

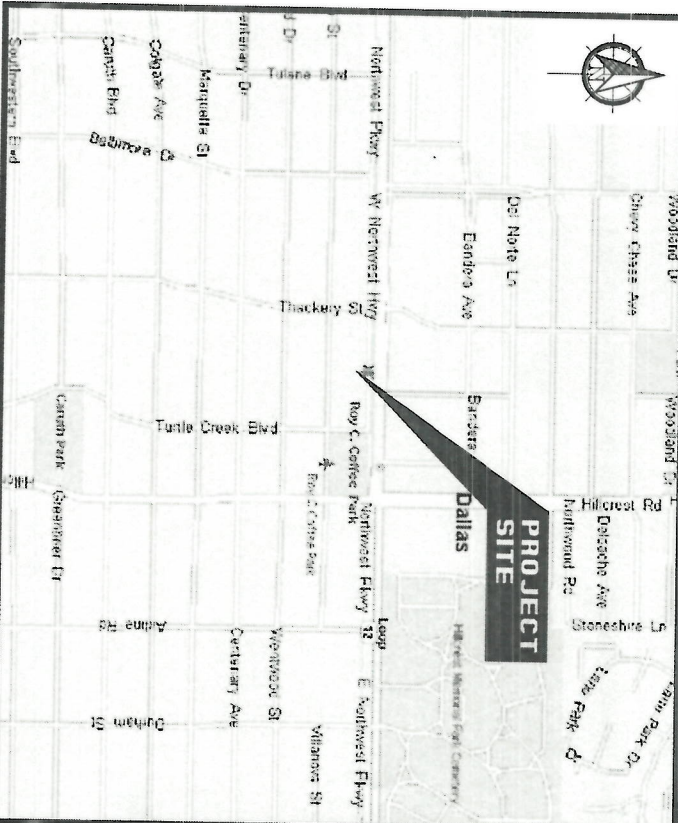
PROJECT INFORMATION

APPLICANT/LEASSEE:
NAME: AT&T MOBILITY
ADDRESS: 1801 VALLEY VIEW LANE
CITY, STATE, ZIP: FARMERS BRANCH, TX 75234
CONTACT:
PHONE:
TOWER OWNER:
NAME: CITY OF UNIVERSITY PARK
ADDRESS:
CITY, STATE, ZIP:
CONTACT:
PHONE:
PROPERTY OWNER:
NAME: CITY OF UNIVERSITY PARK
ADDRESS:
CITY, STATE, ZIP:
CONTACT:
PHONE:
SCOPE OF WORK: COLOCATION ON EXISTING WATER TOWER
LATITUDE: 32° 51' 54.22" (NAD83)
LONGITUDE: -96° 47' 25.00" (NAD83)
AMSL: 613' (NAD88)
JURISDICTION: CITY OF UNIVERSITY PARK
TELEPHONE CO.: UNKNOWN
POWER CO.: UNKNOWN

DRIVING DIRECTIONS

DEPART 1801 VALLEY VIEW LN, DALLAS, TX 75234 [1801 VALLEY VIEW LN, DALLAS, TX 75234]
ON VALLEY VIEW LN (SOUTH-WEST)0.3 MI
TURN LEFT (SOUTH) ONTO LUNA ROAD 0.9 MI
TURN LEFT (EAST) ONTO LINDEN B JOHNSON Fwy [I-835 E]7.6 YDS
US-80 AND CHANDLER B JOHNSON Fwy [FOREST LANE]4.2 YDS
TURN RIGHT (LEFT) ONTO I-835 [I-835 Fwy]5.3 MI-835 E / I-35E
AT EXIT 320, TURN LEFT ONTO DALLAS NORTH TOLLWAY SOUTH / DALLAS PARKWAY
KEEP LEFT TO STAY ON RAMP3 TOLLWAY SOUTH
TOLL ROAD WEDGE ONTO DALLAS NORTH TOLLWAY3.8 MI
KEEP LEFT ONTO RAMP0.3 MSR-12 LOOP / NW HWY
KEEP STRAIGHT ONTO LOCAL ROAD(S)21 YDS
TURN LEFT (EAST) ONTO SR-12 LOOP [W NORTHWEST HWY]1.1 MI
TURN RIGHT (SOUTH) ONTO HACKNEY ST, THEN IMMEDIATELY TURN LEFT (EAST) ONTO NORTHWEST PARKWAY1 MI
ARRIVE 32.85506N 96.79028W

VICINITY MAP



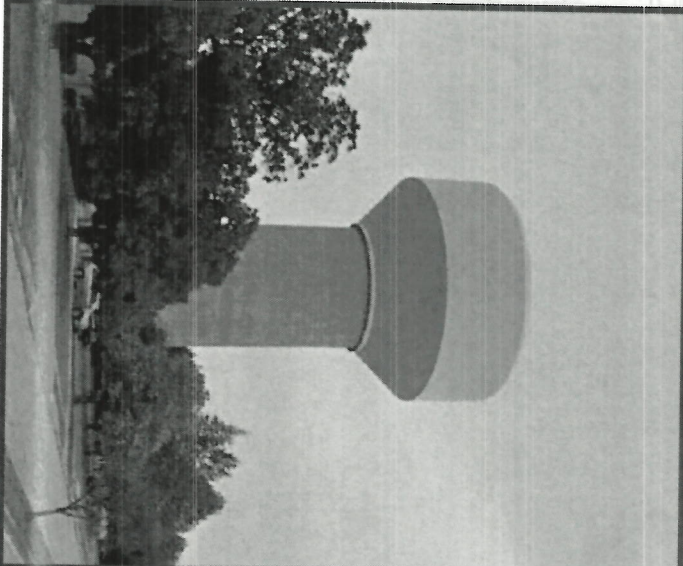
at&t

1801 VALLEY VIEW LANE
FARMERS BRANCH, TX 75234

SITE NAME
UNIVERSITY PARK WATER TOWER

SITE ADDRESS
3533 E. NORTHWEST PKWY
DALLAS, TX 75225
(DALLAS COUNTY)

SITE PHOTO



DESIGN TEAM

ENGINEER:
NAME: THE CELERIS GROUP, INC.
ADDRESS: 2000 E. LAMAR BLVD., STE. 550
CITY, STATE, ZIP: ARLINGTON, TX 76006
CONTACT: MARK STAPLETON
PHONE: 817-446-1700



APPROVALS

AT&T CONSTRUCTION MGR. AT&T ENGINEER
AT&T CONSTRUCTION MGR. CONTRACTOR
PROPERTY OWNER CONTRACTOR

SHEET INDEX

NO.	DESCRIPTION	REV
T01	TITLE SHEET	2
N01	GENERAL NOTES	2
C01	OVERALL SITE PLAN	0
C02	DETAIL SITE PLAN	1
C03.0	ELEVATION / ANTENNA ORIENTATION	2
C03.1	ANTENNA CONFIGURATION	0
C04	DETAILS	0
C05	DETAILS	2
E01	ELECTRICAL SITE PLAN	0
E02	ELECTRICAL RISER DIAGRAM	0
E03	ELECTRICAL GROUNDING PLAN	0
E04	ELECTRICAL DETAILS	0
E05	ELECTRICAL DETAILS	0
E06	ELECTRICAL SPECIFICATIONS	0

BUILDING CODES

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AND RELATED AMENDMENTS AS ADOPTED BY THE CITY:

1. CURRENT ADA AND TAS REQUIREMENTS
2. 2015 IBC
3. 2012 IPC
4. 2006 IFCC
5. 2012 IECC
6. 2012 IMC
7. 2014 NEC



IF YOU DIG IN ANY STATE DIAL 811
FOR THE LOCAL 'ONE CALL CENTER'
IT'S THE LAW

THE UTILITIES SHOWN HEREIN ARE FOR THE CONTRACTORS CONVENIENCE ONLY. THERE MAY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE ENGINEER/SURVEYOR ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS SHOWN AND IF SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL THE UTILITIES WITHIN THE LIMITS OF THE WORK. ALL DAMAGE MADE TO THE EXISTING UTILITIES BY THE CONTRACTOR SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

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REVISIONS	DATE
1/0 ISSUED FOR CONSTRUCTION	09/03/17
1/1 ISSUED FOR CONSTRUCTION	09/14/17
2/0 ISSUED FOR CONSTRUCTION	09/21/17

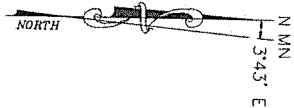
CELERIS GROUP
CONSULTING ENGINEERS
2000 E. Lamar Blvd., Suite 550
Arlington, TX 76006
Office: 817.446.1700
Fax: 817.460.0677
TX Firm Reg. # F-13992



