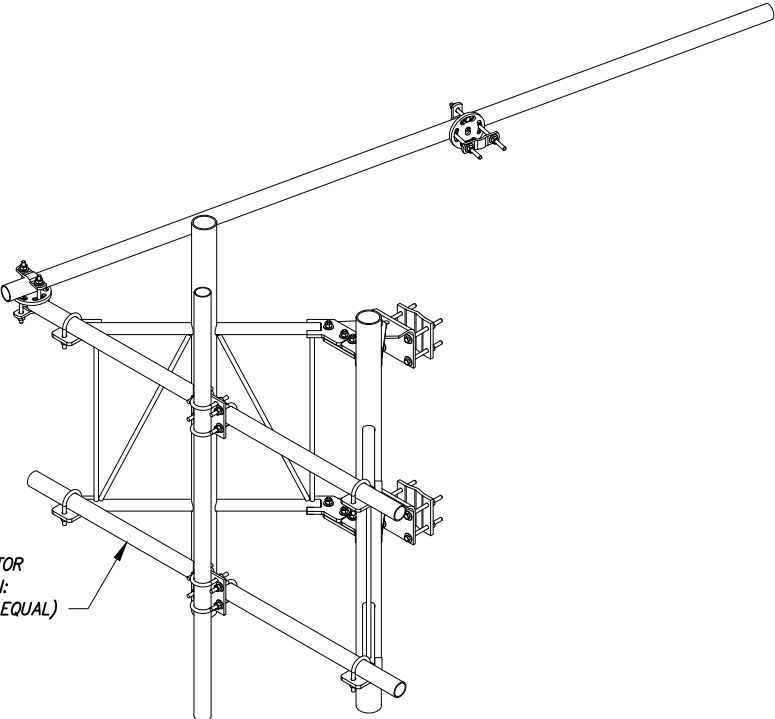
THE GPS UNIT MOUNT IS DESIGNED TO FASTEN TO A STANDARD 1-1/4" DIAMETER, SCHEDULE 40 GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE GPS MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 18 INCHES) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE GPS MOUNT.

TYPICAL GPS MOUNTING DETAIL

NO SCALE

3

INFINIGY ENGINEERING HAS NOT EVALUATED THE TOWER OR MOUNT FOR THIS SITE AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. REFER TO STRUCTURAL ANALYSIS PRIOR TO CONSTRUCTION.




V-FRAME SECTOR MOUNT KIT DETAIL

NO SCALE


4

PLANS PREPARED FOR:



T-MOBILE WEST
18400 East 22nd Avenue
Aurora, CO 80011


PLANS PREPARED BY:

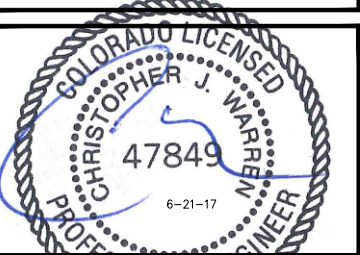


FROM ZERO TO INFINIGY
the solutions are endless

7301 Federal Blvd, Suite 301
Westminster, CO 80030
Office # (303) 219-1178
Fax # (303) 242-8636

JOB NUMBER 317-000





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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	06/21/17	WNM	0

T-MOBILE SITE NAME:

WATKINS

T-MOBILE SITE #:

DN01507B

SITE ADDRESS:

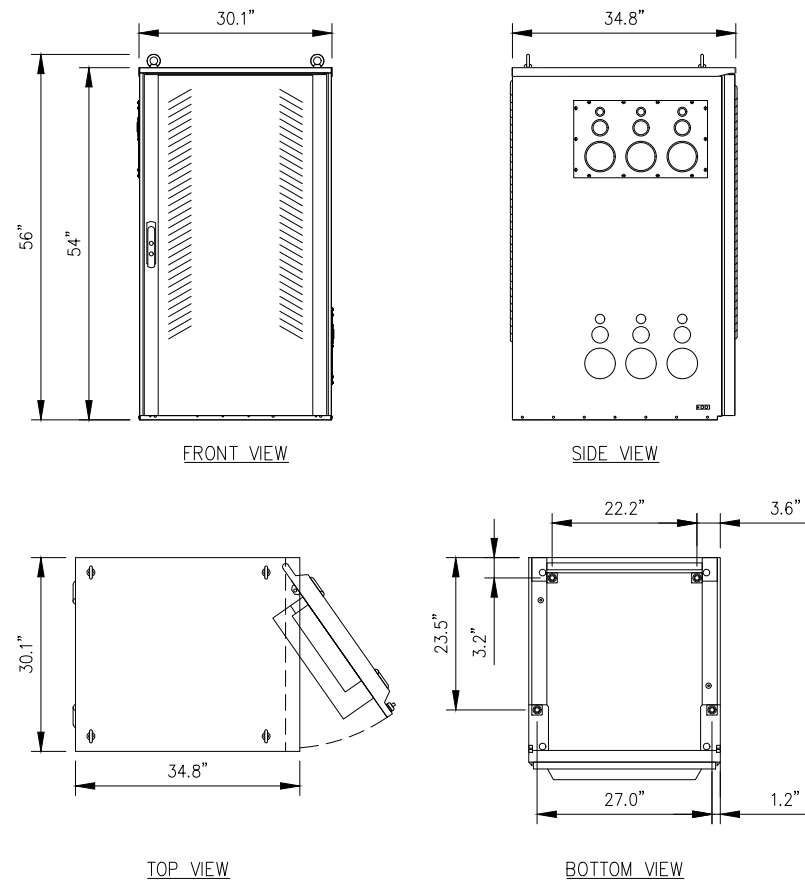
24055 E. 6TH AVENUE
AURORA, CO 80018

SHEET DESCRIPTION:

EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:

