

REVIEW BY FORT BEND COUNTY COMMISSIONERS COURT

On this 28th day of June, 2016, Commissioners Court came on to be heard and reviewed the accompanying notice of General Telecom Inc

Job Location 6941 Thompson Ferry Road, Missouri City, TX 77479

Date 6/13/2016 Bond No. 106532367, Permit No. 2016-7701 to make use of certain Fort Bend County property subject to, "A Revised Order Regulating the Laying, Construction, Maintenance, and Repair of Buried Cables, Conduits, and Pole Lines, In, Under, Across or Along Roads, Streets, Highways, and Drainage Ditches in Fort Bend County, Texas, Under the Jurisdiction of the Commissioners Court of Fort Bend County, Texas," as passed by the Commissioners Court of Fort Bend County, Texas the 3rd day of August, 1987, recorded in Volume _____ of the Minutes of the Commissioners Court of Fort Bend County, Texas, to the extent that such order is not inconsistent with Article 1436a, Vernon's Texas Civil Statutes. Upon Motion of Commissioner Meyers, seconded by Commissioner Patterson, duly put and carried, it is ORDERED, ADJUDGED AND DECREED that said notice of said above purpose is hereby acknowledged by the Commissioners Court of Fort Bend County, Texas, and that said notice be placed on record according to the regulation order thereof.

Notes:

1. Evidence of review by the Commissioners Court must be kept on the job site and failure to do so constitutes grounds for job shutdown.
2. Written notices are required:
 - a. 48 hours in advance of construction start up, and
 - b. when construction is completed and ready for final inspection

Mail notices to: Permit Administrator
Fort Bend County Engineering
301 Jackson Street
Richmond, Texas 77469
281-633-7500

3. This permit expires one (1) year from date of permit if construction has not commenced.

By: Charles A. Doy
for County Engineer

Presented to Commissioners Court and approved.
Recorded in Volume 6/28/16 13E
Minutes of Commissioners Court

By: N/A
Drainage District Engineer/Manager

Clerk of Commissioners Court
By: [Signature]
Deputy
RENEE MICHULKA

**PERFORMANCE BOND COVERING ALL CABLE, CONDUIT AND/OR POLE LINE
ACTIVITY IN, UNDER, ACROSS OR ALONG FORT BEND COUNTY ROAD
AUTHORIZED**

BOND NO 106532367

THE STATE OF TEXAS

§

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF FORT BEND

§

THAT WE, GENERAL TELECOM, INC. whose address is 1000 POWDER PLANT RD. BESSEMER, AL 35022 Texas, hereinafter called the Principal, And Travelers Casualty and Surety Company of America, a Corporation existing under and by virtue of the laws of the state of CONNECTICUT and authorized to do an indemnifying business in the state of Texas, and whose principal office is located at One Tower Square Hartford, CT 06183, whose officer residing in the State of Texas, authorized to accept service in all suits and actions brought whining said state is _____ and Whose address is _____, hereinafter called the Surety, and held and firmly bound unto, Robert e. Hebert, County Judge of Fort Bend County, Texas, or his successors in office, in the full sum of Five Thousand Dollars (\$5,000.00) current, lawful money of the United States of America, to be paid to said Robert E. Hebert, County Judge of Fort Bend County, Texas, or his successors in office, to which payment well and truly to be made and done, we, the undersigned, bind ourselves and each of us, our heirs, executors, administrators, successors, assigns, and legal representatives, jointly and severally, by these presents.

THE CONDITION OF THIS BOND IS SUCH THAT, WHEREAS, the above bounden principal contemplates laying, constructing, maintaining and/or repairing one or more cables, conduits, and/or pole lines in, under, across and/or along roads, streets and highways, commercial driveway and median openings or modifications in the County of Fort Bend, and the State of Texas, under the jurisdiction of the Commissioners' Court of Fort Bend County, Texas, pursuant to the Commissioners' Court order adopted on the 1st day of December, A.D. 1980, recorded in Volume 13, of the Commissioners' Court Minutes of Fort Bend County, Texas, regulating same, which Commissioners' Court order is hereby referred to and made a part hereof for all purposes as though fully set out herein;

AND WHEREAS, the principal desires to provide Fort Bend County with a performance bond covering all such cable, conduit and/or pole line activity, commercial driveway and median openings or modifications;

NOW, THEREFORE, if the above bounden principal shall faithfully perform all its cable, conduit and/or pole line activity (including, but not limited to the laying, construction, maintenance and/or repair of cables, conduits and/or pole lines) in, under, across and/or along roads, streets and highways, commercial driveway and median openings or modifications in the County of Fort Bend and State of Texas, under the jurisdiction of the Commissioners Court of Fort Bend County, Texas, pursuant to and in accordance with minimum requirements and conditions of the above mentioned Commissioners' Court order set forth and specified to be by said principal done and performed, at the time and in the manner therein specified, and shall pay over and make good and reimburse Fort Bend County, all loss and damages which Fort Bend County may sustain by reason of any failure or default on the part of said principal, then this obligation shall be null and void, otherwise to remain in full force and effect.

This bond is payable at the County Courthouse in the County of Fort Bend and State of Texas.

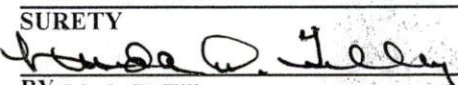
It is understood that at any time Fort Bend County deems itself insecure under this bond, it may require further and/or additional bonds of the principal.

EXECUTED this 08 day of June, 2016.

GENERAL TELECOM, INC.
PRINCIPAL

BY 

Travelers Casualty and Surety Company of America
SURETY

BY  Linda D. Tilley

TRAVELERS

POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Surety Bond No. 106532367

Principal: GENERAL TELECOM, INC.
1000 POWDER PLANT RD. BESSEMER, AL 35022

Obligee: County Judge of Fort Bend County
P.O Box 1449 ROSENBERG, TX 77471

KNOW ALL MEN BY THESE PRESENTS: That Farmington Casualty Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, are corporations duly organized under the laws of the State of Connecticut, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc. is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **Linda D. Tilley**, of the City of **Birmingham**, State of **AL**, their true and lawful Attorney(s)-in-Fact, to sign, execute, seal and acknowledge the surety bond referenced above.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this **10th** day of **September**, 2012.


Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company



State of Connecticut

City of Hartford ss.

By: 
Robert L. Raney, Senior Vice President

On this the **10th** day of **September**, 2012, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June**, 2016.




Marie C. Tetreault, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

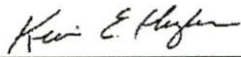
FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kevin E. Hughes, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 08 day of June, 2016.


Kevin E. Hughes, Assistant Secretary



To verify the authenticity of this Power of Attorney, call 1-800-421-3880 or contact us at www.travelersbond.com. Please refer to the Attorney-In-Fact number, the above-named individuals and the details of the bond to which the power is attached.



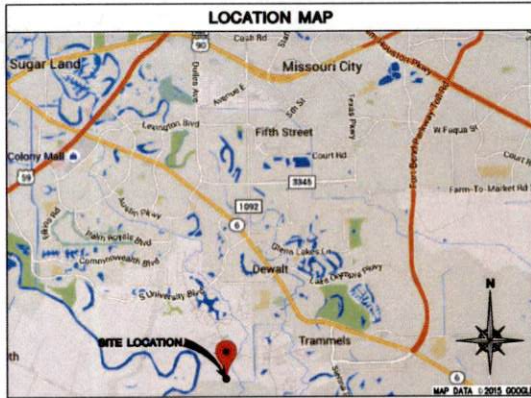
IMPORTANT NOTICE REGARDING COMPENSATION DISCLOSURE

For information about how Travelers compensates independent agents, brokers, or other insurance producers, please visit this website: www.travelers.com/w3c/legal/Producer_Compensation_Disclosure.html

If you prefer, you can call the following toll-free number: 1-866-904-8348. Or you can write to us at Travelers, Enterprise Development, One Tower Square, Hartford, CT 06183.



SITE NAME: SIENNA PLANTATION
SITE NUMBER: TX-0032
ADDRESS: 6941 THOMPSON FERRY RD.
 MISSOURI CITY, TX 77479
JURISDICTION: FORT BEND COUNTY
STRUCTURE TYPE: 150' MONOPOLE TOWER



PROJECT DESCRIPTION
 CONSTRUCT NEW TELECOMMUNICATION FACILITY WITH 50'-0" X 50'-0" LEASE AREA AND 150'-0" MONOPOLE TOWER. INSTALL RASSED PLATFORM FOR COMMUNITY UTILITIES.
 *NO NEW WATER OR SEWER IS REQUIRED AS FACILITY IS UNMANNED.

PROJECT INFORMATION
SITE ADDRESS: 6941 THOMPSON FERRY ROAD, MISSOURI CITY, TX 77479, FORT BEND COUNTY
JURISDICTION: FORT BEND COUNTY
COORDINATES (NAD83): LAT: 29°31'21.02" (NAD83), LONG: -95°34'19.59" (NAD83), ELEVATION: 61.00' A.M.S.L. (NAD83)
PROPERTY OWNERS: JOHNSON DEVELOPMENT CORP, 5777 SIENNA PRKY, STE. 100, MISSOURI CITY, TX 77406, TEL: (713) 351-4815, CONTACT: MICHAEL SMITH
ASSESSOR'S PARCEL NUMBER: R34753

APPLICABLE CODES
 ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH 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 FOLLOWING CODES.
 BUILDING CODE: INTERNATIONAL BUILDING CODE 2012
 ELECTRICAL CODE: NATIONAL ELECTRICAL CODE 2011

DRIVING DIRECTIONS
 DIRECTIONS FROM WILLIAM P. HOBBY AIRPORT:
 FROM 7800 AIRPORT BLVD HOUSTON, TX 77061, GET ON SAM HOUSTON Pkwy W FROM AIRPORT BLVD AND TELEPHONE RD, HEAD EAST ON AIRPORT BLVD TOWARD GLENCHREST AVE. MAKE A U-TURN AT GLENCHREST AVE, TURN LEFT ONTO TELEPHONE RD, TURN RIGHT ONTO SOUTH SAM HOUSTON Pkwy E W. TAKE THE SAM HOUSTON TOLLWAY W RAMP ON THE LEFT TO TEXAS 8 BELTWAY W. FOLLOW SAM HOUSTON Pkwy W AND FORT BEND PARKWAY TOLL RD TO TX-6 N IN FORT BEND COUNTY, EXIT FROM FORT BEND PARKWAY TOLL RD, MERGE ONTO SAM HOUSTON Pkwy W. TAKE THE EXIT TOWARD FORT BEND TOLL RD/SAM HOUSTAN TOLLWAY N. MERGE ONTO S SAM HOUSTON Pkwy W, TURN LEFT ONTO HILLCREST AVE, TAKE THE FORT BEND PARKWAY TOLL RD S RAMP ON THE LEFT, MERGE ONTO FORT BEND PARKWAY TOLL RD, EXIT ONTO TX-6 N, CONTINUE ON TX-6 N, TAKE SIENNA RANCH RD TO THOMPSON FERRY RD, MERGE ONTO TX-6 N, TURN LEFT ONTO SIENNA RANCH RD, TURN RIGHT ONTO SIENNA SPRINGS DR, CONTINUE ONTO L Pkwy, TURN LEFT ONTO THOMPSON FERRY RD, DESTINATION WILL BE ON THE LEFT.

CONTACTS
TOWER OWNERS: ECO-SITE, 240 LEDG FARM RD., SUITE 415, DURHAM, NC 27707, TEL: (281) 783-1666, CONTACT: GABRIY ORTIZLOW
APPLICANT: ECO-SITE, 240 LEDG FARM RD., SUITE 415, DURHAM, NC 27707, TEL: (281) 783-1666, CONTACT: GABRIY ORTIZLOW

PROJECT TEAM
AME: W-T COMMUNICATION DESIGN GROUP, LLC, 6530 N BELTLINE RD., STE. 335, IRVING, TX 75063, TEL: (214) 422-5625, CONTACT: KC BILLING
STRUCTURAL ENGINEERS: TBO, 25307 NORTH FREEDWAY, SUITE 100, THE WOODLANDS, TX 77380, TEL: (281) 465-8730, CONTACT: KC BILLING
SURVEYORS: TOWN & COUNTRY SURVEYORS, LLC, 25307 NORTH FREEDWAY, SUITE 100, THE WOODLANDS, TX 77380, TEL: (281) 465-8730, CONTACT: KC BILLING
SITE ACQUISITION: PYRAMID NETWORK SERVICES, LLC, 6519 TOPPATH ROAD, EAST STRAUSBURG, NY 13057, TEL: (315) 382-3448, FAX: (315) 445-0653

COMPLIANCE NOTES
ADA COMPLIANCE: THIS WIRELESS COMMUNICATION FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. THIS FACILITY DOES NOT REQUIRE POTABLE WATER AND WILL NOT PRODUCE ANY SERVIC, LANDINGS AND EXITS SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES.
FCC COMPLIANCE: RADIATION FROM THIS FACILITY WILL NOT INTERFERE WITH OPERATION OF OTHER COMMUNICATION DEVICES.

UTILITIES
ELECTRIC: CENTERPOINT ENERGY, TEL: (281) 561-2979, CONTACT: AUSTIN COMBROWSON
FIBER: VERIZON, TEL: (281) 338-2221, CONTACT: DARWIN ALBRECHT

SHEET INDEX

SHEET NUMBER	TITLE SHEET	DESCRIPTION
T-1	TITLE SHEET	
GN-1	GENERAL NOTES	
GN-2	GENERAL NOTES	
GN-3	GENERAL NOTES	
S-1	SURVEY (BY OTHERS)	
S-2	SURVEY (BY OTHERS)	
S-3	SURVEY (BY OTHERS)	
C-1	OVERALL SITE PLAN	
C-2	ENLARGED SITE PLAN	
C-3	GEOMETRIC SITE PLAN	
C-4	GRADING PLAN	
C-5	SITE DETAILS	
C-6	SITE DETAILS	
A-1	ELEVATION	
E-1	UTILITY PLANS	
E-2	UTILITY DETAILS	
GR-1	GROUNDING PLANS	
GR-2	GROUNDING DETAILS	
GR-3	GROUNDING DETAILS	
SE-1	UTILITY PLATFORM PLAN	
SE-2	PLATFORM SECTION VIEW AND DETAILS	
SE-3	STRUCTURAL DETAILS	
SE-4	PLATFORM FOUNDATION PLAN	
SE-5	STRUCTURAL NOTES	



APPROVALS

PENDING APPROVAL OF THE JURISDICTION, THE FOLLOWING PARTIES HAVE REVIEWED THE DESIGN WITHIN THEIR FUNCTIONAL RESPONSIBILITIES AND HAVE APPROVED THIS PROJECT FOR CONSTRUCTION. CONTRACTORS MAY NOT START CONSTRUCTION WITHOUT A NOTICE TO PROCEED (NTP) FROM LLUIS.

PRINT NAME	SIGNATURE	DATE
LANDLORD		
PRECON. MGR		
DEVELOP. MGR		
CONST. MGR		
AME		
RF ENGINEER		
OPERATIONS		
ZONING REP		
UTILITIES		



PLANS PREPARED BY:
W-T COMMUNICATION DESIGN GROUP, LLC.
 WIRELESS INFRASTRUCTURE
 6530 N BELTLINE RD., STE. 335, IRVING, TX 75063
 PH: (214) 422-5625, FAX: (214) 293-6444
 www.wtdesigngroup.com



DATE **DESCRIPTION** **BY** **REV**

03/08/16	ISSUED FOR REVIEW	KCB	A
04/08/16	REVISED FOR REVIEW	KCB	B
04/11/16	FINAL ISSUE	KCB	0

SITE INFORMATION:
TX-0032
SIENNA PLANTATION
 6941 THOMPSON FERRY RD., MISSOURI CITY, TX 77479
 W-1 JOB NUMBER: 1150531

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T-1

PLOT SCALE: 1:2 @ 11"x17"

6.0 CHAIN LINK FENCES & GATES

- 1. GENERAL**
 - 1.1 FENCE CHAIN LINK FENCES AND GATES AS COMPLETE UNITS BY A SINGLE SUPPLY SOURCE INCLUDING NECESSARY ERECTION ACCESSORIES, FITTINGS AND FASTENERS.
 - 1.2 PRODUCTS AND MATERIALS (AS APPROVED BY CONSTRUCTION MANAGER OR AS NOTED IN CONSTRUCTION DOCUMENTS)
 1. COMPLIANT FENCE 36 INCHES HIGH AND OVER WITH 2-INCH MESH SHALL BE BLACKED AT ONE BELMONT AND TWENTY AT THE OTHER.
 - STEEL FABRIC COMPLY WITH CHAIN LINK FENCE MANUFACTURERS INSTITUTE (CLFMI) PRODUCT MANUAL. FURNISH ONE PIECE OF FABRIC WITHIN NINE SIZE INCLUDES ZINC OR ALUMINUM COATING.
 - A. SIZE: 3-INCH MESH 9 GAUGE (21-40-INCH DIAMETER) WIRE.
 - GALVANIZED STEEL FABRIC ASTM A 301 CLASS 2 WITH A MINIMUM 5.0 OZ. ZINC PER SQ. FT. OF UNCOATED WIRE SURFACE.
 - FRAMING AND ACCESSORIES
 - A. GENERAL REQUIREMENTS EXCEPT AS INDICATED OTHERWISE CONFORM TO THE CHAIN LINK FENCE MANUFACTURERS INSTITUTE (CLFMI) PRODUCT MANUAL. HOWEVER, STEEL GUIDE FOR FENCE RAILS, POSTS, GATES AND ACCESSORIES INCLUDING TABLE 1.
 - STRENGTH REQUIREMENTS FOR POSTS AND RAILS CONFORMING TO ASTM F 1043.
 - TYPE 1 PIPE NOT-DIPPED GALVANIZED STEEL PIPE CONFORMING TO ASTM F 1581 PLAIN END, STANDARD HEIGHT (SCHEDULE 40) WITH NOT LESS THAN 18 OZ. ZINC PER SQ. FT. OF SURFACE AREA COATING.
 - PELLING: COMPLY WITH ASTM F 536 MILD PRESSED ALUMINUM OR GALVANIZED IRON STEEL TO COMPLY WITH MANUFACTURER'S REQUIREMENTS.
 - TOP RAIL MANUFACTURER'S LOWEST LENGTHS WITH EXPANSION TYPE COUPLERS, APPROXIMATELY 8 INCHES LONG FOR EACH JOINT. PROVIDE MEANS FOR ATTACHING TOP RAIL SECURELY TO EACH GATE CORNER, PULL AND END POST.
 - 2. GALVANIZED STEEL 1-1/4 INCH MESH (1.88 INCH OD) TYPE I OR II STEEL PIPE OR 1.58 INCH x 1.38 INCH RAIL-FORMED C SECTIONS WEIGHING 1.35 LBS. PER FT.
 - 3. BRING GATES COMPLY WITH ASTM F 802. PROVIDE HARDWARE AND ACCESSORIES FOR EACH GATE. GALVANIZED PER ASTM A 183, AND IN ACCORDANCE WITH THE FOLLOWING:
 - A. MINIMUM NON LEFT-OFF TYPE, OFFSET TO PERMIT 180 DEG. GATE OPENING.
 - RAIL: WITH MULTI-LOCKING DEVICE MT-03477 OR APPROVED EQUAL.
 - HEAVY: PROVIDE KEYS FOR VEHICLE GATES, WHICH AUTOMATICALLY CHANGES GATE LEAF AND HOLDS IT IN OPEN POSITION UNTIL MANUALLY RELEASED.
 - 4. CONCRETE: PROVIDE CONCRETE CONCRETE OF PORTLAND CEMENT, ASTM C 150, AGGREGATES ASTM C 29, AND CLEAN WATER. USE MATERIALS TO OBTAIN CONCRETE WITH A MINIMUM OF 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI.

