

Memorandum Department of Planning & Public Works



To: Planning and Public Works Committee

**From: Shawn Seymour, AICP
Senior Planner**

Date: June 21, 2010

RE: T.S.P. 20-2010 Clearwire US LLC. (14550 South Outer 40 Road):

A request to obtain approval for a Telecommunication Facility Siting Permit for the location of antennas and equipment on an existing AmerenUE transmission tower in a "NU" Non-Urban District-zoned right-of-way located southeast of the US Highway 40 and Timberlake Manor interchange (19R540055).

Summary

Clearwire US LLC, has requested a telecommunications facilities siting permit to allow the following on an existing AmerenUE transmission line tower located along the right-of-way of South Outer 40 Road north of the Suburbia Gardens Landscaping business:

- Location of antennas to facilitate a broadband internet service on an existing AmerenUE transmission tower.
- Addition of ground located equipment located at the base of the transmission tower.

City of Chesterfield Ordinance 2391, which governs telecommunications and facilities siting, requires that the Planning Commission provide a venue for public hearing of requests for Telecommunications Siting Permits. Please note, the Commission does not provide a recommendation to the City Council, but rather generates a list of issues during the hearing. At the public hearing on June 14, 2010, no outstanding issues were identified.

Attached are copies of the materials submitted to the Planning Commission.

Respectfully submitted,

Shawn Seymour, AICP
Senior Planner

CC: Michael G. Herring, City Administrator
Rob Heggie, City Attorney
Michael O. Geisel, Director of Planning & Public Works
Aimee Nassif, Planning & Development Services Director

Attachments: Planning Commission packet



IV.B.

690 Chesterfield Pkwy W • Chesterfield MO 63017-0760
Phone: 636-537-4000 • Fax 636-537-4798 • www.chesterfield.mo.us

Department of Planning & Public Works Public Hearing Summary Report

T.S.P. 20-2010 Clearwire US LLC. (14550 South Outer 40 Road): A request to obtain approval for a Telecommunication Facility Siting Permit for the location of antennas and equipment on an existing AmerenUE transmission tower in a "NU" Non-Urban District-zoned right-of-way located southeast of the US Highway 40 and Timberlake Manor interchange (19R540055).

Summary

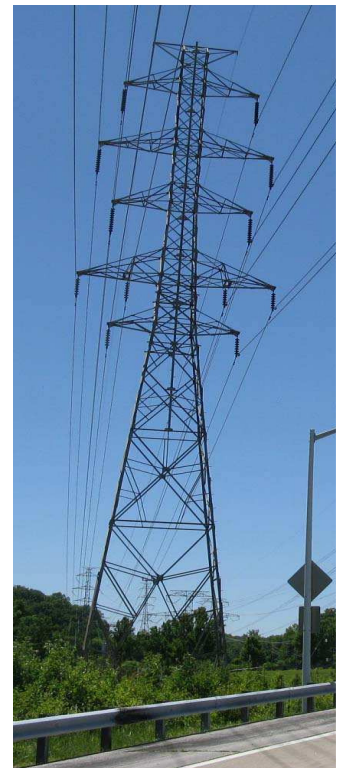
The above-referenced project is a request for a Telecommunications Siting Permit (T.S.P.). If the request is approved, the Permit will allow placement of antennas from a new user, Clearwire US, on an existing AmerenUE transmission line tower located at 14550 South Outer 40 Road. Equipment to support the antennas is proposed to be placed at the base of the AmerenUE tower.

City of Chesterfield Ordinance 2391, which now governs telecommunications and facilities siting, requires a public hearing before the City of Chesterfield Planning Commission when a request is made for T.S.P. Please note, the Commission does not provide a recommendation to the City Council, but rather a list of issues generated during the hearing. City Council is the decision-making body for all requests for Telecommunications Siting Permits. A public hearing further addressing the request will be held at the June 14, 2010 City of Chesterfield Planning Commission meeting. Attached please find a copy of the Public Hearing Notice and an application packet detailing the Petitioner's request.

Respectfully submitted,

Shawn Seymour, AICP
Senior Planner

Cc: Michael G. Herring, City Administrator
Rob Heggie, City Attorney
Michael O. Geisel, Director of Planning and Public Works
Aimee Nassif, Planning and Development Services Director



Existing Structure

**NOTICE OF PUBLIC HEARING
CITY OF CHESTERFIELD
PLANNING COMMISSION**

NOTICE IS HEREBY GIVEN that the Planning Commission of the City of Chesterfield will hold a Public Hearing on Monday, June 14, 2010, at 7:00 PM, in the Council Chambers at the City Hall, 690 Chesterfield Parkway West, Chesterfield, Missouri 63017.

Said hearing will be as follows:

T.S.P. 20-2010 Clearwire US LLC. (14550 South Outer 40 Road): A request to obtain approval for a Telecommunication Facility Siting Permit for the location of additional antennas and equipment on an existing AmerenUE transmission tower in a "NU" Non-Urban District-zoned right-of-way located southeast of the US Highway 40 and Timberlake Manor interchange (19R540055).



Anyone interested in the proceedings will be given an opportunity to be heard. Copies of the request are available for review in the Department of Planning and Public Works at the Chesterfield City Hall, 690 Chesterfield Parkway West during weekdays between the hours of 8:30 a.m. and 4:30 p.m. If you should need additional information about this project, please contact Mr. Shawn P. Seymour, Senior Planner, by telephone at 636-537-4741 or by email at sseymour@chesterfield.mo.us

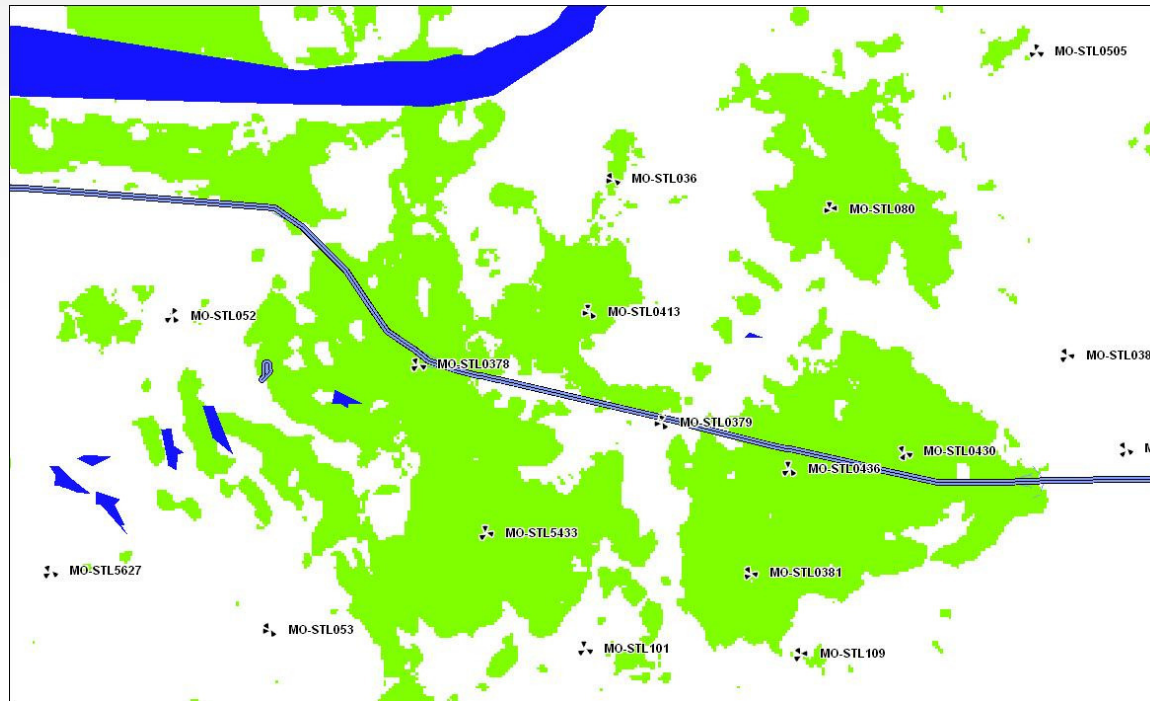
CITY OF CHESTERFIELD
Maurice L. Hirsch, Jr., Chair
Chesterfield Planning Commission

Description of Area

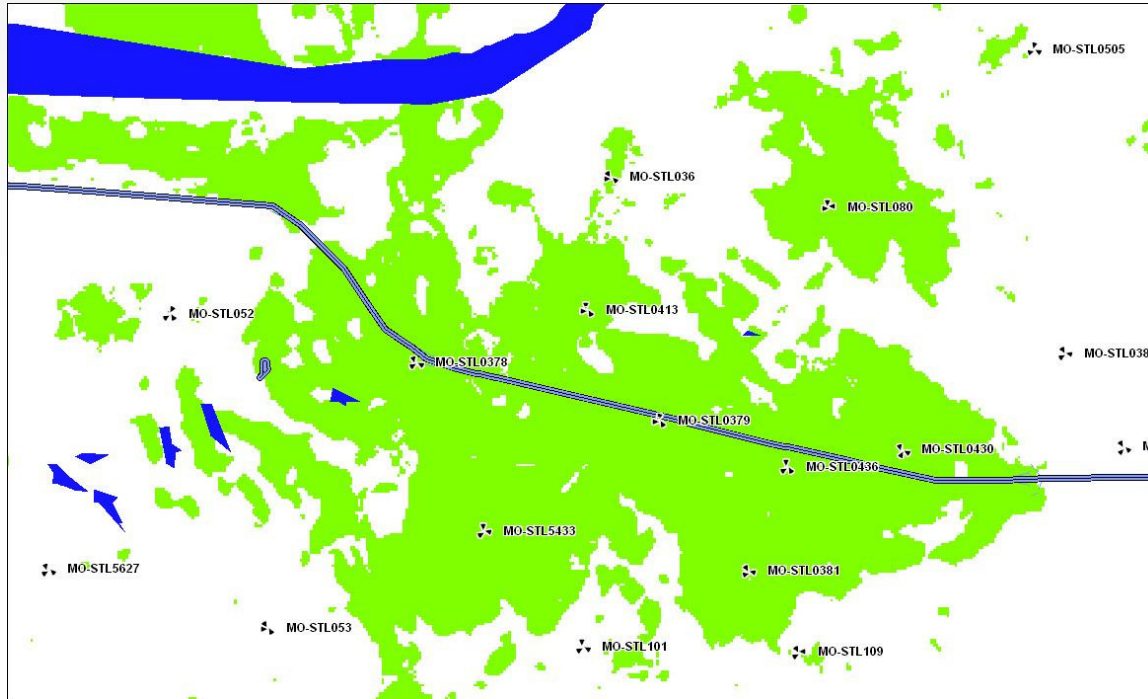
Part of Lot 2 of the Subdivision of land of Samuel Conway, deceased, in partition in U.S. Survey 366 and Section 13 and 14, Township 45 North, Range 4 East, in St. Louis County, Missouri, according to the Plat thereof recorded in Plat Book 9 Page 77 of the St. Louis City (former County) Records.

MO-STL0379

Coverage Analysis



Indoor Coverage without MO-STL0379



Indoor Coverage with MO-STL0379

CLEARWIRE PROJECT MANAGEMENT	DATE
CLEARWIRE CONSTRUCTION MANAGEMENT	DATE
CLEARWIRE ENGINEERING	DATE
BACKHAUL ENGINEERING	DATE
LANDLORD	DATE

clearwire®

TECHNOLOGIES, INC.

SITE ID: MO-STL0379

MASON GRAY SUMMIT #25



DRAWING INDEX

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A-2	ANTENNA MOUNTING DETAILS & NOTES
A-3	STRUCTURAL NOTES, SECTIONS & DETAILS
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E-1	ELECTRICAL PLAN
E-2	GROUNDING PLAN
E-3	ELECTRICAL DETAILS
E-4	GROUNDING DETAILS & NOTES
E-5	GROUNDING ANTENNA DETAILS

CIVIL ENGINEER

LANDTECH PROFESSIONAL SURVEYING AND ENGINEERING
1275 MCGREGOR WAY
GRAWN, MI 49637
P.O. BOX 193
PHONE: (231) 943-0050

SURVEYOR

LANDTECH PROFESSIONAL SURVEYING AND ENGINEERING
1275 MCGREGOR WAY
GRAWN, MI 49637
P.O. BOX 193
PHONE: (231) 943-0050

PROJECT INFORMATION

SCOPE OF WORK:
THIS FACILITY IS AN UNOCCUPIED TELECOMMUNICATIONS FACILITY CONSISTING OF CO-LOCATING ON AN EXISTING TRANSMISSION TOWER WITH MICROWAVE ANTENNAS AND THE INSTALLATION OF NEW OUTDOOR EQUIPMENT ON GRADE.

SITE ADDRESS:
14550 S. OUTER 40 RD.
CHESTERFIELD, MO 63017

TOWER OWNER:
AMEREN
P.O. BOX 66529
ST. LOUIS, MO 63166

TOWER OWNER SITE#:
MASON GRAY SUMMIT #25

APPLICANT:
CLEARWIRE
4400 CARILLON POINT
KIRKLAND, WA 98033
(425) 216-7600 PH
(425) 216-7900 FAX

CONTACT:
AMY ISENBURG

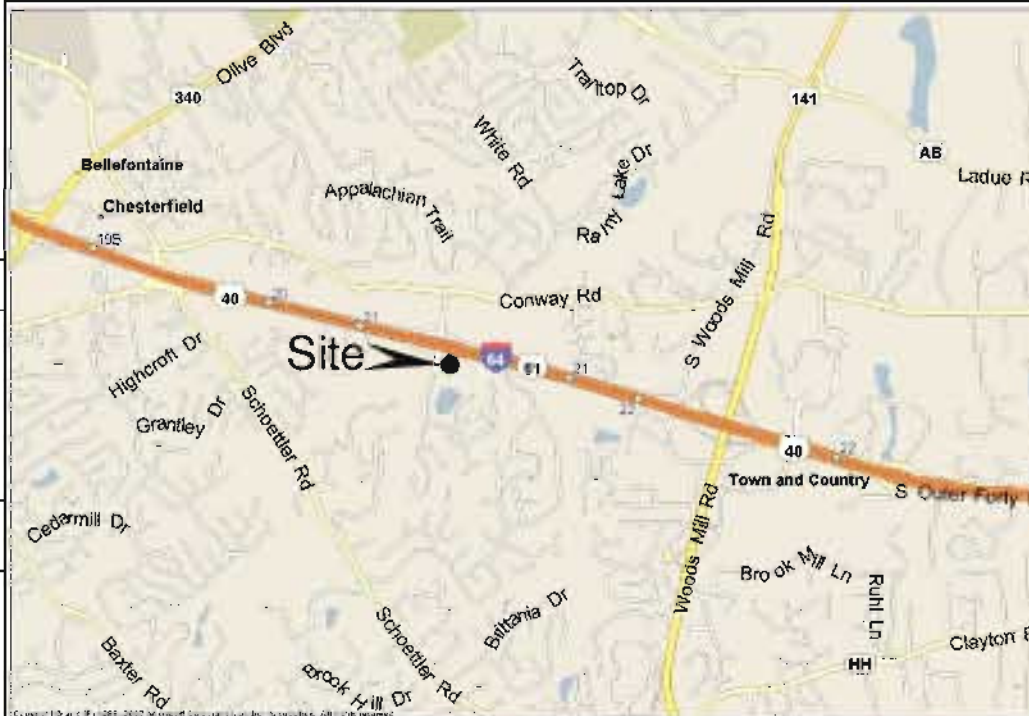
TOWER INFORMATION:
(LATITUDE & LONGITUDE BASED ON NAD1983)
LATITUDE: 38° 38' 45.4" N
LONGITUDE: 90° 31' 46.5" W
PROPOSED RAD CENTER HEIGHT: 140' AGL.