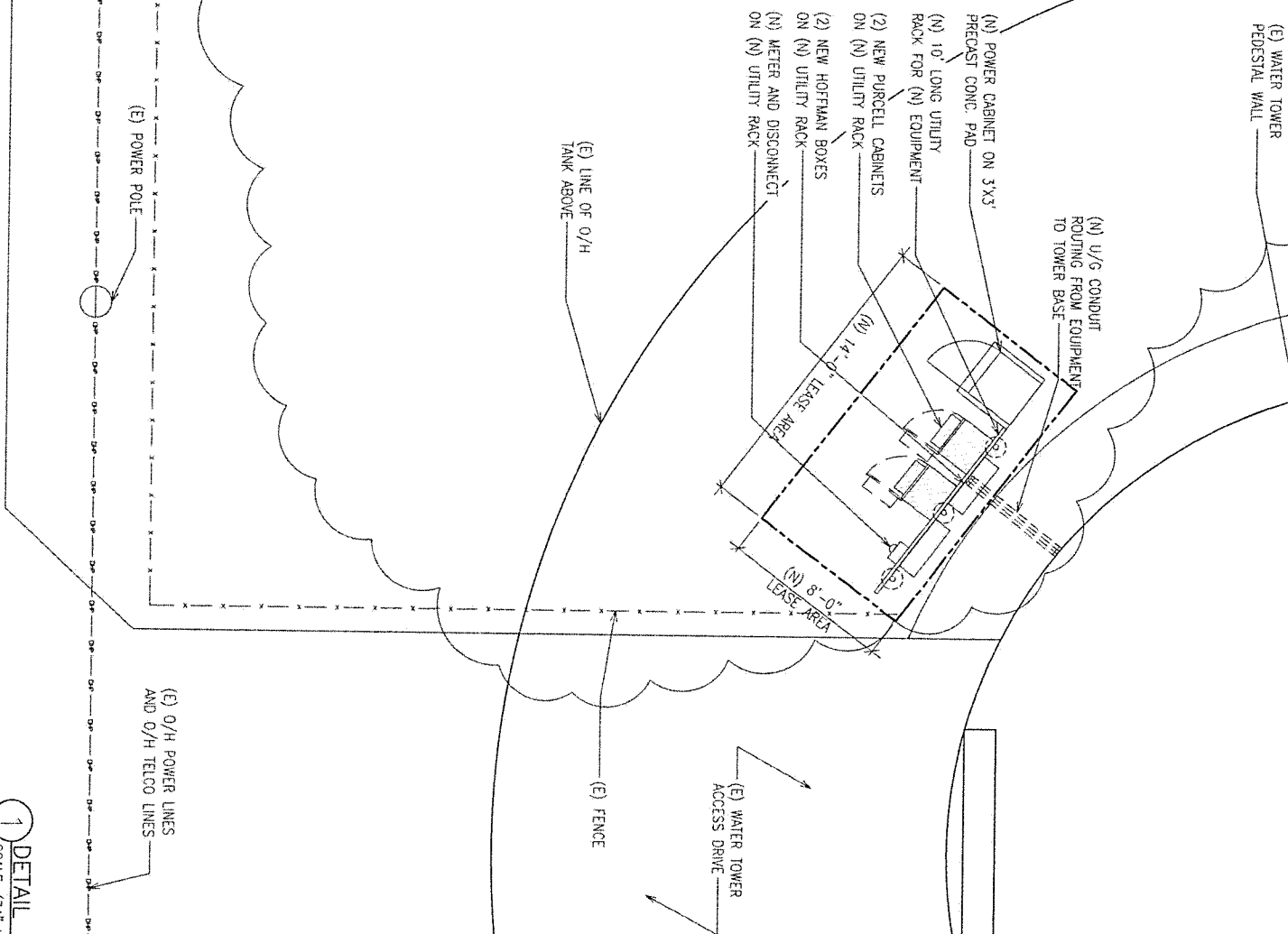
1801 VALLEY VIEW LANE
FARMERS BRANCH, TX 75234

SITE NAME
UNIVERSITY PARK
WATER TOWER

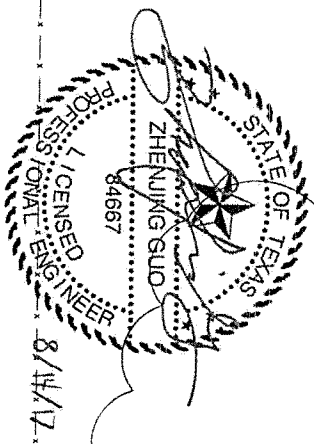
DRAWN BY:	KDR
CHECKED BY:	ZG
DATE:	08/21/17
PLOT SCALE:	1"=2'
DRAWING NAME:	TITLE SHEET
SHEET NO.:	T01



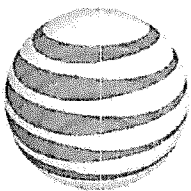
NOTE: CONTRACTOR SHALL
SCHEDULE ACCESS INSIDE THE
WATER TOWER WITH THE CITY
INFRASTRUCTURE MAINTENANCE
SUPERINTENDENT AT 214-987-5465



1 **DETAIL SITE PLAN**
SCALE: (34" X 22") 1/4"=1'-0"
SCALE: (17" X 11") 1/8"=1'-0"
GRAPHIC SCALE
0' 2' 4' 8' 12'



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1801 VALLEY VIEW LANE
FARMERS BRANCH, TX 75234

at&t

SITE NAME
**UNIVERSITY PARK
WATER TOWER**

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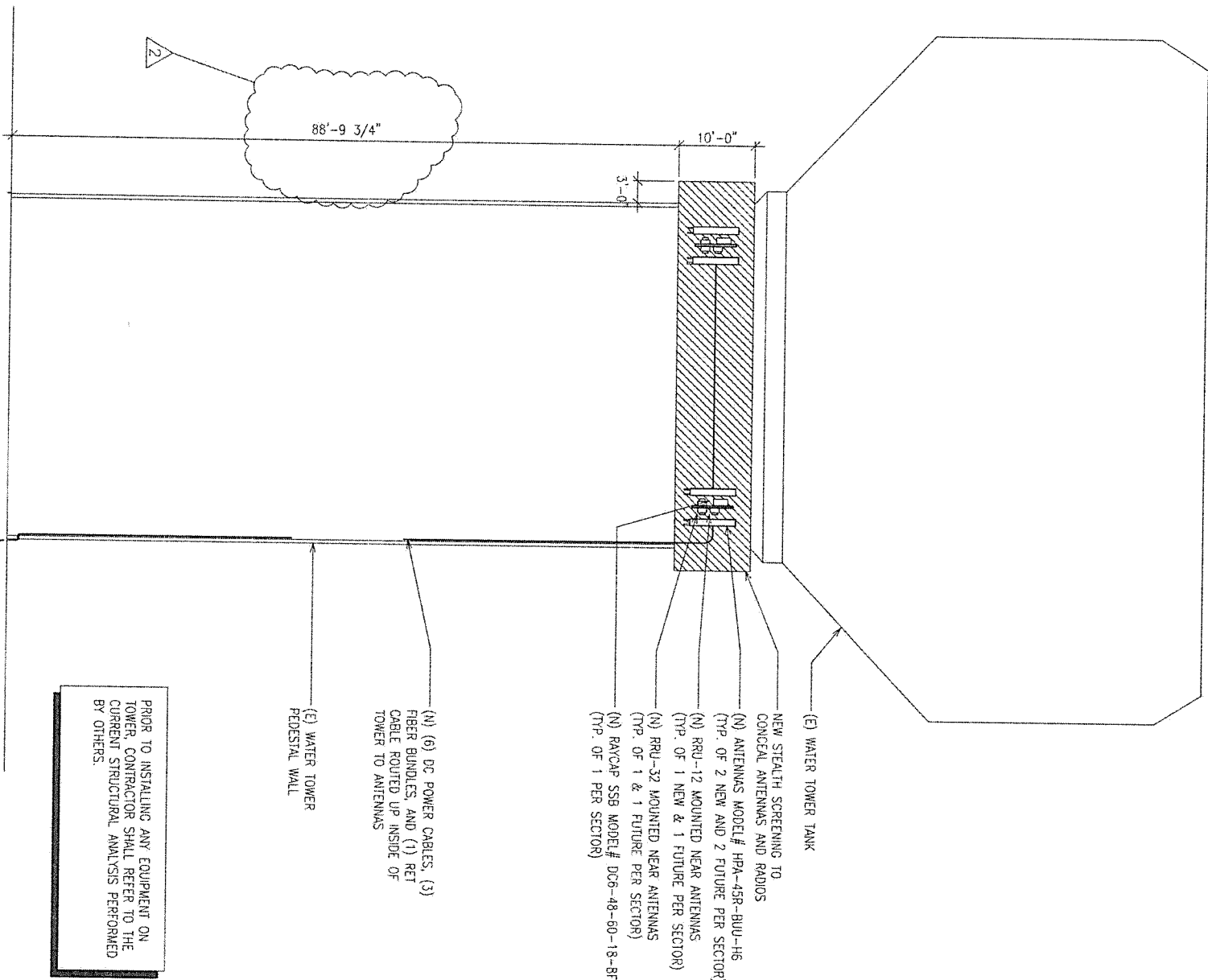
CELERIS PROJECT NO.: 16-8534

REVISIONS	DATE
ISSUED FOR CONSTRUCTION	08/03/17
ISSUED FOR CONSTRUCTION	08/14/17

C02

DRAWN BY:
KDR
CHECKED BY:
ZG
DATE:
08/14/17
FOR SCALE:
1-2
DRAWING NAME:
DETAIL SITE PLAN
SHEET NO.:

NOTE: CONTRACTOR SHALL X-RAY AND LOCATE ALL EXISTING REINFORCING AND CABLES BEFORE INSTALLATION OF CONNECTIONS. CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES IN ORDER TO ENSURE THE EXISTING REINFORCING AND CABLES ARE NOT DAMAGED DURING INSTALLATION OF CONNECTIONS



PRIOR TO INSTALLING ANY EQUIPMENT ON TOWER, CONTRACTOR SHALL REFER TO THE CURRENT STRUCTURAL ANALYSIS PERFORMED BY OTHERS.