6.0 LANDSCAPING (IF APPLICABLE)

- 1. LANDSCAPING**
 - 1.1 PLANTING, SEEDING, AND MAINTAIN LANDSCAPING WORK AS SHOWN AND AS REQUIRED WITHIN THE CONSTRUCTION DOCUMENTS OR AS SPECIFIED IN THE TOWER OWNER INFO CONSTRUCTION SPECIFICATIONS.

7.0 CONCRETE FORMWORK

- 1. CONCRETE FORMWORK**
 - 1.1 FORMS: SUPPORT AND FREE OF SURFACE IRREGULARITIES, UNLESS FORM RELEASE AGENTS.
 - A. CHAMFER EDGED EDGES OF ALL TOWER FOUNDATIONS SHALL RECEIVE A 3/4" BY 3/4" 45 DEGREE CHAMFER. OTHER EXPOSED EDGES SHALL RECEIVE A TYPICAL RADIUS FINISH.
 - UPON COMPLETION, REMOVE ALL FORMS, INCLUDING THOSE CONCEALED OR BURRED.
 - REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.

8.0 CONCRETE REINFORCEMENT

- 1. CONCRETE REINFORCEMENT**
 - 1.1 REFER TO STRUCTURAL DRAWINGS FOR ALL REQUIREMENTS.

8.0 CAST IN PLACE CONCRETE

- 1. CAST IN PLACE CONCRETE**
 - 1.1 FOR STRUCTURAL CONCRETE (FOUNDATIONS, ETC.) REFER TO STRUCTURAL DRAWINGS. FOR MISCELLANEOUS CONCRETE, REFER TO SPECIFICATION BOOK OR OTHER REQUIREMENTS FROM CONSTRUCTION MANAGER.
 - A. ALL CONCRETE SHALL COMPLY WITH ASTM C 04 UNLESS NOTED OTHERWISE.
 - MINIMUM COMPRESSIVE STRENGTH (F') AT 28 DAYS: 4000 PSI FOR TOWER FOUNDATION AND 3500 PSI FOR ALL OTHER CONCRETE UNLESS SPECIFIED IN CONSTRUCTION DOCUMENTS.
 - CONCRETE TESTING: ALL FOUNDATION CONCRETE SHALL BE TESTED BY AN INDEPENDENT TESTING AGENCY APPROVED BY THE CONSTRUCTION MANAGER. ALL STRUCTURAL TOWER FOUNDATION CONCRETE MUST BE TESTED. EQUIPMENT OR BUILDING PARTS ARE NOT REQUIRED TO BE TESTED, UNLESS OTHERWISE NOTED BY CONSTRUCTION MANAGER. PROVIDE A MINIMUM OF 3 CYLINDERS (2-7-DAY, 2-28-DAY, 1-SPREAD) FOR EACH DAY POUR OR FOR EACH 50 TONS PLACED. INSPECTOR IS GRANTED. ADDITIONAL TESTS OR CYLINDERS MAY BE REQUIRED BY CONSTRUCTION MANAGER. A SLUMP, AIR, AND TEMPERATURE TEST SHALL BE PERFORMED FOR EACH SET OF CYLINDERS CAST. PROBABLY TESTS SHALL BE PERFORMED AT THE LOCATION OF ANCHOR BOLTS (SPIN - FOR MAT & PIER, CHAIRS - FOR 1/3 OF CIRCUM). TESTS SHALL ALSO BE REQUIRED FOR CONCRETE CONSIDERED TO BE LESS THAN REPAIRABLE BY CONCRETE REPAIR SPECIFICATIONS. THE TESTING AGENCY HAS THE AUTHORITY TO NOT ACCEPT CONCRETE MEETING THESE SPECIFICATIONS FOR TOWER OWNER INFO. THE CONTRACTOR IS RESPONSIBLE FOR ANY CONCRETE NOT MEETING THESE STANDARDS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF THE TESTING AGENCY A MINIMUM OF 24 HOURS IN ADVANCE WITH CONSTRUCTION MANAGER. TEST REPORTS SHALL BE FURNISHED TO TOWER OWNER INFO CONSTRUCTION MANAGER WITHIN 24 HOURS OF LAB TEST.
 - VERIFY ALL CONCRETE USING SUFFICIENT HIGH FREQUENCY LOW AMPLITUDE MECHANICAL VIBRATION TYPE VIBRATORS. INSERT VIBRATORS IN CONCRETE AT REGULAR INTERVALS AND OPERATE SURFACE TO VIBRATE FULL CONCRETE AND BETWEEN REINFORCEMENT BARS AND IRREGULARITIES. VIBRATE THOROUGHLY THROUGH EACH LIFT TO THE PREVIOUS LIFT REINFORCEMENT AS LATE AS THE RUNNING VIBRATOR WILL BE WITHOUT UPWARD LIFTING OF ITS WEIGHT IS RECOMMENDED. DISCONTINUE VIBRATION WHEN BUBBLES STOP BREAKING STOP BREAKING THE LEVELING SURFACE. DO NOT OVER VIBRATE AS THIS MAY CAUSE SEGREGATION.
 - FINISH EXPOSED CONCRETE SURFACES
 - A. THESE PREPARATIONS APPLY TO ALL EXPOSED AND ALL FORMED CONCRETE, EXTERIOR OR INTERIOR, UNLESS SPECIFICALLY DETAIL OTHERWISE. PERFORM PROCEDURES PRIOR TO APPLICATION OF ANY CURING COMPOUND.
 - ALL SURFACES THOROUGHLY CLEAN OF ALL STAIN, SPATTER AND LOOSE MATERIAL.
 - FINISH EDGES AND CORNERS: EDGE FINISH WITH ABRASIVE POWER GRINDER WHILE CONCRETE IS GREEN, IMMEDIATELY AFTER FORM REMOVAL.
 - FORM JOINTS AND JOINT IMPRESSIONS: FLUSH THOROUGHLY WITH CLEAN WATER AND TAMP TO OVERFILL WITH BRICKPAK. CARE TO DAYS AND HOLE FLUSH AND SMOOTH.
 - ROCK POCKETS, HONEYCOMB, SAND STRAINS, DEBRIS AND VOID: CUT OUT AT LEAST 1 INCH DEEP WITH EDGES PERPENDICULAR TO SURFACE. FLUSH THOROUGHLY WITH CLEAN WATER. COAT SURFACE WITH SEAL CEMENT PASTE AND TAMP TO OVERFILL WITH BRICKPAK IN AT LEAST TWO LAYERS. CARE FOR 10 DAYS AND MORE FINISHED AND SMOOTH.
 - 2. CONTRACTOR SHALL VERIFY ALL SIZES AND LOCATIONS OF ALL ELECTRICAL OPENINGS AND EQUIPMENT/VALUING PARTS WITH THE ELECTRICAL DRAWINGS AND SHOP DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL OPENINGS AND RECESSES FOR PROPER DISTRIBUTION FOR ALL UTILITIES. CONTRACTOR SHALL REFER TO DRAWINGS OF OTHER TRADES AND VENDOR DRAWINGS FOR UNBURRED ITEMS AND RECESSES NOT SHOWN ON STRUCTURAL DRAWINGS. PRIOR TO POURING CONCRETE THE INDEPENDENT TESTING AGENCY SHALL VERIFY ALL FOUNDATION STEEL AND FOUNDATION SURFACE.
 - 3. CONCRETE PANS FOR FOUNDATIONS SHALL BE SHIELDED AND POURED ON THE SAME DAY.

10.0 STRUCTURAL STEEL

- 1. STRUCTURAL STEEL - MEET OR EXCEED MANUFACTURER'S RECOMMENDATIONS**
 - 1.1 UNLESS OTHERWISE NOTED, ALL DETAILS, FABRICATION AND PLACING OF REINFORCING STEEL SHALL CONFORM TO THE MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI 318).
 - 2. ALL REINFORCING STEEL SHALL BE NEW BULLET STEEL, CONFORMING TO ASTM A-601, GRADE 60, DEFORCED.
 - 3. HEATING AND WELDING OF BARS IS PROHIBITED WITH THE EXCEPTION OF WRITTEN APPROVAL BY THE STRUCTURAL ENGINEER.
 - 4. ALL REINFORCEMENT BARS TO BE FREE FROM LOOSE RUST AND SCALE.
 - 5. UNLESS OTHERWISE NOTED, ALL REINFORCEMENT SHALL HAVE A MINIMUM CONCRETE COVERAGE OF 3 INCHES. THIS MAY REQUIRE SPACERS AND CHAIRS AS REQUIRED BY TESTING AGENCY OR CONSTRUCTION MANAGER.
 - 6. SPACERS IN REINFORCEMENT STEEL ARE PROHIBITED, UNLESS APPROVED BY CONSTRUCTION MANAGER. ALL SPACERS MUST BE MADE OF ALL APPLICABLE ASTM STANDARDS FOR SPACERS ESTABLISHED BY AWS, AISC AND AIA.
- 11.0 TOWER & ANTENNA INSTALLATION:**
 - 1.1 WORK INCLUDES
 - A. FURNISH, TEST AND FURNISH TOWER.
 - GROUND TOWER TEMPORARILY DURING ERECTION. GROUNDING SHALL INCLUDE BARS(S) AND ANCHORS.
 - IF REQUIRED, INSTALL PLATFORMS/ACENTS AS DETAIL ON DRAWINGS - CONFORM WITH OWNER REPRESENTATIVE.
 - INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND OTHER SPECIFICATIONS.
 - INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.
 - INSTALL FINISHED GALVANIZED STEEL WINDSHIELD LUGS.
 - INSTALL WINDSHIELD BRIDGE AS INDICATED ON DRAWING.
 - SUPPLY AND INSTALL ONE INSULATOR BRIDGE BAR AT EQUIPMENT CABINET.
 - SUPPLY AND INSTALL GROUNDING STRAP WITH 1/2 INCH BARE COPPER LUGS (ON TO JUNCTION-DEVIATOR OR APPROVED EQUAL) AND TOWER BASE BEFORE ERECTING THE EQUIPMENT. GROUNDING STRAPS TO BE CONNECTED TO ANALOGUE GROUND BAR.
 - PERFORM SWEEP TEST OF METALIZED COAT OR OTHER COATING (SWEEP & GATE) AS REQUIRED.
 - 1.1.1 UNLESS OTHERWISE SPECIFIED, ALL MATERIALS SHALL BE U.S. STANDARDS UNLESS OTHERWISE NOTED.
 - 2. INSTALL ANTENNA, ANTENNA CABLES, GROUNDING SYSTEM IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS IN EFFECT AT PROJECT LOCATION AND RECOMMENDATIONS OF STATE AND LOCAL BUILDING CODES. SPECIAL CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS OF WORK, THIS INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:
 - A. TA - TELECOMMUNICATIONS INDUSTRY ASSOCIATION TA-221, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.
 - FAA - FEDERAL AVIATION ADMINISTRATION AERODROME CIRCULAR AC 70/7400-24, CONSTRUCTION DRAWING AND LIGHTING.
 - FCC - FEDERAL COMMUNICATIONS COMMISSION RULES AND REGULATIONS FORM 716, CONSTRUCTION DRAWING AND LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES AND FORM 716A, HIGH INTERFERENCE CONSTRUCTION LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES.
 - ABC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATION FOR STRUCTURAL STEEL USING ASTM A36 OR A502 STEEL.
 - NEC - NATIONAL ELECTRICAL CODE - ON TOWER LIGHTING SETS.
 - UL - UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.
 - IN ALL CASES, PART 77 OF THE FAA RULES AND PARTS 17 AND 22 OF THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.
 - LIFE SAFETY CODE NFPA-101.

12.0 GENERAL ELECTRIC PROVISIONS:

1. SUBMITTAL OF 80 INDICATES CONTRACTOR IS COORDINATE OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
2. CONTRACTOR SHALL PERFORM ALL VERIFICATION OBSERVATIONS TEST, AND EXAMINATION WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL MAKE A WRITTEN NOTICE OF ALL PROBLEMS TO THE ENGINEER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
3. HEIGHTS AND LENGTHS SHALL BE VERIFIED WITH OTHER PRIOR TO INSTALLATION.
4. THESE PLANS ARE DIAGRAMMATIC ONLY, FOLLOW AS CLOSELY AS POSSIBLE.
5. ELECTRICAL SERVICE 120 / 208 VAC 3-PHASE 4-WIRE 100 AMP SERVICE OR 120 / 240 VAC SINGLE PHASE 3-WIRE 200 AMP SERVICE.
6. EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANEL BOARD, PULL BOX, 4-WIRE SWITCH BOX, ETC., IN COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA).

7. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INVENTORY, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR A COMPLETE AND PROPERLY OPERATING SYSTEM INCLUDING THROUGHOUT AND AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
8. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED "I" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF THE DESIGNER OF INDUSTRIAL SAFETY AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY AWS, AISC AND AIA.
9. ALL CONDUIT INSTALLED SHALL BE SURFACE MOUNTED OR DIRECT BURIAL UNLESS OTHERWISE NOTED. NOT IN 80 DISTANCE SHALL PRESENT A TRIP HAZARD.
10. CONTRACTOR SHALL CARRY OUT THEIR WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND ORDINANCES AND TOWER OWNER INFO'S.
11. CONTRACTOR TO OBTAIN ALL PERMITS, PAY PERMIT FEES, AND BE RESPONSIBLE FOR SCHEDULING INSPECTIONS.
12. COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF JOB ACCEPTANCE BY OWNER. ANY WORK, MATERIAL, OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
13. ALL CONDUIT SHALL HAVE A PULL WIRE OR ROPPE.
14. PROVIDE PROJECT MANUAL WITH ONE SET OF COMPLETE ELECTRICAL "AS BUILT" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, RATINGS AND NOTES.
15. ALL BOOKS, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC., SHALL BE TURNED OVER TO THE OWNER AT JOB COMPLETION.
16. USE 1/2-INCH CONNECTIONS ON ALL MULTI-CIRCUITS WITH COMMON NEUTRAL CONDUCTOR FOR LIGHTING FIXTURES.
17. ALL CONDUITS SHALL BE COVER UNLESS OTHERWISE NOTED.
18. ALL CABLE BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING SHORT CIRCUIT CAPACITY TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10000 AIC.
19. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDING AS REQUIRED BY ALL APPLICABLE CODES.
20. PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
21. PENETRATIONS IN FINE PAVED SHALL BE FINE STOPPED IN ACCORDANCE WITH APPLICABLE LOCAL BUILDING CODES.
22. WIRE AND CABLE CONDUITS SHALL BE COVER (JET AND MINIMUM UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS).
23. GROUNDING CONDUITS SHALL BE BOLD THINED COVER UNLESS OTHERWISE NOTED.
24. MEETS SOCIETY APPROVED, VOLTAGE, NUMBER OF PHASES SHALL BE AS NOTED ON THE DRAWINGS, MANUFACTURED BY "SHAWNEE COMPANY", OR APPROVED EQUAL.
25. ALL MATERIALS SHALL BE U.S. LISTED.
26. CONDUIT
 - A. USED CONDUIT SHALL BE U.S. LISTED GALVANIZED ZINC COATED WITH 20% ZINC AND SHALL BE USED WHEN INSTALLED IN OR UNDER CONCRETE SLABS IN CONTACT WITH THE EARTH, UNDER PUBLIC ROADS, IN MASONRY WALLS OR EXPOSED ON BUILDING EXTERIOR. RIBB CONDUIT IN CONTACT WITH EARTH SHALL BE 1/2" LAPPED WRAPPED WITH HEAVY SWEEP PROCESS NO. 3.
 - B. ELECTRICAL METALLIC TUBING SHALL HAVE U.S. LISTED, FITTING SHALL BE CLAMP RING COMPRESSION TYPE, BUT SHALL BE USED ONLY FOR EXTERIOR RUNS.
 - C. FLEXIBLE METALLIC CONDUIT SHALL HAVE U.S. LISTED LABEL AND MAY BE USED WHERE PERMITTED BY CODE. FITTINGS SHALL BE "SNIP" OR "BURST" TYPE, SEAL TIGHT FLEXIBLE CONDUIT. ALL CONDUIT SHALL HAVE FULL SIZE EQUIPMENT GROUND WIRE.
 - D. CONDUIT RUNS SHALL BE SURFACE MOUNTED ON CEILING OR WALLS UNLESS INDICATED OTHERWISE. CONDUIT SHALL RUN PARALLEL OR AT RIGHT ANGLES TO CEILING, FLOOR OR BEAM. VERIFY EXACT ROUTING OF ALL EXPOSED CONDUIT WITH THE OWNER PRIOR TO INSTALLING. NO HORIZONTAL CONDUIT SHALL BE BELOW 7'-6" A.F.F. NO BE OR BELOW CABLE IS PERMITTED.
 - E. PARALLEL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 (UNLESS NOTED OTHERWISE) AT A MINIMUM DEPTH OF 30" BELOW GRADE - EXPOSED UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 (UNLESS NOTED OTHERWISE) AT A MINIMUM DEPTH OF 30" BELOW GRADE.
 - F. ABOVE GROUND CONDUIT SHALL BE RIBB (UNLESS NOTED OTHERWISE).
27. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS.
28. CONTRACTOR TO PROVIDE DAILY UPDATES TO PM UNTIL FINAL ELECTRICAL SERVICE IS EFFECTED.
29. UPON COMPLETION OF WORK, CONDUCT COMPLETION, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUND TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO PROJECT MANAGER. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNHARMED CONDITION.
30. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL INCURR COSTS TO BE PAID BY CONTRACTOR.