PARCEL NUMBER (TAX I.D.):
19R540055

CURRENT ZONING:
FPNU COMMERCIAL

TYPE OF CONSTRUCTION:
PROJECT TYPE: EXISTING TRANSMISSION TOWER

DIRECTIONS TO SITE:
FROM LAMBERT INTERNATIONAL AIRPORT: TAKE I-70 WESTBOUND. TAKE I-270 EXIT SOUTH TO THE HWY 40 / I-64 WEST EXIT. PROCEED TO THE TIMBERLAKE MANOR EXIT AND TURN LEFT AT THE STOPLIGHT. THE AMEREN TOWER IS TO YOUR LEFT.



VICINITY MAP
NOT TO SCALE



CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED 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 THE LATEST EDITIONS OF THE FOLLOWING CODES.

- | | |
|-------------|--|
| 1 IBC 2003 | 6. LOCAL BUILDING CODE |
| 2 IMC 2003 | 7. CITY/COUNTY ORDINANCES |
| 3 IRC 2003 | 8. IECC 2003 (2003 IBC) |
| 4 UPC 2003 | 9. INTERNATIONAL EXISTING BUILDING CODE 2003 |
| 5. NEC 2005 | |

SITE QUALIFICATION PARTICIPANTS

	NAME	COMPANY	NUMBER
A/E	MATTHEW MOKANYK, P.E.	LANDTECH	231-943-0050
SAC	RUSSELL BEEN	COLLECTIVE SOLUTIONS, LLC	314-989-9810
RF	JASON GIBBS	CLEARWIRE	
CON	AMY ISENBURG	CLEARWIRE	amy.isenburg@clearwire.com
LL	TIM WEBERS	AMEREN	314-554-2993



4400 CARILLON POINT
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(425) 216-7600 PH
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SITE NUMBER: MO-STL0379
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14550 S. OUTER 40 RD.
CHESTERFIELD, MO 63017

NO.	DATE	REVISIONS	BY	CHK	APPD
4	04/22/10	PER CITY OF CHESTERFIELD COMMENTS	TCM	MM	MM
3	04/16/10	CHANGE TO POWER MOUNT	TCM	MM	MM
2	01/07/10	NEW ANTENNA CONFIG	TCM	MM	MM
1	11/02/09	PRELIMINARY CONSTRUCTION DRAWINGS	TCM	MM	MM
0	06/01/09	PRELIMINARY DRAWINGS	CJL	MM	MM

SCALE: AS SHOWN DESIGNED BY MM

SHEET T-1

TITLE SHEET

DRAWING NUMBER

0938527

SITE ADDRESS:

14550 S. OUTER 40 RD.
CHESTERFIELD, MO 63017

LAND OWNER:

40-TIMBERLAKE SE LLC
36 BRIARCLIFF STREET
ST. LOUIS, MO 63124

TOWER OWNER:

AMEREN
P.O. BOX 66529
ST. LOUIS, MO 63166

ZONING:

SUBJECT SITE: FPNU COMMERCIAL
NORTH OF SITE: HIGHWAY
SOUTH OF SITE: NU RESIDENTIAL
EAST OF SITE: R3 RESIDENTIAL
WEST OF SITE: HIGHWAY

AREA DATA:

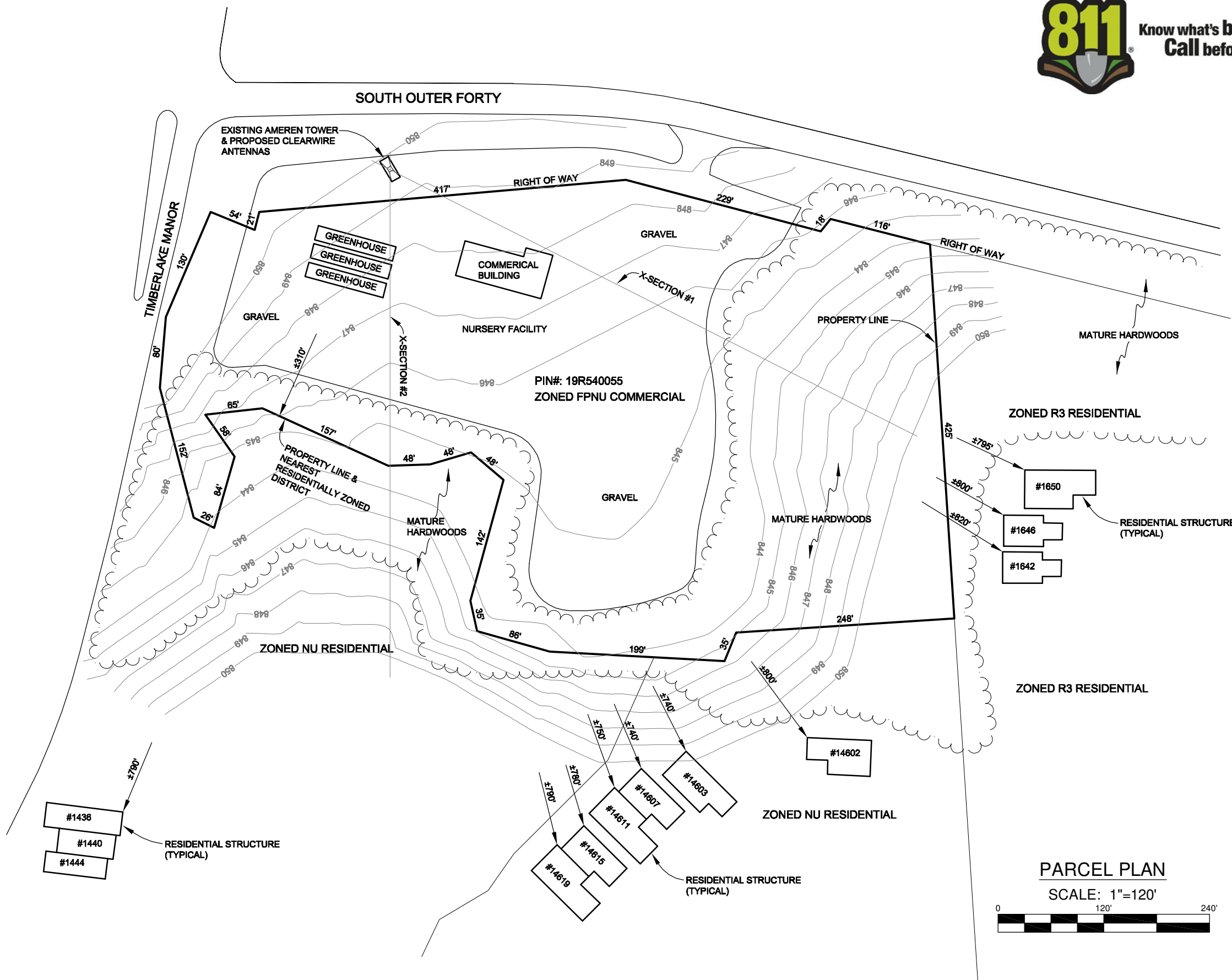
PARENT PARCEL AREA: 8.71 ACRES
LEASE AREA: 49 SQ.FT.
AREA OF CONSTRUCTION: 49 SQ.FT.

PARENT PARCEL DESCRIPTION

Part of Lot 2 of the Subdivision of land of Samuel Conway, deceased, in partition in U.S. Survey 366 and Sections 13 and 14, Township 45 North, Range 4 East, in St. Louis County, Missouri, according to the Plat thereof recorded in Plat Book 9 Page 77 of the St. Louis City (former County) Records, being described as:
Beginning at a railroad spike at the intersection of the South line of T.R. Highway No. 40 with the West line of said Lot 2, thence South 4 degrees 35-1/2 minutes West 439.38 feet, thence South 14 degrees 58 minutes East 152.33 feet; thence South 64 degrees 18 minutes East 27.72 feet, thence North 14 degrees 54 minutes East 84.10 feet, thence North 35 degrees 25 minutes West 57.80 feet, thence North 83 degrees 6 minutes East 65.62 feet, thence South 65 degrees 54 minutes East 155.03 feet, thence North 89 degrees 19 minutes East 47.49 feet, thence North 73 degrees 22 minutes East 50.63 feet, thence South 49 degrees 51 minutes East 47.50 feet, thence South 14 degrees 51 minutes West 144.90 feet, thence South 13 degrees 28 minutes East 33.81 feet, thence South 74 degrees 10 minutes East 80.14 feet, thence South 87 degrees 17 minutes East 205 feet, thence North 22 degrees 19 minutes East 24.28 feet, thence North 85 degrees 53 minutes East 248 feet to an old iron stone at the Northeast corner of Lot 4 of said Subdivision, thence North 4 degrees 7 minutes West to the South line of said T.R. Highway No. 40, thence North 76 degrees 46 minutes West along the South line of said Highway a distance of 856.43 feet, more or less, to the point of beginning, according to Survey made by Elbring Surveying Company during the Month of April, 1960, EXCEPTING THEREFROM that part thereof condemned for new right-of-way T.R. Highway No. 40, in Condemnation Suit No. 276693 in the Circuit Court of St. Louis County, Missouri.



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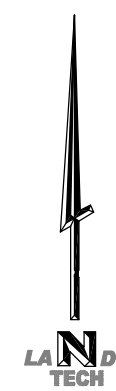
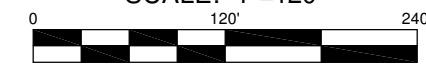


LEGEND	
•	IRON FOUND
○	IRON SET
•	P.K. NAIL FOUND
•	P.K. NAIL SET
○	GPS MONUMENT
○	MONUMENT BOX FOUND
○	MONUMENT FOUND
○	MONUMENT SET
(R)	RECORD
(M)	MEASURED
○	575 STORM MANHOLE
○	CATCH BASIN
□	SQUARE CATCH BASIN
○	365 SANITARY MANHOLE
○	SANITARY CLEAN-OUT
○	MONITOR WELL
○	TELCO. MANHOLE
○	LIGHT POLE
⊕	ELECTRIC TRANSFORMER
⊕	ELECTRIC METER
—	ELECTRIC HANDHOLE
—	POWER POLE
—	GUY
—	WATER VALVE
—	HYDRANT
—	GAS METER
—	GAS MARKER
—	GAS VALVE
—	TELEPHONE PEDESTAL
—	SIGN POST
—	FENCE LINE
—	BENCHMARK

ALL UTILITIES AS SHOWN ARE APPROXIMATE LOCATIONS DERIVED FROM ACTUAL MEASUREMENTS AND AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATION NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THE AREA.

PARCEL PLAN

SCALE: 1"=120'



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SITE NUMBER: MO-STL0379
MASON GRAY SUMMIT #25
14550 S. OUTER 40 RD.
CHESTERFIELD, MO 63017

NO.	DATE	REVISIONS	BY	CHK	APPD
4	04/22/10	PER CITY OF CHESTERFIELD COMMENTS	TCM	MM	MM
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1	11/02/09	PRELIMINARY CONSTRUCTION DRAWINGS	TCM	MM	MM
0	06/01/09	PRELIMINARY DRAWINGS	CJL	MM	MM

SCALE: AS SHOWN DESIGNED BY: MM

SHEET S-1
PARCEL PLAN
DRAWING NUMBER
0938527

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CHESTERFIELD, MO 63017

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36 BRIARCLIFF STREET
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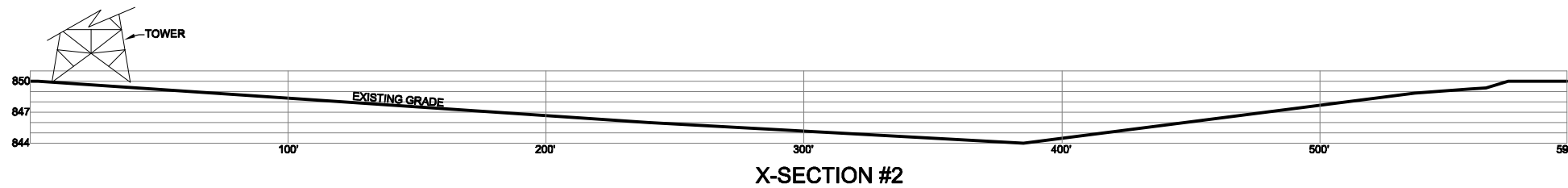
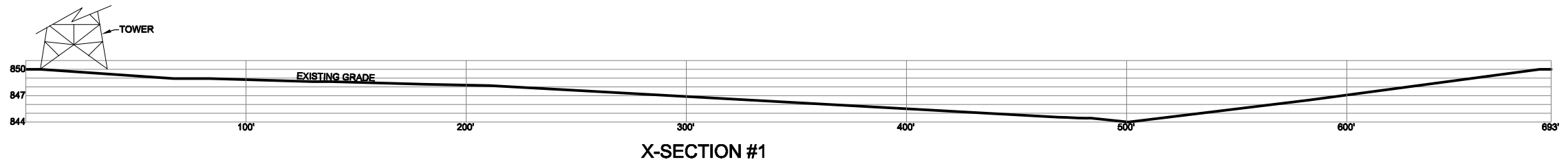
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NORTH OF SITE: HIGHWAY
SOUTH OF SITE: NU RESIDENTIAL
EAST OF SITE: R3 RESIDENTIAL
WEST OF SITE: HIGHWAY

AREA DATA:

PARENT PARCEL AREA: 8.71 ACRES
LEASE AREA: 49 SQ.FT.
AREA OF CONSTRUCTION: 49 SQ.FT.



CROSS SECTIONS
HORIZONTAL SCALE: 1"=60'
VERTICAL SCALE: 1"=15'

• IRON FOUND	EHH ELECTRIC HANDHOLE
○ IRON SET	PP POWER POLE
• P.K. NAIL FOUND	GUY
• P.K. NAIL SET	WV WATER VALVE
○ GPS MONUMENT	HYDRANT
○ MONUMENT BOX FOUND	GM GAS METER
○ MONUMENT FOUND	GM GAS MARKER
○ MONUMENT SET	GV GAS VALVE
(R) RECORD	TEL TELEPHONE PEDESTAL
(M) MEASURED	SP SIGN POST
○ SM STORM MANHOLE	FL FENCE LINE
○ CATCH BASIN	BM BENCHMARK
□ SQUARE CATCH BASIN	
○ SM SANITARY MANHOLE	
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○ TELCO. MANHOLE	
○ LIGHT POLE	
○ ELECTRIC TRANSFORMER	
○ ^{EM} ELECTRIC METER	

LEGEND

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SCALE: AS SHOWN			DESIGNED BY: MM		