1 TOWER ELEVATION

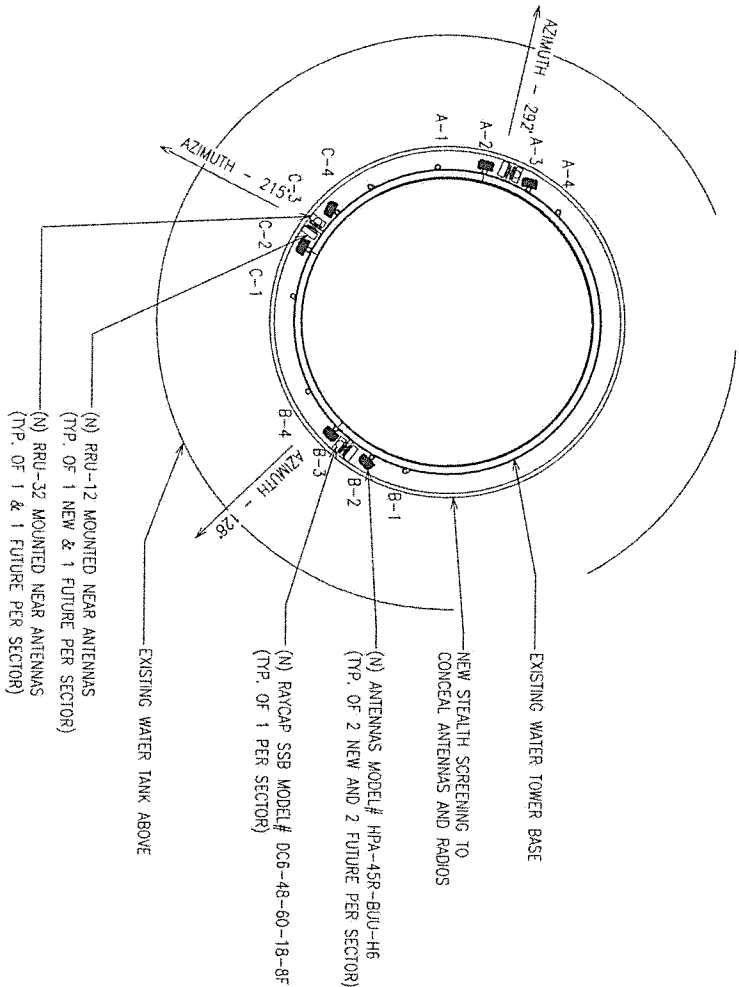
SCALE (22" X 34"): 1"=10'-0"

SCALE (11" X 17"): 1"=20'-0"

GRAPHIC SCALE

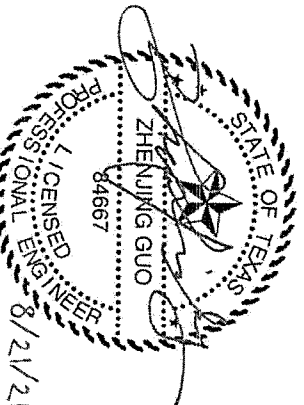
0' 10' 20' 30' 40'

NOTE: BEFORE INSTALLING ANY EQUIPMENT CONTRACTOR MUST CHECK WITH AT&T PROJECT MANAGER AND AT&T RF ENGINEER FOR MOST RECENT RF CONFIGURATION SHEET.



2 ANTENNA ORIENTATION

SCALE: NTS



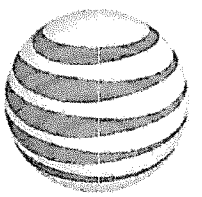
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CELERIS PROJECT NO.: 16-8534



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Fax: 817.460.0577
TX Firm Reg. # F-13992



at&t
1801 VALLEY VIEW LANE
FARMERS BRANCH, TX 75234

SITE NAME
UNIVERSITY PARK
WATER TOWER

DRAWN BY:	KDR
CHECKED BY:	ZG
DATE:	08/21/17
PROJECT:	1.2
DRAWING NAME:	ELEVATION / ANTENNA ORIENTATION
SHEET NO.:	C03.0

REVISIONS	DATE
ISSUED FOR CONSTRUCTION	08/09/17

CELERIS PROJECT NO.: 16-8534

**CELERIS GROUP**

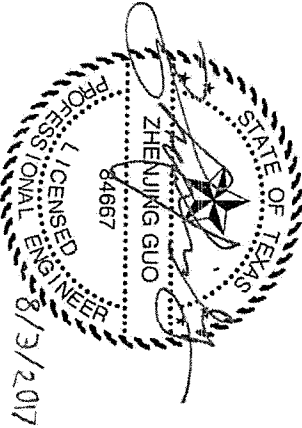
CONSULTING ENGINEERS
2000 E. Lomax Blvd., Suite 550
Arlington, TX 76006
Office: 817.446.1700
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TX Firm Reg. # F-13992



1801 VALLEY VIEW LANE
FARMERS BRANCH, TX 75234

SITE NAME
UNIVERSITY PARK
WATER TOWER

DRAWN BY:	KDR
CHECKED BY:	ZG
DATE	08/03/17
SCALE	1:2
DRAWING NAME	
SHEET NO.	C03.1



ANTENNA NUMBER	COAX COLOR CODE	ANTENNA INFO.		AZIMUTH	RAD CENTER	700/850		1900/HB		COAX INFO.	
		MAKE	MODEL			ELEC. DOWNHILL	MECH. DOWNHILL	ELEC. DOWNHILL	MECH. DOWNHILL	SIZE	LENGTH
A-1	RD										
	RD/RD										
A-2	RD/OR										
	RD/OR/WH	CCI	HPA-45R-BUU-H6	292°	90°	0'	0'	0'	0'		SEE CABLE NOTES
A-3	RD/WH										
	RD/WH	CCI	HPA-45R-BUU-H6	292°	90°	0'	0'	0'	0'		SEE CABLE NOTES
A-4	RD/WH										
	RD/WH										
B-1	RD										
	RD/RD										
B-2	RD/OR										
	RD/OR/WH	CCI	HPA-45R-BUU-H6	128°	90°	0'	0'	0'	0'		SEE CABLE NOTES
B-3	RD/WH										
	RD/WH	CCI	HPA-45R-BUU-H6	128°	90°	0'	0'	0'	0'		SEE CABLE NOTES
B-4	RD/RD/WH/WH										
	RD/WH										
	RD/RD/WH/WH										
G-1	RD										
	RD/RD										
G-2	RD/OR										
	RD/OR/WH	CCI	HPA-45R-BUU-H6	215°	90°	0'	0'	0'	0'		SEE CABLE NOTES
G-3	RD/WH										
	RD/WH	CCI	HPA-45R-BUU-H6	215°	90°	0'	0'	0'	0'		SEE CABLE NOTES
G-4	RD/WH										
	RD/RD/WH/WH										

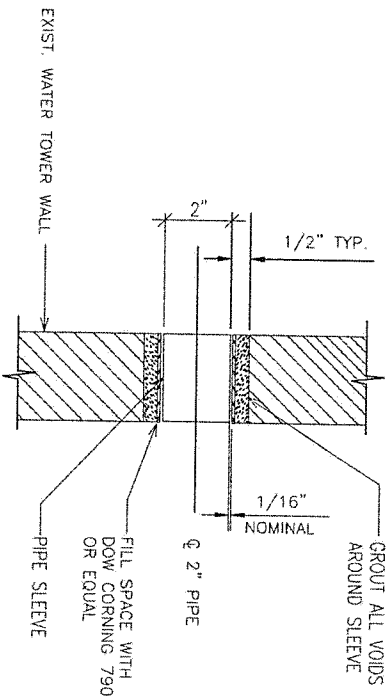
CABLE NOTE	TYPE OF CABLE	CABLE INFO.	QTY	LENGTH
NOTE 1	FIBER	1/2"	3	ALPHA 160'±, BETA 130'±, GAMMA 110'±
NOTE 2	DC POWER	3/4"	6	ALPHA 160'±, BETA 130'±, GAMMA 110'±
NOTE 3	RET CABLE	3/8"	1	ALPHA 160'±, BETA 130'±, GAMMA 110'±

- NOTES:
- LENGTHS POSED ON THIS CHART ARE ESTIMATED FROM AVAILABLE INFORMATION
 - TYPES AND SIZES OF THE ANTENNA CABLES ARE BASED ON THE ESTIMATED LENGTH OF THE CABLES. CONTRACTOR TO VERIFY ALL ACTUAL LENGTHS IN THE FIELD PRIOR TO INSTALLATION AND NOTIFY THE AT&T FIELD ENGINEER FOR VERIFICATION OF SIZES OF CABLES.
 - CONTRACTOR TO PROVIDE AS-BUILTS FOR THE LENGTH OF CABLES UPON COMPLETION OF INSTALLATION.