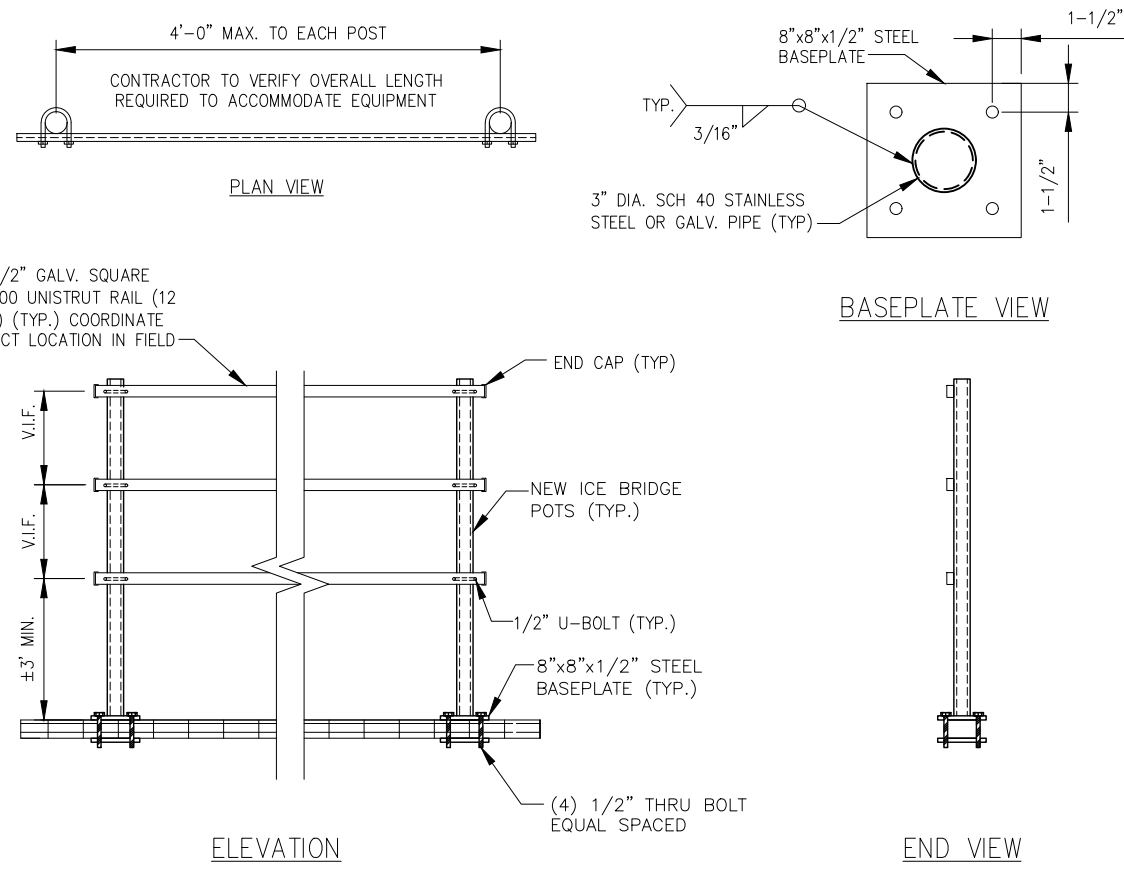
A-7



SITE SUPPORT CABINET DETAIL

NO SCALE

1



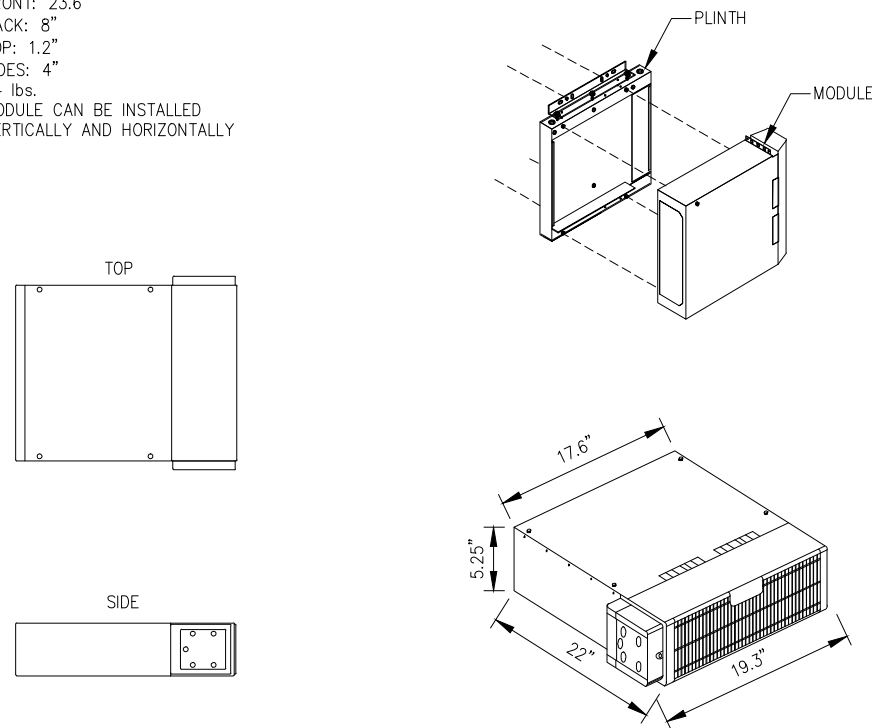
TYPICAL H-FRAME FABRICATION DETAIL

NO SCALE

2

NOKIA FLEX SYSTEM RADIO MODULES:
FBBC, FSME, FSMF, FXFC

CLEARANCES: FRONT: 23.6"
BACK: 8"
TOP: 1.2"
SIDES: 4"
WEIGHT: 44 lbs.
NOTE: MODULE CAN BE INSTALLED VERTICALLY AND HORIZONTALLY



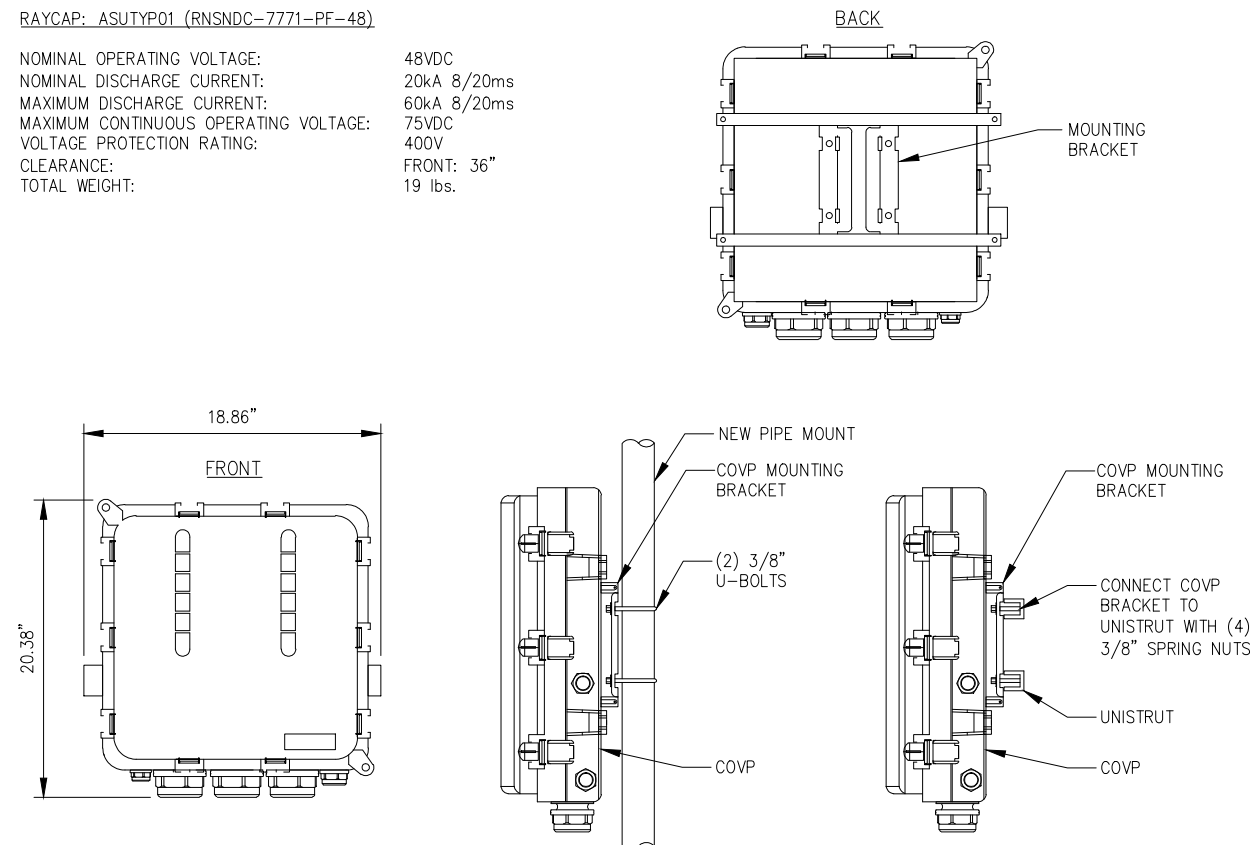
NOKIA FLEXI SYSTEM/ RADIO MODULE DETAIL

NO SCALE

3

RAYCAP: ASUTYP01 (RNSNDC-7771-PF-48)

NOMINAL OPERATING VOLTAGE: 48VDC
NOMINAL DISCHARGE CURRENT: 20kA 8/20ms
MAXIMUM DISCHARGE CURRENT: 60kA 8/20ms
MAXIMUM CONTINUOUS OPERATING VOLTAGE: 75VDC
VOLTAGE PROTECTION RATING: 400V
CLEARANCE: FRONT: 36"
TOTAL WEIGHT: 19 lbs.



COVP & MOUNTING DETAILS

NO SCALE

4

PLANS PREPARED FOR:

T-Mobile

T-MOBILE WEST
18400 East 22nd Avenue
Aurora, CO 80011

PLANS PREPARED BY:

INFINIGY

FROM ZERO TO INFINIGY
the solutions are endless

7301 Federal Blvd, Suite 301
Westminster, CO 80030
Office # (303) 219-1178
Fax # (303) 242-8636

JOB NUMBER 317-000

AMERICAN TOWER CORPORATION

COLORADO LICENSED
PROFESSIONAL ENGINEER
CHRISTOPHER J. WARREN
47849
6-21-17

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WATKINS

T-MOBILE SITE #:

DN01507B

SITE ADDRESS:

24055 E. 6TH AVENUE
AURORA, CO 80018

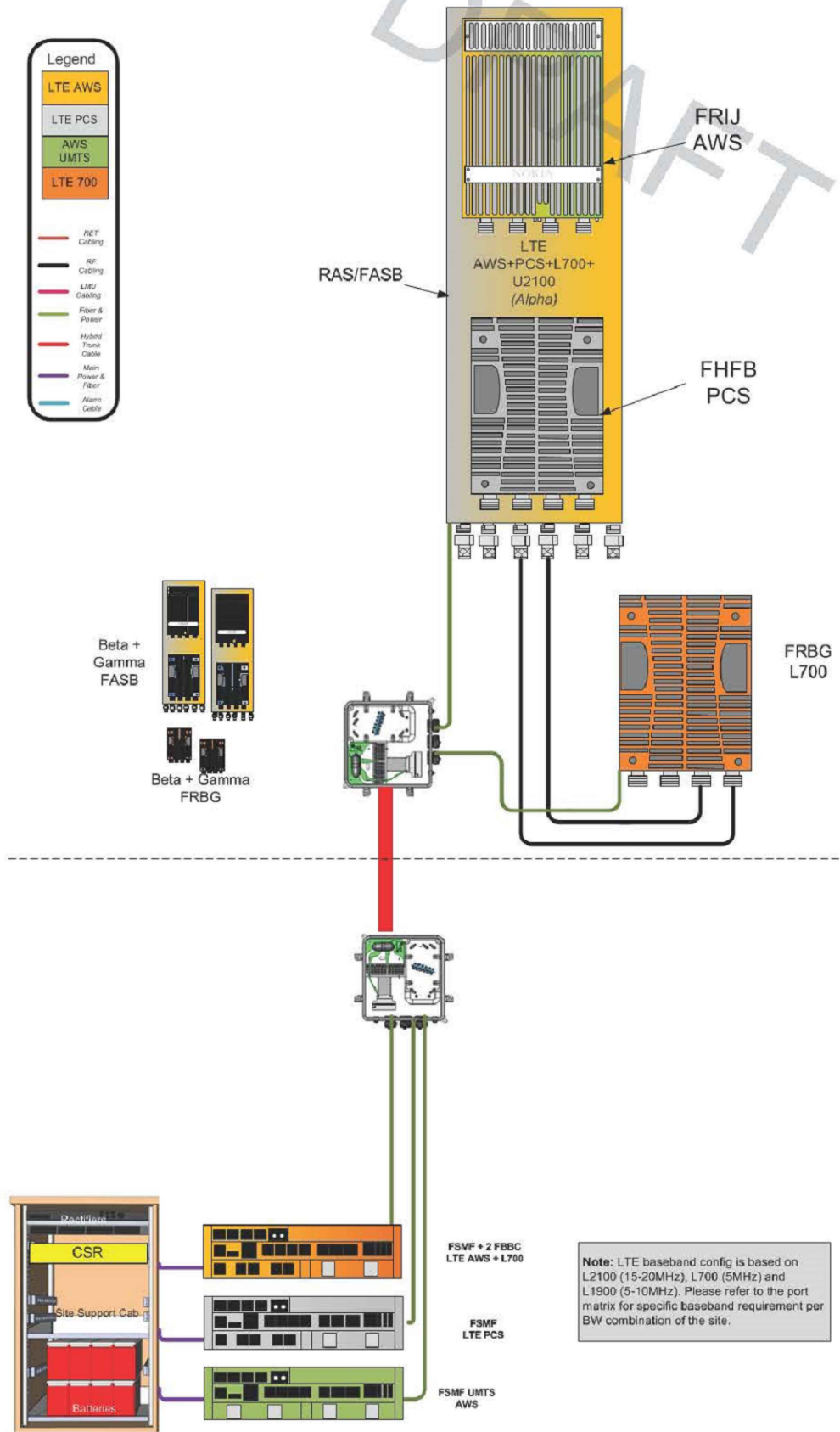
SHEET DESCRIPTION:

EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:

A-8

NSD urban RAS configuration 716S (L2100/U2100/L1900/L700)



PLANS PREPARED FOR:

T-Mobile

T-MOBILE WEST
18400 East 22nd Avenue
Aurora, CO 80011

PLANS PREPARED BY:

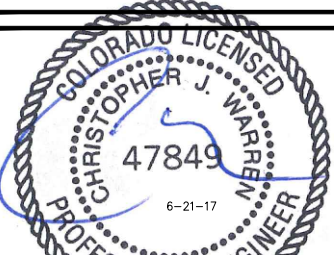
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AMERICAN
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WATKINS

T-MOBILE SITE #:

DN01507B

SITE ADDRESS:

24055 E. 6TH AVENUE
AURORA, CO 80018

SHEET DESCRIPTION:

PLUMBING DIAGRAM

SHEET NUMBER:

A-9

UTILITY NOTES:

1. CONNECTION TO EXISTING UTILITIES AND INCOMING POWER AND TELEPHONE SERVICES IS FOR CONCEPT ONLY. THE CONTRACTOR SHALL COORDINATE THE ACTUAL LOCATION WITH THE ELECTRIC AND TELEPHONE UTILITIES AND CARRIER.
2. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ARRANGEMENTS WITH THE ELECTRIC AND TELEPHONE UTILITIES TO ENSURE TO A TIMELY INSTALLATION OF THE INCOMING POWER AND TELEPHONE SERVICES. THE CARRIER WILL OBTAIN AN ELECTRIC SERVICE ORDER (ESO) FOR THIS SITE PRIOR TO THE CONTRACTOR INITIATING ANY WORK ON-SITE.
3. THE INCOMING ELECTRIC SERVICE SHALL BE INSPECTED BY THE AUTHORITY HAVING JURISDICTION AND A CERTIFICATE OF SUCH INSPECTION SHALL BE FURNISHED TO THE CARRIER WITH A COPY FORWARDED TO THAT UTILITY.
4. ANY UTILITY CHARGES ASSOCIATED WITH THIS SITE SHALL BE PAID BY THE CARRIER AND NO CHARGES, THEREFORE SHALL ACCRUE TO THE CONTRACTOR.
5. COORDINATE METER SOCKET REQUIREMENTS AND UTILITY METER ENCLOSURE WITH CARRIER. AND ELECTRIC UTILITY.
6. INCOMING ELECTRIC SERVICES SHALL BE IN CONFORMANCE WITH THE UTILITIES STANDARDS (LATEST EDITION).
7. INSTALL PULL ROPES IN ALL CONDUITS UNLESS NOTED OTHERWISE.
8. CONDUIT RUNS SHALL HAVE ONE 18"x18"x8" TRAFFIC RATED PULLBOX AFTER 270 DEGREES OF BEND.
9. CONDUIT RUNS SHALL HAVE A PULLBOX WITH A MAXIMUM SPACING OF 500 LINEAR FEET.

CODED DRAWING NOTES:

- 1

EXISTING SELF SUPPORT TOWER
- 2

EXISTING CONCRETE EQUIPMENT PAD (TYP.)
- 3

EXISTING UTILITY H-FRAME
- 4

PROPOSED T-MOBILE METER & DISCONNECT MOUNTED TO EXISTING UTILITY H-FRAME (PENDING COORDINATION WITH LOCAL UTILITY COMPANY)
- 5

APPROXIMATE ROUTE OF PROPOSED (1) 2" PVC CONDUIT WITH (3) #3/0 CU THWN & (1) #6 CU GROUND FROM PROPOSED METER & DISCONNECT TO PROPOSED T-MOBILE PPC CABINET (PENDING COORDINATION WITH LOCAL UTILITY COMPANY)
- 6