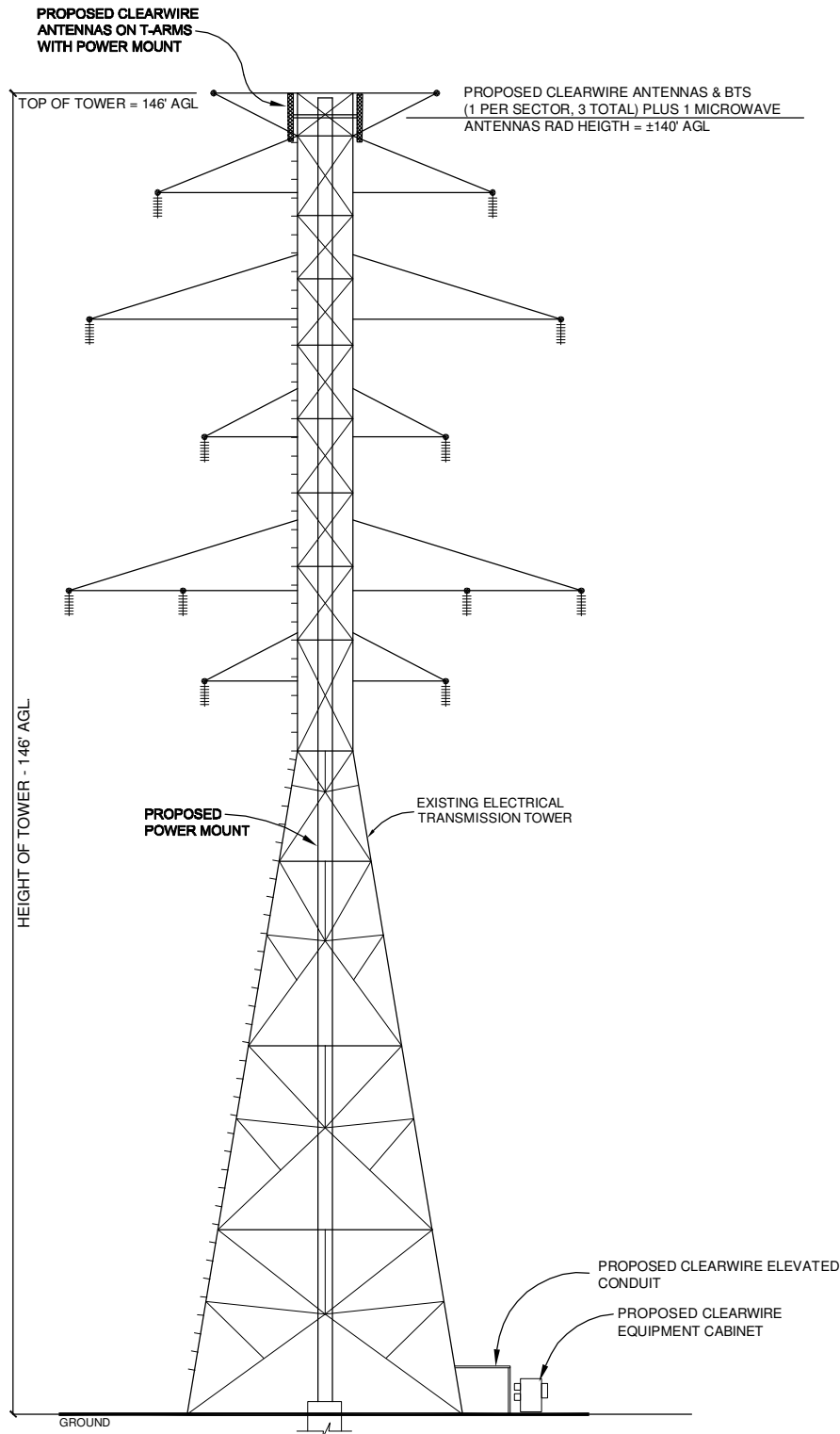
SHEET S-2		
CROSS SECTIONS		
DRAWING NUMBER		
0938527		

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NOTE:
RESTORE COMPOUND GRAVEL SURFACE TO PRE-CONSTRUCTION CONDITION AFTER COMPLETION OF WORK.

NOTE:
HAND DIG TO PROTECT EXISTING UNDERGROUND UTILITIES AND GROUNDING AS REQUIRED.



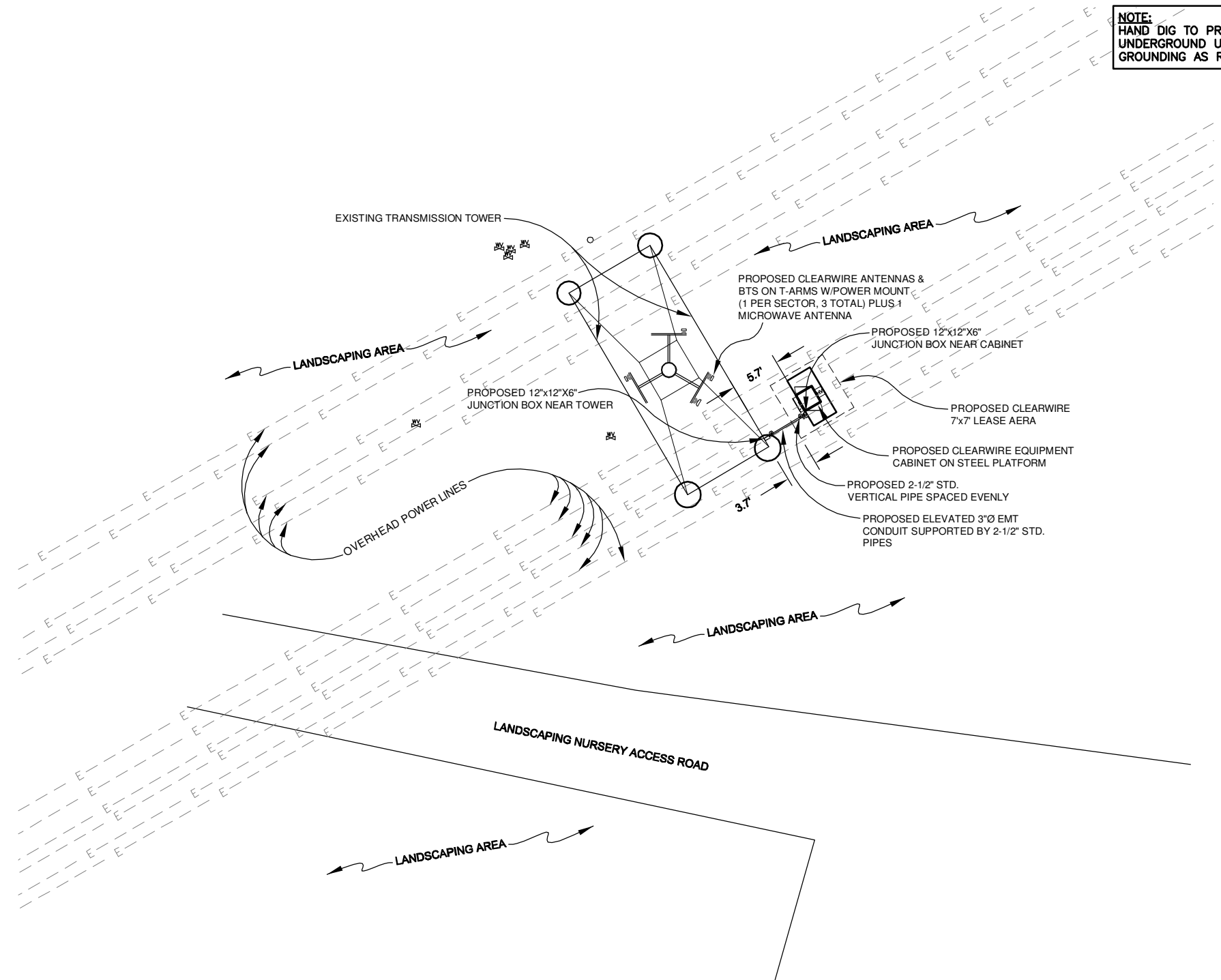
TOWER ELEVATION VIEW
NOT TO SCALE

STORM WATER DRAINAGE NOTES:
 1) THERE IS NO CHANGE IN THE EXISTING DRAINAGE PATTERN DUE TO THE PROPOSED INSTALLATION.
 2) NO SIGNIFICANT RUNOFF IS GENERATED BY THE PROPOSED INSTALLATION (4'x4' SLAB).
 3) NO GRADING IS PROPOSED FOR THIS INSTALLATION.
 4) NO STORM WATER DRAINAGE PLAN IS CONSIDERED NECESSARY.

FENCING / SCREENING / LANDSCAPING NOTE:
 1) NO FENCING, SCREENING OR LANDSCAPING IS PROPOSED FOR THIS PROJECT.

WETLANDS / FLOODPLAIN / TREE PRESERVATION NOTES:
 1) NO WETLANDS OR FLOODPLAIN EXIST ON SITE.
 2) NO TREE REMOVAL IS PLANNED FOR THIS PROJECT.

MISCELLANEOUS NOTES:
 1) NO CURB CUTS ARE PLANNED FOR THIS PROJECT.
 2) NO SANITARY SEWER IS PLANNED FOR THIS PROJECT.
 3) THIS SITE WILL BE UNMANNED AND NOT OCCUPIED.
SOIL EROSION AND SEDIMENT CONTROL MEASURES
 1) THERE IS NO CHANGE IN THE EXISTING DRAINAGE PATTERN DUE TO THE PROPOSED INSTALLATION.
 2) NO SIGNIFICANT RUNOFF IS GENERATED BY THE PROPOSED INSTALLATION.
 3) NO GRADING IS PROPOSED FOR THIS INSTALLATION.
 4) NO SOIL EROSION AND SEDIMENTATION CONTROL MEASURES ARE CONSIDERED NECESSARY.
HAZARDOUS SUBSTANCES NOTE:
 1) THERE SHALL BE NO STORAGE OF HAZARDOUS SUBSTANCES OR POLLUTING MATERIALS.



ENLARGED SITE PLAN
 SCALE: 1"=15'
 0 15' 30'



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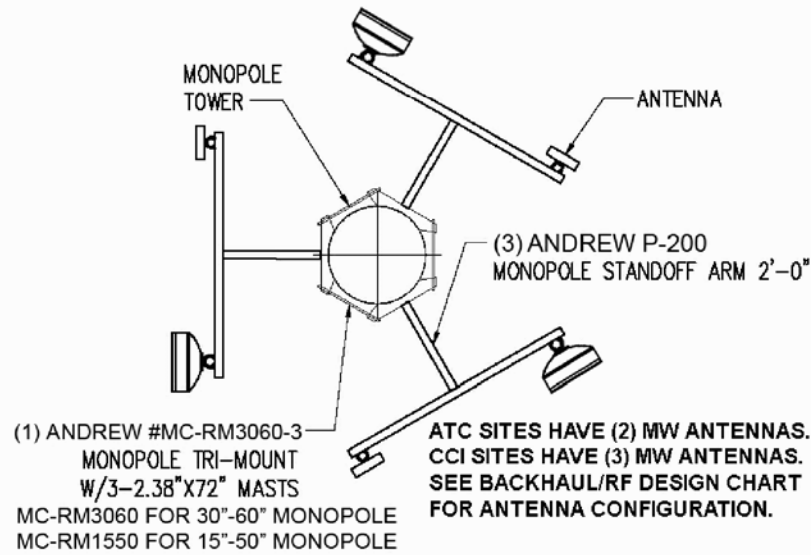
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SCALE: AS SHOWN			DESIGNED BY: MM		

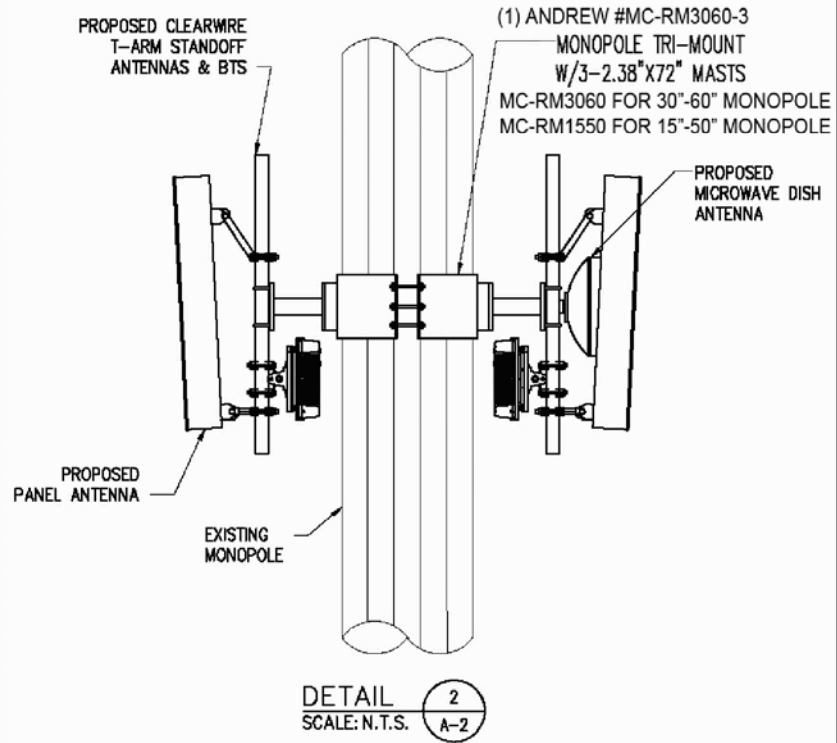
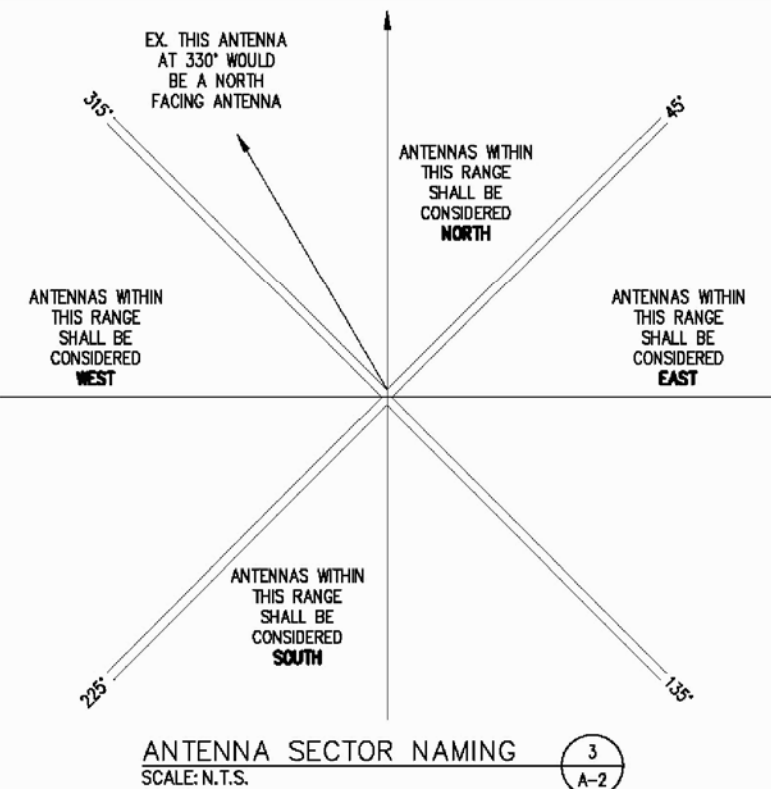
SHEET A-1
 ENLARGED SITE PLAN
 & TOWER ELEVATION
 DRAWING NUMBER
 0938527

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1. ALL ANTENNAS FURNISHED WITH DOWNTILT BRACKETS. CONTRACTOR TO COORDINATE REQUIRED MECHANICAL DOWNTILT FOR EACH ANTENNA WITH RF ENGINEER.
2. ANTENNA CENTERLINE HEIGHT IS IN REFERENCE TO ELEVATION 0'-0". ANTENNA HEIGHTS ARE SHOWN ON TOWER ELEVATION DETAIL 2/A-1.
3. CONTRACTOR SHALL VERIFY ANTENNA TYPE, CABLE TYPE, AND AZIMUTH WITH RF ENGINEER AND/OR CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION.
4. LOCAL MAGNETIC DECLINATION FACTOR, PER THE NATIONAL GEOPHYSICAL DATA CENTER, IS 5'0"W BY 0'7"W PER YEAR.

ANTENNA ORIENTATION PLAN (1) A-2
SCALE: N.T.S.



SECTOR	MARKING METHOD COLORED BANDS	MARKING METHOD NUMBER OF BANDS
NORTH	RED	1
EAST	BLUE	2
SOUTH	WHITE	3
WEST	GREEN	4

NOTES:
 LABEL MARKINGS SHALL BE PLACED WITHIN 12" OF THE CABLE AT BOTH ENDS, AT OR NEAR THE TOWER MGB AND EITHER PRIOR TO THE ENTRY INTO THE CONDUIT OR PRIOR TO ENTRY INTO THE CABINET. LABEL MARKING SHALL BE AT LEAST 1" WIDE BUT NOT MORE THAN 2" WIDE. FOR MULTIPLE BAND MARKING, BANDS SHALL BE SEPERATED BY AT LEAST 1" BUT NOT MORE THAN 2".
 ETHERNET CABLES SHALL BE ATTACHED TO TOWER WAVEGUIDE LADDER USING UV-RESISTANT BLACK CABLE TIES WITH 40LB MINIMUM BREAKING STRENGTH.