1 ANTENNA CONFIGURATION
SCALE: NTS

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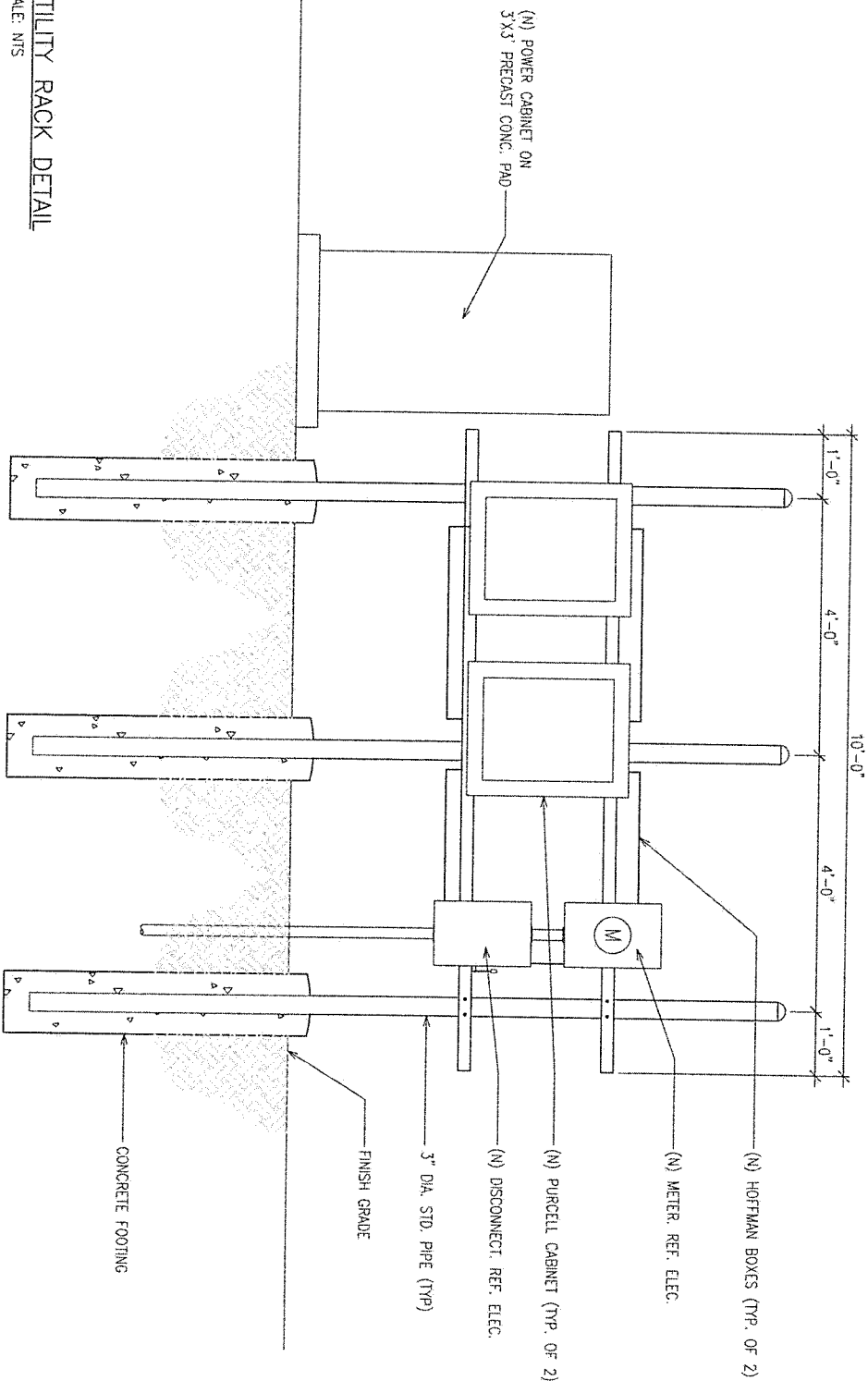
NOTE:
CONTRACTOR SHALL SEAL NEW PORTS
WEATHERTIGHT AFTER INSTALLATION OF
THE CABLES



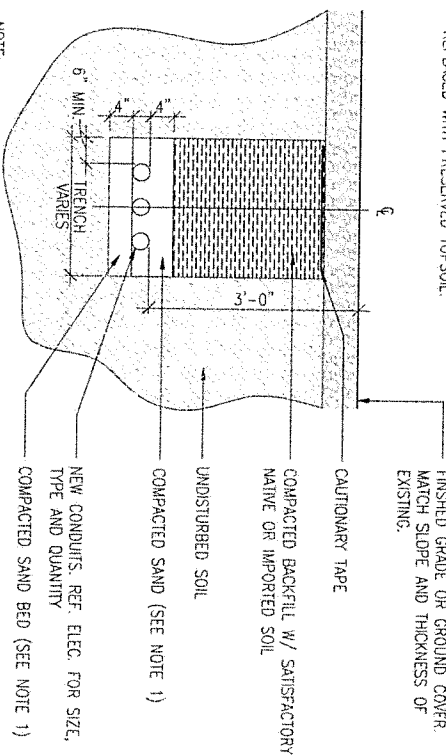
- NOTES: (FOR FIRE-RATED WALL ONLY)
1. PIPE ANCHORAGE IS REQUIRED NEARBY TO PREVENT PIPE MOVEMENT THROUGH PENETRATION.
 2. CABLES WITHIN CONDUIT PENETRATION SHALL BE FIRE SEALED AFTER INSTALLATION
 3. CONTRACTOR TO VERIFY EXIST. REINFORCING IN EXIST. TOWER WALLS BEFORE CORE DRILLING (TYP.)

1 CABLE PENETRATION AT BASE OF TOWER
SCALE: NTS

2 UTILITY RACK DETAIL
SCALE: NTS



NOTE:
DOUBLE CUT WITH TOP 1.5' OF TOP
SOIL ON ONE SIDE OF THE TRENCH AND
BOTTOM EXCAVATION MATERIAL ON
OPPOSITE SIDE. TOP SOIL SHALL BE
REPLACED WITH PRESERVED TOPSOIL.

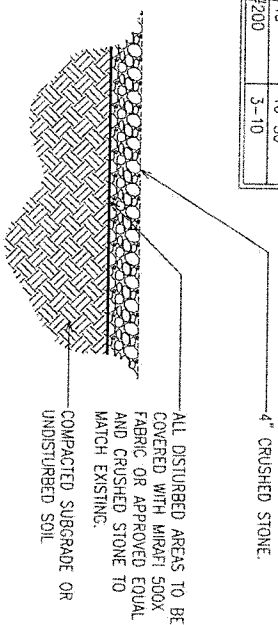


NOTE:
1. LEAN CONCRETE, RED-COLORED TOP, MAY BE
USED IN PLACE OF COMPACTED SAND.

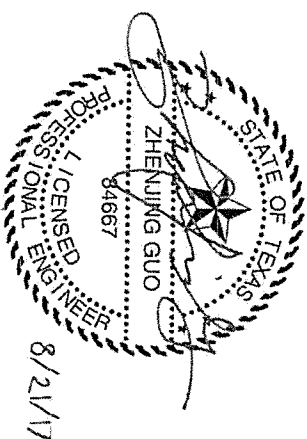
4 UTILITY TRENCH DETAIL
SCALE: NTS

CLASS 7 GRADATION SCHEDULE		
SIZE	SIZE	% PASSING
1 1/2"	100	100
3/4"	60-100	50-90
3/8"	25-55	—
#4	10-30	—
#10	3-10	—
#200	—	—

NOTE:
MINIMUM STONE THICKNESS
SHALL BE 4" OF CLASS 7
OR OTHER APPROVED
MATERIAL. (SEE GRADATION
SCHEDULE THIS SHEET)



5 GEOTEXTILE FABRIC DETAIL
SCALE: NTS

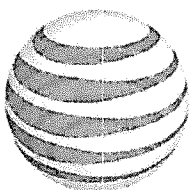


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ISSUED FOR CONSTRUCTION	08/03/17
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ISSUED FOR CONSTRUCTION	08/21/17

CELERIS PROJECT NO.: 16-8534

CELERIS GROUP
CONSULTING ENGINEERS
2000 E. Lomax Blvd., Suite 550
Arlington, TX 76006
Office: 817.446.1700
Fax: 817.460.0677
TX Firm Reg. # F-13992

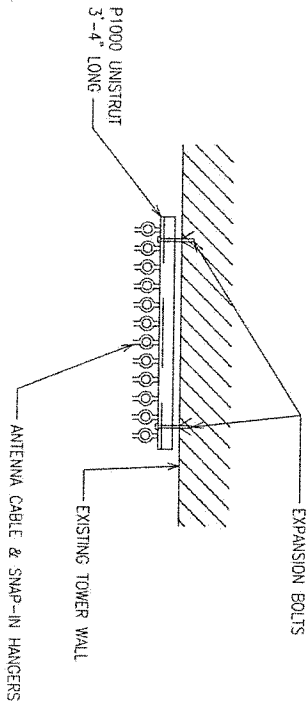


1801 VALLEY VIEW LANE
FARMERS BRANCH, TX 75234

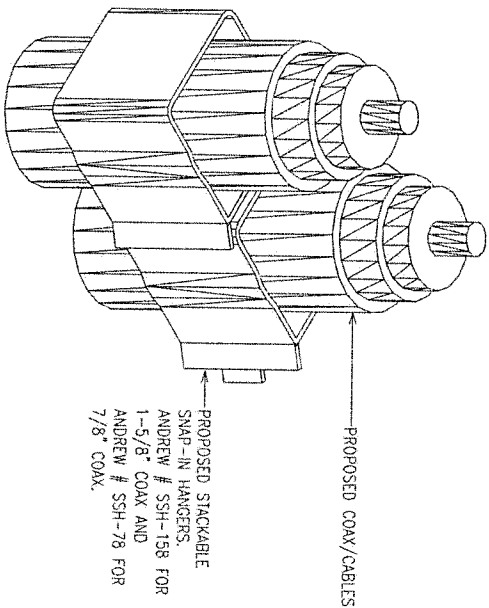
SITE NAME
UNIVERSITY PARK
WATER TOWER

DRAWN BY:	KDR
CHECKED BY:	ZG
DATE:	08/21/17
FIG. SCALE:	1-2
DRAWING NAME:	DETAILS
SHEET NO.:	C04

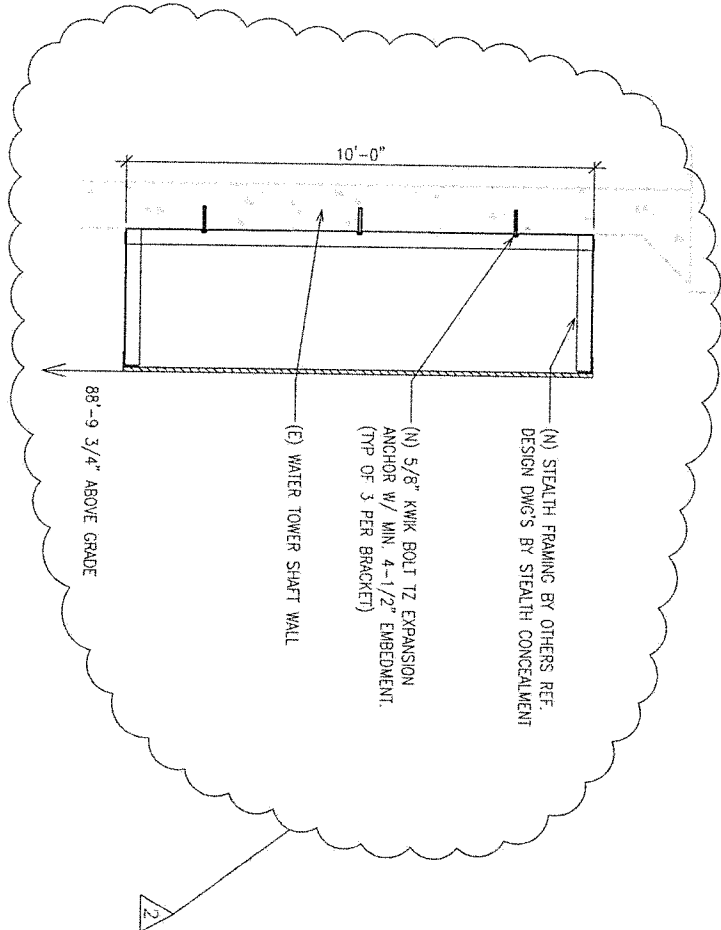
NOTE: THE DRILLING OF THE CONCRETE SHALL BE LIMITED TO EXPANSION ANCHORS UP TO 1/2" DIAMETER AND ONLY TO THE DEPTH REQUIRED FOR APPROPRIATE ANCHORAGE OF THE BRACKETS AND THE BRACKETS SHOULD BE SPACED AS FAR APART AS PRACTICALLY POSSIBLE.