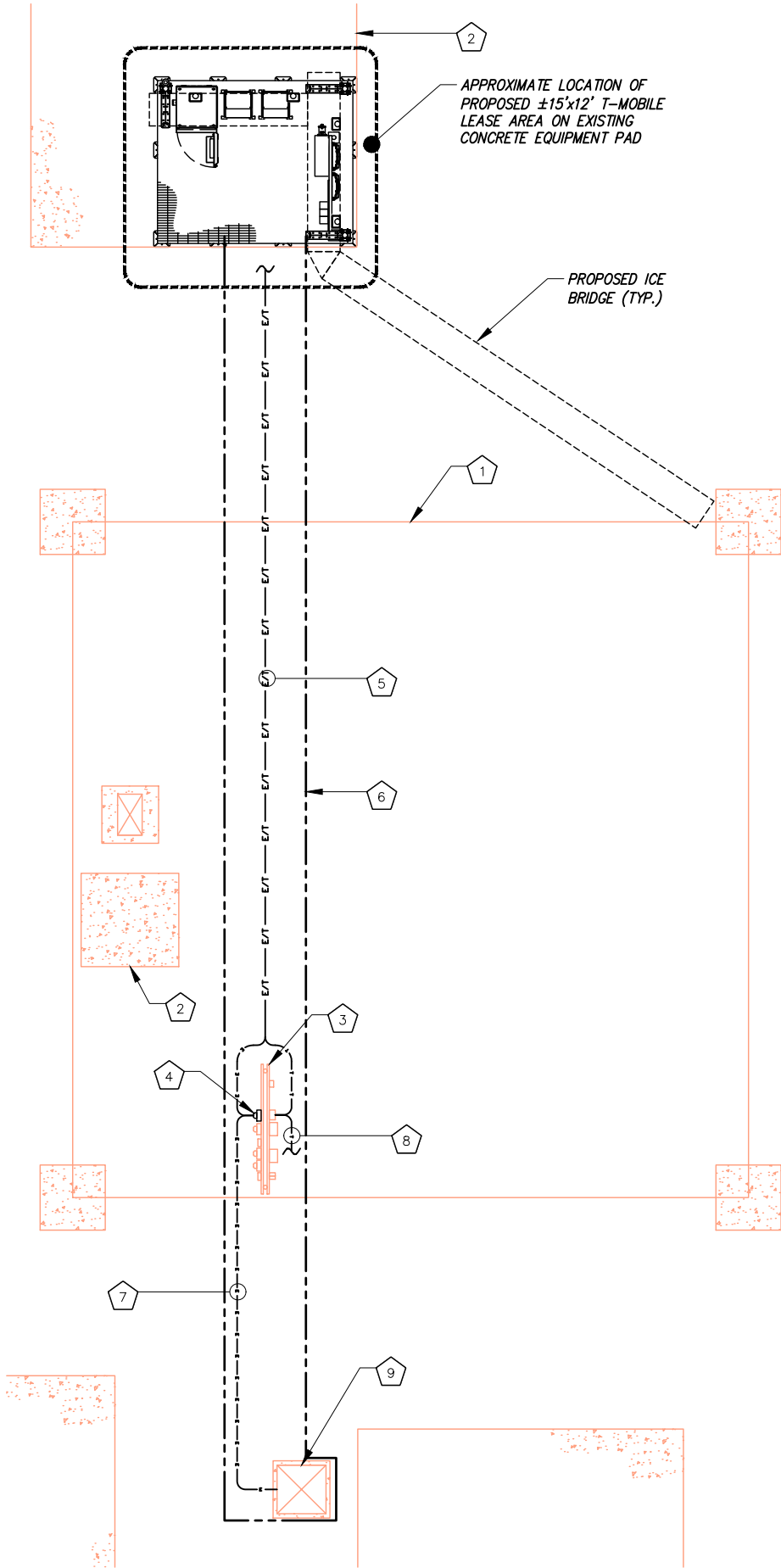
PROPOSED T-MOBILE 5' WIDE UTILITY EASEMENT
- 7

(1) 2" PVC CONDUIT WITH (3) 3/0 AWG FROM EXISTING TRANSFORMER TO PROPOSED T-MOBILE METER (PENDING COORDINATION WITH LOCAL UTILITY COMPANY)
- 8

NEW FIBER SERVICE – PROVIDE (1) 2" PVC CONDUIT FROM NEAREST EXISTING FIBER DEMARC TO PROPOSED T-MOBILE PPC/FIBER INTERFACE (PENDING COORDINATION WITH LOCAL UTILITY COMPANY)
- 9

EXISTING TRANSFORMER

NOTE:
CONTRACTOR TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. COORDINATE LOCATION OF ALL PROPOSED DIGGING & UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.



GENERAL ELECTRICAL NOTES:

1. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF THE NATIONAL ELECTRICAL CODE AND ALL LOCAL AND STATE CODES, LAWS, AND ORDINANCES.
2. ALL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 UNLESS OTHERWISE INDICATED. SUPPLY UTILITY MARKING TAPE BURIED 12" BELOW GRADE ALONG ENTIRE LENGTH OF UNDERGROUND CONDUITS.
3. ALL CONDUCTORS SHALL BE COPPER WITH THHN/THWN INSULATION. CONTROL CONDUCTORS SHALL BE STRANDED, POWER & LIGHTING CONDUCTORS SHALL BE SOLID FOR #10 & #12 CONDUCTORS AND STRANDED FOR ALL OTHER SIZES.
4. ELECTRICAL DRAWINGS ARE IN PART DIAGRAMMATIC. COORDINATE ELECTRICAL WORK WITH SITE CONDITIONS.
5. LOCATE ALL UNDERGROUND UTILITIES BEFORE TRENCHING. IF CONFLICTS ARISE, CONTACT UTILITY COMPANY AND ENGINEER IMMEDIATELY.
6. ALL EXPOSED CONDUITS SHALL HAVE WEATHERPROOF CAPS NOT DUCT TAPE.
7. PROVIDE 200 LB TEST PULL WIRES IN EACH TELEPHONE AND POWER CONDUIT.
8. PULL BOXES SHALL BE INSTALLED AS NEEDED PER NEC UTILITY REQUIREMENTS.

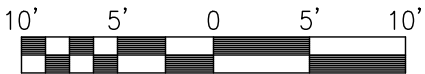
ABBREVIATIONS:

&	AND
AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
BFG	BELOW FINISH GRADE
BTS	BARE TINNED STRANDED
C	CONDUIT
CAB	CABINET
CIGBE	COAX ISOLATED GROUND BAR EXTERNAL
DLO	DIESEL LOCOMOTIVE CABLE
DWG	DRAWING
EGR	EXTERIOR GROUND RING
EIGB	EXTERIOR ISOLATED GROUND BAR
G	GROUND
GPS	GLOBAL POSITIONING SYSTEM
HALO	INTERIOR GROUND RING
MGB	MAIN ISOLATED GROUND BAR
MGN	MULTI-GROUNDED NEUTRAL
MSC	MOBILE SWITCHING CENTER
MTSO	MOBILE TELEPHONE SWITCHING OFFICE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RGS	RIGID GALVANIZED STEEL
SS	STAINLESS STEEL
SST	SELF SUPPORT TOWER
TGR	TOWER GROUND RING
TYP.	TYPICAL
W/	WITH

ELECTRICAL SYMBOLS:

	RECEPTACLE
	BURIED POWER CONDUIT
	BURIED TELCO CONDUIT
	ELECTRICAL METER
	INDICATES CODED NUMBER
	SAFETY SWITCH
	UTILITY POLE

GRAPHIC SCALE



SCALE: 22"x34" SHEET 1"= 5'
SCALE: 11"x17" SHEET 1"= 10'



SITE UTILITY PLAN

SCALE: AS NOTED

1

PLANS PREPARED FOR:

T-Mobile

T-MOBILE WEST
18400 East 22nd Avenue
Aurora, CO 80011

PLANS PREPARED BY:

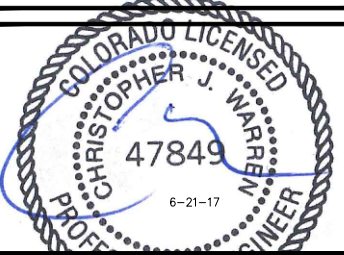
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T-MOBILE SITE NAME:

WATKINS

T-MOBILE SITE #:

DN01507B

SITE ADDRESS:

24055 E. 6TH AVENUE
AURORA, CO 80018

SHEET DESCRIPTION:

SITE UTILITY PLAN

SHEET NUMBER:

E-1

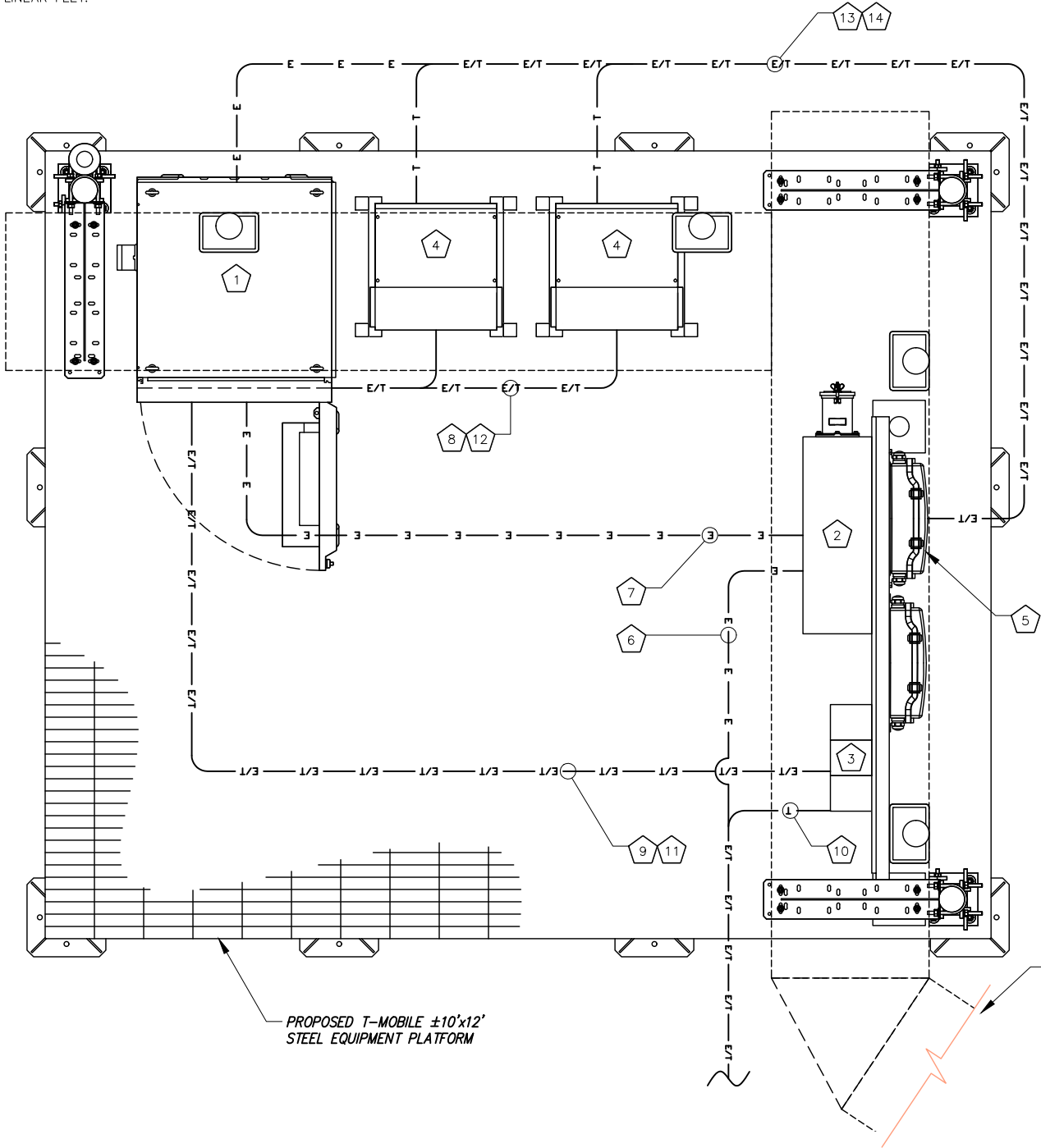
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7. INSTALL PULL ROPES IN ALL CONDUITS UNLESS NOTED OTHERWISE.
8. CONDUIT RUNS SHALL HAVE ONE 18"x18"x8" TRAFFIC RATED PULLBOX AFTER 270 DEGREES OF BEND.
9. CONDUIT RUNS SHALL HAVE A PULLBOX WITH A MAXIMUM SPACING OF 500 LINEAR FEET.

CODED DRAWING NOTES:

- 1 PROPOSED T-MOBILE DELTA SITE SUPPORT CABINET
- 2 PROPOSED T-MOBILE PPC CABINET
- 3 PROPOSED CIENA ENCLOSURE
- 4 PROPOSED T-MOBILE STACKED SLEEVE (TYP. OF (2))
- 5 PROPOSED T-MOBILE COVP (TYP. OF (2))
- 6 (1) 2" PVC CONDUIT WITH (3) #3/0 CU THWN & (1) #6 CU GROUND FROM PROPOSED METER & DISCONNECT TO PROPOSED T-MOBILE PPC CABINET (PENDING COORDINATION WITH LOCAL UTILITY COMPANY)
- 7 (1) 2" GRC OR LIQUIDTIGHT CONDUIT FROM PROPOSED PPC CABINET TO PROPOSED T-MOBILE DELTA SITE SUPPORT CABINET (PENDING COORDINATION WITH LOCAL UTILITY COMPANY) (QTY./SIZE OF CONDUCTORS PER MANUFACTURER'S SPECIFICATIONS)
- 8 (2) 2" PVC CONDUIT WITH (3) #3/0 CU THWN & (1) #6 CU GROUND FROM PROPOSED SITE SUPPORT CABINET TO PROPOSED T-MOBILE STACKED SLEEVE (TYP. PER STACKED SLEEVE) (PENDING COORDINATION WITH LOCAL UTILITY COMPANY)
- 9 (1) 2" GRC OR LIQUIDTIGHT CONDUIT FOR POWER FROM PROPOSED T-MOBILE DELTA SITE SUPPORT CABINET TO PROPOSED CIENA ENCLOSURE (PENDING COORDINATION WITH LOCAL UTILITY COMPANY)
- 10 (1) 2" PVC CONDUIT FOR TELCO FROM EXISTING TELCO DEMARC TO PROPOSED CIENA ENCLOSURE (PENDING COORDINATION WITH LOCAL UTILITY COMPANY)
- 11 (1) 2" GRC OR LIQUIDTIGHT CONDUIT FOR FIBER FROM PROPOSED CIENA ENCLOSURE TO PROPOSED T-MOBILE DELTA SITE SUPPORT CABINET
- 12 (1) 2" GRC OR LIQUIDTIGHT CONDUIT FOR FIBER FROM PROPOSED T-MOBILE DELTA SITE SUPPORT CABINET TO PROPOSED T-MOBILE STACKED SLEEVE (TYP. PER STACKED SLEEVE)
- 13 (1) 2" GRC OR LIQUIDTIGHT CONDUIT FOR FIBER FROM PROPOSED T-MOBILE STACKED SLEEVE TO PROPOSED T-MOBILE COVPs (TYP. PER STACKED SLEEVE)
- 14 (1) 2" GRC OR LIQUIDTIGHT CONDUIT FOR POWER FROM PROPOSED T-MOBILE DELTA SITE SUPPORT CABINET TO PROPOSED T-MOBILE COVPs (PENDING COORDINATION WITH LOCAL UTILITY COMPANY)
- 15 COORDINATE EXACT LOCATION WITH UTILITY COMPANY. STUB UP POWER AND CONDUITS AS DIRECTED BY UTILITY COMPANY. REFER TO EQUIPMENT SPECIFICATIONS FOR ELECTRICAL REQUIREMENTS.

NOTE:
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8. PULL BOXES SHALL BE INSTALLED AS NEEDED PER NEC UTILITY REQUIREMENTS.

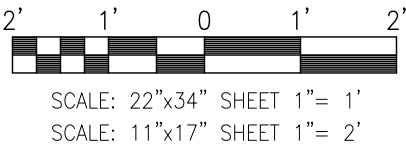
ABBREVIATIONS:

&	AND
AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
BFG	BELOW FINISH GRADE
BTS	BARE TINNED STRANDED
C	CONDUIT
CAB	CABINET
CIGBE	COAX ISOLATED GROUND BAR EXTERNAL
DLO	DIESEL LOCOMOTIVE CABLE
DWG	DRAWING
EGR	EXTERIOR GROUND RING
EIGB	EXTERIOR ISOLATED GROUND BAR
G	GROUND
GPS	GLOBAL POSITIONING SYSTEM
HALO	INTERIOR GROUND RING
MGB	MAIN ISOLATED GROUND BAR
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MSC	MOBILE SWITCHING CENTER
MTSO	MOBILE TELEPHONE SWITCHING OFFICE
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QTY	QUANTITY
RGS	RIGID GALVANIZED STEEL
SS	STAINLESS STEEL
SST	SELF SUPPORT TOWER
TGR	TOWER GROUND RING
TYP.	TYPICAL
W/	WITH

ELECTRICAL SYMBOLS:

⌀	RECEPTACLE
— E —	BURIED POWER CONDUIT
— T —	BURIED TELCO CONDUIT
(M)	ELECTRICAL METER
#	INDICATES CODED NUMBER
□	SAFETY SWITCH
⊘	UTILITY POLE

GRAPHIC SCALE



PLANS PREPARED FOR:

T-Mobile

T-MOBILE WEST
18400 East 22nd Avenue
Aurora, CO 80011

PLANS PREPARED BY:

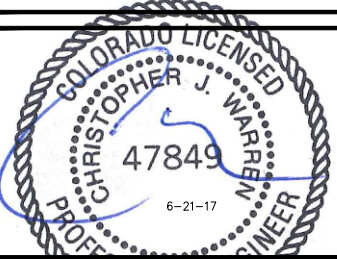
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T-MOBILE SITE NAME:

WATKINS

T-MOBILE SITE #:

DN01507B

SITE ADDRESS:

24055 E. 6TH AVENUE
AURORA, CO 80018

SHEET DESCRIPTION:

EQUIPMENT
UTILITY PLAN

SHEET NUMBER:

E-2

CODED DRAWING NOTES:

- 1 PROPOSED T-MOBILE BURIED EQUIPMENT GROUND RING (#2 AWG SOLID TINNED BCW) (BELOW PLATFORM)
- 2 PROPOSED EQUIPMENT GROUND BAR NEAR PROPOSED T-MOBILE EQUIPMENT (TYP. OF (2))
- 3 PROPOSED T-MOBILE STEEL EQUIPMENT PLATFORM TO BE GROUNDED PER MANUFACTURER'S SPECIFICATIONS
- 4 PROPOSED T-MOBILE DELTA SITE SUPPORT CABINET TO BE GROUNDED PER MANUFACTURER'S SPECIFICATIONS
- 5 PROPOSED T-MOBILE STACKED SLEEVE TO BE GROUNDED PER MANUFACTURER'S SPECIFICATIONS (TYP. OF (2))
- 6 PROPOSED T-MOBILE PPC CABINET TO BE GROUNDED PER MANUFACTURER'S SPECIFICATIONS (TYP.)
- 7 PROPOSED T-MOBILE COVP TO BE GROUNDED PER MANUFACTURER'S SPECIFICATIONS (TYP. OF (2))
- 8 PROPOSED CIENA ENCLOSURE TO BE GROUNDED PER MANUFACTURER'S SPECIFICATIONS (TYP.)
- 9 BOND PROPOSED T-MOBILE H-FRAME TO NEW T-MOBILE BURIED EQUIPMENT GROUND RING WITH #2 AWG SOLID TINNED BCW.
- 10 BOND PROPOSED EQUIPMENT GROUND BAR TO NEW T-MOBILE BURIED EQUIPMENT GROUND RING WITH #2 AWG SOLID TINNED BCW.
- 11 BOND PROPOSED ICE BRIDGE TO NEW T-MOBILE BURIED EQUIPMENT GROUND RING WITH #2 AWG SOLID TINNED BCW.
- 12 BOND PROPOSED T-MOBILE GPS UNIT TO NEW T-MOBILE BURIED EQUIPMENT GROUND RING WITH #2 AWG SOLID TINNED BCW.
- 13 BOND PROPOSED T-MOBILE BURIED EQUIPMENT GROUND RING TO EXISTING COMPOUND GROUNDING WITH #2 AWG SOLID TINNED BCW.
- 14 BOND PROPOSED T-MOBILE BURIED EQUIPMENT GROUND RING TO EXISTING BURIED TOWER GROUND RING WITH #2 AWG SOLID TINNED BCW. (TYP. OF (2) PLACES) (CONTRACTOR TO VERIFY)
- 15 BOND PROPOSED T-MOBILE METER & DISCONNECT TO EXISTING UTILITY GROUND BAR WITH #2 AWG SOLID TINNED BCW. (NOT SHOWN)
- 16 PROPOSED T-MOBILE WORKLIGHT TO BE GROUNDED PER MANUFACTURER'S SPECIFICATIONS (TYP.)

GROUNDING SYMBOLS:

⊗ GROUND ROD

□ ACCESS WELL

⊗ GROUND ROD WITH ACCESS

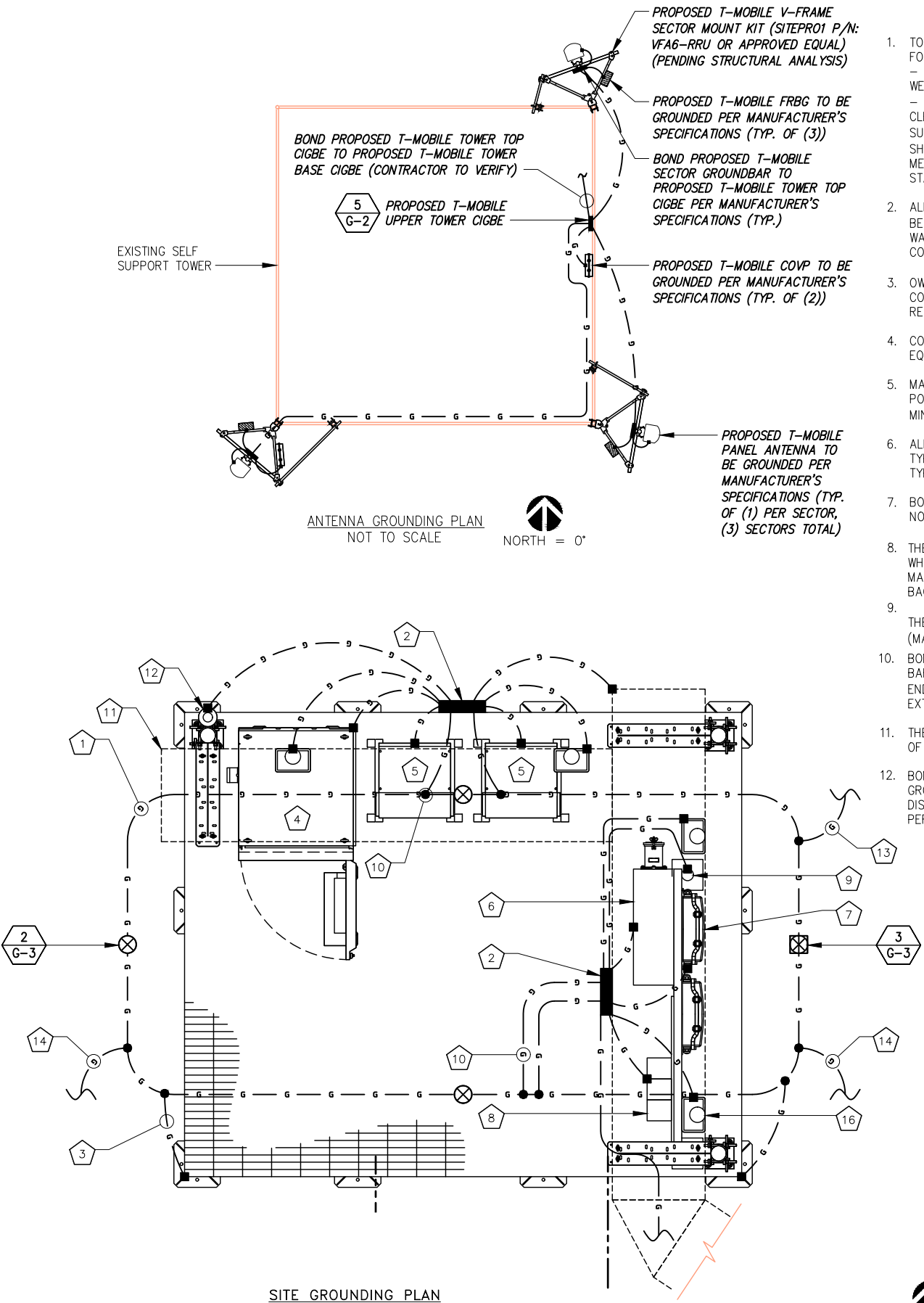
■ COMPRESSION TYPE CONNECTION

● EXOTHERMIC WELD TYPE CONNECTION

— G — #2 BTS COPPER CONDUCTOR

— BURIED GROUND CABLE

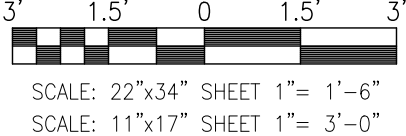
INDICATES CODED NOTE



GENERAL GROUNDING NOTES:

1. TO ENSURE PROPER BONDING, ALL CONNECTIONS SHALL BE AS FOLLOWS:
- #2 BARE TINNED SOLID COPPER CONDUCTOR: EXOTHERMIC WELD TO RODS OR GROUND RING
 - LUGS AND BUS BAR (UNLESS NOTED OTHERWISE): SANDED CLEAN, COATED WITH OXIDE INHIBITOR AND BOLTED FOR MAXIMUM SURFACE CONTACT. ALL LUGS SHALL BE COPPER (NO ALUMINUM SHALL BE PERMITTED). PROVIDE LOCK WASHERS FOR ALL MECHANICAL CONNECTIONS FOR GROUND CONDUCTORS. USE STAINLESS STEEL HARDWARE THROUGHOUT.
2. ALL GROUNDING CABLE IN CONCRETE OR THROUGH WALLS SHALL BE IN 3/4" PVC CONDUIT. SEAL AROUND CONDUIT THROUGH WALLS. NO METALLIC CONDUIT SHALL BE USED FOR GROUNDING CONDUCTORS.
3. OWNER'S REPRESENTATIVE WILL INSPECT EXOTHERMIC WELD AND CONDUCT MEGGER TEST PRIOR TO BURIAL. MAXIMUM 5 OHMS RESISTANCE IS REQUIRED.
4. CONTRACTOR TO INSTALL GROUNDING IN CLOSE PROXIMITY TO EQUIPMENT PLATFORM OR PAD.
5. MAKE ALL GROUND CONNECTIONS AS SHORT AND DIRECT AS POSSIBLE. AVOID SHARP BENDS. ALL BENDS SHALL BE A MINIMUM 8" RADIUS AND NO GREATER THAN 90 DEGREES.
6. ALL CADWELDS TO BURIED GROUND RING SHALL BE THE PARALLEL TYPE, EXCEPT FOR THE GROUND RODS WHICH SHALL BE THE TEE TYPE.
7. BOND SERVICE CONDUITS TO GROUND RING AS THEY CROSS. DO NOT EXOTHERMICALLY WELD TO CONDUITS.
8. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER WHEN THE GROUNDING SYSTEM IS COMPLETE. THE CONSTRUCTION MANAGER SHALL INSPECT THE GROUNDING SYSTEM PRIOR TO BACKFILLING.
9. THE MINIMUM SPACING BETWEEN GROUND RODS SHALL BE 10'-0" (MAX. 15'-0").
10. BOND CIGBE TO EXTERNAL GROUND RING WITH 2 RUNS OF #2 BARE, TINNED, SOLID COPPER CONDUCTOR IN PVC. CONNECT BAR END WITH 2 HOLE LUG, AND "CADWELD" THE OTHER END TO THE EXTERNAL GROUND ROD.
11. THE PREFERRED LOCATION FOR COAX GROUNDING IS AT THE BASE OF THE TOWER PRIOR TO THE COAX BEND.
12. BONDING OF THE GROUNDED CONDUCTOR (NEUTRAL) AND THE GROUNDING CONDUCTOR SHALL BE AT THE SERVICE DISCONNECTING MEANS. BONDING JUMPER SHALL BE INSTALLED PER N.E.C. ARTICLE 250-30.

GRAPHIC SCALE



PLANS PREPARED FOR:



T-MOBILE WEST
18400 East 22nd Avenue
Aurora, CO 80011

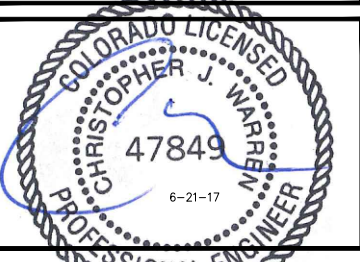
PLANS PREPARED BY:



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JOB NUMBER 317-000



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REVISIONS:			
DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	06/21/17	WNM	0

T-MOBILE SITE NAME:

WATKINS

T-MOBILE SITE #:

DN01507B

SITE ADDRESS:

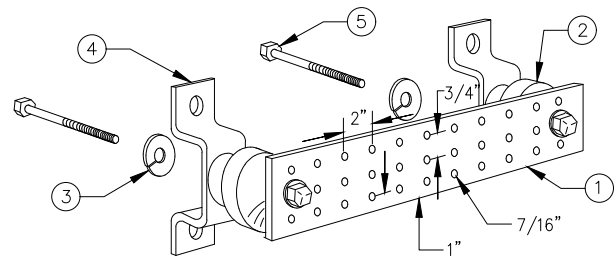
24055 E. 6TH AVENUE
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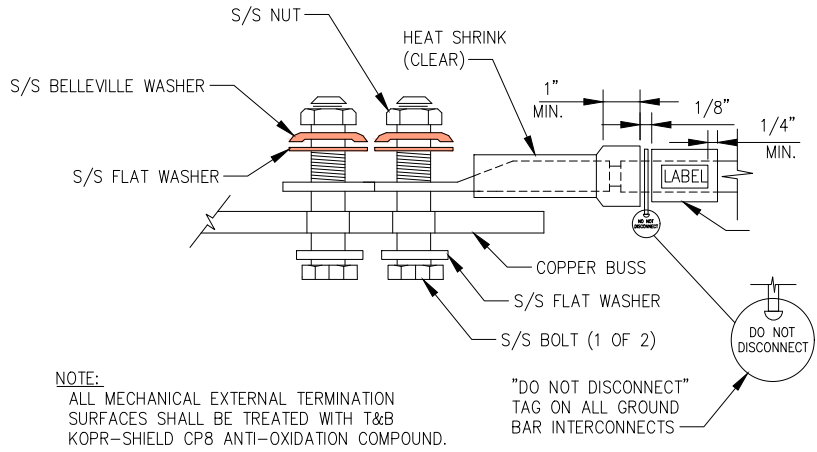
GROUNDING PLANS

SHEET NUMBER:

G-1



- LEGEND
1. TINNED COPPER GROUND BAR, 1/4"x4"x20", NEWTON INSTRUMENT CO., HARGER TGB114420M, OR EQUIVALENT. HOLE CENTERS TO MATCH
 2. NEMA DOUBLE LUG CONFIGURATION.
 3. INSULATORS, NEWTON INSTRUMENT CO. CAT. NO. 3061-4 OR HARGER EQUIVALENT.
 4. 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8 OR EQUIVALENT.
 5. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT. NO. A-6056 OR HARGER EQUIVALENT.
 6. 5/8-11"x1" H.H.C.S. BOLTS, NEWTON INSTRUMENT CO. CAT. NO. 3012-1 OR HARGER EQUIVALENT.
- NOTES:
1. ALL MOUNTING HARDWARE CAN ALSO BE USED ON 6", 12", 18", ETC. GROUND BARS.
 2. ENTIRE ESSEMBLY AVAILABLE FROM NEWTON INSTRUMENT CO. CAT. NO. 2106060010 OR AS HARGER TGB114420M.



- NOTE:
- ALL MECHANICAL EXTERNAL TERMINATION SURFACES SHALL BE TREATED WITH T&B KOPR-SHIELD CP8 ANTI-OXIDATION COMPOUND.
- "DO NOT DISCONNECT" TAG ON ALL GROUND BAR INTERCONNECTS

TYPICAL GROUND BAR

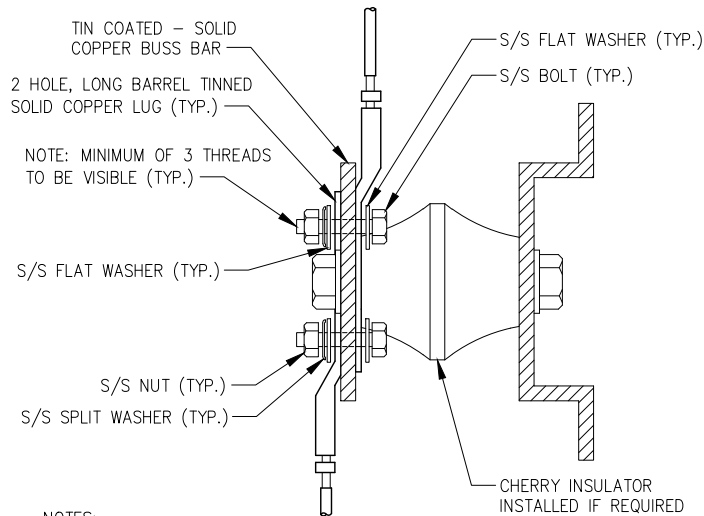
NO SCALE

1

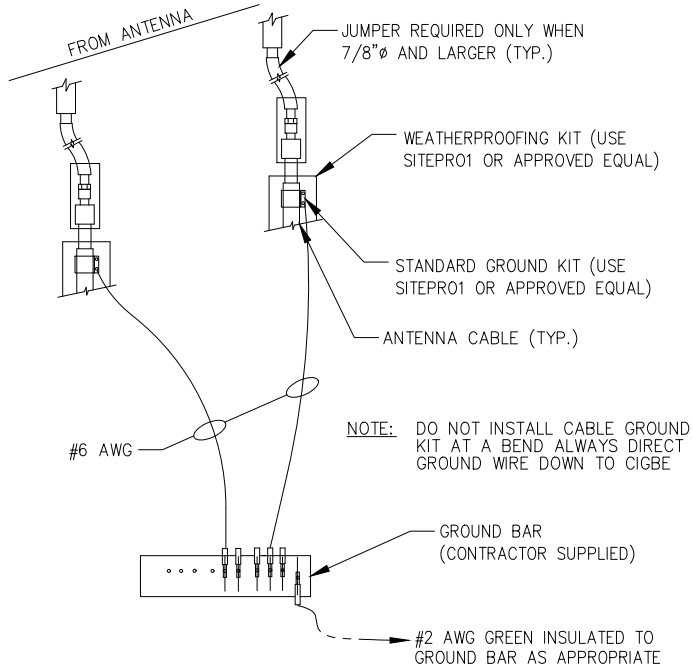
TYPICAL EQUIPMENT GROUND CONNECTION

NO SCALE

2



- NOTES:
1. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING SPLIT WASHERS.
 2. COAT WIRE END WITH ANTI-OXIDATION COMPOUND PRIOR TO INSERTION INTO LUG BARREL AND CRIMPING.
 3. APPLY ANTI-OXIDATION COMPOUND BETWEEN ALL LUGS AND BUSS BARS PRIOR TO MATING AND BOLTING.