COLOR CODING (4) A-2
SCALE: N.T.S.

1. FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (HANDICAPPED ACCESS NOT REQUIRED).
2. FACILITY HAS NO PLUMBING.
3. FACILITY WILL BE INDEPENDENTLY POWERED WITH SEPERATE METER.
4. ANTENNA INSTALLATION SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS, TRANSMISSION LINES, AND SUPPORT STRUCTURES.
5. CONTRACT COMPANIES AND THEIR EMPLOYEES SHALL OBSERVE AND PRACTICE ALL O.S.H.A. SAFETY GUIDELINES WHILE PERFORMING SERVICE FOR CLEARWIRE TECHNOLOGIES, INC.
6. CONTRACTOR SHALL PERFORM A SAFETY INSPECTION PRIOR TO COMMENCING ALL WORK ACTIVITIES AT A CLEARWIRE TECHNOLOGIES, INC. LEASED OR OWNED SITE. CLEARWIRE TECHNOLOGIES, INC. SHOULD BE IMMEDIATELY NOTIFIED OF SAFETY HAZARD(S) FOUND DURING THE INSPECTION THAT COULD CAUSE DAMAGE TO PROPERTY. ALL WORK SHALL BE HALTED UNTIL SUCH TIME THE REPORTED SAFETY HAZARD IS CORRECTED. THE SAFETY HAZARD, IF POSSIBLE, SHOULD BE CORRECTED BY THE CONTRACTOR WHILE ON SITE. AFTER THE CONTRACTOR HAS NOTIFIED CLEARWIRE TECHNOLOGIES, INC. OF THE HAZARD AND HAS RECEIVED APPROVAL FROM CLEARWIRE TECHNOLOGIES, INC. TO PERFORM THE CORRECTION.
7. TOWER MODIFICATIONS, IF REQUIRED, ARE TO BE COMPLETED BEFORE THE INSTALLATION OF ANY EQUIPMENT.

- | | |
|--------------|--|
| 1P, 2P, & 3P | SINGLE POLE, TWO POLE, & THREE POLES |
| A/C | AIR CONDITIONING |
| ADJ. | ADJUSTABLE |
| AFF | ABOVE FINISH FLOOR |
| APPROX. | APPROXIMATELY |
| ASTM | AMERICAN SOCIETY FOR TESTING AND MATERIALS |
| AWG | AMERICAN WIRE GAUGE |
| A. OR AMP. | AMPERE |
| BLDG. | BUILDING |
| BLK. | BLOCK |
| BMR | BASE MOBILE RADIO |
| B/S | BUILDING STANDARD |
| CU. | COPPER |
| C.O. | CONDUIT ONLY |
| C. | CONDUIT SIZE AS NOTED |
| C.B. | CIRCUIT BREAKER |
| CKT. | CIRCUIT |
| CLG | CEILING |
| CLR. | CLEAR |
| CONC. | CONCRETE |
| CONST. | CONSTRUCTION |
| CONT. | CONTINUOUS |
| C.F.C.I. | CONTRACTOR FURNISHED CONTRACTOR INSTALLED |
| DBL. | DOUBLE |
| DIA, # | DIAMETER |
| DIAG. | DIAGONAL |
| DIM. | DIMENSION |
| DN | DOWN |
| DTL, DETL | DETAIL |
| DWG. | DRAWING |
| DEF | DUAL ELEMENT FUSES |
| E | EAST |
| EA. | EACH |
| EL, ELEV | ELEVATION |
| ELECT | ELECTRICAL |
| EQ. | EQUAL |
| EQUIP. | EQUIPMENT |
| E.W. | EACH WAY |
| EXIST. | EXISTING |
| EXT | EXTERIOR |
| EMT. | ELECTRICAL METALLIC TUBING (THIN WALL) |
| E.C. | ELECTRICAL CONTRACTOR |
| EGB | EQUIPMENT GROUND BUS |
| FIN. | FINISH |
| FLOUR. | FLUORESCENT |
| FLR | FLOOR |
| FT. | FOOT |
| GRC. | GALVANIZED RIGID CONDUIT |
| G. OR GRD. | GROUND |
| GA. | GAUGE |
| GALV | GALVANIZE(D) |
| GC | GENERAL CONTRACTOR |
| GWB | GYPSPUM WALL BOARD |
| GYP. BD. | GYPSPUM BOARD |
| HARD'WD | HARDWOOD |
| HORIZ. | HORIZONTAL |
| HR | HOUR |
| HT. | HEIGHT |
| HVAC | HEATING, VENTING AND AIR CONDITIONING |
| I.D. | INSIDE DIA. |
| IN. | INCH |
| INFO | INFORMATION |
| INSUL. | INSULATION |
| INT. | INTERIOR |
| KW. | KILOWATTS |
| LB(S) | POUND(S) |
| MAX. | MAXIMUM |
| MECH | MECHANICAL |
| MET, MTL | METAL |
| MFR. | MANUFACTURER |
| MGR | MANAGER |
| MIN. | MINIMUM |
| MISC | MISCELLANEOUS |
| MGB | MAIN GROUND BUS |
| MTD. | MOUNTED |

- | | |
|----------|---------------------------------------|
| NEUT. | NEUTRAL |
| N | NORTH |
| NA | NOT APPLICABLE |
| NIC | NOT IN CONTRACT |
| NTS | NOT TO SCALE |
| O.F.C.I. | OWNER FURNISHED, CONTRACTOR INSTALLED |
| OC, o/c | ON CENTER |
| OD | OUTSIDE DIAMETER |
| OPG. | OPENING |
| OPP | OPPOSITE |
| OHT/OHP | OVERHEAD TELEPHONE/OVERHEAD POWER |
| OHP | OVERHEAD POWER |
| OHT | OVERHEAD TELEPHONE |
| PVC. | SCHEDULE 40 PLASTIC CONDUIT. |
| PLYWD. | PLYWOOD |
| PR | PAIR |
| PROJ | PROJECT |
| PROP | PROPERTY |
| PT | PRESSURE TREATED |
| RECP.T. | RECEPTACLE |
| REQ'D | REQUIRED |
| RM | ROOM |
| R.O. | ROUGH OPENING |
| S | SOUTH |
| SW. | SWITCH |
| SHT | SHEET |
| SIM. | SIMILAR |
| SPEC. | SPECIFICATION |
| SQ. | SQUARE |
| SS | STAINLESS STEEL |
| STL | STEEL |
| STRUCT. | STRUCTURAL |
| SUSP. | SUSPENDED |
| S.V. | SHEET VINYL |
| THRU | THROUGH |
| TNND | TINNED |
| T.O.C. | TOP OF CONCRETE |
| T.O.M. | TOP OF MASONRY |
| TYP | TYPICAL |
| U.O.N. | UNLESS OTHERWISE NOTED |
| UBC | UNIFORM BUILDING CODE |
| UGP | UNDERGROUND POWER |
| UGT | UNDERGROUND TELEPHONE |
| VERT. | VERTICAL |
| VF | VERIFY IN FIELD |
| VT | VINYL TILE |
| W | WEST |
| W/ | WITH |
| WIN | WINDOW |
| W/O | WITHOUT |
| W. | WATTS |
| W.P. | WEATHERPROOF |
| XFMR | TRANSFORMER |

- ∠ - ANGLE
 & - AND
 ⊃ - CENTER LINE
 □ - PROPERTY LINE
 ⊙ - AT
 # - NUMBER
- (1) = REVISION
 (1) = KEY NOTES
 (1/A-1) = DETAIL REFERENCE
 [1] = KEYED NOTES
- (1/A-1) = ELEVATION REFERENCE
 (1/A-1) = SECTION REFERENCE
 ↑ = NORTH ARROW
 NORTH

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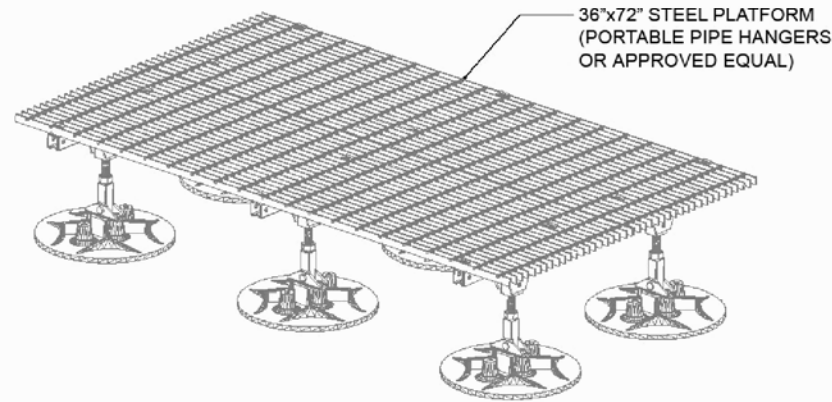
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SITE NUMBER: MO-STL0379
MASON GRAY SUMMIT #25
 14550 S. OUTER 40 RD.
 CHESTERFIELD, MO 63017

NO.	DATE	REVISIONS	BY	CHK	APPD
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2	01/07/10	NEW ANTENNA CONFIG	TCM	MM	MM
1	11/02/09	PRELIMINARY CONSTRUCTION DRAWINGS	TCM	MM	MM
0	06/01/09	PRELIMINARY DRAWINGS	CJL	MM	MM

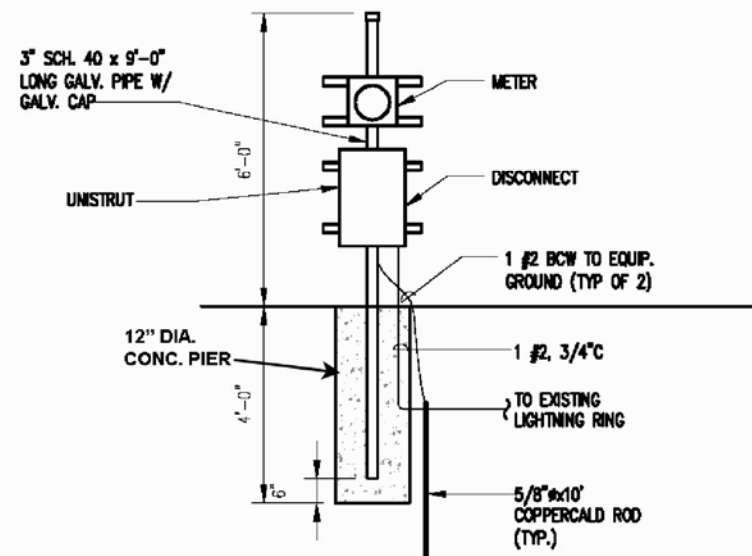
SCALE: AS SHOWN DESIGNED BY: MM

SHEET A-2	
ANTENNA MOUNTING DETAILS & NOTES	
DRAWING NUMBER	
0938527	



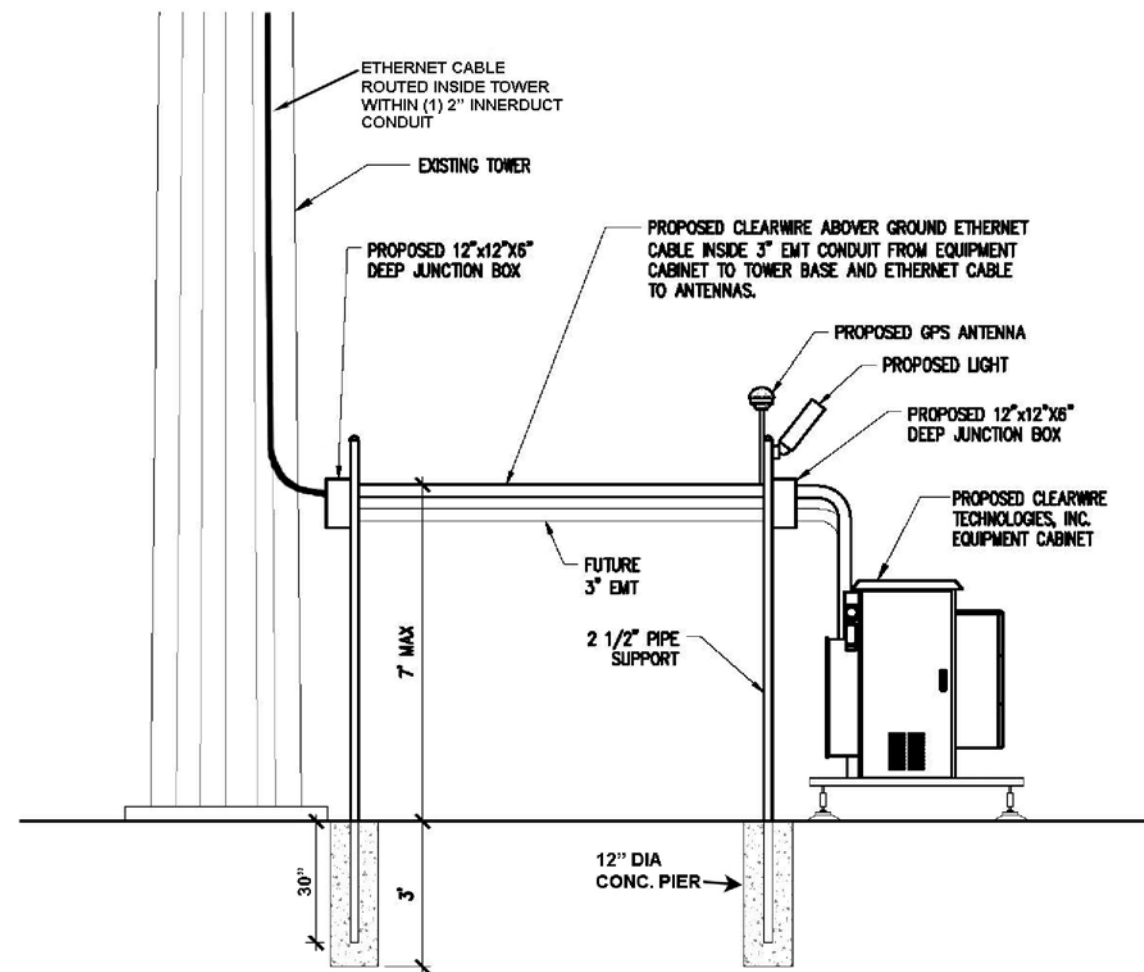
36"x72" PLATFORM DETAIL
SCALE: N.T.S.

1
A-3



H-FRAME (IF APPLICABLE)
SCALE: N.T.S.

4
A-3



ELEVATION
SCALE: N.T.S.