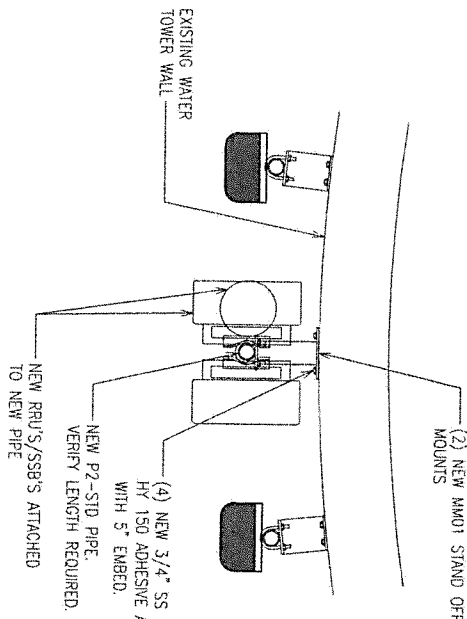
1 COAX MOUNT DETAIL INSIDE TOWER WALL
SCALE: NTS



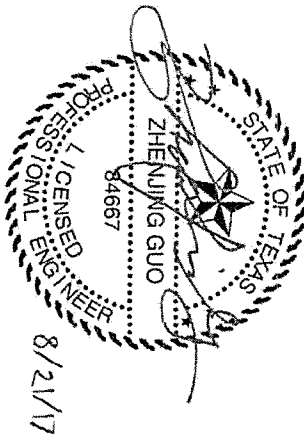
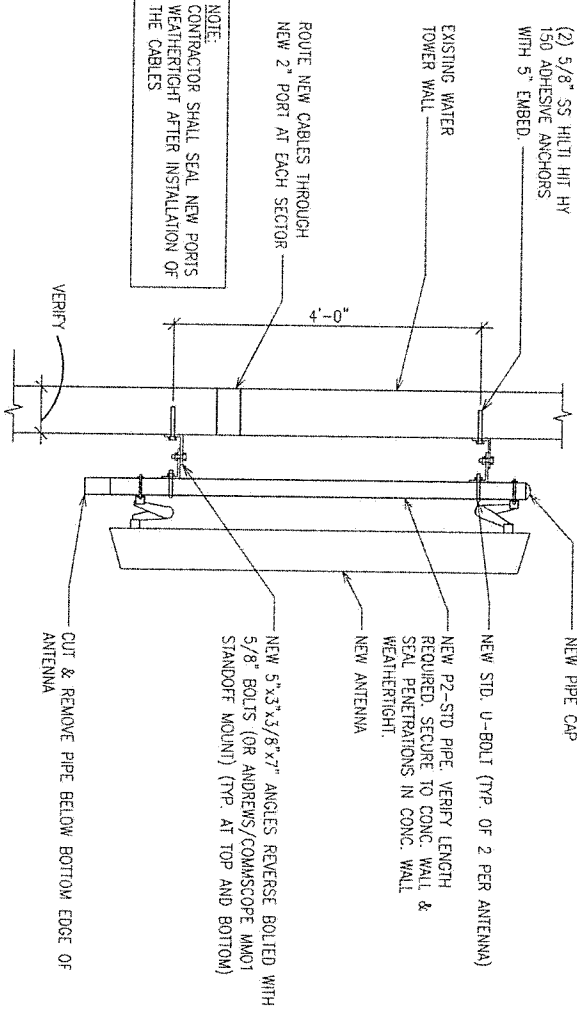
3 DETAIL - SNAP-IN HANGERS
SCALE: NTS



2 NOT USED
SCALE: NTS



NOTE: CONTRACTOR SHALL X-RAY AND LOCATE ALL EXISTING REINFORCING AND CABLES BEFORE INSTALLATION OF CONNECTIONS. CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES IN ORDER TO ENSURE THE EXISTING REINFORCING AND CABLES ARE NOT DAMAGED DURING INSTALLATION OF CONNECTIONS.

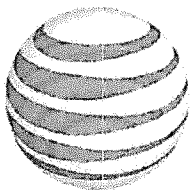


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1801 VALLEY VIEW LANE
FARMERS BRANCH, TX 75234

SITE NAME
**UNIVERSITY PARK
WATER TOWER**

DRAWN BY: KDR
CHECKED BY: ZG
DATE: 08/21/17
PLOT SCALE: 1/2"
DRAWING NAME: DETAILS
SHEET NO.: C05

GENERAL NOTES

- IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO CONTACT THE SERVING POWER COMPANY AS SOON AS THE WORK IS SCHEDULED FOR THIS SITE. CONTRACTOR SHALL INFORM THEM OF THE CONDITIONS SPECIFIC TO THIS SITE AND COORDINATE THE PROPOSED ROUTING OF CONDUITS, TERMINATION OF CONDUITS, POWER (VOLTAGE AND KVA) REQUIRED AND SCHEDULED DATE OF ACTIVATION.
- ROUTING OF UNDERGROUND UTILITIES IS APPROXIMATE. CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES AND SHALL BE EXTREMELY CAUTIOUS WHEN EXCAVATING TO AVOID DISRUPTION OF POWER OR TELEPHONE SERVICE OF OTHER TENANTS ON THE SITE. FAILURE TO OBSERVE THIS REQUIREMENT SHALL LEAVE THIS CONTRACTOR LIABLE FOR LOSS OF SERVICE (REVENUE) OF ANY SITE OCCUPANT.
- CONTRACTOR SHALL PROVIDE ALL CONDUIT, WIREMANS, CABINETS, ETC. AS REQUIRED BY SERVING ELECTRICAL UTILITY COMPANY.
- DO NOT SCALE PLANS. SITE VERIFY EXISTING CONDITIONS.
- ELECTRICAL SERVICE SIZE IS NOMINAL FOR BIDDING PURPOSE. ADJUST SIZE IF REQ'D BY A.H.J. OR TO MEET VOLTAGE DROP PERMITTED BY NEPA--70, ART 215
- PROVIDE PULLBOX AS SHOWN OR WHERE TOTAL CONDUIT BENDS EXCEED 360° AND/OR LENGTH OF CONDUIT EXCEEDS 200 FT. (200 FT. MAX. PERMITTED BETWEEN PULL BOXES) LOCATE PULLBOXES TO PROVIDE UNIFORM PULLING TENSION.
- REFER TO NOTES 2, 3, & 4 SHEET ED2 AND SECTION 16130 OF ELECTRICAL SPECS ON SHEET ED6 FOR RACEWAY MATERIALS REQUIRED.
- THIS PROJECT REQUIRES EVALUATION FOR PROPOSED NEW SERVICE BY THE LOCAL POWER CO. PRIOR TO STARTING ANY WORK. THE CONTRACTOR SHALL CONTACT THE POWER CO. AND COORDINATE THE POINTS OF SERVICE DEMARCATION. CONTRACTOR SHALL INCLUDE ANY UTILITY COMPANY CHARGES FOR ESTABLISHING THESE SERVICES.
- NEW TRENCH FOR THE BURIED CONDUIT AND GROUNDING CONDUCTORS SHALL BE WIDE ENOUGH TO PERMIT CONNECTIONS TO BE MADE AND INSPECTED BY AUTHORITIES HAVING JURISDICTION. BACKFILL SHALL BE NON-CORROSIVE, LOW RESISTIVITY, FREE OF DEBRIS AND STONES, TAMPED DOWN IN LAYERS NOT TO EXCEED 6" DEEP AND COMPACTED TO 95% OF ORIGINAL DENSITY.