Eco-Site
Urban Renewal Wireless
240 LEIGH FARM RD., SUITE 410
DURHAM, NC 27707

Verizon Wireless
1433 CEDAR ROAD
HOUSTON, TX 77066

PLANS PREPARED BY:
WT
W-T COMMUNICATION DESIGN GROUP, LLC
WIRELESS INFRASTRUCTURE
6200 N. BELLEVUE RD., STE. 325
IRVING, TX 75063
PH: (214) 422-5623 FAX: (214) 290-0444
www.wtcommgroup.com

SHIBU PAPPACHAN
108803
LICENSED PROFESSIONAL ENGINEER
LICENSE NO. 108803 4/11/2016
ISSUED 04/19/16

DATE	DESCRIPTION	BY	REV
03/09/16	ISSUED FOR REVIEW	KCB	A
04/08/16	REVISED FOR REVIEW	KCB	B
04/17/16	FINAL ISSUE	KCB	0

SITE INFORMATION:
TX-0032
SIENNA PLANTATION
6941 THOMPSON FERRY RD.
MISSOURI CITY, TX 77479
E-T-JOB NUMBER: T10031

SHEET TITLE:
GENERAL NOTES

SHEET NUMBER:
GN-2

PLOT SCALE: 1:2 @ 11"x17"

13.0 GROUNDING STANDARDS:

- 13.1 IDENTIFIERS:**
- AWL ANTENNA GROUND BAR
 - AWB AMERICAN WIRE GROUND
 - AWC AMERICAN WIRE GROUND
 - CEILING/AN AN EXISTING WELDING PROCESS WHICH CREATES POSITIVE CONTACT OF GROUNDING CONDUCTORS
 - EMT ELECTRICAL METAL TUBING (LIGHT GAUGE METALLIC CONDUIT)
 - MGD MASTER GROUND BAR
 - PCV POLYVINYL CHLORIDE CONDUIT
 - RFI RADIO FREQUENCY INTERFERENCE
 - TOB TOWER GROUND BAR
- 13.2 LETTER TYPE DESIGNATION FOR CONDUCTOR ISOLATION THAT IS A MODERATE AND HEAT RESISTANT THERMOPLASTIC WITH A MAXIMUM OPERATING TEMPERATURE OF 75 DEGREES CELSIUS OR 167 DEGREES FAHRENHEIT**
- 13.3 IDENTIFIERS:**
- 13.3.1 AREA OF CONCERN:** WHEN DESIGNING A GROUNDING SYSTEM FOR A MOBILE RADIO FACILITY THERE ARE FOUR IDENTIFIED AREAS OF CONCERN. THE BASIC OBJECTIVE FOR EACH IS:
1. LIGHTNING PROTECTION -- TO MAINTAIN ALL EQUIPMENT AT THE SAME POTENTIAL DURING A LIGHTNING IMPULSE.
 2. RFI FOR MOBILE STATION CONTROL -- TO ESTABLISH THE LOWEST POSSIBLE IMPEDANCE AMONG ALL ELEMENTS.
 3. ELECTROSTATIC CONTROL -- TO REDUCE ELECTROSTATIC DISCHARGE PROBLEMS.
 4. PERSONAL SAFETY -- TO MAINTAIN A HUMAN VOLTAGE DIFFERENCE BETWEEN ANY TWO METALLIC OBJECTS WHICH PERSONNEL MIGHT CONTACT SIMULTANEOUSLY.
- 13.3.2 A/C SERVICE:** IN THIS GROUNDING SYSTEM THE A/C SERVICE GROUND SHALL BE KEPT SEPARATE FROM THE EQUIPMENT FRAME WORK AND LIGHTNING PROTECTION GROUND SYSTEMS EXCEPT FOR ONE SPECIFIC POINT. THIS POINT IS THE MAIN BONDING POINT OF THE SYSTEM. THIS BOND IS TYPICALLY BY CONNECTING THE A/C SERVICE GROUND TO THE EXTERNAL GROUND RING. ALL GROUNDING CONNECTIONS OF CONDUCTOR SHALL BE SEPARATE AND COULDS NOT BE JOINTED.
- 13.3.3 LIGHTNING CONDUCTORS:** LIGHTNING DAMAGE OCCURS FROM EITHER INDUCTION OR FROM AN ACTUAL GROUND STRIKE TO THE BUILDING. USUALLY THUNDER THROUGH THE TOWER AND/OR ANTENNAS STRIKES TO OTHER NEARBY OBJECTS INDUCE HIGH ENERGY INTO POWER OR TELEPHONE CABLES SERVING THE BUILDING. THIS TYPE OF EFFECT HISTORICALLY CAUSED MOST OF THE DAMAGE TO THE BUILDING AND ITS CONTENTS.
- 13.3.4 EXISTING GROUNDING SYSTEM:**
- 13.3.4.1 IDENTIFIERS:**
1. #1 AWL BARE SOLID TYPED COPPER WIRE, FOR ALL EXTERIOR CONDUCTORS AND TOWER GROUND BARS CONDUCTORS OR AS OTHERWISE SPECIFIED. GROUNDING TO THE LEAD SHALL BE WELD A STANDARD BOND INSULATED JOINTING. THE GROUND WIRE TO THE WIRE SHALL BE WELD A STANDARD BOND. IF TOWER WIRE BARELY CONNECTED TO THE MAIN BAR AND CONNECTED TO THE GROUND RING OF A GROUND ROD.
 2. #2 AWL INSULATED STRANDED COPPER CABLE IS ACCEPTABLE FOR INTERIOR GROUND BAR CONDUCTORS ON TOWER IMPROVEMENT SITE.
 3. 3/4" X 1/2" GROUND RING OF SOLID COPPER, STAINLESS STEEL OR COPPER CLAD HIGH STRENGTH STEEL.
 4. ANGLE IRON CONDUCTORS SHALL BE BURIED HYDROLY COPPER/CLAD HIGH GRADE CONDUCTOR SHALL BE CAP WELD OR OTHER APPROVED EXTERIOR WELDING SYSTEM FOR BONDING AS SPECIFIED.
 5. #12 OR APPROVED GROUNDING ELECTRIC (AWG), ALL EXTERIOR GROUND RODS SHALL BE UL APPROVED.
 6. SOLID COPPER PLATES OF MINIMUM 3/16"x4" SIZE AS SPECIFIED.
 7. HOLES OR COVERED EQUAL CONDUCTIVE METAL MATERIAL SHALL BE USED IN ALL MECHANICAL CONNECTIONS.
 8. #2 AWL STRANDED INSULATED (USED) FOR ALL INTERIOR EQUIPMENT GROUNDING.
 9. MECHANICAL FASTENERS (E.G. DOUBLE LINES, WELD BOLTS/FANGLS, CONNECTIONS) SHALL BE BRONZE, INCONEL, COPPER OR STAINLESS STEEL, AND HAVE SPACER BETWEEN CONDUCTOR AND CONNECTION.
 10. BOLTS, NUTS AND SCREWS USED TO FASTEN MECHANICAL CONNECTIONS SHALL BE STAINLESS STEEL WITH BARE TYPE STAINLESS STEEL LOCK WASHERS.
- 13.3.4.2 MASTER GROUND BAR (MGB):** THE PURPOSE OF THE MASTER GROUND BAR IS TO GROUND THE RADIO EQUIPMENT AND ALL OTHER METALLIC OBJECTS AROUND THE RADIO EQUIPMENT. IF AN WIRE IS NOT PROVIDED WITH THE RADIO EQUIPMENT, THE WIRE SHALL BE AS FOLLOWS. THE WIRE IS A COPPER BAR MEASURING 4" X 3/4" X 1/4" LOCATED AS CLOSE TO THE RADIO EQUIPMENT AS POSSIBLE. THE WIRE SHALL HAVE A HUMAN NUMBER OF (20) 3/4" HOLES, GROUND BAR SHALL BE SUPPORTED BY BRONZE BRACKETS WITH INSULATED SUPPORTS. (2) #2 WIRE SHALL BE MECHANICALLY ATTACHED (3-HOLE COMPRESSION LUG 3/4" HOLES, 1" CENTER TO CENTER SPACING) TO THE WIRE AND DOWN LEADS FROM THUNDER THROUGH CONDUIT TO THE GROUND RING. THIS CONDUCTOR SHALL BE KEPT SEPARATE AND ISOLATED WELD, TERMINATING AT THE MAIN GROUNDING POINT, (I.E. EXTERIOR GROUND RING OR BUILDING STEEL).
- 13.3.4.3 ANTENNA GROUND BAR (AGB):** THE PURPOSE OF THE ANTENNA GROUND BAR IS PRIMARILY FOR LIGHTNING PROTECTION. COAXIAL CABLE IS USUALLY THE ONLY FIBER GROUNDING TO THIS BAR. HOWEVER IT IS ACCEPTABLE TO BOND EXTERIOR CABLE TRAIL WIRE CLOSE POINTS AND CONTINUED WIRE MAKE BRIDGES TO THE BAR. THE BAR IS A COPPER BAR MEASURING 4" X 3/4" X 1/4". THERE SHALL BE TWO AGB, ONE LOCATED AT THE TOP OF THE TOWER AT THE START OF THE VERTICAL RUN OF COAX, THE OTHER AT THE BOTTOM OF THE VERTICAL RUN OF COAX BEFORE IT MAKES ITS TURN. IF THE TOWER IS OVER 50' TALL THERE SHALL BE A THIRD AND LOCATED AT THE BOTTOM OF THE TOWER. THE BAR SHALL HAVE A NUMBER OF (20) 3/4" HOLES, GROUND BAR SHALL BE SUPPORTED BY BRONZE BRACKETS WITH INSULATED STANDARDS. USE #2 AWL OR SOLID TYPED WIRE BY 3-HOLE SHORT BARREL COMPRESSION LUGS 3/4" HOLES, 1" CENTER TO CENTER SPACING. THIS CONDUCTOR SHALL BE KEPT SEPARATE AND ISOLATED WELD, TERMINATING AT THE MAIN GROUNDING POINT, (I.E. EXTERIOR GROUND RING, OR BUILDING STEEL).

- 13.3.4.4 SAME AMERICAN GROUND BAR:** THE PURPOSE OF THE SAME AMERICAN GROUND BAR IS FOR LIGHTNING PROTECTION. THE SAME AMERICAN GROUND BAR IS A BOLT OF 3" X 3/4" X 1/4" X 3/4" COPPER BAR. IT IS LOCATED ON THE WINDWARD SIDE SUPPORT CLOSEST TO THE EQUIPMENT. ONE FACE OF THE BAR SHALL HAVE A NUMBER OF (20) 3/4" HOLES. HOLES SHALL BE IN Pairs THAT ARE 1" CENTER TO CENTER. THE OTHER FACE SHALL HAVE 3/4" HOLES AS REQUIRED TO ATTACH AND GROUND COAXIAL SAME AMERICAN. THE GROUND BAR SHALL BE SUPPORTED BY BRONZE BRACKETS WITH INSULATED STANDARDS.
- 13.3.4.5 GROUNDING ROD AND GROUNDING BAR:** THE EXTERIOR GROUND ROD SHALL BE PLACED WITHIN THE RADIO EQUIPMENT AT A MINIMUM TWO (2) FEET FROM THE RADIO EQUIPMENT AT A DEPTH OF 2'-4" OR 4" BELOW THE FRONT LEG, HOWEVER IN DEEPER BORE SHALL BE DEPTEN TO A DEPTH SUCH THAT THE TOP OF THE ROD IS AT THE LEVEL OF THE GROUND RING CONDUCTOR. THE ROD SHALL BE PLACED UNIMPAIRED ABOVE THE BAR AT THE FOLLOWING LOCATIONS:
- BELOW THE AREA OF THE INTERNAL MASTER GROUND BAR FOR CONNECTION TO THE BAR.
 - BELOW THE UTILITY BACK FOR CONNECTION TO THE MAIN BUILDING COMMERCIAL POWER DISCONNECT.
 - BELOW THE CORNERS OF THE RADIO EQUIPMENT.
- AS REQUIRED TO ACHIEVE A RECOMMENDED SPACING OF TWENTY (20) FEET BETWEEN GROUND RODS ALONG THE MAIN PERIMETER.
- AS REQUIRED ALONG THE MAIN PERIMETER TO ACHIEVE 0 OHMS OR LESS RESISTANCE WHEN TESTED.

13.0 GROUNDING STANDARDS (CONTINUED):

- 13.3.4.6 TWO RODS LOCATED ON OPPOSITE SIDES AT EACH TOWER OR ON MONOPOLE:**
- ONE ROD LOCATED BETWEEN EACH END OF THE SAME MAKE BRIDGE OR CABLE TRAIL.
- ONE ROD LOCATED ADJACENT TO THE STAIRWAY ENTRANCE, AND IF SEPARATED BY MORE THAN TEN (10) FEET, ONE LOCATED ADJACENT TO THE PULP TRAIL.
- ONE ROD LOCATED AT THE BASE OF THE TOWER FOR THE TOWER.
- 13.3.4.7 TOWER GROUNDING:**
- ALL TOWER SHALL HAVE TWO GROUND RODS PERIMETER, ALL OTHER TOWER SHALL HAVE TWO GROUND RODS PLACED AT EACH TOWER END. EACH MONOPOLE OR TOWER LEG SHALL BE BONDING TO THE SYSTEM WAVE TO BE BARE TYPED SOLID COPPER CONDUCTORS. BURRY CONTACT THE CONNECTION TO ONE STRUCTURAL BARE PLATE OR LUGS OR EARS AS MAY BE PROVIDED. NO BURRY CONTACT SHALL BE MADE TO THE VERTICAL WALLS OF THE STRUCTURE. NEVER GROUND TO HOLLOW LUG MEMBERS.
- 13.3.4.8 ANTENNA GROUNDING:** EACH ANTENNA COAXIAL CABLE SHALL TYPICALLY BE GROUND AT THREE POINTS USING A WELD-BOND COAXIAL CABLE KIT FROM THE MANUFACTURER OF THE ANTENNA CABLE. A TYPICAL INSTALLATION SHALL BE AS FOLLOWS:
- THE FIRST GROUND POINT SHALL OCCUR AS NEAR AS POSSIBLE TO THE ANTENNA AS POSSIBLE, BELOW THE FIRST POINT THE COAX CABLE SHOULD BE BARE NUTRIAL TO THE TOWER. THIS GROUND SHALL TERMINATE DIRECT TO THE TOP AND, OR A TA, GROUND TO THE ANTENNA MOUNT.
- THE SECOND GROUND SHALL BE MADE AT THE BOTTOM OF THE VERTICAL RUN OF THE COAXIAL CABLE AS IT TURNS OUT AWAY FROM THE TOWER THROUGH THE RADIO EQUIPMENT. THIS GROUND SHALL BE TERMINATED AT THE TOWER. THE WIRE SHALL HAVE TWO (2) LEADS OF #2 AWL BARE TYPED SOLID COPPER WIRE, AND SHALL TERMINATE AT THE TOWER GROUND BAR. THIS WIRE SHALL BE GROUND IN PVC PIPE.
- THE THIRD GROUND SHALL BE ON THE SAME ANTERIOR. GROUND TO BE ATTACHED TO THE CABLE ON FRANT/ROCK. YELLOW BROWN, UNDERCOAT, CABLE TRAYS, ALUMINUM ANCHOR BOX, ETC.) SHALL BE GROUND WITH #2 AWL STRANDED (GROUNDED) GROUND WIRE WITH SERRATED LEADS BACK TO THE WIRE. (THE COAX TRAIL, DOOR/FRAME AND UNDERLAY MAY BE AMPERED TOGETHER AND HAVE A WIRE CONNECTION TO THE WIRE).
- 13.3.4.9 PERIMETER FENCE GROUNDING:**
- ALL FENCE CORNER AND END POSTS (CORNER OF TWO) SHALL HAVE ONE (1) SOLID TYPED COPPER GROUND WIRE CONNECTED TO A 3/4" X 1/2" SOLID COPPER GROUND ROD NEXT TO THE POST. THESE POSTS SHALL BE CONNECTED TO THE GROUND RING BY A SOLID TYPED COPPER GROUND WIRE AND INTERMEDIATE GROUND RODS IF THE DISTANCE FROM THE POST TO THE GROUND RING EXCEEDS 10 FEET. IN NO CASE SHALL ANY PORTION OF THE SAME FENCE REMAIN DISCONNECTED FROM THE GROUND RING.
- END POSTS SHALL BE GROUNDING TO EACH CORNER TO PREVENT THE EXTERIOR FENCE FROM ELECTRICAL CONTAMINATION. CONNECTIONS SHALL BE WELD AND TOP WIRE BURIED TYPE HOLES TO THE POST WITH A #2 AWL BARE SOLID TYPED COPPER WIRE.
- GATES SHALL BE BONDING TO GATE POSTS WITH A 1/2" BARE WIRE STRAP TYPE BONDING. THE CONNECTIONS SHALL BE BURRY 3-HOLE LUGS (3/4" HOLES, 1" CENTER TO CENTER) BOLTED THROUGH EACH POST.
- ALL DOWN LEADS TO EARTH SHALL BE GROUND IN 3/4" BORE PVC NON-METALLIC AND SEALED WITH BLOODE.
- 13.3.4.10 CONCRETE FULFILL THIS GROUNDING:**
- THE CONCRETE FULFILL THIS GROUNDING SHALL BE CONNECTED IN AT LEAST ONE PLACE TO THE MAIN EXTERIOR GROUND BAR. IF AWL BARE SOLID TYPED COPPER WIRE SHALL BE BURRY CONTACTED TO ONE SUPPORT LUG OF THE PULP TRAIL AND GROUND WELD TO THE NEAREST EXTERIOR GROUND BARE/UNDERCOAT ROD.
- 13.3.4.11 EQUIPMENT ROOM GROUNDING:**
- THE MASTER GROUND BAR (MGB) SERVES AS THE COLLECTION POINT FOR THE RADIO EQUIPMENT AS WELL AS ALL INTERIOR NON-ELECTRICAL GROUNDING METAL MATERIALS (PVC GRILLS, DOOR FRANT/ROCK, YELLOW BROWN, UNDERCOAT, CABLE TRAYS, ALUMINUM ANCHOR BOX, ETC.) SHALL BE GROUND WITH #2 AWL STRANDED (GROUNDED) GROUND WIRE WITH SERRATED LEADS BACK TO THE WIRE. (THE COAX TRAIL, DOOR/FRAME AND UNDERLAY MAY BE AMPERED TOGETHER AND HAVE A WIRE CONNECTION TO THE WIRE).
- 13.3.4.12 SHIELDING BARRIER:**
- SHIELDING BARRIER (SHIELDING BARRIER) SHALL BE GROUND TO THE MAIN GROUNDING POINT (I.E. EXTERIOR GROUND RING OR BUILDING STEEL).
- 13.3.4.13 GROUNDING POINT:**
- THE GROUNDING POINT SHALL BE GROUND TO THE MAIN GROUNDING POINT (I.E. EXTERIOR GROUND RING OR BUILDING STEEL).
- 13.3.4.14 COAX TRAIL / CABLE TRAIL GROUNDING:**
- THE COAX TRAIL OR CABLE TRAIL SHALL BE GROUND TO THE MAIN GROUNDING POINT (I.E. EXTERIOR GROUND RING OR BUILDING STEEL).