5
A-3

GENERAL NOTES:

1. THE BASIC WIND SPEED UTILIZED FOR OUTDOOR EQUIPMENT CABINETS IS 90 MPH PER IBC (LATEST EDITION)
2. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED BY FIELD MEASUREMENTS. THE GENERAL CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS OR PROCEEDING WITH CONSTRUCTION.
3. THE GENERAL CONTRACTOR AND HIS SUBCONSULTANTS SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK.
4. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS. ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN INCLUDING THE COMMENTARY AND THE AISC CODE OF STANDARD PRACTICE.
5. STRUCTURAL STEEL PLATES AND SHAPES SHALL CONFORM TO ASTM A36. ALL STRUCTURAL STEEL PIPES SHALL CONFORM TO ASTM A53 GRADE B. ALL STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM A500 GRADE B. ALL STRUCTURAL STEEL COMPONENTS AND FABRICATED ASSEMBLIES SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
6. WELDING SHALL BE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY (AWS) D.1.1.96. STRUCTURAL WELDING CODE-STEEL WELD ELECTRODES SHALL BE E70XX. FIELD TOUCH-UP WITH ZINC RICH PAINT (ALL EXISTING AND NEW AREAS) AFTER WELDING IS COMPLETE.
7. ALL THREADED STRUCTURAL FASTENERS FOR ANTENNA SUPPORT ASSEMBLIES SHALL CONFORM TO ASTM A307 OR ASTM A36. ALL STRUCTURAL FASTENERS FOR STRUCTURAL STEEL FRAMING SHALL CONFORM TO ASTM A325. FASTENERS SHALL BE 5/8" MIN. DIAMETER BEARING TYPE CONNECTIONS WITH THREADS EXCLUDED IN THE SHEAR PLANE. ALL EXPOSED FASTENERS, NUTS, AND WASHERS SHALL BE GALVANIZED UNLESS NOTED OTHERWISE. CONCRETE EXPANSION ANCHORS SHALL BE HILTI KWIK BOLTS UNLESS NOTED OTHERWISE. ALL ANCHORS INTO CONCRETE SHALL BE STAINLESS STEEL.
8. ALL COAXIAL CABLE CONNECTORS AND TRANSMITTER EQUIPMENT SHALL BE AS SPECIFIED BY THE OWNER AND IS NOT INCLUDED IN THESE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL FURNISH ALL CONNECTION HARDWARE REQUIRED TO SECURE THE CABLES. ETHERNET CABLES SHALL BE ATTACHED TO THE TOWER WAVEGUIDE LADDER USING UV-RESISTANT TIE WRAPS OR STAINLESS STEEL HARDWARE.
9. NORTH ARROW SHOWN ON PLANS REFERS TO TRUE NORTH. CONTRACTOR SHALL VERIFY NORTH AND INFORM ENGINEER ANY DISCREPANCY BEFORE STARTING CONSTRUCTION.
10. ALL REINFORCING STEEL SHALL CONFORM TO ASTM 615 GRADE 60, DEFORMED BILLET STEEL BARS.
11. CONCRETE FOR THE EQUIPMENT PAD SHALL BE 4000 PSI NORMAL WEIGHT CONCRETE WITH FIBERMESH ADMIXTURE. CONTRACTOR MAY USE APPROVED PRECAST EQUIVALENT.
12. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
13. IT IS THE OWNERS RESPONSIBILITY TO VERIFY THE STRUCTURAL CAPACITY OF THE EXISTING TOWER AND ITS FOUNDATION TO RESIST THE WIND/GRAVITY LOADS FROM THE PROPOSED ANTENNAS.
14. ALL FIELD CUT METAL WILL BE SCRAPPED OF ANY RUST AND COLD GALVANIZED.
15. RUBBER CAPS WILL BE PLACED ON ALL EXPOSED UNISTRUT ENDS.

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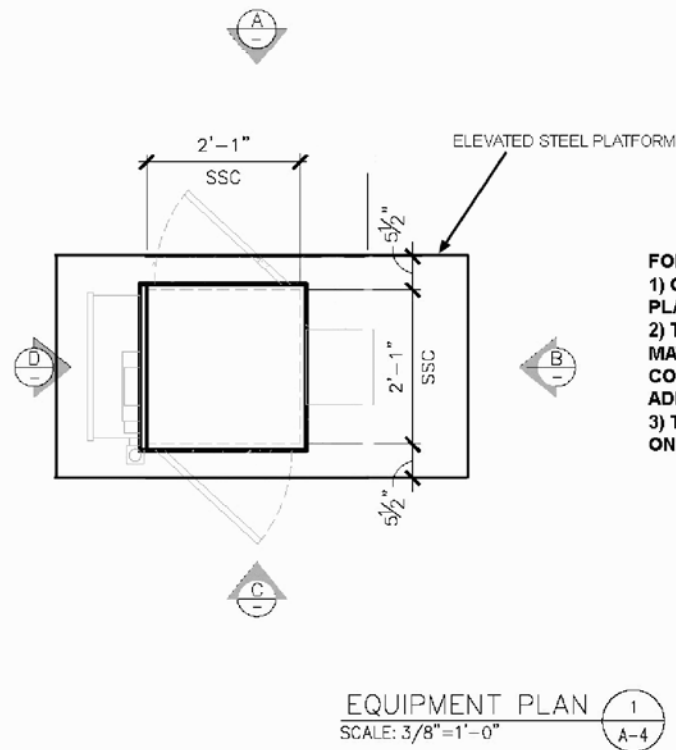
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NO.	DATE	REVISIONS	BY	CHK	APPD
SCALE: AS SHOWN			DESIGNED BY: MM		

SHEET A-3
STRUCTURAL NOTES,
SECTIONS & DETAILS
DRAWING NUMBER
0938527

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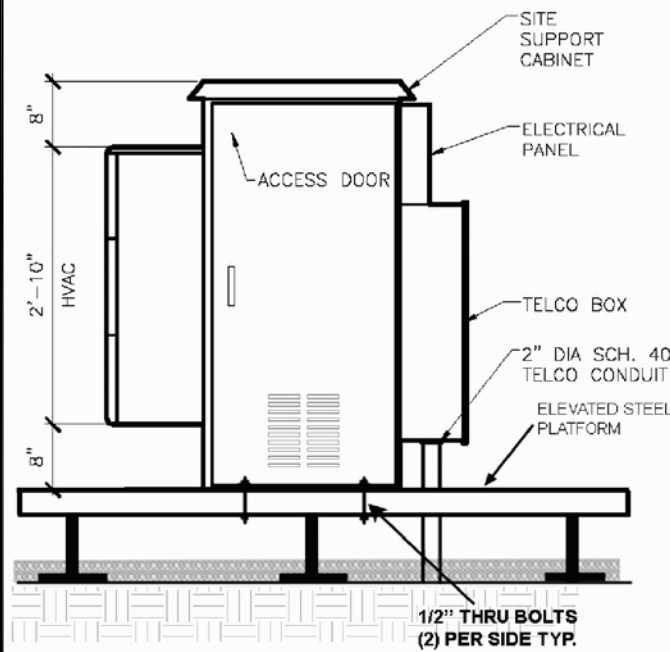


FOR CRUSHED STONE/GRAVEL INSTALLATION:
 1) GRAVEL MUST BE PUSHED BACK IN ALL AREAS WHERE THE PLATFORM WILL BE INSTALLED. PUSH BACK TO WEED BARRIER.
 2) THE GRAVEL MAY BE REUSED AND/OR ADDITIONAL GRAVEL MAY NEED TO BE ADDED TO ENSURE THE DEPTH IS AT THE PRE-CONSTRUCTION LEVEL. THE CONTRACTOR IS TO ENSURE THAT ADDITIONAL GRAVEL MATCHES EXISTING GRAVEL.
 3) THE PLATFORM'S FEET MUST BE PLACED AT GRADE LEVEL ON TOP OF THE WEED BARRIER AND COVERED GRAVEL 8" DEEP.

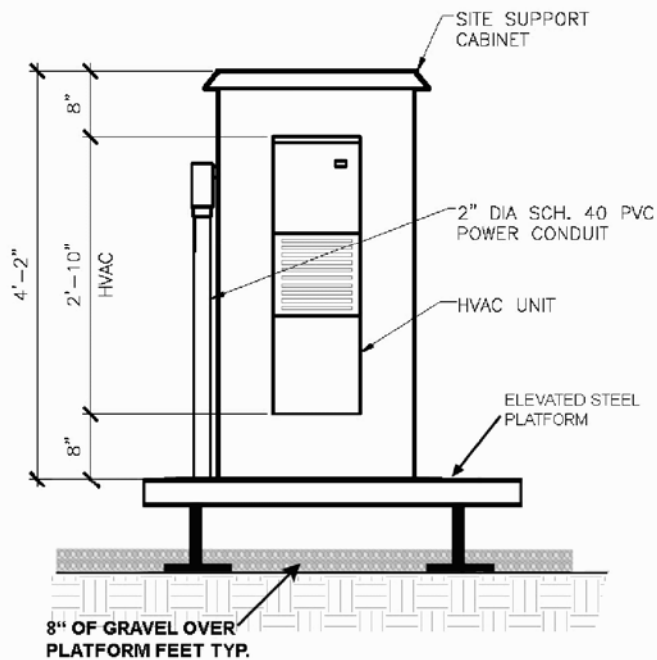
EQUIPMENT PLAN 1
 SCALE: 3/8"=1'-0" A-4



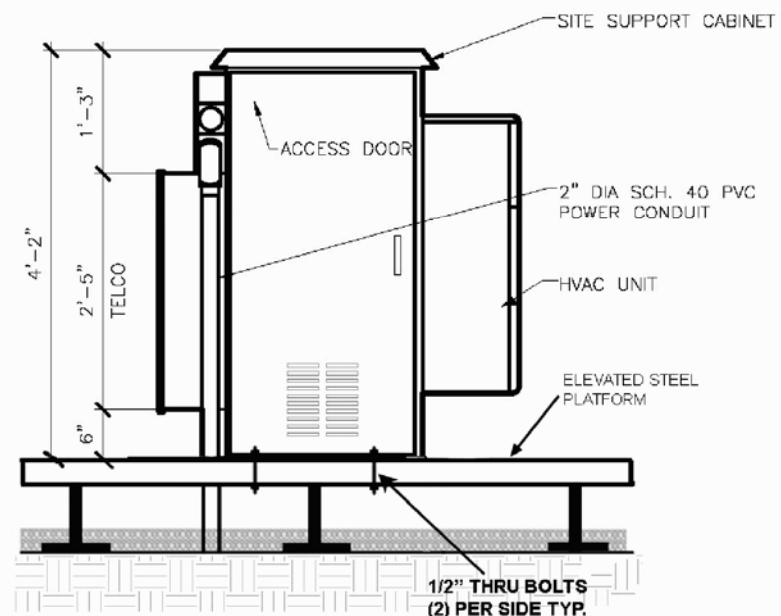
CABINET PHOTOS



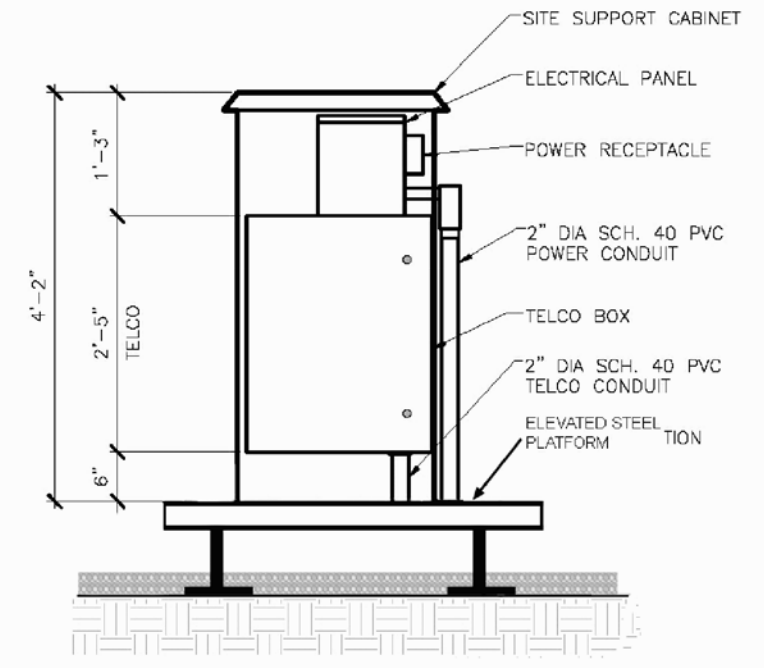
CABINET MOUNTING DETAIL 4
 SCALE: 1/2"=1'-0" A-4



CABINET MOUNTING DETAIL 5
 SCALE: 1/2"=1'-0" A-4



CABINET MOUNTING DETAIL 6
 SCALE: 1/2"=1'-0" A-4



CABINET MOUNTING DETAIL 7
 SCALE: 1/2"=1'-0" A-4

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NO.	DATE	REVISIONS	BY	CHK	APPD
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SHEET A-4

EQUIPMENT DETAILS

DRAWING NUMBER

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MW ANTENNA SCHEDULE

CONTRACTOR TO INSTALL ANTENNAS AT CENTERLINE AND AZIMUTH AS SHOWN ON THE FINAL RF CONFIGURATION SHEET. CABLE ROUTING ON, IN, OR ABOUT SUPPORT STRUCTURES TO BE AS DETAILED IN THE STRUCTURAL ANALYSIS. THESE DOCUMENTS PROVIDED BY CLEARWIRE FIELD REPRESENTATIVE AT PRE-CONSTRUCTION WALK.

MW PATHS	STD MW CONFIG	ADDITIONAL/ALTERNATE MW
1	1 - VHLP1-23	N/A

- *ANTENNA VHLP1 DIAMETER = 12"
- *ANTENNA VHLP2 DIAMETER = 26"
- *ANTENNA VHLP2.5 DIAMETER = 35"

RF ANTENNA SCHEDULE

CONTRACTOR TO INSTALL ANTENNAS AT CENTERLINE AND AZIMUTH AS SHOWN ON THE FINAL RF CONFIGURATION SHEET. CABLE ROUTING ON, IN, OR ABOUT SUPPORT STRUCTURES TO BE AS DETAILED IN THE STRUCTURAL ANALYSIS. THESE DOCUMENTS PROVIDED BY CLEARWIRE FIELD REPRESENTATIVE AT PRE-CONSTRUCTION WALK.

SECTOR	SECTOR A (ALPHA)	SECTOR B (BETA)	SECTOR C (GAMMA)
RF MODEL	ARGUS LLPX310R	ARGUS LLPX310R	ARGUS LLPX310R
RF AZIMUTH	15°	150°	270°



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SCALE: AS SHOWN DESIGNED BY: MM