(N) AT&T METER AND DISCONNECT ON UTILITY RACK

(N) U/G POWER SERVICE APPROX. 45± FROM (N) METER ON UTILITY RACK TO (E) POWER POLE. REF. ELEC. RISER ON SHIT. ED2

(N) U/G 3" SCH. 40 PVC CONDUIT FOR FIBER APPROX. 45± FROM POWER POLE TO NEW HOFFMAN BOX. REF. ELEC. RISER ON SHIT. ED2

(N) TRENCH FOR NEW U/G UTILITY SERVICES. AVOID CONFLICTS WITH EXISTING U/G UTILITIES. REF. 4/C04

(E) POWER POLE

1 ELECTRICAL SITE PLAN

SCALE: NTS



8/3/17

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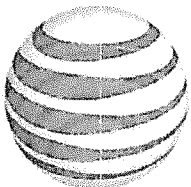
REVISIONS	DATE
ISSUED FOR CONSTRUCTION	08/03/17

CELERS PROJECT NO.: 16-8534



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1801 VALLEY VIEW LANE
FARMERS BRANCH, TX 75234

SITE NAME
UNIVERSITY PARK
WATER TOWER

DRAWN BY:	KDR
CHECKED BY:	RT
DATE	08/03/17
PLOT SCALE	1"=2'
DRAWING NAME	ELECTRICAL SITE PLAN
SHEET No.	E01

NOTES: BY REFERENCE

- 1 NEW POWER CABINET
- 2 NOT USED
- 3 REFER TO GROUND ROD WITH ACCESS AREA DETAIL 2/ED4.
- 4 NEW AT&T 200AMP 240V 163W METER SOCKET IN EXISTING METER BASE BY ELECTRIC SERVICE PROVIDER.
- 5 NOT USED
- 6 2" SCH. 40 PVC CONDUIT WITH 3-3/4, 1#2G TYPE THWN FROM GENERATOR SLAB TO AUTOMATIC TRANSFER SWITCH FOR POWER.
- 7 5/8" DIAMETER X 10' COPPER CLAD GROUND RODS. DRIVE TOP TO 18" BELOW SURFACE. INSTALL GROUND ROD INSPECTION PORT (RE: 2/ED4).
- 8 GROUNDING ELECTRODE CONDUCTOR (#1/0 CU) IN 3/4" PROTECTIVE CONDUIT.
- 9 NOT USED
- 10 NOT USED
- 11 PROVIDE 3--3/4, 1#2G TYPE THWN IN 2" CONDUIT (MVC ABOVE GRADE, SCHED. 40 PVC BELOW GRADE).
- 12 NOT USED
- 13 3/4" SCH. 40 PVC CONDUIT FROM GENERATOR SLAB TO AUTOMATIC TRANSFER SWITCH FOR 2 WIRE START (ROUTE CONDUIT TO NEW AIS ON SHELTER).
- 14 3/4" SCH. 40 PVC CONDUIT FROM GENERATOR SLAB TO 1C LOCATION FOR ALARMING PURPOSES (ROUTE TO TELCO ENTRY AT SHELTER).

PANEL "A" TOTAL CONNECTED LOAD = 20 KVA									
VOLTS/PHASE/WIRE 120/240V, 1 PH, 3W, NEMA		PANEL SIZE & TYPE 200A	MAIN TYPE 200A MCB	*CABINET INSIDE INTERSECT	MIN. SC. CAP. AVAILABLE FROM POWER COMPANY	NOTES: SERVICE ENTRANCE RATED AS REQUIRED	FED FROM INTERSECT: REFER TO ELECTRICAL RISER DIAGRAM		
NO	TRIP**	SERVICES	A	B	N	A	B	N	TRIP**
1	20	REC'TIFIER #1	2400			1200			20
3	20	REC'TIFIER #2		2400			720		20
5	20	REC'TIFIER #3		2400			2500		20
7	20	REC'TIFIER #4			2400			2500	20
9	20	REC'TIFIER #5		2400			2500		20
11	20	REC'TIFIER #6			2400			2500	20
13	20	REC'TIFIER #7		2400				2500	20
15	20	REC'TIFIER #8			2400				20
17	↓	SPACE							16
29	↓	SPACE							30

SYMBOLS LIST AND ABBREVIATIONS

---	DIRECT BURIED BARE GROUND WIRE
---	UNDERGROUND ELECTRICAL CONDUIT AND FEEDER
---	UNDERGROUND TELEPHONE CO. CONDUIT TO TELCO DEMARK POINT
---	GROUNDING RING
---	CONNECTION (CADCWELDED OR EXOTHERMIC WELD TO STRUCTURE OR DEVICE
⊥	GROUNDING PORT, SEE DETAIL 2 SHEET ED4
⊥	GROUND POINT SEE GROUNDING PLAN
⊥	CONNECTION TO GROUND RING OR GROUND ROD. EXOTHERMIC WELD OR AS REQUIRED BY AUTHORITY HAVING JURISDICTION
⊥	PULL BOX NOMINAL 24"x24"x36" DEEP (WITH TRAFFIC LID WHERE VEHICULAR TRAFFIC IS LIKELY)
X	INDICATES 2 HOT, 1 NEUTRAL, & 1 GROUND IN CONDUIT
A.H.U.	AUTHORITY HAVING JURISDICTION
CM	CONSTRUCTION MANAGER OR AGENT FOR AT&T

GENERAL NOTES:

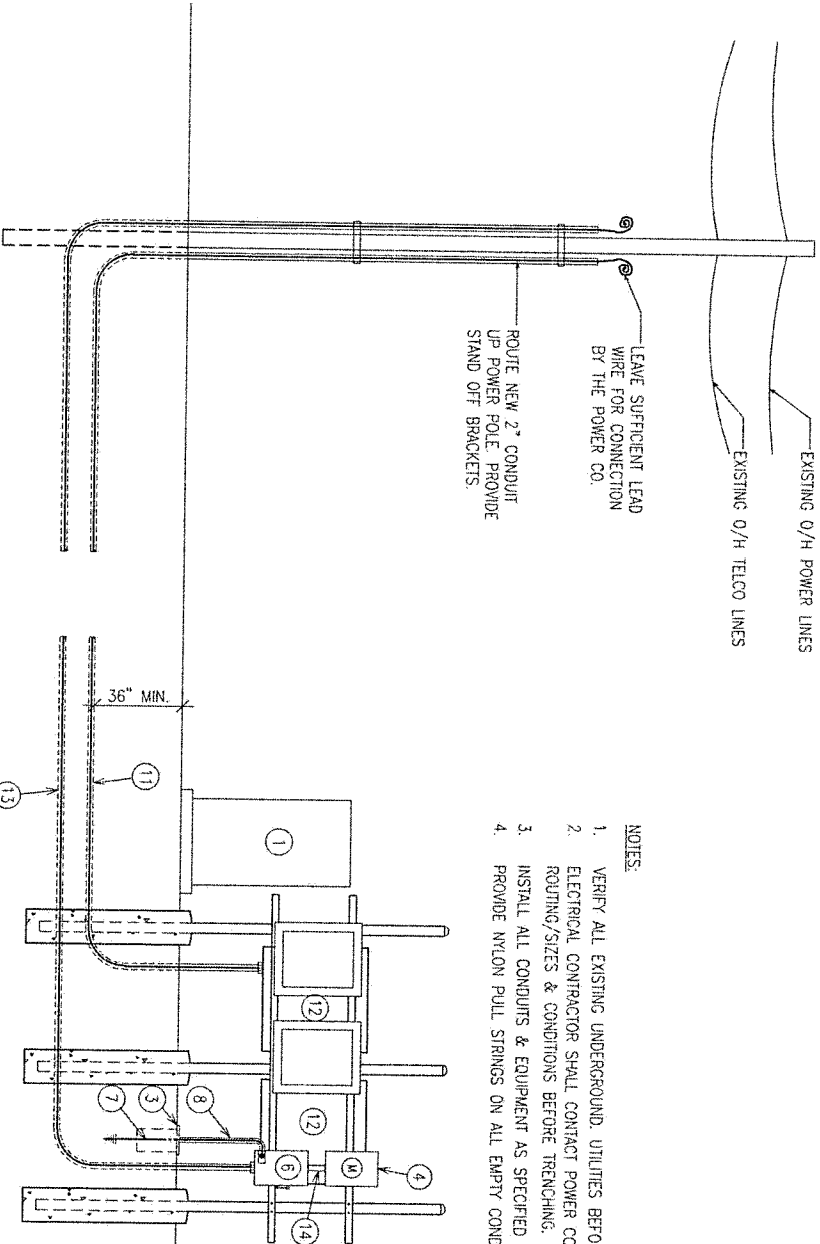
1. REFER TO GENERAL NOTES, SHEET E01 FOR SITE COORDINATION REQUIREMENTS.
2. COORDINATE WITH CONSTRUCTION MANAGER TO OBTAIN CURRENT APPLICABLE TOWER GROUNDING REQUIREMENTS FROM AT&T WIRELESS.
3. USE TINNED COPPER (SOLID) FOR EXTERIOR GROUNDING (TYPICALLY #2 OR AS NOTED); USE STRANDED COPPER WIRE FOR GROUNDING WHERE NOT EXPOSED AND NOT IN CONTACT WITH EARTH (SEE NOTE 4 BELOW)
4. BURY ALL BARE GROUND WIRES 30" BELOW GRADE. LOCATE NO CLOSER THAN 3' FROM FENCE OR 24" FROM FOUNDATIONS. SLEEVE ALL FOUNDATIONS. CADCWELDED AND TEST CONDUCTIVITY OF ALL GROUND TIE POINTS.
5. TO MINIMIZE LIGHTNING DAMAGE, NO SHARP BENDS PERMITTED IN ANY WIRING, INCLUDING GROUNDING.
6. GROUND RODS TO BE COPPER CLAD STEEL 5/8" DIAMETER X 10'-0" LONG WITH TOPS BURIED 18" MINIMUM BELOW FINISHED GRADE. CADCWELDED TO GROUND RING. RODS SHALL BE SPACED 10' TO 15' ON CENTER ALONG THE GROUND RING.
7. PRIME AND EPOXY PAINT ALL EXPOSED CONDUIT TO MATCH EXTERIOR OF EQUIPMENT BUILDING.
8. ELECTRICAL CONTRACTOR SHALL CONNECT EXTERIOR GROUNDING WIRE TO GROUND RING INSIDE EQUIPMENT BUILDING. TOWER CONTRACTOR SHALL MAKE ALL ABOVE GROUND CONNECTIONS TO TOWER BUS BARS, AND WAVEGUIDE BRIDGES AT TIME OF CONNECTION TO TOWER. ONE CONNECTION TO THE TOWER BASE SHALL BE A MECHANICAL TYPE. ALL OTHERS SHALL BE CADCWELDED. (SEE NOTE 10 BELOW)
9. CIVIL CONSTRUCTION CONTRACTOR SHALL BURY ALL GROUND RINGS. CIVIL CONSTRUCTION CONTRACTOR SHALL CADCWELD PIGTAILS FOR ALL ABOVE GROUND CONNECTIONS AT TIME OF GROUND RINGS INSTALLATION.
10. PROTECT AND SUPPORT ALL WIRING SUCH THAT IT WILL NOT VIBRATE AGAINST OTHER METALLIC OBJECTS AND SUCH THAT THERE ARE NO SHARP BENDS (NOMINAL RADIUS 6" MIN.) CADCWELDED ALL CONNECTIONS WHERE POSSIBLE. AT TOWER OR LOCATION OF MULTIPLE CADCWELDED CONNECTIONS, IT MAY BE PERMISSIBLE TO MECHANICALLY BOLT A BUSS BAR TO GROUND OR TO SUPPORT STRUCTURE.