- 13.3.4.15 AWL AND BURRY CONNECTIONS:**
- AWL AND BURRY CONNECTIONS SHALL BE BARE ALL UNDERGROUND AND BARE ALL EXTERIOR. BURRY CONNECTIONS SHALL BE BARE ALL UNDERGROUND, PERMANENT AND HAVE FOUR BURRY CONNECTIONS. BURRY CONNECTIONS SHALL BE TYPICALLY USED TO BOND ALL INTERIOR EQUIPMENT, COAX CABLE BONDERS AND COAXIAL CABLE GROUND WIRE. ALL LUG TYPE BURRY CONNECTIONS TO THE AWL OR AWB SHALL BE TWO HOLE TYPE CONNECTIONS WITH STAINLESS STEEL BOLTS AND NUTS WITH STAINLESS STEEL LOCK WASHERS AND BROADEN ON OTHER SIDE OF THE BAR.
- 13.3.4.16 EXTERIOR GROUND RODS:**
- EXTERIOR GROUND RODS SHALL NOT BE INSTALLED ON GROUND RING INSTALLATIONS WITH NORMAL SOIL. EXTERIOR GROUND RODS SHALL BE INSTALLED ONLY FOR SPECIAL DESIGN APPLICATIONS THAT REQUIRE SINGLE POINT GROUNDING DUE TO SPECIAL SOIL CONDITIONS.
- 13.3.4.17 STRUCTURAL CONCRETE BARRIERS:**
- STRUCTURAL CONCRETE BARRIERS ARE MORE DIFFICULT TO GROUND PROPERLY. THE ANTENNAS SHOULD BE GROUND TO A SEPARATE BARE BAR AND DOWN LEADS WELD THE COAXIAL CABLES WITH THE BUILDING. THE DOWN LEAD SHOULD BE RUN IN A REGULAR FASHION AS IN THE STRUCTURAL STEEL EQUIPMENT ROOM. THE DOWN LEADS SHOULD BE PROTECTED IN CONDUIT AND SHOULD BE INSTALLED AS FAR AWAY AS IS PRACTICAL FROM EACH COVER. THE SEPARATE DOWN LEADS SHOULD NOT CONTACT EACH OTHER UNTIL CONNECTION WITH THE FIRST GROUND ROD.
- 13.3.4.18 LINES OF BARE WIRE:**
- IT IS IMPORTANT THAT THE GROUNDING CONDUCTOR CONNECTING THE INSIDE AND EXTERIOR GROUND SYSTEMS BE AS STRAIGHT AS POSSIBLE, WITH NO KINKS OR BENDS SHORTER THAN ONE FOOT RADII WITH A THREE FOOT RADIUS CURVATURE TO RIGHT ANGLES. A BUMP SHOULD BE ALLOWED.
- 13.3.4.19 BURRY CONNECTIONS:**
- ALL BURRY CONNECTIONS SHOULD BE MADE TO BONDING OF OTHER GROUND WELD OR BURRY CONNECTIONS. BURRY CONNECTIONS SHOULD BE MADE TO THE POINT OF EXPOSURE OF THE SURFACE BELOW POINT TO BE GROUNDING CONDUCTOR. FOR OTHER SURFACES INCLUDING COPPER BARS WITH ALL PAINT, BURRY TUBING AND GROUND SHALL BE BURRY POINT TO BONDING THE GROUNDING CONDUCTOR. BURRY POINTS SHALL BE FINISHED WITH THE APPLICATION OF OLD GALVANIZATION AND THEN APPLICABLE BURRY FINISH WITH AN APPROXIMATE COLOR AS REQUIRED. MECHANICAL TYPE BONDING ON BARE BARS SHALL BE FINISHED WITH THE APPLICATION OF BONDING OR OTHER APPROVED CONDUCTIVE METAL MATERIAL BETWEEN CONDUCTOR AND BARE BAR. MECHANICAL TYPE BONDING ON ALL OTHER SURFACES SHALL BE FINISHED WITH THE APPLICATION OF OLD GALVANIZATION AND/OR THE APPROPRIATE PAINT TO MATCH AS REQUIRED.
- 13.3.4.20 BURRY CONNECTIONS:**
- THE EXTERIOR GROUND RING SHALL BE TESTED AFTER INSTALLATION BUT PRIOR TO BACKFILLING THE GROUND RING TRENCH. THE GROUND FIELD RESISTANCE SHALL MEASURE 0 OHMS OR LESS TO THE EXTERIOR GROUND RING. THE RESISTANCE TO THE EXTERIOR GROUND RING SHALL BE MEASURED USING THE METHOD OF POTENTIAL VOLTAGE TESTING SHALL BE PERFORMED BY AN OTHER PROVED INSTRUMENT TECHNICAL LABORATORY FROM WHICH A WRITTEN REPORT SHALL BE PROVIDED FOR REVIEW BY THE PROJECT MANAGER.
- 13.3.4.21 BURRY CONNECTIONS:**
- BURRY CONNECTIONS SHALL BE NON-COMPARABLE GROUND BARS, SHALE, ETC.) THAT PREVENTS THE INSTALLATION OF THE STANDARD GROUNDING SYSTEM AND PROCEDURES, THEN NORMAL PROCEDURES SHALL BE RESTRICTED BY THE PM.
- 13.3.4.22 EXTERIOR GROUND RODS:**
- THE EXTERIOR GROUND RODS SHALL EXTEND TO THE MAXIMUM ALLOWABLE DEPTH IN NON COMPACTED SOIL.
- 13.3.4.23 GROUND ROD REPLACEMENT:**
- WHEN GROUND RODS CANNOT BE DRIVEN INTO THE SOIL VERTICALLY TO A DEPTH DESCRIBED IN PARAGRAPH 13.3.4.22 AND REMAIN IN BARE COMPACTED SOIL, THEN THE FOLLOWING METHOD OF SUBSTITUTION MAY BE USED. THESE ARE SUGGESTED METHODS ONLY, AND EACH CASE SHOULD BE REVIEWED BY THE PROJECT MANAGER. THE PURPOSE IS TO ACHIEVE THE LOWEST IMPEDANCE TO GROUND, IN ANY CASE, TO OR LESS THAN 5 OHMS.
- 13.3.4.24 SOIL WITH BARE SOIL CONDITIONS:**
- IF BARE SOIL WITH BARE SOIL CONDITIONS WHICH CONSIST OF SOIL OR SAND SOIL SOIL BELOW ABOUT THREE FEET OF COMPACTABLE SOIL, A COMBINATION OF METHODS MAY BE USED.
1. A COMBINATION OF BURRY GROUND RODS MAY BE USED WITH 3" SQUARE 1/4" COPPER PLATES. A NUMBER OF TWO PLATES SHOULD BE USED AND SHOULD REPLACE GROUND RODS ON AN EQUALWEIGHTY OF TWO GROUND RODS LEAVING PER COVER PLATE. THE COPPER PLATE SHOULD BE PLACED IN A MINIMUM 2" BENTONITE BASK AND COVERED WITH 3" OF BENTONITE FILL PRIOR TO BACKFILL.
 2. AN ACTIVE TYPE CHEMICAL ROD SYSTEM MAY BE USED. THIS IS AN EXPERIMENTAL ADJUDMENT AND SHOULD BE USED ONLY UNDER NECESSARY, DUE TO VARIATION. IN ALL CASES, THE STANDARD PRACTICES OUTLINED IN THIS DOCUMENT SHOULD BE FOLLOWED TO THE EXTENT THAT IS APPLICABLE, AND SHOULD BE MODIFIED AS TO THE QUANTITY OF GROUND RODS AND CONDUCTOR SIZE ONLY AS RECOMMENDED BY THE MANUFACTURER OF THE GROUND ROD SYSTEM.
 3. A SYSTEM INCLUDING CORRED SHAFTS, BENTONITE GROUND RODS ON A TYPICAL LAYOUT, WITH A BENTONITE (SLAY) BACKFILL. IN THIS CASE EACH GROUND ROD SHOULD BE TESTED INDIVIDUALLY, AND EACH ROD SHOULD HAVE AN ACCESS BOX PLACED FOR FUTURE TESTING.
- 13.3.4.25 BURRY CONNECTIONS:**
1. HIGH RESISTANCE PRESENT A UNIQUE PROBLEM IN GROUNDING. A FACILITY INSPECTOR SHOULD BE MADE INTO THE STRUCTURE OF THE BUILDING, AND AS TO THE POSSIBLE PRESENCE OF AN EXISTING LIGHTNING PROTECTION SYSTEM. IF ONE IS IN PLACE AND APPEARS ADEQUATE IN DESIGN, IT MAY BE NECESSARY TO CONNECT THE ANTENNA SYSTEM TO THE EXISTING SYSTEM WITH A TEST TO THE SYSTEM AFTER INSTALLATION TO ENSURE THAT IT HAS NOT CHANGED THE SYSTEM TO EXCEED 5 OHMS.
 2. STRUCTURAL STEEL BUILDINGS IF THE BUILDING IS BUILT OF STRUCTURAL STEEL, IT MAY BE POSSIBLE TO GROUND THE ANTENNAS TO THE BUILDING. IT IS PREFERRED TO GROUND THE ANTENNAS AND THE REST TO A BURRY CONNECTION POINT OF SPARE BURRY CONNECTIONS OF COMPACTABLE SOIL (20) AWL OR LARGER) COILING FROM GROUND BARS TO COLLECT THE GROUND BARS, AND RUN DOWN A BURRY CONNECTION ON STAINLESS STEEL TO A PLATE OF BURRY CONNECTION FROM GROUND BARS. HOWEVER PRACTICAL, THE BUILDING STEEL SHOULD BE BONDING TO THE GROUND RING WITH A BURRY LEAD TO THE GROUND RING FIELD.
 3. STRUCTURAL CONCRETE BUILDINGS ARE MORE DIFFICULT TO GROUND PROPERLY. THE ANTENNAS SHOULD BE GROUND TO A SEPARATE BARE BAR AND DOWN LEADS WELD THE COAXIAL CABLES WITH THE BUILDING. THE DOWN LEAD SHOULD BE RUN IN A REGULAR FASHION AS IN THE STRUCTURAL STEEL EQUIPMENT ROOM. THE DOWN LEADS SHOULD BE PROTECTED IN CONDUIT AND SHOULD BE INSTALLED AS FAR AWAY AS IS PRACTICAL FROM EACH COVER. THE SEPARATE DOWN LEADS SHOULD NOT CONTACT EACH OTHER UNTIL CONNECTION WITH THE FIRST GROUND ROD.

14.0 ELECTRICAL NOTES & STANDARDS

- 14.1 GENERAL:**
1. VERIFY THAT EVERY WIRE MUST BE INSTALLED IN CONDUIT, UNLESS NOTED OTHERWISE, OR AS APPROVED BY THE ENGINEER.
 2. UNLESS OTHERWISE SPECIFIED, ALL WIRING SHALL BE COPPER (OD) TYPE, SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
 3. ANTENNAS SHALL BE GROUND TO THE MAIN GROUNDING POINT (I.E. EXTERIOR GROUND RING OR BUILDING STEEL) AS APPROVED FOR THE INSTALLATION.
 4. ALL JOINTS AND CONNECTIONS SHALL BE PROTECTED AS REQUIRED TO FACILITATE INSTALLATION OF ANTENNAS AND WIRING. PROVIDE ANCHOR BOX AND PULL BOXES FOR CONDUIT BARS W/ MORE THAN (20) DEGREE OF BENDS.
 5. PROVIDE A COMPLETE RACEWAY AND WIRING INSTALLATION, PERMANENTLY AND EFFECTIVELY GROUNDING IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE AND LOCAL CODES.
 6. ALL STEEL CONDUIT SHALL BE BONDED AT BOTH ENDS WITH GROUNDING BUSHING.
- 14.2 GENERAL:**
- SEE DETAILS AND SCHEDULES ON BRACKETS AND SPECIFICATIONS FOR MEASUREMENTS OF APPROXIMATIONS AND ADDITIONAL REQUIREMENTS AND INFORMATION. CHECK ARCHITECTURAL, STRUCTURAL AND OTHER MECHANICAL AND ELECTRICAL DRAWINGS FOR SCALE, SPACE LIMITATIONS, COORDINATION, AND ADDITIONAL INFORMATION, ETC. REPORT ANY DISCREPANCIES, CONFLICTS, ETC. TO ENGINEER BEFORE SUBMITTING BIDD. ALL EQUIPMENT FURNISHED BY OTHERS (PRO) SHALL BE PROVIDED BY THE PROJECT MANAGER. THE ELECTRICAL CONTRACTOR SHALL INSTALL AND COMPLETELY WIRE ALL ASSOCIATED EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S WIRE SCHEDULES AND AS REQUIRED FOR A COMPLETE OPERATING INSTALLATION. ELECTRICAL CONTRACTOR SHALL VERIFY AND COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF (PRO) EQUIPMENT PRIOR TO REPAIR-OF OF CONDUIT AND WIRING TO AVOID CONFLICTS.
- 14.3 COORDINATION WITH UTILITY COMPANIES:**
1. THE ELECTRICAL CONTRACTOR SHALL COORDINATE COMPLETE ELECTRICAL SERVICE WITH LOCAL UTILITY COMPANY FOR A COMPLETE OPERATIONS SYSTEM, INCLUDING TRANSFORMER CONNECTIONS, CONDUCTOR TRANSFORMER PAGES IF REQUIRED, METER SCHEDULE, PRIMARY CABLE RACEWAY REQUIREMENTS, SECONDARY SERVICE, ETC. PRIOR TO SUBMITTING BID TO INCLUDE ALL LABOR AND MATERIALS. THE ELECTRICAL CONTRACTOR SHALL INCLUDE IN THE BID ANY SPECIAL OR EXCESS FACILITY CHARGES ASSOCIATED WITH PROVIDING ELECTRICAL SERVICE FROM LOCAL UTILITY COMPANY. VERIFY BEFORE BIDDING TO INCLUDE ALL COSTS.
 2. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE AVAILABLE FAULT CURRENT WITH THE LOCAL UTILITY COMPANY PRIOR TO SUBMITTING BIDD. ADJUST ALL RATINGS OF THE OPEN-CURRENT PROTECTION DEVICES IN DISTRIBUTION EQUIPMENT AS REQUIRED TO COORDINATE W/ AVAILABLE FAULT CURRENT FROM LOCAL UTILITY COMPANY. ALL GROUNDING RODS PROVIDED BY THE POWER OR TELEPHONE UTILITY COMPANIES MUST BE TIED INTO THE MAIN EXTERNAL GROUND RING.