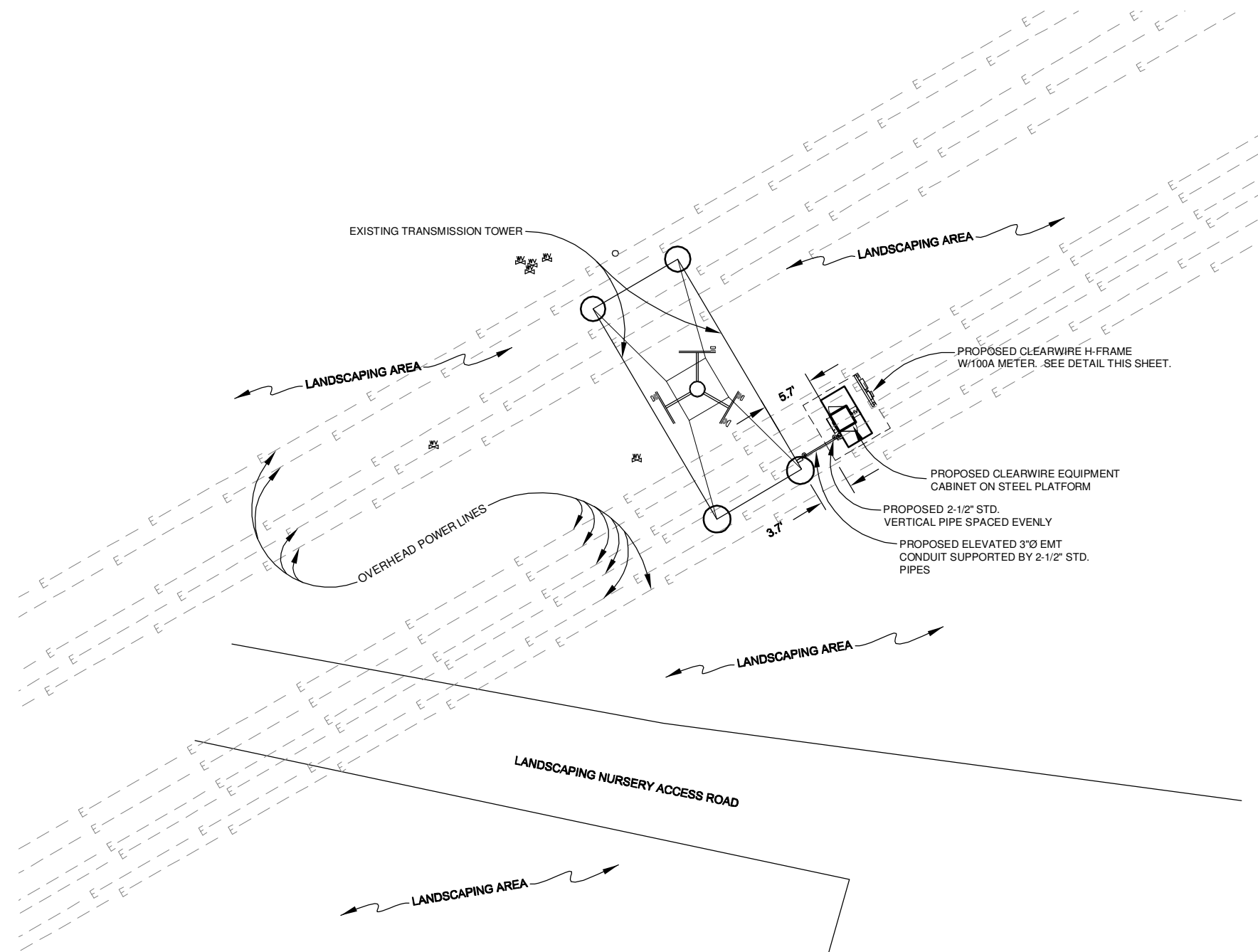
SHEET A-5

MATERIAL LIST

DRAWING NUMBER

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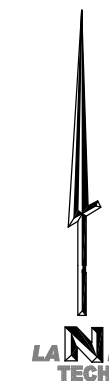
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POWER NOTES:
 ROUTE PROPOSED CLEARWIRE BURIED POWER CONDUIT (1) 2" SCH. 40 PVC FROM EXISTING POWER SOURCE TO NEW H-FRAME RACK TO CLEARWIRE CABINET.
 FIELD VERIFY LOCATION OF EXISTING POWER SOURCE.
 PROVIDE PULL BOX AS REQUIRED BY NEC.
 COORDINATE WITH LOCAL UTILITY COMPANY.
 CLEARWIRE TO LOCATE 100A METER ON NEW H-FRAME RACK. SEE DETAIL THIS SHEET.

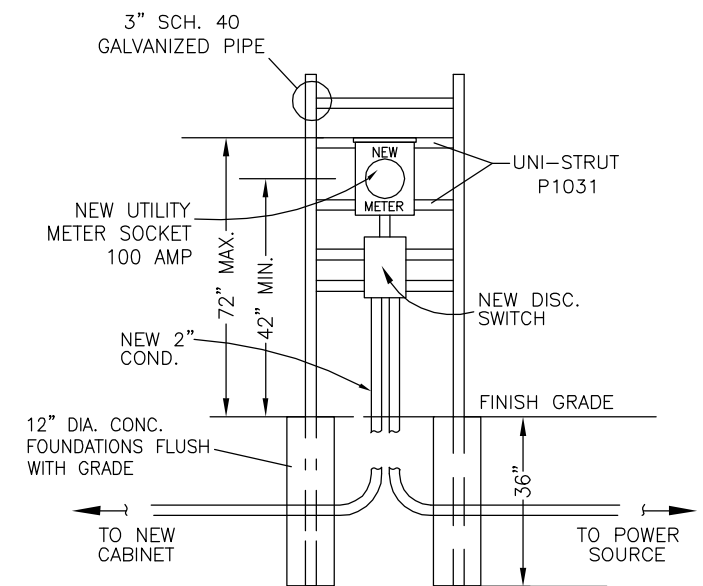
GENERAL SPECIFICATIONS:

1. WIRING SHALL BE AWG STRANDED COPPER WITH THHN OR EQUIVALENT INSULATION. #12 MINIMUM INSTALLED IN 1/2" MINIMUM CONDUIT. SIGNAL WIRING SHALL BE INSULATED #22 AWG. NO BX OR ROMEX CABLE IS PERMITTED. CONDUITS SHALL BE SURFACE MOUNTED.
2. WIRING DEVICES AND EQUIPMENT SHALL BE UL LISTED SPECIFICATIONS GRADE.
3. MATERIALS SHALL BE NEW AND CONFORM TO THE APPLICABLE STANDARDS ESTABLISHED FOR EACH ITEM BY THE ORGANIZATIONS LISTED BELOW.
 - AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)
 - UNDERWRITER'S LABORATORY (UL)
 - NATIONAL ELECTRICAL MANUFACTURING ASSOCIATION (NEMA)
 - AMERICAN STANDARDS ASSOCIATION (ASA)
 - NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
4. INSTALLATION OF MATERIALS SHALL COMPLY WITH REGULATIONS OF:
 - THE NATIONAL ELECTRICAL CODE (NFPA 70)
 - THE NATIONAL ELECTRICAL SAFETY CODE (ANSI C-2)
 - THE LIFE SAFETY CODE (NFPA 101)
 - LOCAL BUILDING CODES
5. THE ENTIRE SYSTEM SHALL BE SOLIDLY GROUNDED USING LOCKNUTS AND BONDING NUTS ON CONDUITS AND PROPERLY BONDED GROUND CONDUCTOR. RECEPTACLES AND EQUIPMENT BRANCH CIRCUITS SHALL BE GROUNDED WITH A FULL-SIZED EQUIPMENT GROUNDING CONDUCTOR RUN IN THE CIRCUIT'S CONDUIT
6. OUTLET AND JUNCTION BOXES SHALL BE ZINC-COATED OR CADMIUM PLATED STEEL, NOT LESS THAN 4" SQUARE AND SUITABLE FOR THE TYPE SERVICE AND OUTLET. OUTLET AND JUNCTION BOXES SHALL BE SURFACE MOUNTED AND LABELED WITH BRANCH CIRCUIT BREAKER NUMBER.
7. LABEL ALL EQUIPMENT SERVED FROM CLEAR WIRE TECHNOLOGIES, INC. PANEL BOARD WITH PHONEMIC LABELS SIZED IN RELATION TO USAGE.
8. INDOOR CONDUCTORS SHALL BE INSTALLED IN EMT UNLESS NOTED OTHERWISE. OUTDOOR CONDUCTORS SHALL BE INSTALLED IN RIGID GALVANIZED STEEL UNLESS NOTED OTHERWISE. WHERE EMT IS USED, IT SHALL BE WITH ONLY LISTED COMPRESSION FITTINGS. NO SET SCREW FITTINGS SHALL BE ALLOWED.
9. CONTRACTOR TO PROVIDE AND INSTALL ENGRAVED LABEL ON THE CLEARWIRE TECHNOLOGIES, INC. METER SOCKET ENCLOSURE.



ELECTRICAL SITE PLAN

SCALE: 1"=15'



H-FRAME ELEVATION DETAIL (if needed)

NOT TO SCALE

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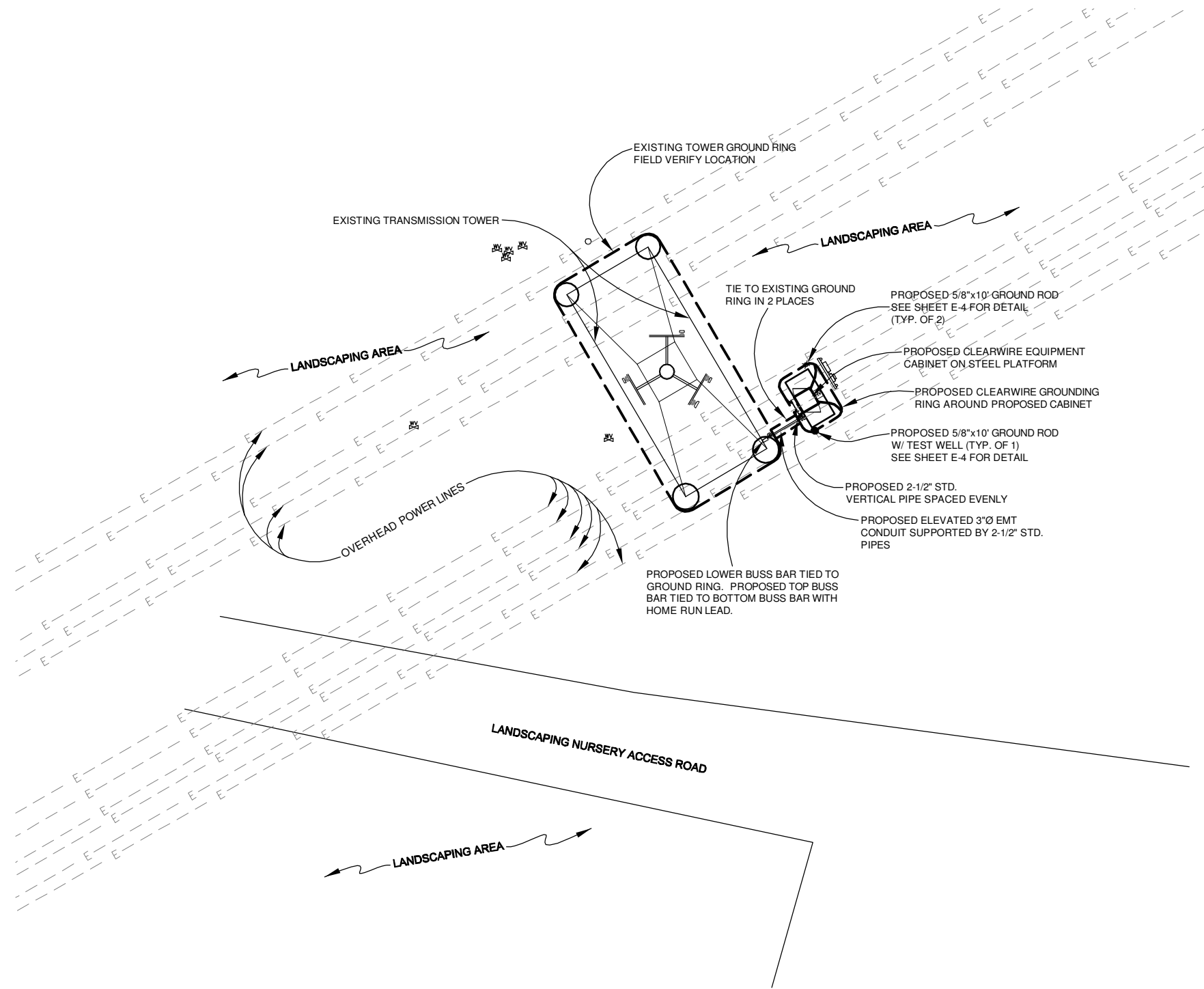
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SCALE: AS SHOWN			DESIGNED BY: MM		

SHEET E-1
 ELECTRICAL SITE PLAN
 DRAWING NUMBER
 0938527

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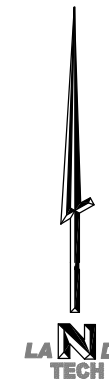


GROUNDING SPECIFICATIONS:

1. GROUNDING SHALL COMPLY WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
2. ALL GROUNDING DEVICES SHALL BE U.L. APPROVED OR LISTED FOR THEIR INTENDED USE.
3. GROUND WIRES SHALL BE TINNED #2 AWG BARE SOLID Cu UNLESS NOTED OTHERWISE.
4. GROUNDING CONNECTIONS SHALL BE EXOTHERMIC (CADWELD) UNLESS NOTED OTHERWISE. CLEAN SURFACES TO SHINY METAL. WHERE GROUND WIRES ARE CADWELDED TO GALVANIZED SURFACES, SPRAY CADWELD WITH GALVANIZING PAINT.
5. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE. BEND GROUNDING LEADS WITH A MINIMUM 8" RADIUS.
6. PRIOR TO INSTALLING LUGS ON GROUND WIRES, APPLY THOMAS & BETSS KOPR-SHIELD (TM OF JET LUB INC.). PRIOR TO BOLTING GROUND WIRE LUGS TO GROUND BARS, APPLY KOPR-SHIELD OR EQUAL.
7. WHERE BARE COPPER GROUND WIRES ARE ROUTED FROM ANY CONNECTION ABOVE GRADE TO GROUND RING, INSTALL WIRE IN 3/4" PVC SLEEVE, FROM 1'-0" ABOVE GRADE AND SEAL TOP WITH SILICONE MATERIAL.
8. PREPARE ALL BONDING SURFACES FOR GROUNDING CONNECTIONS BY REMOVING ALL PAINT AND CORROSION DOWN TO SHINY METAL. FOLLOWING CONNECTION, APPLY APPROPRIATE ANTI-OXIDIZATION PAINT.
9. GROUNDING WIRE CONNECTIONS SHALL BE 3-CRIMP C-TAP COMPRESSION TYPE. SPLIT BOLTS ARE NOT ACCEPTABLE.
10. GROUND RODS SHALL BE COPPER CLAD STEEL 5/8"x10" SPACED NOT LESS THAN 10' O.C.
11. CONNECTORS SHALL BE CRIMPED USING HYDRAULIC CRIMPING TOOLS.
12. SURFACE CONNECTIONS SHALL BE MADE TO BARE METAL. PAINTED SURFACES SHALL BE FILED TO ENSURE PROPER CONTACT. APPLY NON-OXIDIZING AGENT TO CONNECTIONS.
13. COPPER BUSES SHALL BE CLEANED, POLISHED AND A NON-OXIDIZING AGENT APPLIED. NO FINGERPRINTS OR DISCOLORED COPPER WILL BE PERMITTED.
14. GROUNDING CONDUCTORS SHALL BE RUN THROUGH PVC SLEEVE WHERE ROUTED THROUGH WALLS, FLOORS, AND CEILING. ENDS OF CONDUIT SHALL BE GROUNDED. SEAL BOTH ENDS OF CONDUIT WITH SILICONE CAULK.
15. HARDWARE (I.E. NUTS, BOLTS, WASHERS, ETC.) IS TO BE STAINLESS STEEL.
16. EXOTHERMIC WELDS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS
17. THE ENTIRE SYSTEM SHALL BE SOLIDLY GROUNDED USING LOCKNUTS, AND BONDING NUTS ON CONDUITS AND PROPERLY BONDED GROUND CONDUCTORS. RECEPTACLES AND EQUIPMENT BRANCH CIRCUITS SHALL BE GROUNDED WITH A FULL SIZED EQUIPMENT GROUNDING CONDUCTOR RUN IN THE CIRCUIT'S CONDUIT.
18. INSTALL GROUND BUSHINGS ON ALL METALLIC CONDUITS AND BOND TO THE EQUIPMENT GROUND BUS IN THE PANEL BOARD.
19. GROUND BARS (SECTOR, COLLECTOR, MASTER) SHALL BE BARE 1/4"x4" COPPER; LARGE ENOUGH TO ACCOMMODATE THE REQUIRED NUMBER OF GROUND CONNECTIONS. THE HARDWARE SECURING THE MGB SHALL ELECTRICALLY INSULATE THE MGB FROM ANY STRUCTURE TO WHICH IT IS FASTENED.
20. APPLY TAB KOPR-SHIELD OR APPROVED EQUAL PRIOR TO MAKING MECHANICAL CONNECTIONS. CONNECTIONS SHALL BE MADE WITH STAINLESS STEEL BOLTS, NUTS AND LOCK WASHERS 3/8" DIAMETER MIN. WHERE GALVANIZING IS REMOVED FROM METEL IT SHALL BE PAINTED OR TOUCHED UP WITH 'GALVONOX' OR EQUAL.
21. ALL TERMINATIONS AT EQUIPMENT ENCLOSURES, PANELS, FRAMES OF EQUIPMENT AND WHERE EXPOSED FOR GROUNDING CONDUCTOR TERMINATION SHALL BE PERFORMED UTILIZING TWO HOLE BOLTED TONGUE COMPRESSION TYPE WITH STAINLESS STEEL SELF-TAPPING SCREWS.
22. ALL CLAMPS AND SUPPORTS USED TO SUPPORT THE GROUNDING SYSTEM CONDUCTORS AND PVC CONDUITS SHALL BE PVC TYPE (NON-CONDUCTIVE). DO NOT USE METAL BRACKETS OR SUPPORTS WHICH WOULD FORM A COMPLETE RING AROUND ANY GROUNDING CONDUCTOR.
23. ALL BOLTS, WASHERS AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
24. THE CONTRACTOR SHALL ENGAGE AN INDEPENDENT ELECTRICAL TESTING FIRM TO TEST AND VERIFY THAT RESISTANCE TO EARTH DOES NOT EXCEED 5.0 OHMS. PROVIDE A COPY OF TESTING REPORT, INCLUDING THE METHOD AND INSTRUMENTS USED TO VERIFY RESISTANCE TO CLEARWIRE REPRESENTATIVE.
25. BOND CABINET THROUGH THE MAIN GROUND BAR.