8/3/17



NOTES:

1. VERIFY ALL EXISTING UNDERGROUND UTILITIES BEFORE TRENCHING.
2. ELECTRICAL CONTRACTOR SHALL CONTACT POWER CO. & TELE. CO. & VERIFY EXACT ROUTING/SIZES & CONDITIONS BEFORE TRENCHING.
3. INSTALL ALL CONDUITS & EQUIPMENT AS SPECIFIED BY POWER CO. & TELE. CO.
4. PROVIDE NYLON PULL STRINGS ON ALL EMPTY CONDUITS.



1 RISER DIAGRAM
SCALE: NTS

REVISIONS

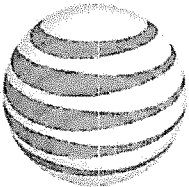
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CELEERS PROJECT NO.: 16-8534



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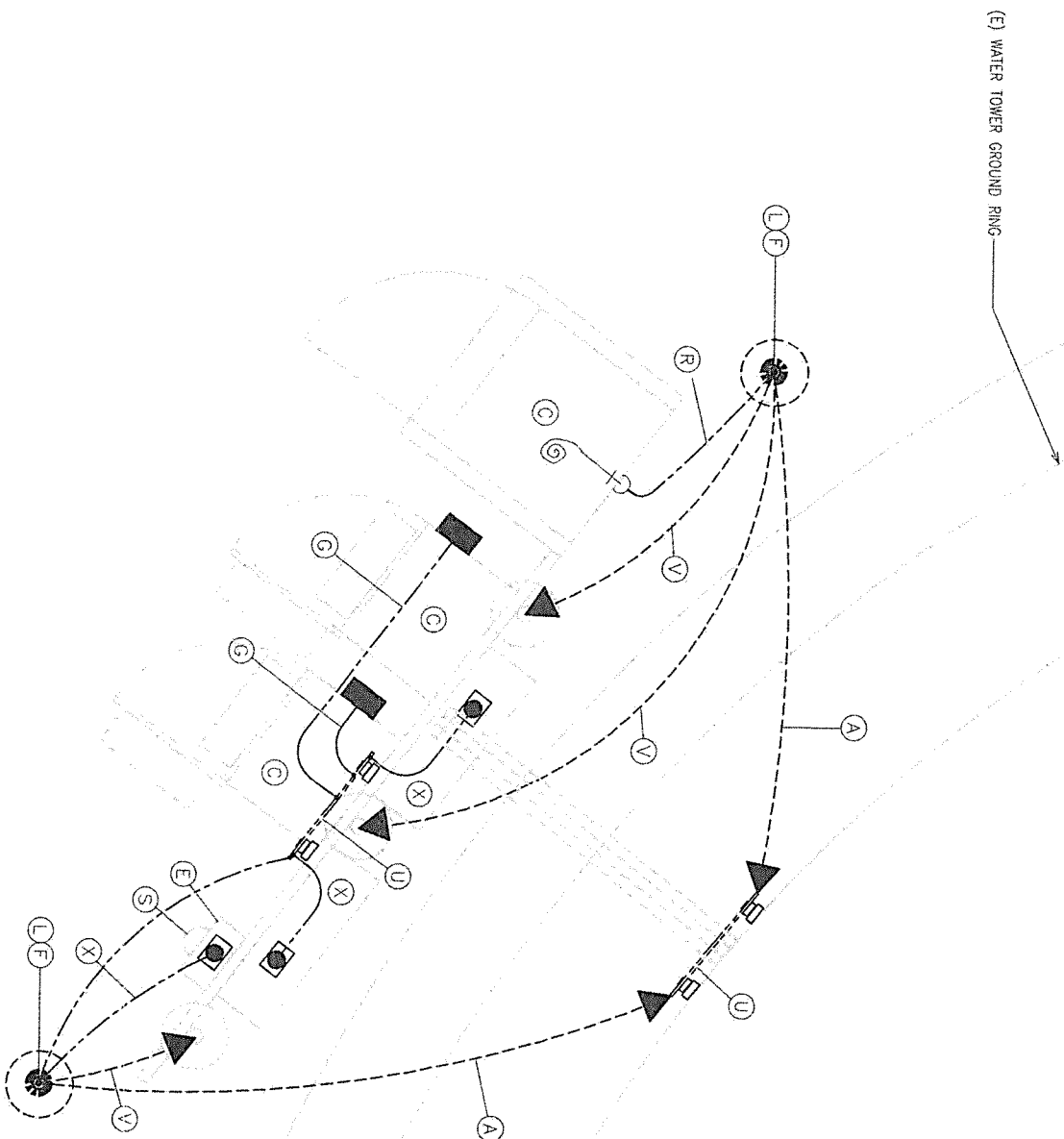
SITE NAME

UNIVERSITY PARK
WATER TOWER

DRAWN BY: KDR
CHECKED BY: RT
DATE: 08/03/17
PLOT SCALE: 1"=2'
DRAWING NAME: ELECTRICAL RISER DIAGRAM
SHEET NO. E02

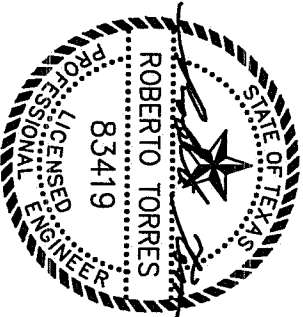
NOTES: REFERENCED TO GROUNDING PLAN

- (A) #2 AWG SOLID TINNED COPPER GROUND WIRE 30" MINIMUM BELOW GRADE. CADWELDED TO EACH GROUND ROD SHOWN. LOCATE 24" MINIMUM FROM NEW BUILDING FOUNDATION.
- (B) #2 BARE SOLID TINNED COPPER GROUND WIRE 18" MINIMUM BELOW GRADE OR 6" BELOW FROST LINE, WHICHEVER IS GREATER. CADWELDED TO GATE AND CORNER FENCE POSTS. PROVIDE FLEXIBLE BRAIDED JUMPER AT GATES.
- (C) NEW ERICSSON EQUIPMENT CABINETS.
- (D) NOT USED
- (E) NEW SERVICE ENTRANCE DISCONNECT SWITCH.
- (F) 5/8" DIAMETER X 10' COPPER CLAD GROUND ROD. DRIVE TO 18" BELOW SURFACE. REFER TO 3/EO4, WHERE LOCATED AT GROUND RING. EVENLY SPACE GROUND RODS SIMILAR TO THAT SHOWN BELOW BUT TYPICALLY TWICE THE GROUND ROD LENGTH BUT NO MORE THAN 1 1/2' THAT LENGTH.
- (G) #2 AWG SOLID TINNED COPPER GROUND WIRE. CONNECT TO GROUND RING AND STEEL REBAR IN CONCRETE FOUNDATION. EXOTHERMICALLY WELD. TEST FOR RESISTANCE. VERIFY WELD NON-POROUS OR RE-WELD.
- (H) NOT USED
- (I) #2 AWG SOLID TINNED COPPER GROUND WIRE 18" BELOW GRADE FOR CONNECTION TO ICE BRIDGE SUPPORT POSTS.
- (J) NOT USED
- (K) NOT USED
- (L) REFER TO GROUND ROD WITH ACCESS AREA DETAIL 2/EO4.
- (M) NOT USED
- (N) PROVIDE "INTERSECT" PANEL, 200A, 143W, 240V COMBINATION MANUAL TRANSFER SWITCH, SURGE PROTECTOR, PANELBOARD "A" AND. REFER TO PANEL SCHEDULE FOR CIRCUIT BREAKERS.
- (O) INTERLOCKED 240V, 200A GENERATOR RECEPTACLE
- (P) #2 BARE SOLID TINNED COPPER GROUND WIRE IN 3/4" PVC CONDUIT FROM INTERSECT PANEL DOWN TO GROUND RING AND CADWELD.
- (Q) VERIFY ACTUAL MOUNTING LOCATION WITH AT&T WIRELESS CONSTRUCTION.
- (R) #2 TINNED COPPER GROUND WIRE 18" BELOW GRADE. PROVIDE SIGNIFICANT LEAD WIRE FOR CABINET CONNECTION
- (S) NEW METER BASE AND JAWS BY E.C. AS APPROVED BY LOCAL ELECTRIC SERVICE PROVIDER
- (T) PROVIDE #6 AWG BARE SOLID TINNED COPPER GROUND WIRE FROM GROUND RING TO TELEPHONE CABINET GROUND BAR. PROVIDE 3/4" PVC SLEEVE WHERE ABOVE GRADE.
- (U) NEW 30" x 4" x 1/4" PRE-DRILLED COPPER ANTENNA GROUND BAR. PROVIDE STAND OFF ISOLATORS. VERIFY EXACT LOCATION WITH AT&T WIRELESS.
- (V) #2 BARE SOLID TINNED COPPER GROUND WIRE FROM UTILITY RACK SUPPORT POSTS DOWN TO GROUND RING. PROVIDE CADWELDED CONNECTIONS.
- (W) #2 BARE SOLID, TINNED COPPER GROUND WIRE EXOTHERMICALLY CADWELDED TO TOWER GROUND RING.
- (X) 1#2 AWG GEC (GROUNDING ELECTRODE CONDUCTOR) DOWN IN 3/4" CONDUIT TO 10' GROUND ROD. CONNECT WITH MECHANICAL COUPLING IN GROUND INSPECTION PORT OR AS DIRECTED BY CODE ENFORCEMENT AUTHORITY HAVING JURISDICTION.