Eco-Site
Urban Renewal Wireless
240 LEON FARM RD., SUITE 410
DURHAM, NC 27707

Urban Renewal Wireless
1423 CEDAR ROAD
HOUSTON, TX 77005

PLANS PREPARED BY
WT
W-T COMMUNICATION DESIGN GROUP, LLC.
WIRELESS INFRASTRUCTURE
8204 BELLEVUE RD., STE 325
IRVING, TX 75039
PH (214) 422-0202 FAX (214) 290-6444
www.wtengr.com

SHIBU PAPPACHAN
108803
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
LICENSE # 10880 4/11/2010
CORP/REG/07/07 1/1

DATE	DESCRIPTION	BY	REV
03/09/16	ISSUED FOR REVIEW	KCB	A
04/09/16	REVISED FOR REVIEW	KCB	B
04/11/16	FINAL ISSUE	KCB	B

SITE INFORMATION:
TX-0032
SIENNA PLANTATION
6941 THOMPSON FERRY RD.
MISSOURI CITY, TX 77479
1-309 NUMBER 110031

SHEET TITLE:
GENERAL NOTES
SHEET NUMBER:
GN-3
PLAT SCALE: 1/2" = 11' 11"

N 87°12'07" E 782.04'
FND
1" IP

LINE	BEARING	DISTANCE
L1	S 84°46'53" E	50.00'
L2	S 05°12'07" W	50.00'
L3	N 84°46'53" W	50.00'
L4	N 05°12'07" E	50.00'
L5	S 05°12'07" W	50.00'
L6	S 84°46'53" E	25.00'
L7	N 05°12'07" E	50.00'
L8	N 84°46'53" W	25.00'

NORTH
SCALE: 1" = 20'

- LEGEND
- BWF BARBWIRE FENCE
 - CD CENTER LINE OF DITCH
 - EA EDGE OF ASPHALT
 - EB EDGE OF BRUSH
 - EG EDGE OF GRAVEL
 - FND FOUND
 - IP IRON PIPE
 - IR IRON ROD
 - FBCDR FORT BEND COUNTY DEED RECORDS
 - FBCOPRRP FORT BEND COUNTY OFFICIAL PUBLIC RECORDS OF REAL PROPERTY
 - MB MAILBOX
 - OHP OVERHEAD POWER
 - POB POINT OF BEGINNING
 - POC POINT OF COMMENCING
 - PG PAGE
 - PP POWER POLE
 - "S" SET 5/8-INCH IRON ROD (WITH CAP STAMPED 'COTTON SURVEYING')
 - TB TOP OF BANK
 - TBM TEMPORARY BENCHMARK
 - TCM TELEPHONE CABLE MARKER
 - TPD TELEPHONE PEDESTAL
 - VOL VOLUME

POC
LESSEE'S LAND SPACE
LESSEE'S RIGHT-OF-WAY FOR
INGRESS / EGRESS
AND UTILITIES
FND 5/8" IR (W/ CAP STAMPED "RPLS 5206")

8.25 ACRES
TRACT G
TO FORT BEND
IMPROVEMENTS LTD
CF No. 951463 FBCDR

POB
LESSEE'S
RIGHT-OF-WAY FOR
INGRESS/EGRESS
AND UTILITIES

POB
LESSEE'S
LAND SPACE

LESSEE'S LAND SPACE
0.0574 ACRE

2,500 SQ. FT.
(SEE NOTE: 6)

LOT 12
OF THE FREEMAN
SUBDIVISION OF THE TINSLEY
1,000 ACRE TRACT
VOL D, PG 250 FORT BEND COUNTY
SURVEYORS RECORDS

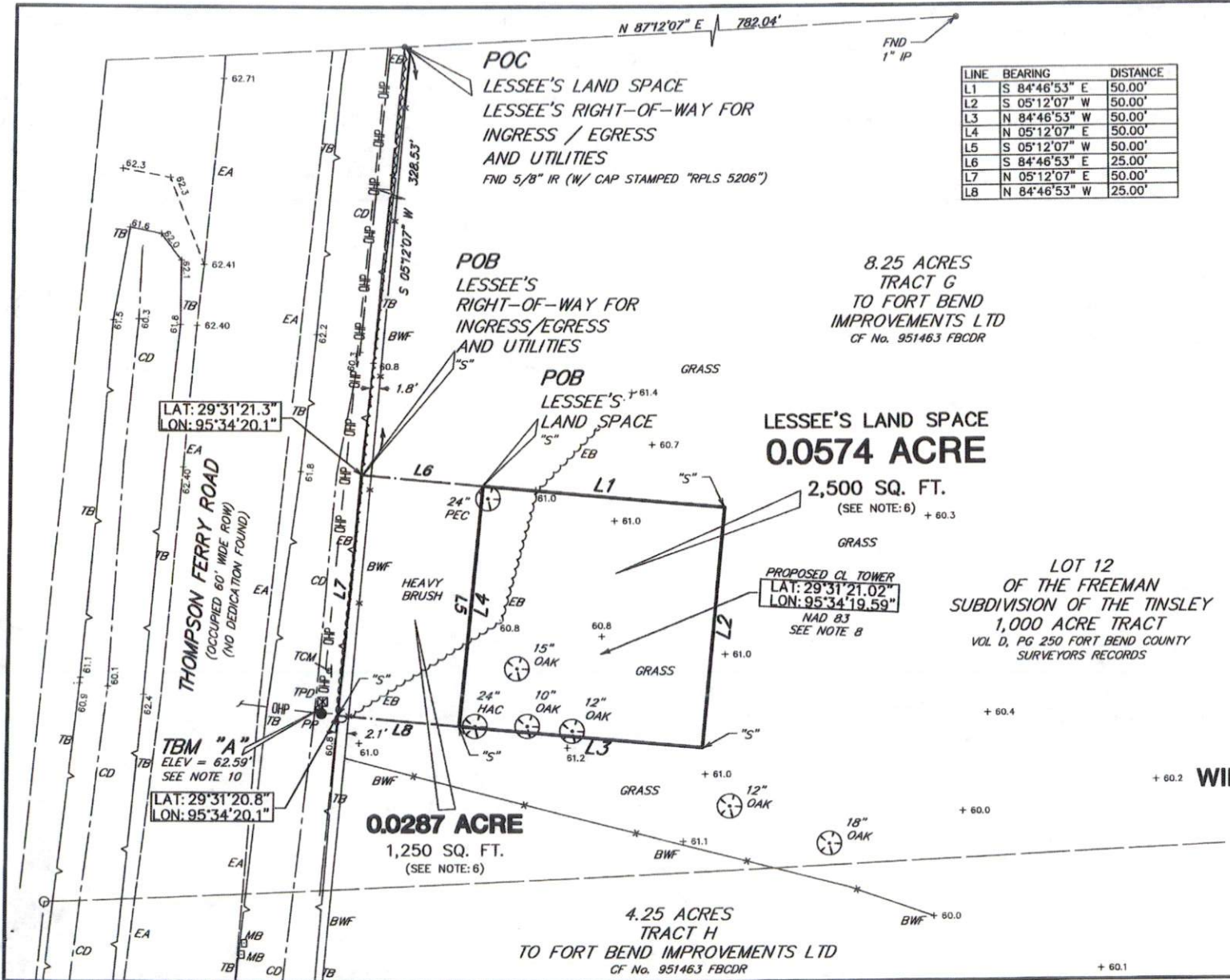
0.0287 ACRE
1,250 SQ. FT.
(SEE NOTE: 6)

4.25 ACRES
TRACT H
TO FORT BEND IMPROVEMENTS LTD
CF No. 951463 FBCDR

LAT: 29°31'21.3"
LON: 95°34'20.1"

PROPOSED CL TOWER
LAT: 29°31'21.02"
LON: 95°34'19.59"
NAD 83
SEE NOTE B

TBM "A"
ELEV = 62.59'
SEE NOTE 10
LAT: 29°31'20.8"
LON: 95°34'20.1"



LAND TITLE SURVEY
OF
SIENNA VILLAGE SITE
PROJECT NO. 20130888112
LOCATION CODE: 266516
WILLIAM LITTLE LEAGUE, A-54
FORT BEND COUNTY, TEXAS
APRIL 2015



COTTON SURVEYING COMPANY
6555 Guffton, Suite 103
Houston, Texas 77061-1189
Office (713) 981-0275
a Jones & Carter Company
Austin • Breham • Bryan • Dallas • Houston
Rosenberg • San Antonio • The Woodlands
Texas Board of Professional Land Surveying
Registration No. 100401-00

SHEET 1 OF 3
DWG. No. 9154

LESSEE'S LAND SPACE
0.0574 ACRE

STATE OF TEXAS §
COUNTY OF FORT BEND §

A METES & BOUNDS description of a certain 0.0574 acre tract of land situated in the William Little League, Abstract No. 54 on the East side of Brazos River, in Fort Bend County, Texas being out of Lot 12, of the Freeman Subdivision of the Tinsley 1,000 acre tract in said League, according to the Plat of said Subdivision recorded in Volume D, Page 250 of the Surveyor's Records of Fort Bend County, Texas, further described also by Warranty Deed with Vendor's Lien as a 8.25 acre tract "Tract G" conveyed to Fort Bend Improvement Limited recorded in Clerk's File No. 9514643 of the Fort Bend County Deed Records, said 0.0574 acre tract being more particularly described as follows with all bearings based on the Texas Coordinate System, South Central Zone, NAD 83;

COMMENCING at a 5/8-inch iron rod found in the north line of said 8.25 acre tract, also being in the east occupied right-of-way line of Thompson Ferry Road (no dedication found), from which a found 1-inch iron pipe bears North 87°12'07" East, 782.04 feet;

THENCE, South 05°12'07" West, along the occupied east right-of-way line of said Thompson Ferry Road, 328.53 feet to a set 5/8-inch iron rod (with cap stamped "Cotton Surveying") at the northwest corner of a proposed 0.0287 acre tract;

THENCE, South 84°46'53" East, 25.00 feet along the north line of proposed 0.0287 acre tract to a set 5/8-inch iron rod (with cap stamped "Cotton Surveying") at the northeast corner of proposed 0.0287 acre tract for the POINT OF BEGINNING of the herein described 0.0574 acre tract;

THENCE, South 84°46'53" East, 50.00 feet to a set 5/8-inch iron rod (with cap stamped "Cotton Surveying") for the northeast corner;

THENCE, South 05°12'07" West, 50.00 feet to a set 5/8-inch iron rod (with cap stamped "Cotton Surveying") for the southeast corner;

THENCE, North 84°46'53" West, 50.00 feet a set 5/8-inch iron rod (with cap stamped "Cotton Surveying") for the southwest corner, common with the southeast corner of a proposed 0.0287 acre tract;

THENCE, North 02°08'36" East, along the east line of proposed 0.0287 acre tract, 50.00 feet to the POINT OF BEGINNING, CONTAINING 0.0574 acre of land in Fort Bend County Texas as shown on Drawing No. 9154 in the offices of Cotton Surveying Company in Houston, Texas.

LESSEE'S RIGHT-OF-WAY FOR INGRESS/EGRESS AND UTILITIES
0.0287 OF AN ACRE

STATE OF TEXAS §
COUNTY OF FORT BEND §

A METES & BOUNDS description of a certain 0.0287 acre tract of land situated in the William Little League, Abstract No. 54 on the East side of Brazos River, in Fort Bend County, Texas being out of Lot 12, of the Freeman Subdivision of the Tinsley 1,000 acre tract in said League, according to the Plat of said Subdivision recorded in Volume D, Page 250 of the Surveyor's Records of Fort Bend County, Texas, further described also by Warranty Deed with Vendor's Lien as a 8.25 acre tract "Tract G" conveyed to Fort Bend Improvement Limited recorded in Clerk's File No. 9514643 of the Fort Bend County Deed Records, said 0.0287 acre tract being more particularly described as follows with all bearings based on the Texas Coordinate System, South Central Zone, NAD 83;

COMMENCING at a 5/8-inch iron rod found in the north line of said 8.25 acre tract, also being in the east occupied right-of-way line of Thompson Ferry Road (no dedication found), from which a found 1-inch iron pipe bears North 87°12'07" East, 782.04 feet;

THENCE, South 05°12'07" West, along the occupied east right-of-way line of said Thompson Ferry Road, 328.53 feet to a set 5/8-inch iron rod (with cap stamped "Cotton Surveying") for the POINT OF BEGINNING of the herein described 0.0287 acre tract;

THENCE, South 84°46'53" East, 25.00 feet to a set 5/8-inch iron rod (with cap stamped "Cotton Surveying") for the northeast corner, common with the northwest corner of a proposed 0.0574 acre tract;

THENCE, South 05°12'07" West, along the west line of proposed 0.0587 acre tract, 50.00 feet to a set 5/8-inch iron rod (with cap stamped "Cotton Surveying") for the southeast corner, common with the southwest corner of proposed 0.0574 acre tract;

THENCE, North 84°46'53" West, 25.00 feet a set 5/8-inch iron rod (with cap stamped "Cotton Surveying") for the southwest corner in the east right-of-way line of said Thompson Ferry Road;

THENCE, North 05°12'07" East, 50.00 feet along the occupied east line of said Thompson Ferry Road to the POINT OF BEGINNING, CONTAINING 0.0287 acre of land in Fort Bend County Texas as shown on Drawing No. 9154 in the offices of Cotton Surveying Company in Houston, Texas.

LAND TITLE SURVEY
OF
SIENNA VILLAGE SITE
PROJECT NO. 20130888112
LOCATION CODE: 266516
WILLIAM LITTLE LEAGUE, A-54
FORT BEND COUNTY, TEXAS



COTTON SURVEYING
COMPANY
9335 Duffon, Suite 103
Houston, Texas 77061-1160
Office (713) 981-0276

a Jones & Carter Company
Austin • Breham • Bryan • Dallas • Houston
Rosenberg • San Antonio • The Woodlands

Texas Board of Professional Land Surveying
Registration No. 100461-00

SHEET 2 OF 3

GENERAL NOTES:

- Reference on Report of Title No. 19990745 prepared by Fidelity National Title issued March 9, 2015. No additional research for easements or encumbrances was performed by Cotton Surveying Company.
- Bearings shown hereon are based on the Texas Coordinate System, South Central Zone, (NAD 83).
- This survey does not provide any determination concerning wetlands, fault lines, toxic waste or any other environmental issues. Such matters should be directed by the client or prospective purchaser to an expert consultant.
- According to Map No. 48157C0290L of the Federal Emergency Management Agency's Flood Insurance Rate Maps for Fort Bend County, Texas, dated April 2, 2014 the subject tract is situated within: Zone AE described as a Special Flood Hazard Areas subject to inundation by the 1% annual chance flood event (100-year flood) with base flood elevations determined.

The FEMA website (www.msc.fema.gov) was checked on March 5, 2015. At this time 3 LOMC were reported, 0 of which are located on the subject tract.

This flood statement does not imply that the property or structures thereon will be free from flooding or flood damage. On rare occasions floods can and will occur and flood heights may be increased by man-made or natural causes. This flood statement shall not create liability on the part of the surveyor.

- No research for Adjoiner Tracts was performed by U.S. Title Solutions.
- The square footage totals as shown hereon are based on the mathematical closure of the courses and distances reflected on this survey. It does not include the tolerances that may be present due to position accuracy of the boundary monuments shown hereon.
- The surveyor has not been provided with construction plans showing the location of underground utilities. Underground utilities may exist which are not shown hereon.
- Latitude, Longitude and Elevations were obtained with Global Positioning Satellite Equipment.
- Elevations shown hereon are based on National Geodetic Survey Monument Designation HGCS D 73, PID No. AW5464 having published information as follows:
Latitude 29°30'29.33" North
Longitude 095°30'35.94" West
NAD 83
Elevation 61.5 feet, NAVD 88
- Temporary Benchmark A being a set 100D Nail set in a Power Pole +/- 3 feet west of the southwest corner of the Lessee's Right-of-Way for Ingress/Egress and Utilities. Elevation=62.59 feet NAVD 88
- Temporary Benchmark B being a set 100D Nail set in a Power Pole northeast +/- 254 feet from the northwest corner of the Lessee's Right-of-Way for Ingress/Egress and Utilities. Elevation=62.85 feet NAVD 88
- This survey has been prepared for the sole purpose of the transaction described in the above referenced Title Commitment and the parties listed thereon. This survey is not to be used for any subsequent transactions.
- Visible Improvements/utilities were located with this survey; no subsurface probing, excavation or exploration was performed for this survey.
- A metes & bounds description of this tract is available in the offices of Cotton Surveying Company in Houston, Texas.
- Fences shown hereon are graphic only, with dimensional ties shown at specific locations where they were physically measured. The fence line may meander between said measured locations. The dimensions showing the distance between the fence and the property line also indicates which side of the property line the fence is on.

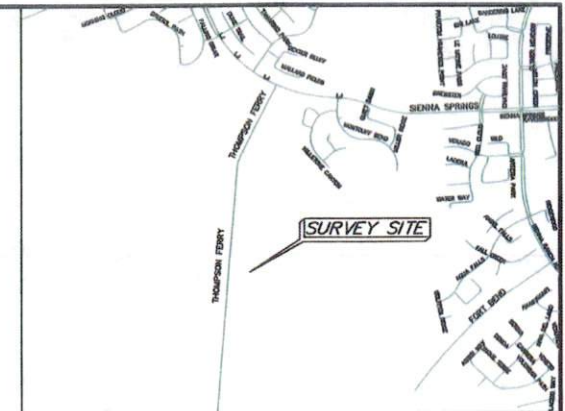
- Said Report of Title mentions a Surface Waiver Agreement recorded in Instrument No. 2006149514, supplemented by Instrument No. 2006160051 both of the Fort Bend County Official Public Records. (Said documents mention four Drill Sites and Access Strips to the sites, none of which affect the property)
- Said Report of Title mentions a Memorandum Of Lease recorded in Instrument No. 2007038781 of the Fort Bend County Official Public Records. (Said lease expired on January 3, 2015)
- Said Report of Title mentions a Pipeline Right-of-Way Agreement recorded in Instrument No. 2009074077 of the Fort Bend County Official Public Records. (Said easement is located to the southwest and does not affect the property.)
- Access to the site will be from the Thompson Ferry Road (No Dedication Document provided by said Report of Title) thence through the Lessee's Right-of-Way for Ingress/Egress and Utilities to the Lessee's Land Space.
- No building lines or building setbacks were mentioned or show by said Title Report or in the recorded documents provided by said Title Report
- The Lessee's Right-of-Way for Ingress/Egress and Utilities Space abuts Thompson Ferry Road. (No Dedication Document provided by said Report of Title) This statement is subject to the exercise of power of the governmental authority to limit, control or deny access, ingress or egress.

Subject to the General Notes shown hereon:

The undersigned hereby certifies unto Verizon Wireless and Pennington Law Firm, LLP, and Fidelity National Title that (a) this survey drawing is based upon an on-the-ground survey made by the undersigned on January 23, 2015 and as to matters of record relies upon the documents listed in the Report of Title No. 19990745, prepared by Fidelity National Title and certified through February 25, 2015, which includes, and is limited to, the Lessee's Land Space and the Lessee's Right of Way for Utilities, herein collectively termed, the 'Property', as shown and as described on this drawing (b) this survey accurately shows (1) the location of any buildings, structures and other improvements situated on or within the Property (2) the facts found by the undersigned at the time of said survey, (3) the courses and measured distances of the perimeter boundaries of the Property as described and shown on this survey, and (4) all setback lines, encroachments, easements and rights-of-way crossing, abutting or affecting the Property, as shown on the Abstractor's Certificate or otherwise known to or observed by the undersigned, along with any recording information for such setback lines, encroachments, easements and rights-of-way; (c) the area of the Property shown hereon is accurate to the nearest square foot, and there are no discrepancies, conflicts or shortages in area or boundary lines; (d) the field notes attached to this survey accurately state the courses and distances found in performing the on-the-ground survey; (e) the notes listed on the survey are true and correct (f) except as shown on the survey drawing, there are no (1) visible easements or rights-of-way across or abutting or affecting the Property (2) easements or rights-of-way across or abutting or affecting the Property of which the undersigned has been advised (3) visible encroachments from the Property onto an adjacent property or onto easements, streets, or alleys, by any of the building structures or other improvements, or (4) visible encroachments on the Property by buildings structures or other improvements situated on adjoining property; (g) Access to the Lessee's Land Space will be from Thompson Ferry Road thence through the Lessee's Right-of-Way for Ingress/Egress and Utilities to the Lessee's Land Space (h) this professional service conforms to (1) the scope of work as requested by Verizon Wireless on a site visit and (2) the current Texas Society of Professional Surveyors Standards and Specifications for a Category 1A, Condition 1 Survey.