GROUNDING LEGEND

- INSPECTION WELL
VERIFY LOCATION W/CONSTR. MGR.
- 5/8"x10' COPPER CLAD, STEEL GROUND ROD. USE EXOTHERMIC CONNECTION TO GROUND CABLE.
- #2 SOLID COPPER TINNED BURIED
- BURIED GROUNDING CABLE TO CABLE CONNECTION USING EXOTHERMIC PROCESS.



GROUNDING PLAN

SCALE: 1"=15'
0 7.5' 15'

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KIRKLAND, WA 98033
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(425) 216-7900 FAX

SITE NUMBER: MO-STL0379
MASON GRAY SUMMIT #25
14550 S. OUTER 40 RD.
CHESTERFIELD, MO 63017

4	04/22/10	PER CITY OF CHESTERFIELD COMMENTS	TCM	MM	MM
3	04/16/10	CHANGE TO POWER MOUNT	TCM	MM	MM
2	01/07/10	NEW ANTENNA CONFIG	TCM	MM	MM
1	11/02/09	PRELIMINARY CONSTRUCTION DRAWINGS	TCM	MM	MM
0	06/01/09	PRELIMINARY DRAWINGS	CJL	MM	MM
NO.	DATE	REVISIONS	BY	CHK	APPD
SCALE: AS SHOWN			DESIGNED BY: MM		

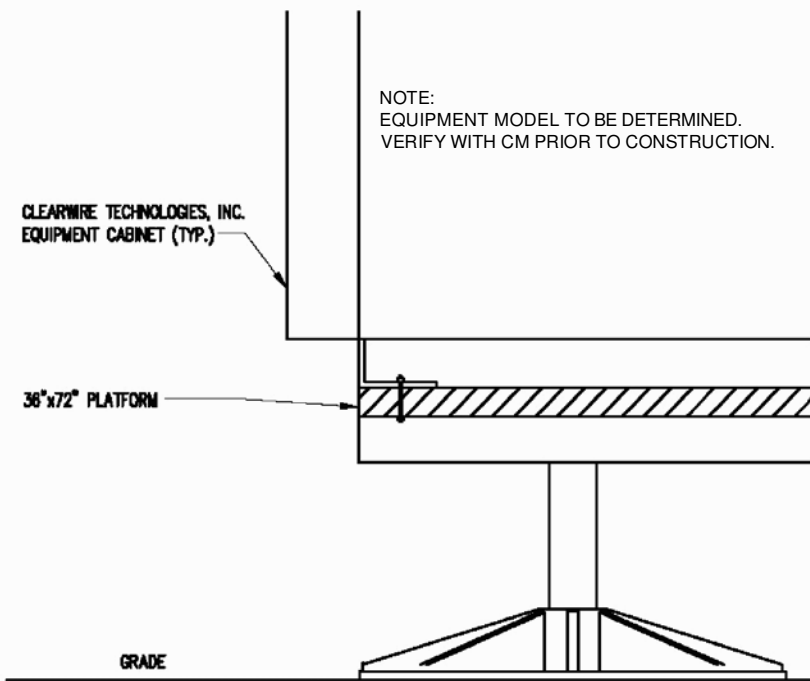
SHEET E-2

GROUNDING PLAN

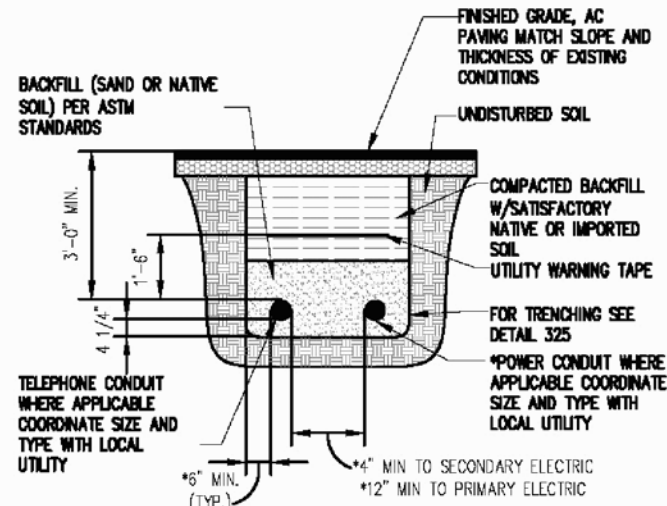
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PLATFORM MOUNTING DETAIL (1)
SCALE: N.T.S. (E-3)

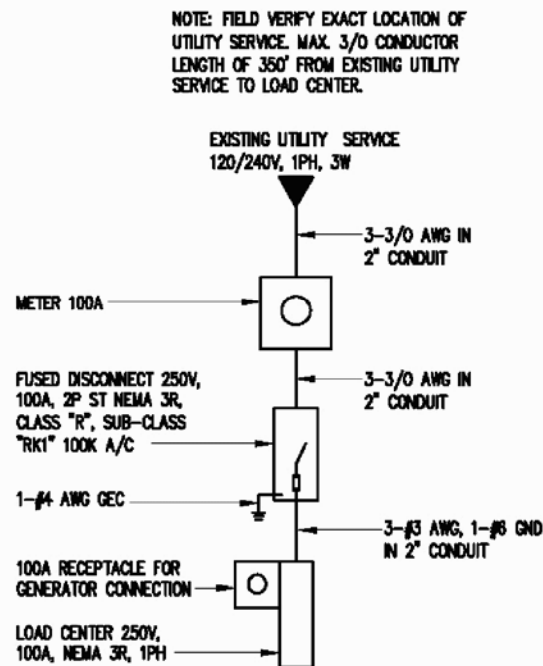


JOINT SERVICE TRENCH BURIED CONDUIT
ELECT/TELEPHONE

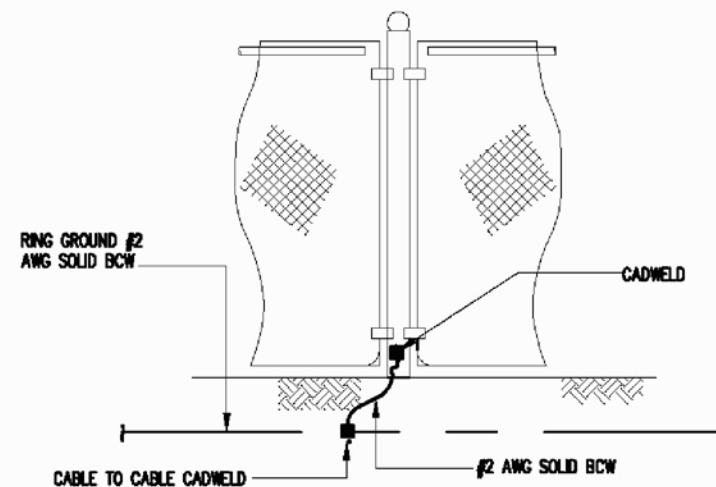
TYPICAL TRENCH SECTION (2)
SCALE: N.T.S. (E-3)

GENERAL NOTES:

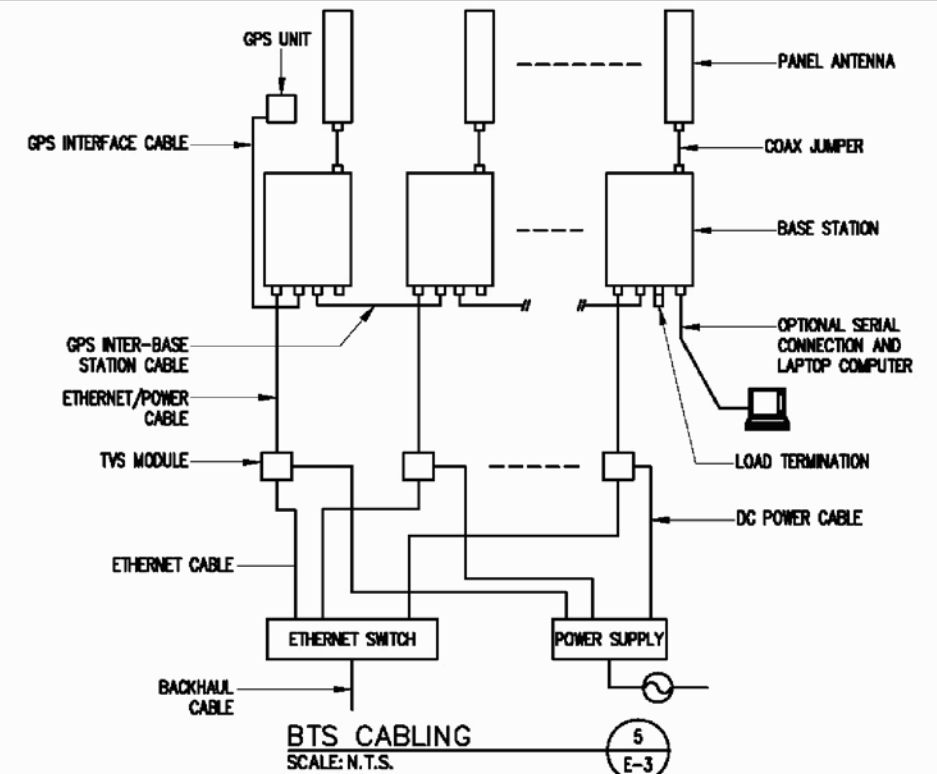
- OBTAIN PERMITS AND PAY FEES RELATED TO ELECTRICAL WORK PERFORMED ON THIS PROJECT. DELIVER COPIES OF ALL PERMITS TO CLEARWIRE TECHNOLOGIES, INC.
- SCHEDULE AND ATTEND INSPECTIONS RELATED TO ELECTRICAL WORK REQUIRED BY JURISDICTION HAVING AUTHORITY. CORRECT AND PAY FOR ANY WORK REQUIRED TO PASS ANY FAILED INSPECTION.
- REDLINED AS-BUILTS ARE TO BE DELIVERED TO CLEARWIRE TECHNOLOGIES, INC. REPRESENTATIVE.
- PROVIDE TWO COPIES OF OPERATION AND MAINTENANCE MANUALS IN THREE-RING BINDER.
- FURNISH AND INSTALL THE COMPLETE ELECTRICAL SYSTEM, TELCO SYSTEM, AND THE GROUNDING SYSTEM AS SHOWN ON THESE DRAWINGS.
- ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL APPLICABLE BUILDING CODES AND LOCAL ORDINANCES, INSTALLED IN A NEAT MANNER AND SHALL BE SUBJECT TO APPROVAL BY CLEARWIRE TECHNOLOGIES, INC. REPRESENTATIVE.
- CONDUCT A PRE-CONSTRUCTION SITE VISIT AND VERIFY EXISTING SITE CONDITIONS AFFECTING THIS WORK. REPORT ANY OMISSIONS OR DISCREPANCIES FOR CLARIFICATION PRIOR TO THE START OF CONSTRUCTION.
- PROTECT ADJACENT STRUCTURES AND FINISHES FROM DAMAGE. REPAIR TO ORIGINAL CONDITION ANY DAMAGED AREA.
- REMOVE DEBRIS ON A DAILY BASIS. DEBRIS NOT REMOVED IN A TIMELY FASHION WILL BE REMOVED BY OTHERS AND THE RESPONSIBLE SUBCONTRACTOR SHALL BE CHARGED ACCORDINGLY. REMOVAL OF DEBRIS SHALL BE COORDINATED WITH THE SITE OWNERS REPRESENTATIVE. DEBRIS SHALL BE REMOVED FROM THE PROPERTY AND DISPOSED OF LEGALLY. USE OF THE PROPERTY'S DUMPSTER IS PROHIBITED.
- CONTRACTOR TO CONFIRM AVAILABLE CAPACITY AT EXISTING UTILITY PEDESTAL AND ADVISE ENGINEER OF SERVICE SIZE AND FAULT CURRENT LEVEL.
- IF PEDESTAL DOES NOT HAVE ADEQUATE CAPACITY, CONTRACTOR TO SUBMIT COST QUOTATION TO UPGRADE. UPON APPROVAL OF SUBMITTED COST QUOTATION, THE CONTRACTOR SHALL PROVIDE NEW SERVICE AND/OR UPGRADE SERVICE. FEEDERS AND EQUIPMENT/ELECTRODE GROUNDING CONDUCTORS SIZE ACCORDINGLY.
- CONTRACTOR SHALL VERIFY SEPERATION DIMENSION BETWEEN POWER COMPANY ELECTRICAL CONDUITS AND LP GAS PIPES AS PER UTILITY COMPANY. LOCAL CODES, NEC, NFPA, AND GAS TANK MANUFACTURER'S SPECIFICATION.
- CONTRACTOR SHALL VERIFY THAT THE TOTAL NUMBER OF SERVICE ENTRANCE DISCONNECTS IN THE EXISTING UTILITY COMPANY PEDESTAL MUST NOT EXCEED SIX. IF THE NEW SERVICE ADDED EXCEEDS THIS VALUE, CONTRACTOR MUST COORDINATE WITH THE UTILITY COMPANY AND AUTHORITY HAVING JURISDICTION. THE RUNNING OF AN ADDITIONAL EXCLUSIVE AND DEDICATED SERVICE LATERAL SET FOR THE NEW LOAD ADDED TO THE COMPOUND AS PER NEC ARTICLE 230-2(B).
- THE EQUIPMENT/PROTECTIONS MUST BE RATED FOR STANDARD AIC RATE HIGHER THAN INCOMING EQUIPMENT AND/OR UTILITY COMPANY AIC RATE.