ELEVATION VIEW

TYPICAL GROUND LUG

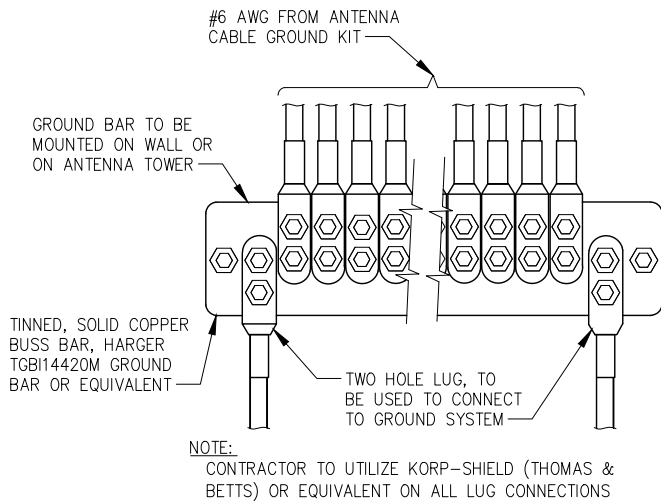
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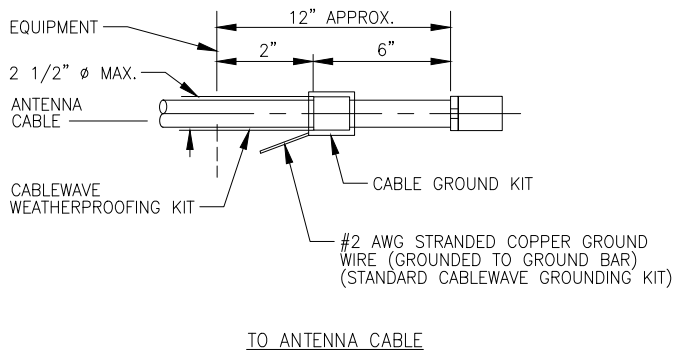
TYPICAL CONNECTION OF GROUND WIRES TO GROUNDING BARS @ ANTENNAS

NO SCALE

4



- NOTE:
- CONTRACTOR TO UTILIZE KOPR-SHIELD (THOMAS & BETTS) OR EQUIVALENT ON ALL LUG CONNECTIONS



- NOTE:
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

TYPICAL ANTENNA GROUND BAR

NO SCALE

5

TYPICAL CABLE GROUND KIT CONNECTION

NO SCALE

6

PLANS PREPARED FOR:

T-Mobile

T-MOBILE WEST
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Aurora, CO 80011

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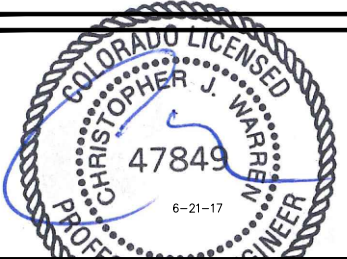
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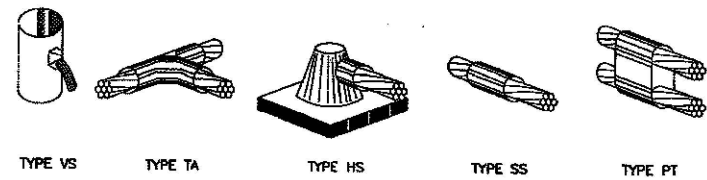
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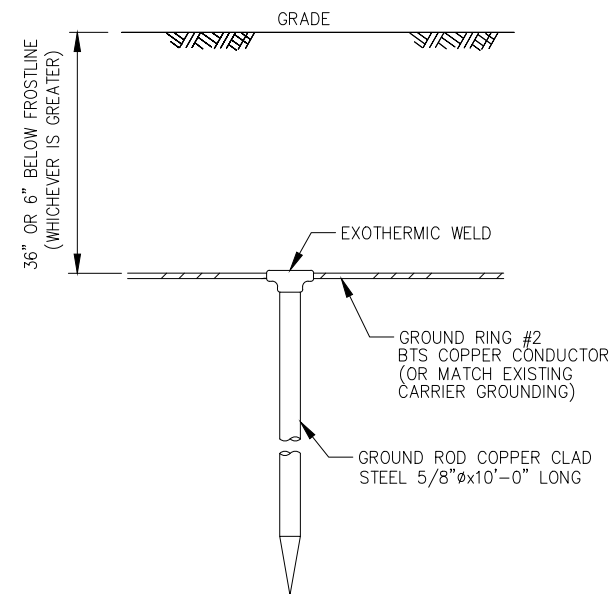
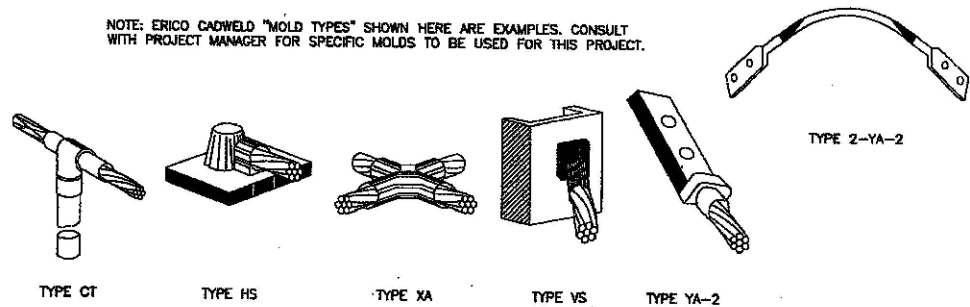
GROUNDING DETAILS

SHEET NUMBER:

G-2



NOTE: ERICO CADWELD "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH PROJECT MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.



TYPICAL EQUIPMENT GROUND CONNECTIONS

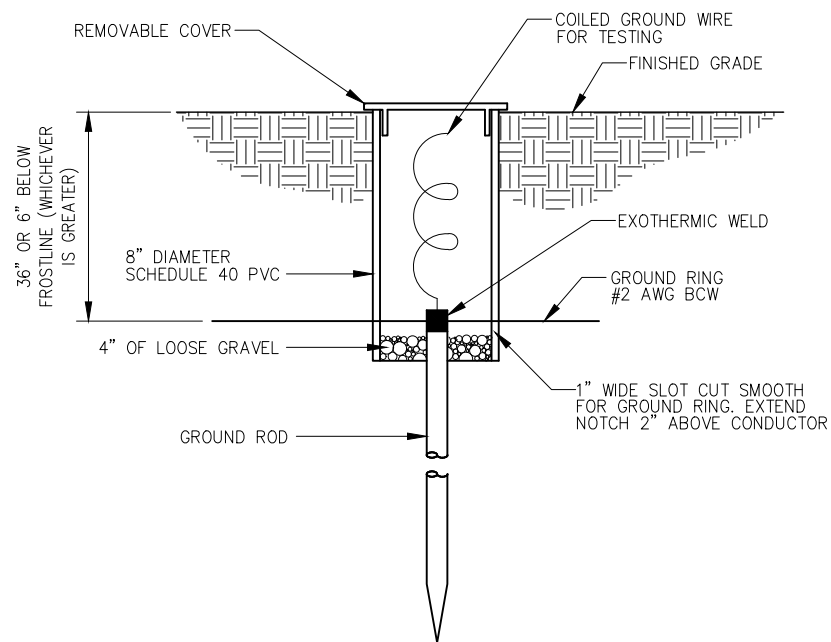
NO SCALE

1

TYPICAL GROUND ROD

NO SCALE

2



TYPICAL INSPECTION SLEEVE

NO SCALE

3

DETAIL NOT USED

NO SCALE

4

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T-Mobile

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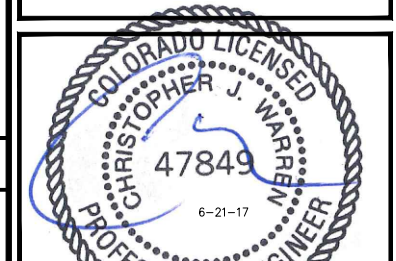
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GROUNDING DETAILS

SHEET NUMBER:

G-3