Surveyed: January 23, 2015

Steven A. Jares
Registered Professional Land Surveyor
No. 5317
Sjares@jonescarter.com



LAND TITLE SURVEY
OF
SIENNA VILLAGE SITE
PROJECT NO. 20130888112
LOCATION CODE: 266516
WILLIAM LITTLE LEAGUE, A-54
FORT BEND COUNTY, TEXAS
APRIL 2015

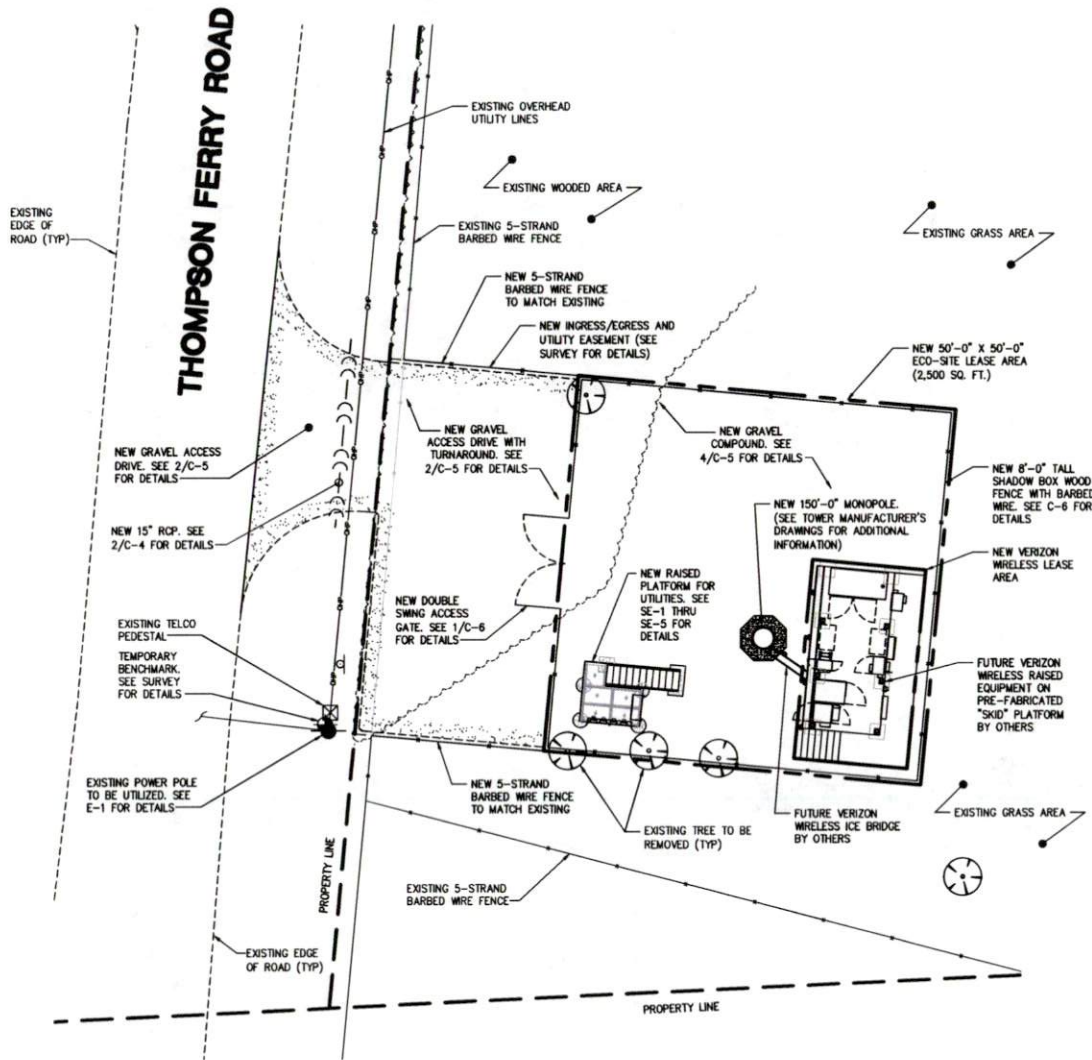


COTTON SURVEYING
COMPANY
6336 Gulton, Suite 103
Houston, Texas 77061-1169
Office (713) 861-0275

a Jones & Carter Company
Austin • Brenham • Bryan • Dallas • Houston
Rosenberg • San Antonio • The Woodlands

Texas Board of Professional Land Surveying
Registration No. 100401-00

SHEET 3 OF 3



IMPORTANT SITE NOTES:

1. GENERAL CONTRACTOR WILL NOT START CONSTRUCTION UNTIL AFTER THEY HAVE RECEIVED THE PRE-CON PACKAGE AND HAVE A PRE-CON WALK WITH THE PROJECT MANAGER.
2. GENERAL CONTRACTOR TO HIRE PUBLIC (811) AND PRIVATE GPR LOCATING SERVICE IN ORDER TO LOCATE AND PROTECT ALL SURFACE UTILITIES. DO NOT SCALE OFF THESE PLANS FOR ANY BELOW GRADE UTILITIES.
3. CONTRACTOR SHALL VERIFY ALL EXISTING BURIED AND OVERHEAD UTILITIES PRIOR TO EXCAVATION. CONTRACTOR SHALL REPAIR ALL DAMAGED UTILITIES AT HIS OWN COST AND COORDINATE ANY REPAIRS WITH RESPECTIVE UTILITY COMPANY.
4. CONTRACTOR TO VERIFY ALL HEIGHTS AND AZIMUTHS IN FIELD PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY CARRIER AND ENGINEERING FIRM OF ANY DISCREPANCIES BEFORE PROCEEDING.
5. CONTRACTOR SHALL RESTORE AND REPAIR ANY DAMAGED AREAS CAUSED BY CONSTRUCTION.
6. CONTRACTOR TO VERIFY UTILITIES WITH LOCAL UTILITY PROVIDERS PRIOR TO CONSTRUCTION.

NOTE:

W-T'S SCOPE OF WORK DOES NOT INCLUDE A STRUCTURAL EVALUATION OF THIS TOWER OR STRUCTURE. NEW ANTENNAS AND EQUIPMENT SHOWN ON THIS PLAN HAVE NOT BEEN EVALUATED TO VERIFY THE TOWER OR STRUCTURE HAS THE CAPACITY TO ADEQUATELY SUPPORT THESE ANTENNAS. PRIOR TO ANY ANTENNA OR EQUIPMENT INSTALLATION, A STRUCTURAL EVALUATION OF THE TOWER OR STRUCTURE, INCLUDING ALL ANTENNA MOUNTING SYSTEMS & HARDWARE SHALL BE PERFORMED.



OVERALL SITE PLAN
SCALE: 1/16"=1'-0" (1/8"=1'-0" ON 24"x36" SHEET) 1

Eco-Site
Urban Renewal Wireless
240 LEIGH FARM RD., SUITE 415
DURHAM, NC 27707

Verizon Wireless
1423 CICERO ROAD
HOUSTON, TX 77065

WT
W-T COMMUNICATION DESIGN GROUP, LLC.
WIRELESS INFRASTRUCTURE
8230 N. BELTLINE RD. SUITE 325
IRVING, TX 75063
PH: (214) 422-9222 FAX: (214) 290-6444
www.wtengineering.com
Texas Registration No. EC175616-000015
Copyright © 2011 W-T COMMUNICATION DESIGN GROUP, LLC.

SHIBU PAPPACHAN
108803
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
LICENSE # 108803 4/11/2016
EXP. 04/11/17

DATE	DESCRIPTION	BY	REV
03/08/16	ISSUED FOR REVIEW	KCB	A
04/08/16	REVISED FOR REVIEW	KCB	B
04/11/16	FINAL ISSUE	KCB	D

SITE INFORMATION:
TX-0032
SIENNA PLANTATION
6941 THOMPSON FERRY RD.
MISSOURI CITY, TX 77479
W-T JOB NUMBER: 1105031

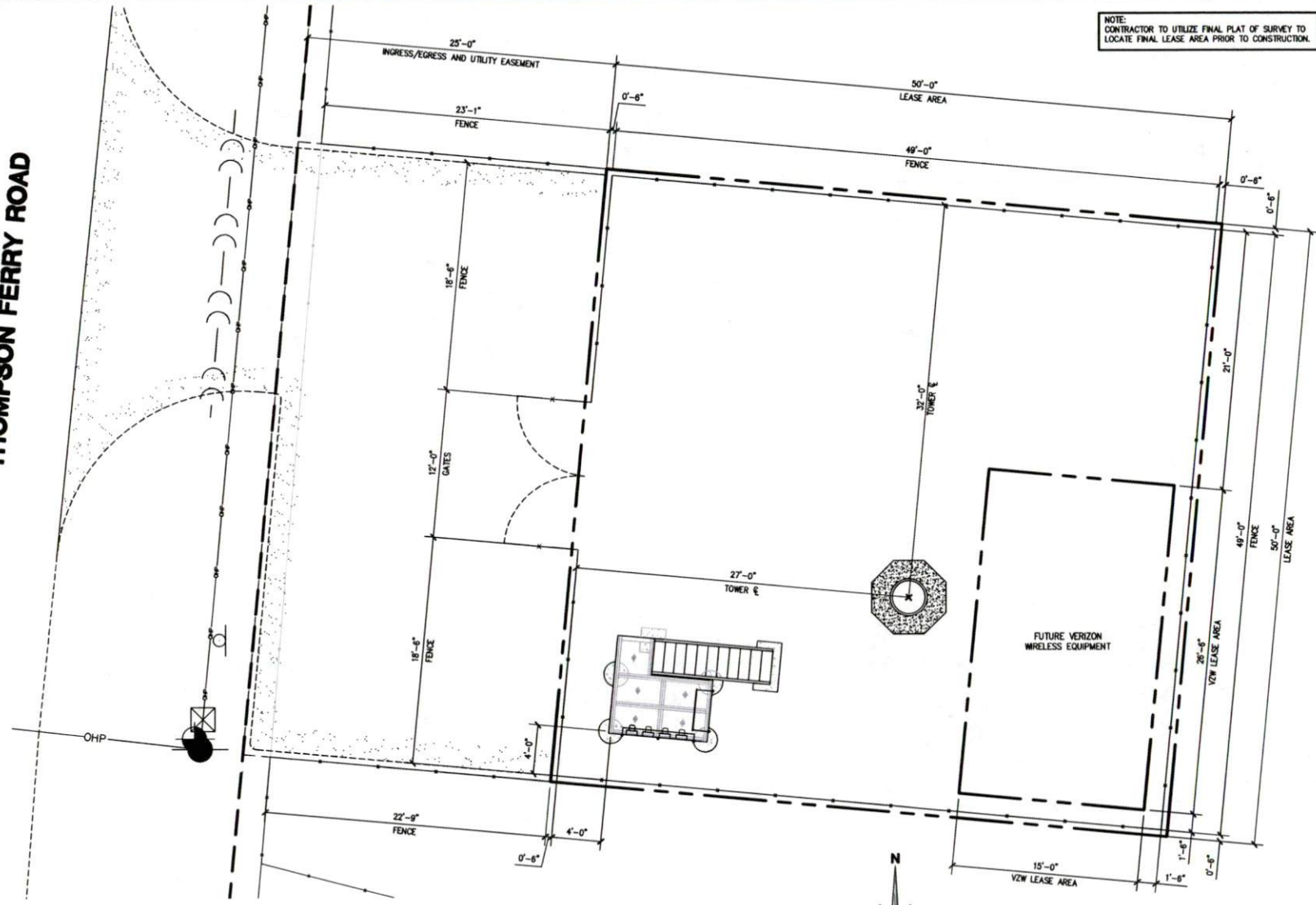
SHEET TITLE:
OVERALL SITE PLAN

SHEET NUMBER:
C-1

PLOT SCALE: 1/2" @ 11"x17"

THOMPSON FERRY ROAD

NOTE: CONTRACTOR TO UTILIZE FINAL PLAT OF SURVEY TO LOCATE FINAL LEASE AREA PRIOR TO CONSTRUCTION.



GEOMETRIC SITE PLAN
 SCALE: 1/8"=1'-0" (1/4"=1'-0" ON 24"x36" SHEET)

1

Eco-Site
 Urban Renewal Wireless
 240 LEIGH FARM RD., SUITE 415
 DALLAS, TX 75247

verizon wireless
 14123 OKERO ROAD
 HOUSTON, TX 77065

PLANS PREPARED BY:
W-T
W-T COMMUNICATION DESIGN GROUP, LLC.
 WIRELESS INFRASTRUCTURE
 6509 N. BELTLINE RD. STE. 100
 IRVING, TX 75038
 PH: (214) 432-9855 FAX: (214) 288-6444
 www.wtdesigngroup.com

SHIBU PAPPACHAN
 108803
 LICENSED PROFESSIONAL ENGINEER
 LICENSE # 108803 4/11/2016
 EXPIRES 04/11/2019

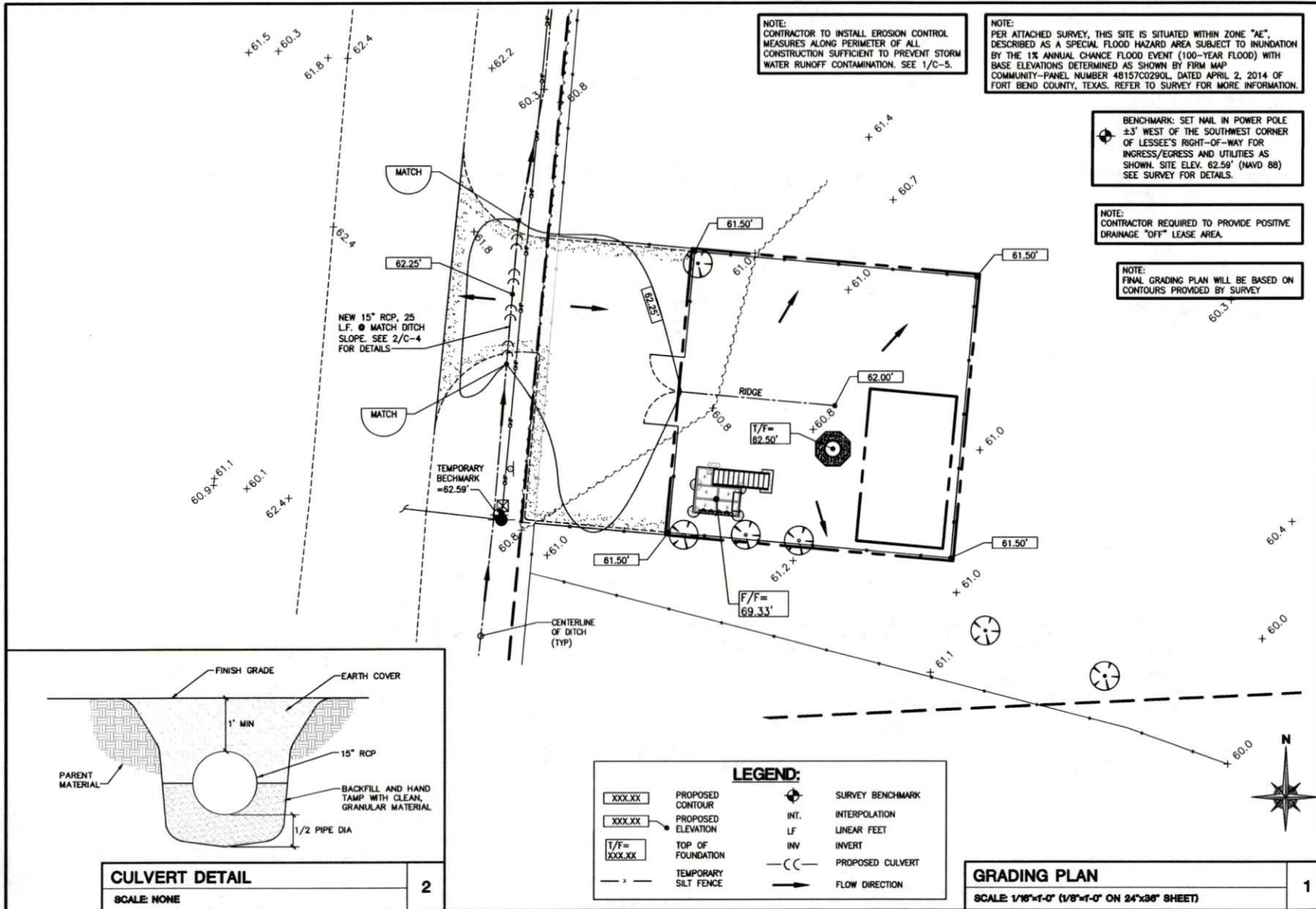
DATE	DESCRIPTION	BY	REV
03/08/16	ISSUED FOR REVIEW	KCB	A
04/08/16	REVISED FOR REVIEW	KCB	B
04/11/16	FINAL ISSUE	KCB	D

SITE INFORMATION:
TX-0032
SIENNA PLANTATION
 6941 THOMPSON FERRY RD.
 MISSOURI CITY, TX 77479
 W-T JOB NUMBER: T150327

SHEET TITLE:
GEOMETRIC SITE PLAN

SHEET NUMBER:
C-3

PLOT SCALE: 1/2" @ 11"X17"