ONE LINE DIAGRAM (3)
SCALE: N.T.S. (E-3)



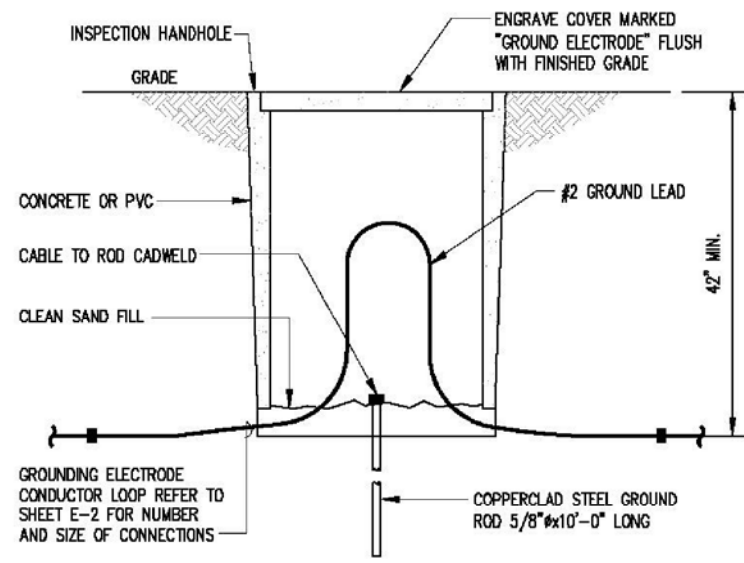
TYPICAL FENCE BONDING DETAIL (4)
SCALE: N.T.S. (E-3)



BTS CABLING (5)
SCALE: N.T.S. (E-3)

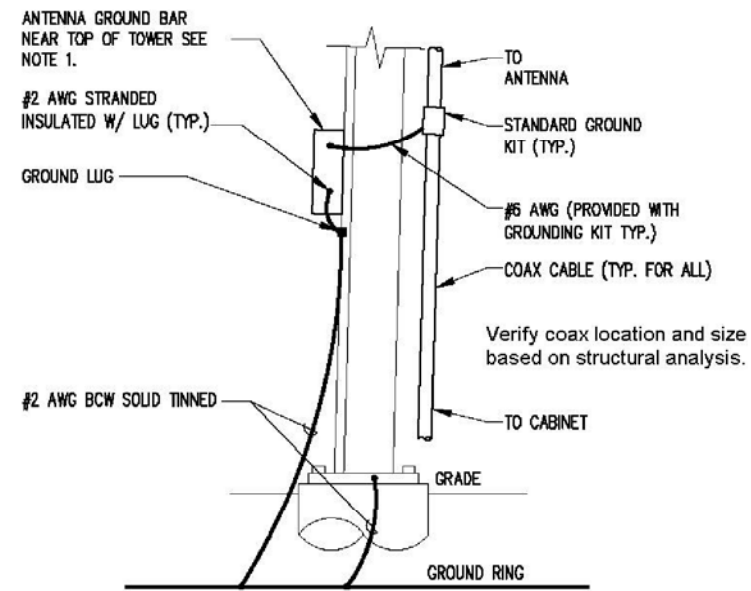
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0	06/01/09	PRELIMINARY DRAWINGS	CJL	MM	MM
NO.	DATE	REVISIONS	BY	CHK	APPD
SCALE: AS SHOWN			DESIGNED BY: MM		

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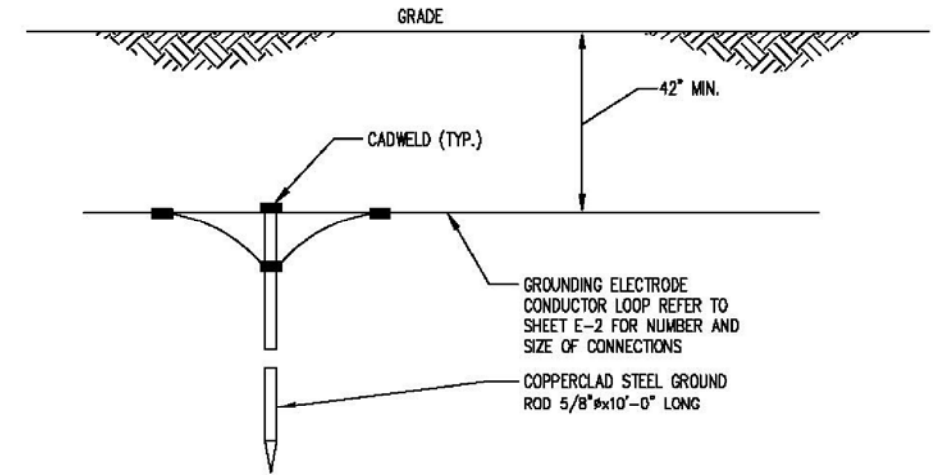
NOTE: INSPECTION HAND HOLE MAY BE CONCRETE OR PVC AND SHALL BE A MIN. OF 8" IN WIDTH/DIAMETER

TYPICAL TEST WELL DETAIL (1) E-4
SCALE: N.T.S.

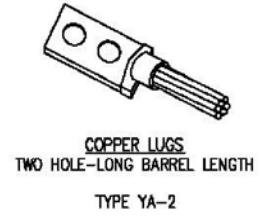
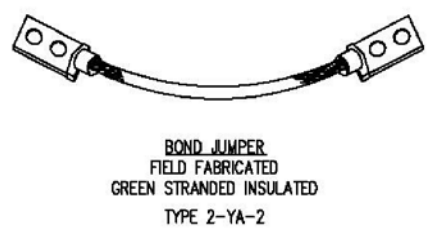
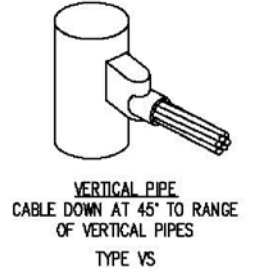
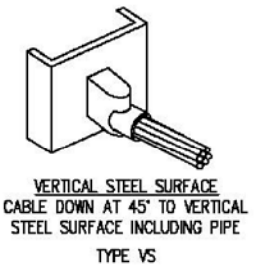
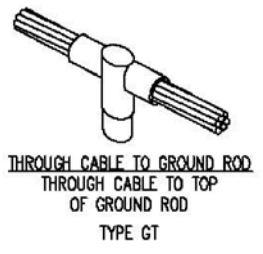
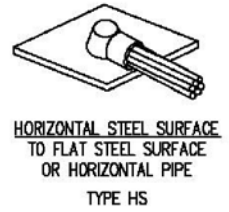
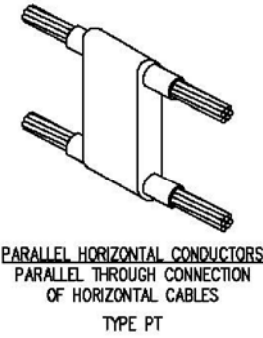


NOTE:
1. NUMBER OF GROUNDING BARS MAY VARY, DEPENDS ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.

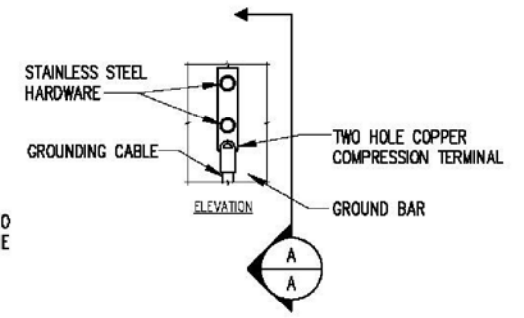
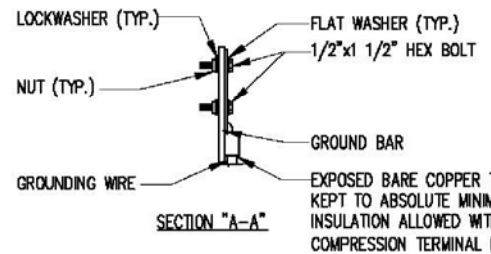
ANTENNA CABLE GROUNDING DETAIL (2) E-4
SCALE: N.T.S.



TYPICAL GROUND ROD DETAIL (3) E-4
SCALE: N.T.S.



TYP. CADWELD TYPES (4) E-4
SCALE: N.T.S.



NOTE:
1. "DOUBLING UP" OR "STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS AND TO BE APPLIED PRIOR TO ADDING HARDWARE.

TYPICAL GROUND BAR CONNECTION DETAILS (5) E-4
SCALE: N.T.S.

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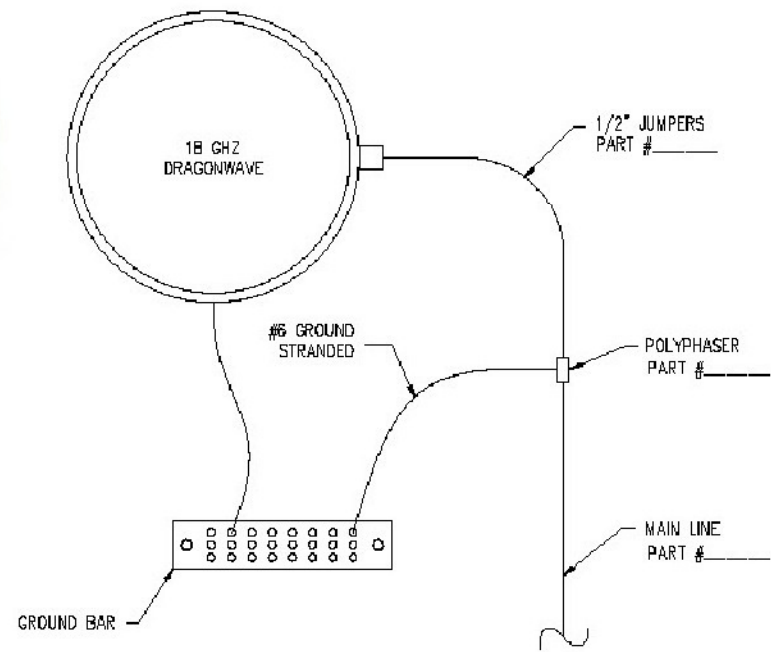
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SITE NUMBER: MO-STL0379
MASON GRAY SUMMIT #25
14550 S. OUTER 40 RD.
CHESTERFIELD, MO 63017

4	04/22/10	PER CITY OF CHESTERFIELD COMMENTS	TCM	MM	MM
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SCALE: AS SHOWN			DESIGNED BY: MM		

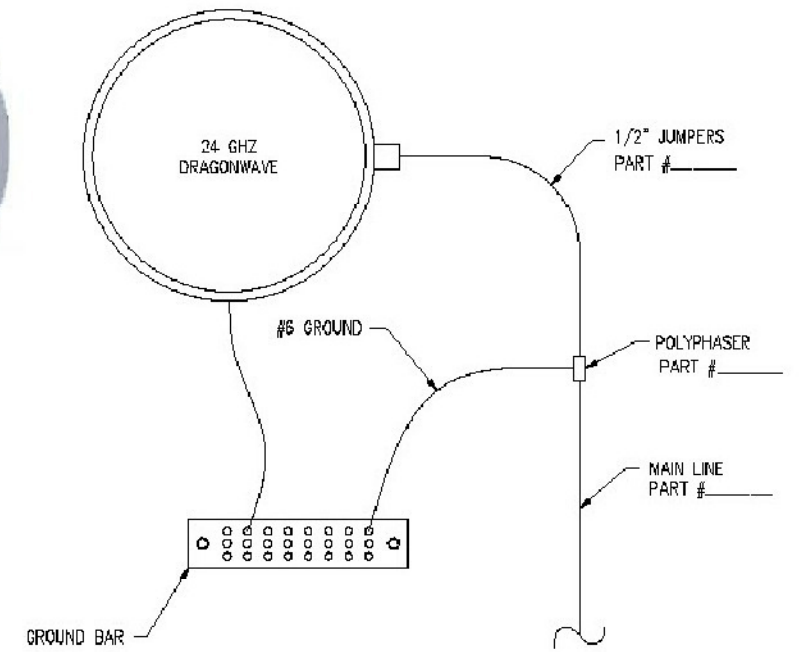
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GROUNDING DETAILS & NOTES	
DRAWING NUMBER	
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18 GHZ DRAGONWAVE GROUNDING
SCALE: N.T.S.

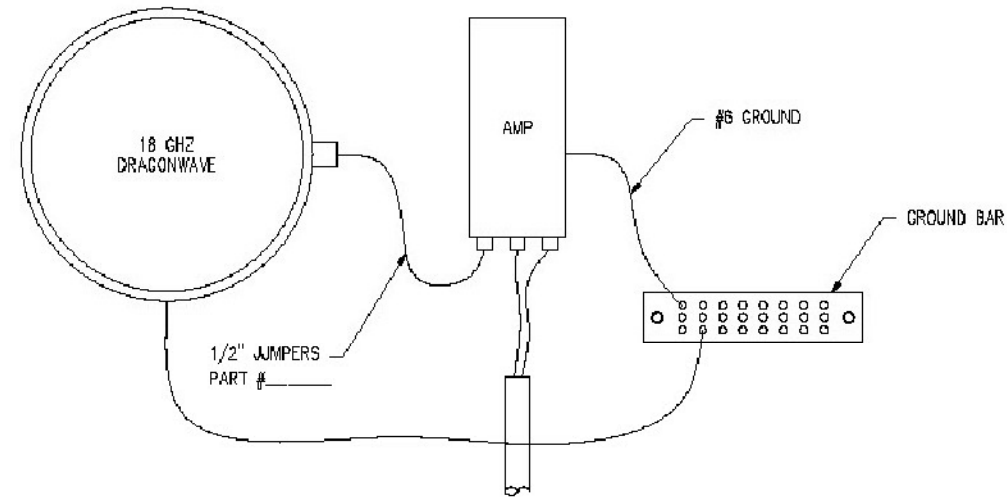
1
E-5



24 GHZ DRAGONWAVE GROUNDING
SCALE: N.T.S.

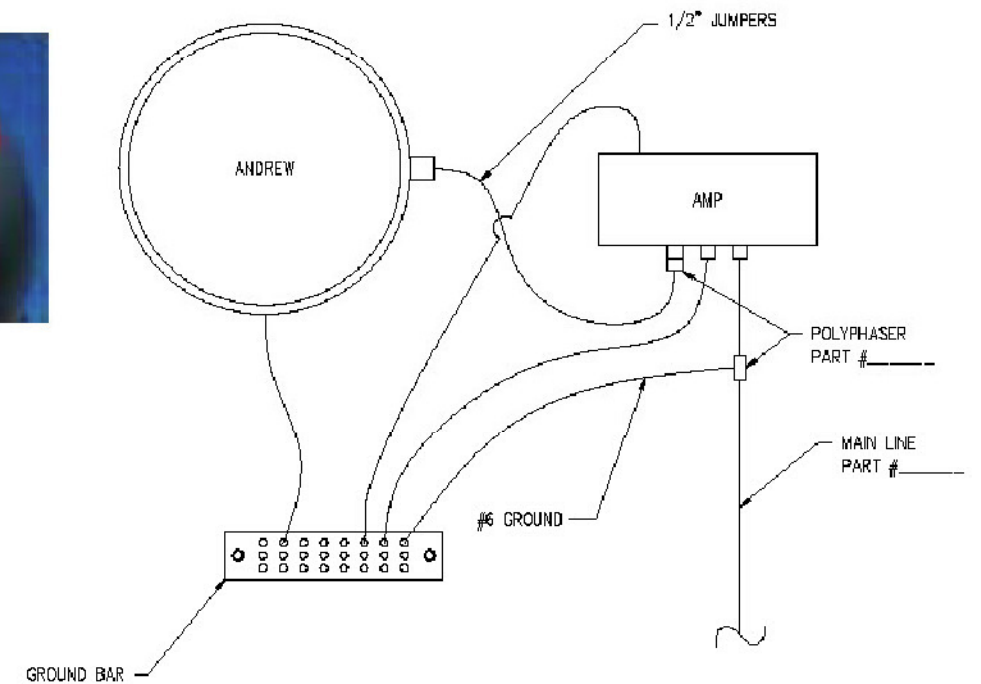
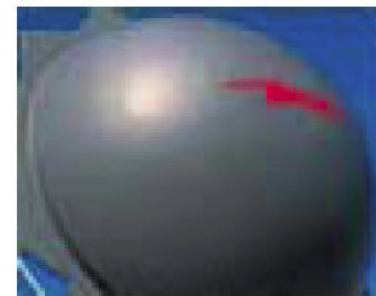
2
E-5

NOTE:
ANTENNA MODEL AND AZIMUTH(S)
TO BE DETERMINED.



18 GHZ DRAGONWAVE/AMP GROUNDING
SCALE: N.T.S.

3
E-5



ANDREW GROUNDING
SCALE: N.T.S.

4
E-5

4	04/22/10	PER CITY OF CHESTERFIELD COMMENTS	TCM	MM	MM
3	04/16/10	CHANGE TO POWER MOUNT	TCM	MM	MM
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