Eco-Site
Urban Renewal Wireless
240 LEIGH FARM RD., SUITE 415
DURHAM, NC 27707

Verizon Wireless
14123 OJERO ROAD
HOUSTON, TX 77065

PLANS PREPARED BY:
W-T
W-T COMMUNICATION DESIGN GROUP, LLC
WIRELESS INFRASTRUCTURE
6200 N. BELTLINE RD. STE. 325
IRVING, TX 75063
PH (214) 422-5625 FAX (214) 290-6444
www.wt-design.com

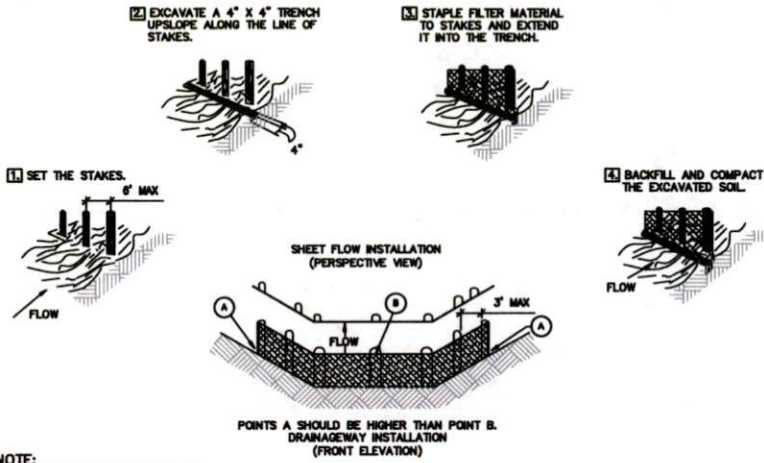
SEAL
SHIBU PAPPACHAN
108803
LICENSED PROFESSIONAL ENGINEER
EXPIRES 06/30/17
LICENSE # 108803 4/11/2016

DATE	DESCRIPTION	BY	REV
03/08/16	ISSUED FOR REVIEW	KCB	A
04/08/16	REVISED FOR REVIEW	KCB	B
04/11/16	FINAL ISSUE	KCB	D

SITE INFORMATION:
TX-0032
SIENNA PLANTATION
6941 THOMPSON FERRY RD.
MISSOURI CITY, TX 77479
W-T JOB NUMBER: T150531

SHEET TITLE:
GRADING PLAN

SHEET NUMBER:
C-4
PLOT SCALE: 1/2" = 11'17"

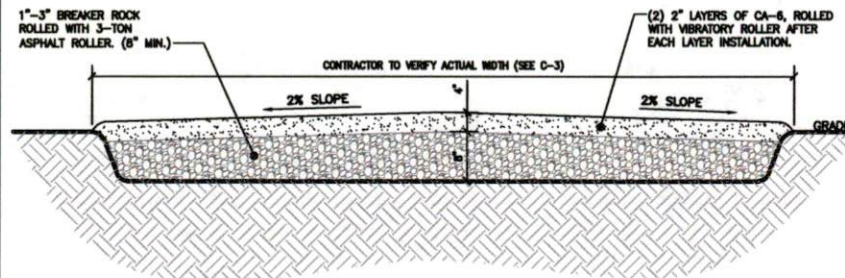


NOTE:
STRAW BALES SHALL BE PLACED IN A SINGLE ROW AND STAKED WITH MIN. 2 STAKES PER BALE. GAPS BETWEEN BALES SHALL BE CHINKED WITH STRAW. BACKFILL SOIL SHALL BE BUILT UP TO 4\"/>

SILT FENCE

SCALE: NONE

1



INSTALLATION PROCEDURE:

1. SUITABLE UNDISTURBED SUBGRADE, REMOVE ALL ORGANIC MATERIAL OR UNSUITABLE MATERIAL, COMPACT TO 90% (MIN.)
2. INSTALL 2\"/>

NOTE:
ALL SELECT GRANULAR FILL SHALL BE COMPACTED TO A 95% COMPACTION AT A MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557 OR WITHIN PLUS OR MINUS 3% OF OPTIMUM MOISTURE CONTENT.

NOTE:
CONTRACTOR SHALL BE RESPONSIBLE FOR CLEARING & GRUBBING THE CONSTRUCTION SITE AND ROADWAY AREAS WHERE APPLICABLE.

DRIVEWAY DETAIL

SCALE: NONE

2



TOWER ID:
SITE NAME:
E911 ADDRESS:
FCC#:



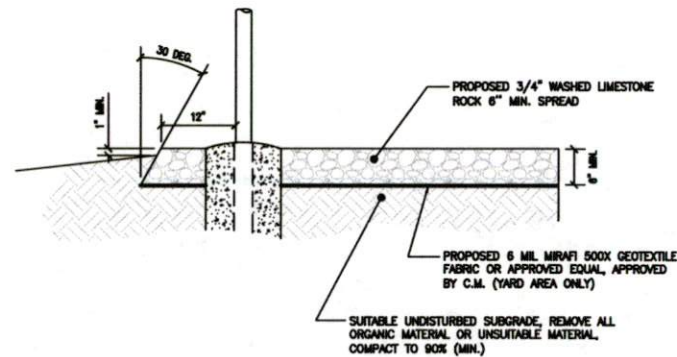
FOR TOWER LEASING INFORMATION &
EMERGENCY CONTACT
1-866-899-6191

NOTE:
GENERAL CONTRACTOR TO INSTALL SIGNS ON INSIDE OF FENCE FABRIC BEFORE QA WALK. PROJECT MANAGER WILL PROVIDE SIGNS.

RF SIGNAGE NOTES

SCALE: NONE

3



NOTE:
WEED CONTROL FABRIC SHALL BE USED UNDER ALL AREAS OF THE YARD, INCLUDING UNDER EQUIPMENT PAD/SHELTER.

NOTE:
GRAVEL TO BE SPREAD TO EDGE OF LEASE LINE OUTSIDE OF FENCED AREA.

COMPOUND GRAVEL DETAIL

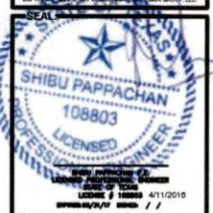
SCALE: NONE

4

Eco-Site
Urban Renewal Wireless
240 LEON FARM RD., SUITE 410
DURHAM, NC 27707

Vertical Wireless
1433 OGDEN ROAD
HOUSTON, TX 77065

PLANS PREPARED BY:
W-T
W-T COMMUNICATION
DESIGN GROUP, LLC.
WIRELESS INFRASTRUCTURE
8230 N. BELTLINE RD., STE. 325
IRVING, TX 75063
PH: (214) 422-5625 FAX: (214) 293-6444
www.wtdesigngroup.com



DATE	DESCRIPTION	BY	REV
03/08/16	ISSUED FOR REVIEW	KCB	A
04/08/16	REVISED FOR REVIEW	KCB	B
04/11/16	FINAL ISSUE	KCB	C

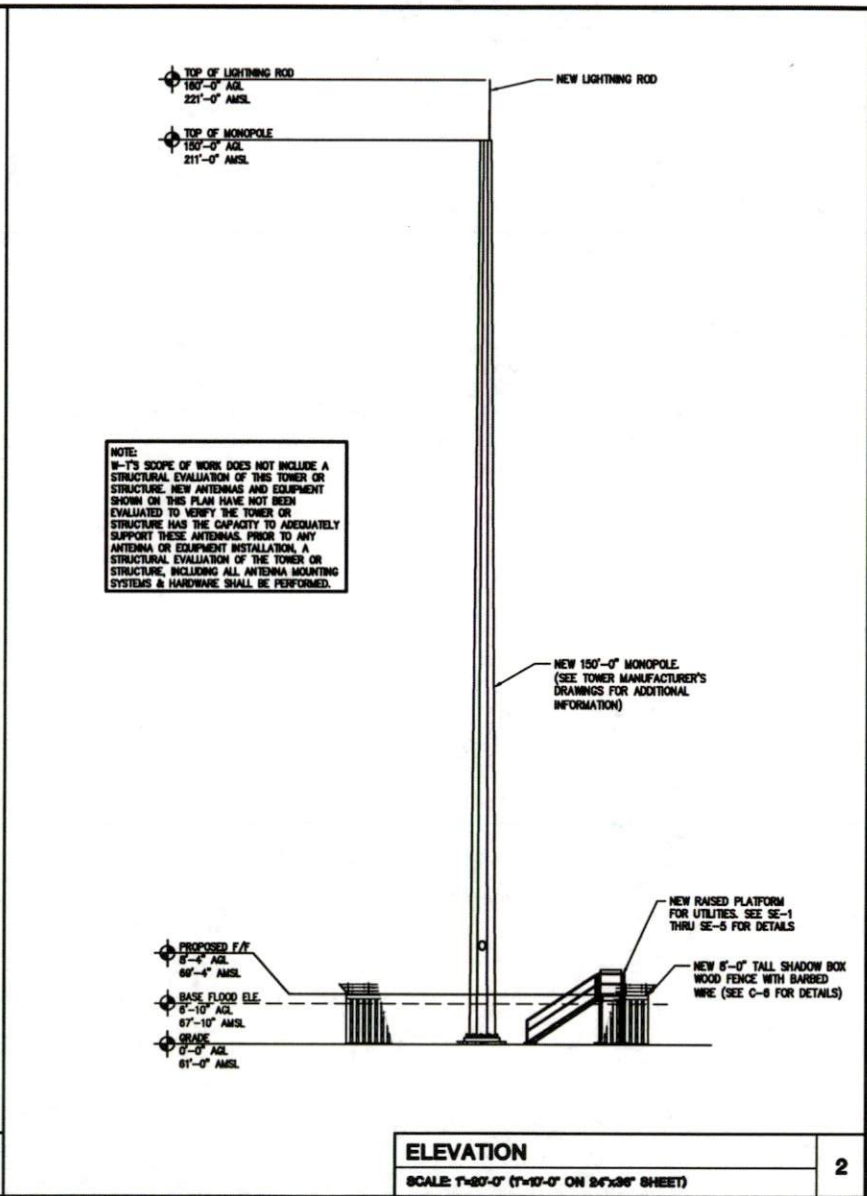
SITE INFORMATION:
TX-0032
SIENNA
PLANTATION
6941 THOMPSON FERRY RD.
MISSOURI CITY, TX 77479
W-T JOB NUMBER: T150021

SHEET TITLE:
SITE DETAILS

SHEET NUMBER:
C-5

PLOT SCALE: 1/2" = 11'x17'

	<p>NOT USED</p> <p>SCALE NONE</p> <p style="text-align: center;">1</p>
--	--



Eco-Site
 Urban Renewal Wireless
 240 LEIGH FARM RD., SUITE 410
 DURHAM, NC 27707

Verizon Wireless
 14123 CEDENO ROAD
 HOUSTON, TX 77060

PLANS PREPARED BY:
W-T
W-T COMMUNICATION DESIGN GROUP, LLC.
 WIRELESS INFRASTRUCTURE
 6220 N. BELTLINE RD., STE. 520
 IRVING, TX 75061
 PH: (214) 422-5625 FAX: (214) 293-5444
 www.wtdesigngroup.com

SEAL
 SHIBU PAPPACHAN
 108803
 LICENSED PROFESSIONAL ENGINEER
 LICENSE # 108803 4/11/2010
 STATE OF TEXAS
 www.tps.org/ty/ty.shtml

DATE	DESCRIPTION	BY	REV
03/09/16	ISSUED FOR REVIEW	KCB	A
04/09/16	REVISED FOR REVIEW	KCB	B
04/11/16	FINAL ISSUE	KCB	C

SITE INFORMATION:
TX-0032
SIENNA PLANTATION
 6941 THOMPSON FERRY RD.
 MISSOURI CITY, TX 77479
 W-T JOB NUMBER: 1100531

SHEET TITLE:
ELEVATION

SHEET NUMBER:
A-1

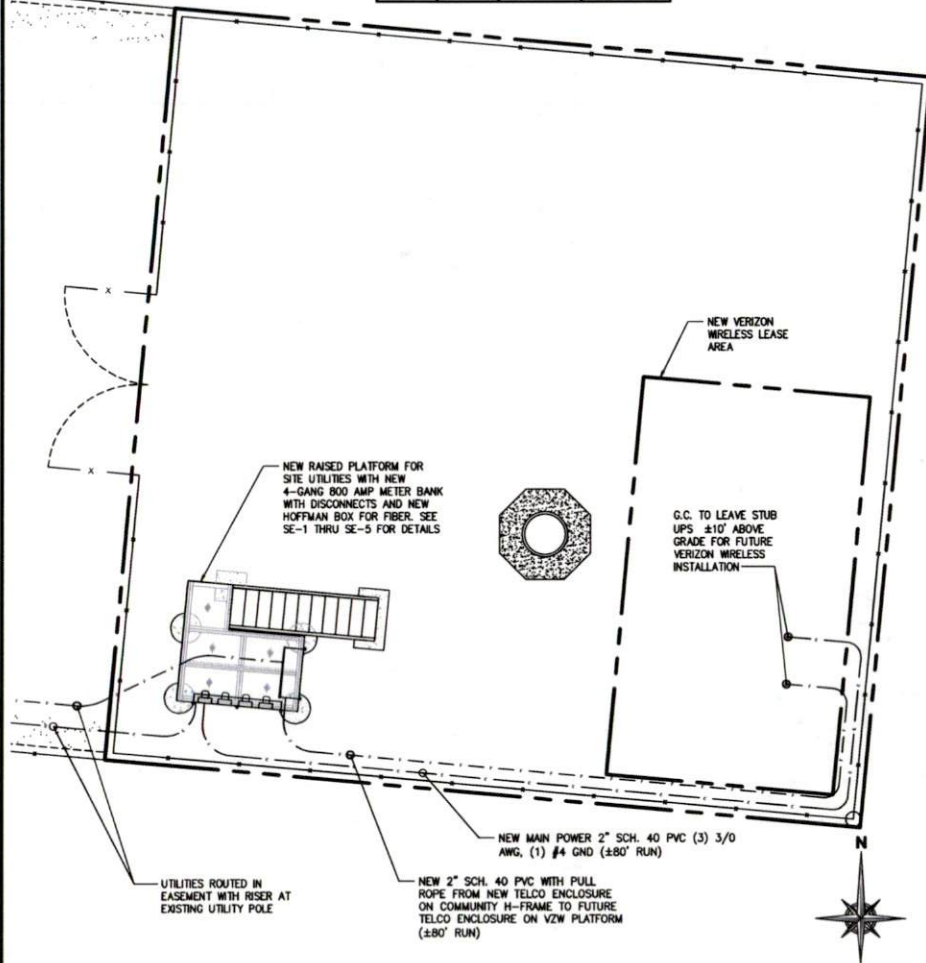
PLOT SCALE: 1/2" = 10'-0"

NOTE:
CONTRACTOR TO UTILIZE RIGID CONDUIT FOR ALL
ABOVE-GRADE CONDUIT ROUTES AND RISERS.

VOLTAGE DROP FROM METER TO VZW (PPG)			
LENGTH OF RUN	WIRE SIZE	VOLTAGE DROP (VOLTS)	PERCENTAGE OF VOLTAGE
80'	(3) 3/0	1.98V	0.63%

LEGEND

— F — FIBER LINE
— E — ELECTRIC LINE



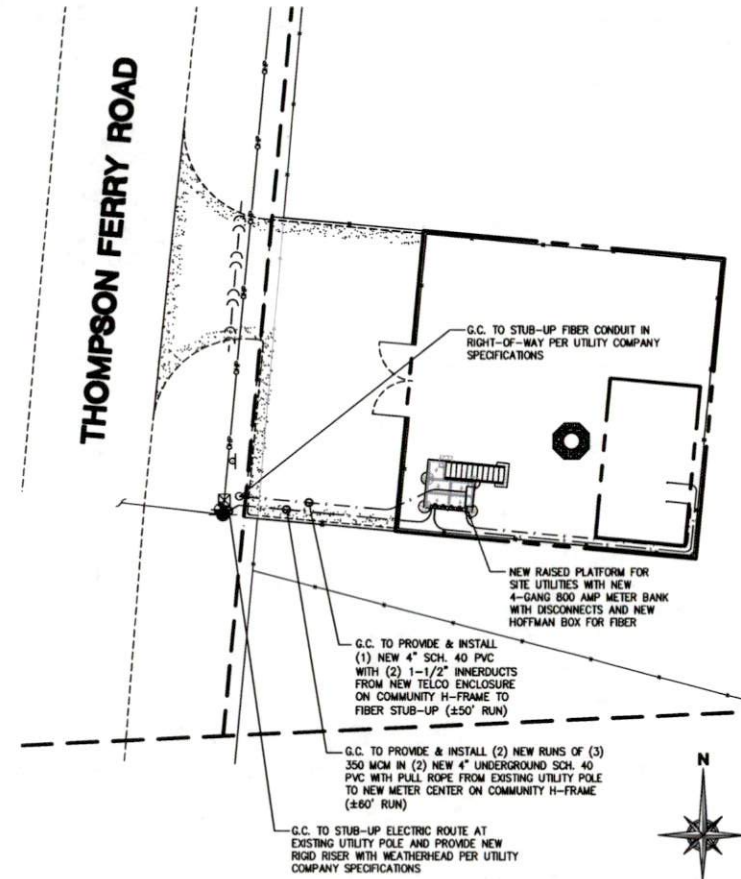
ENLARGED UTILITY PLAN

SCALE: 1/4"=1'-0" (1/2"=1'-0" ON 24"x36" SHEET)

1

VOLTAGE DROP FROM POWER SOURCE TO METER BANK			
LENGTH OF RUN	WIRE SIZE	VOLTAGE DROP (VOLTS)	PERCENTAGE OF VOLTAGE
60'	2 RUNS OF (3) 350MCM	1.55V	0.64%

NOTE:
CONTRACTOR TO VERIFY UTILITIES W/ LOCAL UTILITY
PRIOR TO INSTALLATION.



OVERALL UTILITY PLAN

SCALE: 1"=10'-0" (1"=5'-0" ON 24"x36" SHEET)

2



Know what's below.
Call before you dig.

Eco-Site
Urban Renewal, Wireless
240 LEIGH FARM RD., SUITE 415
DURHAM, NC 27707

Verizon Wireless
14123 OGERO ROAD
HOUSTON, TX 77065

PLANS PREPARED BY:
W-T
**W-T COMMUNICATION
DESIGN GROUP, LLC.**
WIRELESS INFRASTRUCTURE
6200 N. BELTLINE RD., STE. 325
IRVING, TX 75063
PH (214) 422-5425 FAX (214) 293-6444
www.wtdesigngroup.com

SEAL
SHIBU PAPPACHAN
108803
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
LICENSE # 108803 4/11/2016
EXPIRES 05/31/17

DATE	DESCRIPTION	BY	REV
03/08/16	ISSUED FOR REVIEW	KCB	A
04/08/16	REVISION FOR REVIEW	KCB	B
04/11/16	FINAL ISSUE	KCB	D

SITE INFORMATION:
TX-0032
**SIENNA
PLANTATION**
6941 THOMPSON FERRY RD.
MISSOURI CITY, TX 77479
W-T JOB NUMBER: 1150531

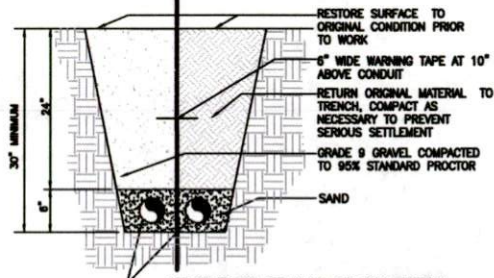
SHEET TITLE:
UTILITY PLANS

SHEET NUMBER:
E-1

PLOT SCALE: 1/2" = 10'-0"

USE THIS SECTION UNDER PAVEMENT OR VEHICLE TRAFFIC AREA

USE THIS SECTION UNDER GRASS OR LAWN AREA

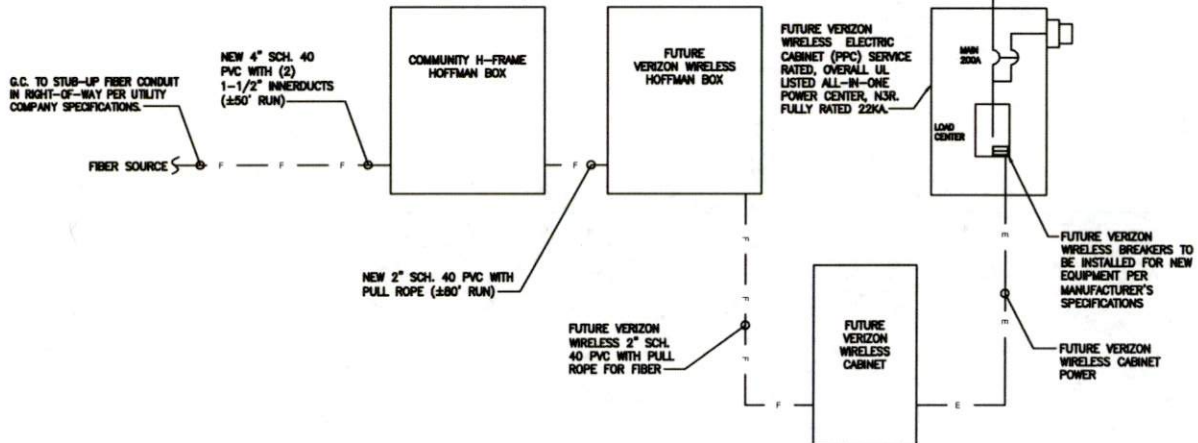


SEE UTILITY AND SITE PLANS FOR NEW ELECTRICAL AND TELEPHONE SERVICES. PROVIDE APPROVED PULL BOXES AS REQUIRED AND COORDINATE INSTALLATION WITH ALL UTILITY COMPANIES FOR INTERFACING AT TERMINATION POINTS. PROVIDE FULL LENGTH MULE TAPE (TYP)

BURIED CONDUIT DETAIL

SCALE: NONE

2



ELECTRIC AND TELCO ONE-LINE

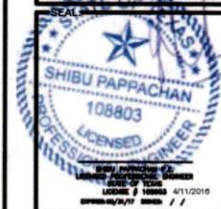
SCALE: NONE

1

Eco-Site
Urban Renewal Wireless
240 LEDH FARM RD., SUITE 410
DURHAM, NC 27707

Verizon Wireless
1433 CEDAR ROAD
HOUSTON, TX 77065

PLANS PREPARED BY:
W-T
W-T COMMUNICATION DESIGN GROUP LLC
WIRELESS INFRASTRUCTURE
8200 N. BELTLINE RD. STE. 325
IRVING, TX 75063
PH (214) 422-5625 FAX (214) 282-8444
www.wtdesigngroup.com
Copyright © 2010 W-T COMMUNICATION DESIGN GROUP LLC



DATE	DESCRIPTION	BY	REV
03/09/10	ISSUED FOR REVIEW	KCB	A
04/06/10	REVIEWED FOR REVIEW	KCB	B
04/11/10	FINAL ISSUE	KCB	C

SITE INFORMATION:
TX-0032
SIENNA PLANTATION
6941 THOMPSON FERRY RD.
MISSOURI CITY, TX 77479
E-T JOB NUMBER T10032

SHEET TITLE:
UTILITY DETAILS

SHEET NUMBER:
E-2

PLOT SCALE: 1/2" = 1'-0"



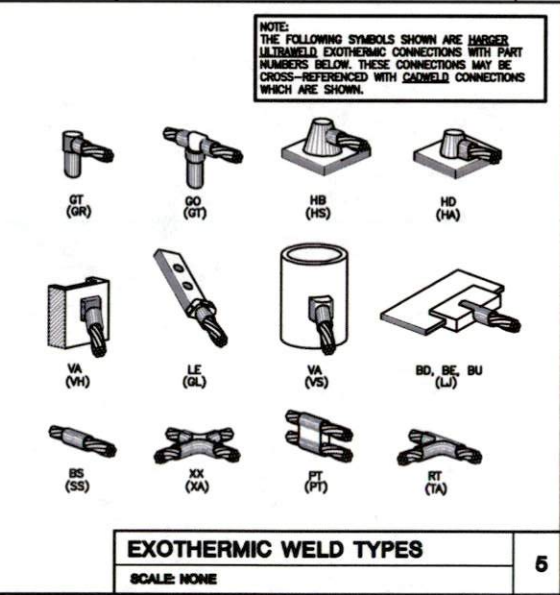
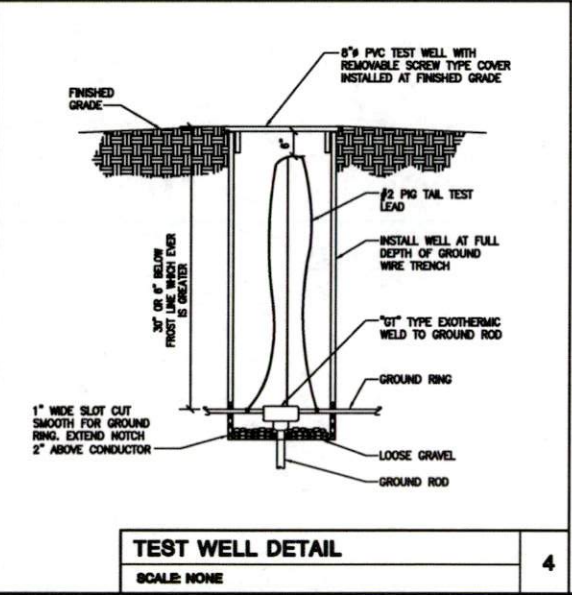
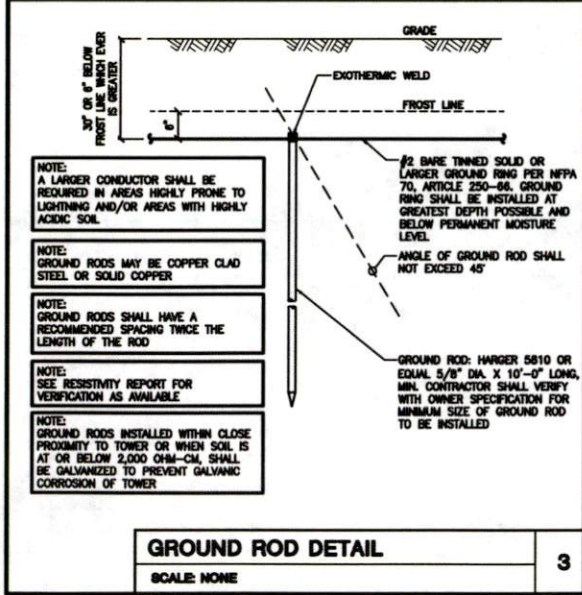
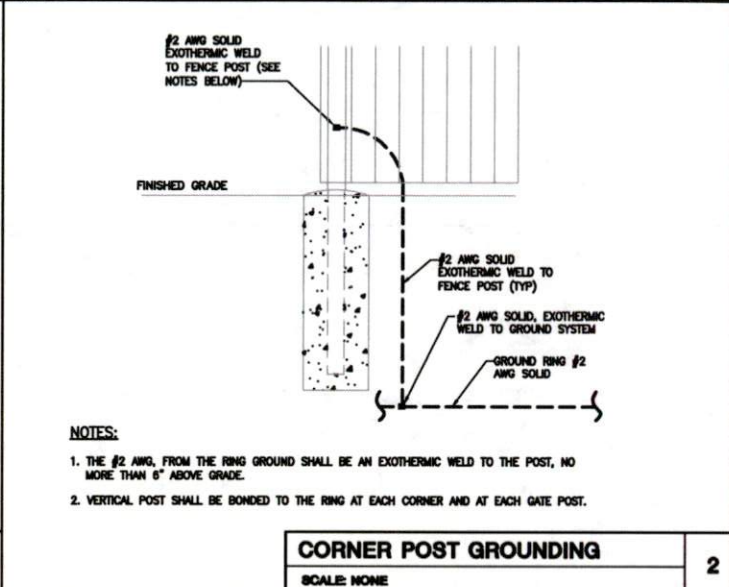
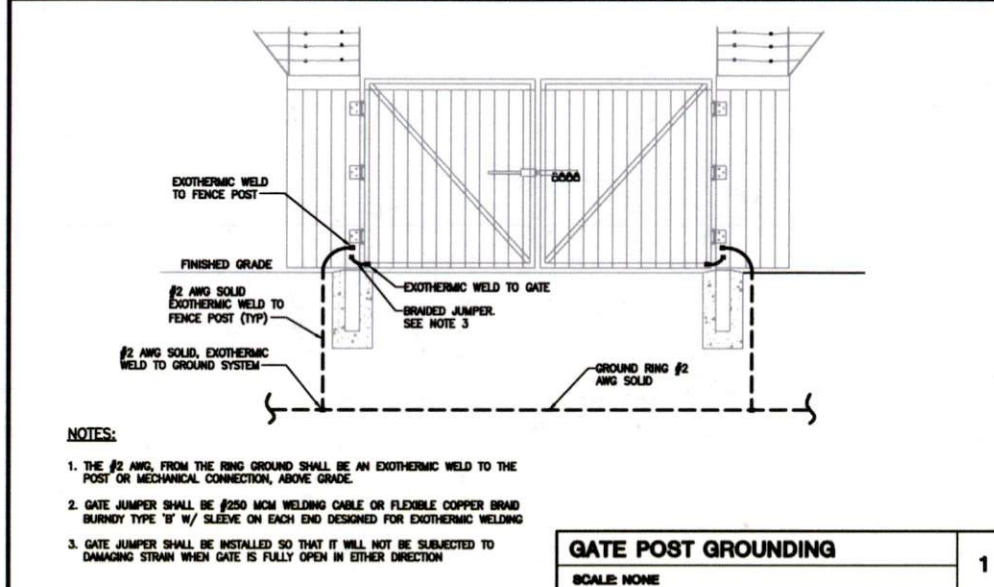
DATE	DESCRIPTION	BY	REV
03/09/16	ISSUED FOR REVIEW	KCB	A
04/09/16	REVIEWED FOR REVIEW	KCB	B
04/11/16	FINAL ISSUE	KCB	D

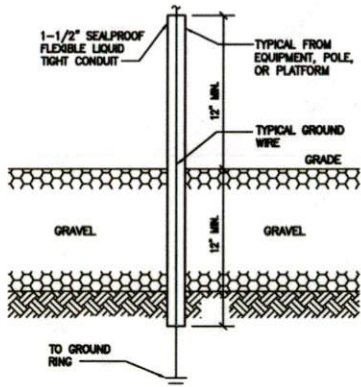
SITE INFORMATION:
TX-0032
SIENNA PLANTATION
6941 THOMPSON FERRY RD.
MISSOURI CITY, TX 77479
E-T JOB NUMBERS 1100031

SHEET TITLE:
GROUNDING DETAILS

SHEET NUMBER:
GR-2

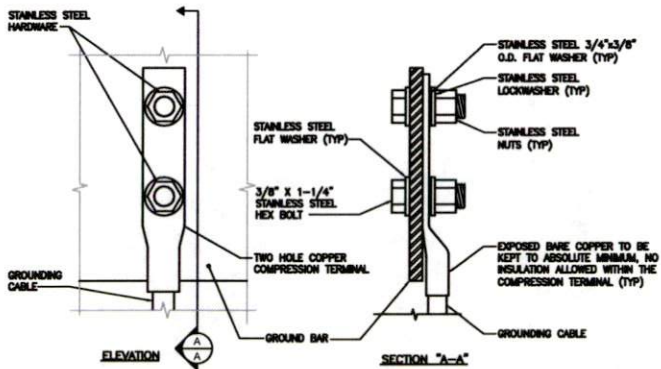
PLOT SCALE: 1/2" = 11'-0"





GROUND WIRE SLEEVE
SCALE: NONE

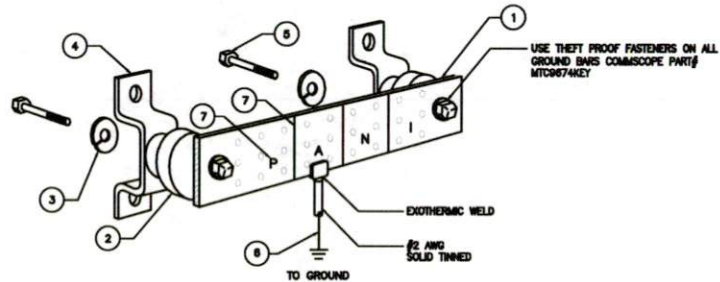
1



1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS
2. NO CRIMPING OF SOLID #2. USE EXOTHERMIC WELD ONLY

GROUND BAR CONNECTION DETAIL
SCALE: NONE

2



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

SECTION "P" - SURGE PRODUCERS

- COLLECTOR GROUND BAR
- GENERATOR FRAMEWORK (IF AVAILABLE)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND
- FIBER GROUND BAR
- EQUIPMENT ROOM COLLECTOR GROUND BAR
- HVAC
- RECTIFIER FRAMES

SECTION "A" - SURGE ABSORBERS

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

SECTION "C" - NON-ISOLATED GROUND ZONE EQUIPMENT

- MISCELLANEOUS NON-ISOLATED GROUND ZONE EQUIPMENT
- CABLE TRAY SYSTEM
- EQUIPMENT FRAMES
- BATTERY RACKS
- DC POWER

SECTION "I" - ISOLATED GROUND ZONE

- ISOLATED EQUIPMENT FRAMES
- ISOLATED GROUND BAR - IGB

- NOTES:**
- EXTERIOR GROUND BARS TO BE TIN PLATED
 - HARDWARE SHALL BE STAINLESS STEEL
 - CONTRACTOR SHALL GROUP INCOMING WIRES
 - CONTRACTOR TO APPLY 'NOPS-SHIELD' TO ALL CONNECTIONS

KEY NOTES:

1.	1/4" THK ELECTRICAL THINNED GROUND BAR HANGER OR APPROVED EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
2.	INSULATORS (UNLESS NOTED OTHERWISE)
3.	3/8" STAINLESS STEEL LOCKWASHERS
4.	WALL MOUNTING BRACKET
5.	3/8" STAINLESS STEEL HALF BOLTS
6.	EXOTHERMICALLY WELD #2 AWG BARE THINNED SOLID COPPER CONDUCTOR TO GROUND BARE ROUTE CONDUCTOR TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD
7.	CONTRACTOR SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "C", "I") WITH 1" HIGH LETTERS

GROUND BAR DETAIL
SCALE: NONE

3

Eco-Site
Urban Renewal Wireless
240 LICH FARM RD, SUITE 416
DURHAM, NC 27707

Verizon Wireless
1423 OCEANO ROAD
HOUSTON, TX 77065

PLANS PREPARED BY:
WT
W-T COMMUNICATION DESIGN GROUP, LLC
WIRELESS INFRASTRUCTURE
6200 N. BELTLINE RD, STE. 325
IRVING, TX 75039
PH: (214) 422-5625 FAX: (214) 292-6444
www.wt-design.com

SHIBU PAPPACHAN
108803
LICENSED PROFESSIONAL ENGINEER
4/11/2016

DATE	DESCRIPTION	BY	REV
03/06/16	ISSUED FOR REVIEW	KCB	A
04/06/16	REVISED FOR REVIEW	KCB	B
04/11/16	FINAL ISSUE	KCB	C

SITE INFORMATION:
TX-0032
SIENNA PLANTATION
6941 THOMPSON FERRY RD.
MISSOURI CITY, TX 77479
S-T JOB NUMBER: T50037

SHEET TITLE:
GROUNDING DETAILS

SHEET NUMBER:
GR-3

PLOT SCALE: 1/2" = 1'-0"



General Telecom Inc.

1000 Powder Plant Road

Bessemer, AL 35022

To Whom It May Concern:

This Letter is in reference to the required Performance Bond for the location outlined below. We are in need of a Culvert Permit for a Tower Construction project in Fort Bend County.

Company Name - Eco-Site

Company Contact - Chad Curry (601-416-4341)

Location Property Address - 6941 Thompson Ferry Road, Missouri City, TX 77479

Location Name - Sienna Plantation

Sub Contractor - General Telecom Inc.

Sub Contractor Contact - Dean Fallon (205-960-0513)

Thank You,

A handwritten signature in black ink, appearing to read "Rob Holston", is written over a solid black horizontal line.

Rob Holston

205-428-8455