1 GROUNDING PLAN

SCALE: NTS



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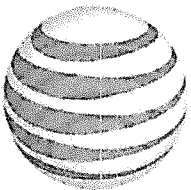
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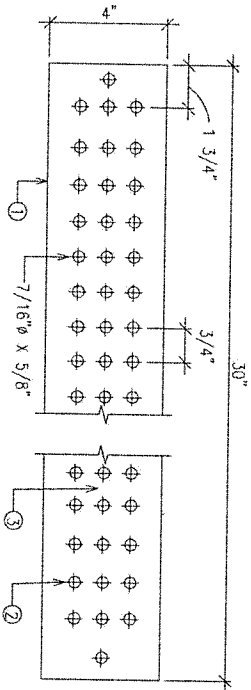
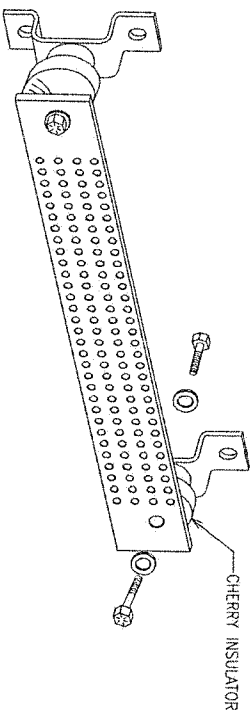


1801 VALLEY VIEW LANE
FARMERS BRANCH, TX 75234

SITE NAME

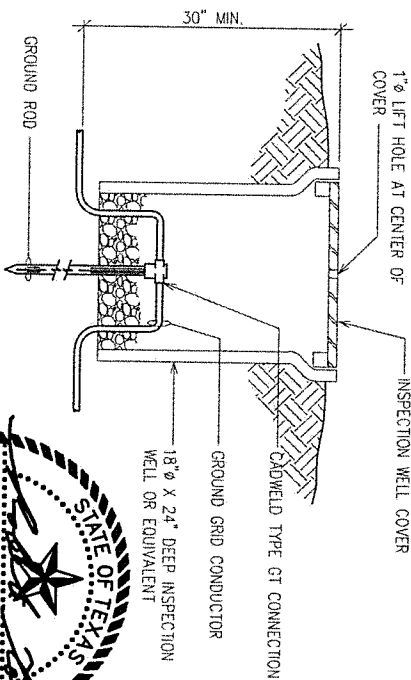
UNIVERSITY PARK
WATER TOWER

DRAWN BY: KDR
CHECKED BY: RT
DATE: 08/03/17
PLOT SCALE: 1"=2'
DRAWING NAME: ELECTRICAL GROUNDING PLAN
SHEET No.: E03

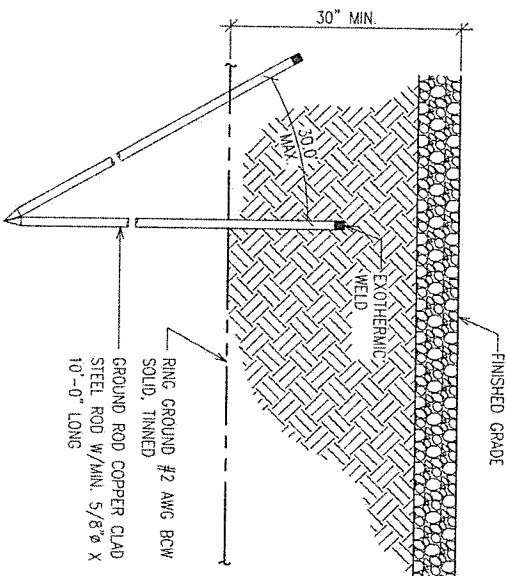


- NOTES:
1. TINNED COPPER GROUND BUSS BAR, 1/4"x4"x30", WITH NON-INSULATED MOUNTING KIT OR EQUIVALENT.
 2. GROUND BAR SHALL BE SIZED TO ACCOMMODATE ALL GROUNDING CONNECTIONS REQUIRED PLUS PROVIDE 50% SPARE CAPACITY
 3. APPLY CONDUCTIVE LUBRICANT (NO-OX COMPOUND OR APPROVED EQUIVALENT) TO EXPOSED AREA OF GROUND BAR.

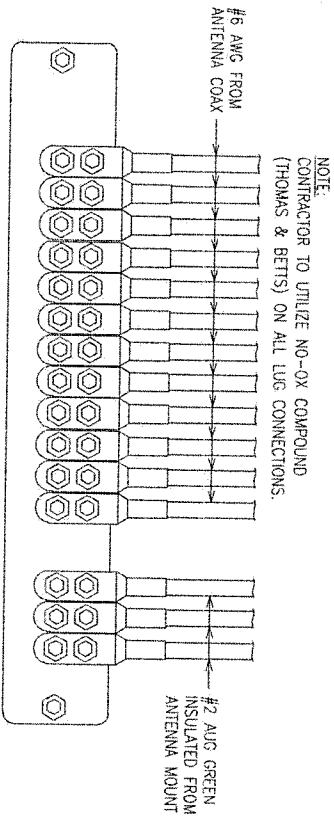
1 MASTER GROUND BAR DETAIL
SCALE: NTS



2 INSPECTION WELL DETAIL
SCALE: NTS

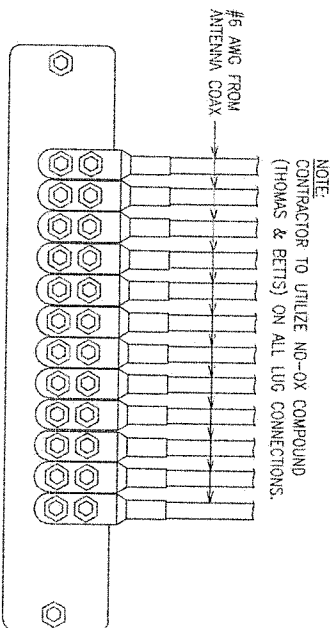


3 GROUND ROD DETAIL
SCALE: NTS



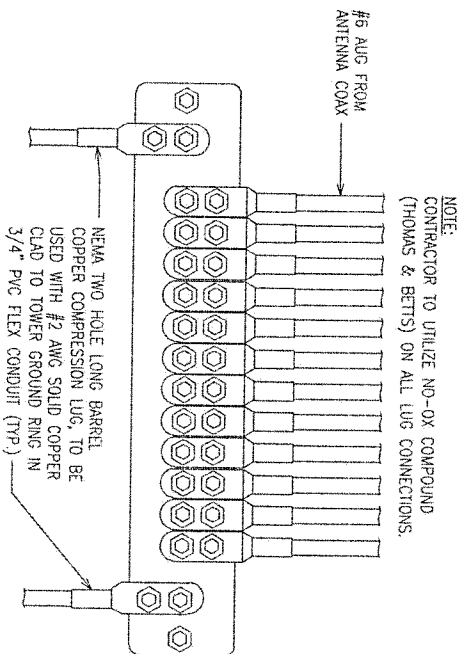
- NOTE:
CONTRACTOR TO UTILIZE NO-OX COMPOUND (THOMAS & BETTS) ON ALL LUG CONNECTIONS.

4 UPPER GROUND BAR DETAIL
SCALE: NTS



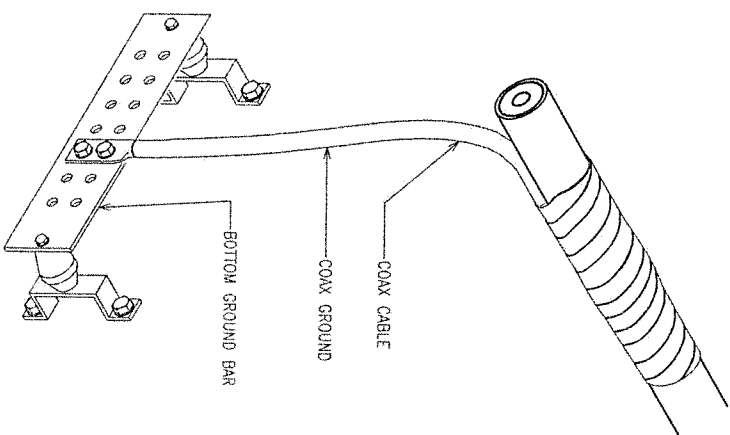
- NOTE:
CONTRACTOR TO UTILIZE NO-OX COMPOUND (THOMAS & BETTS) ON ALL LUG CONNECTIONS.

5 MIDDLE GROUND BAR DETAIL (IF REQUIRED)
SCALE: NTS



- NOTE:
CONTRACTOR TO UTILIZE NO-OX COMPOUND (THOMAS & BETTS) ON ALL LUG CONNECTIONS.

6 LOWER GROUND BAR DETAIL
SCALE: NTS



7 COAX GROUNDING DETAIL
SCALE: NTS

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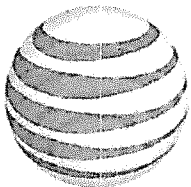
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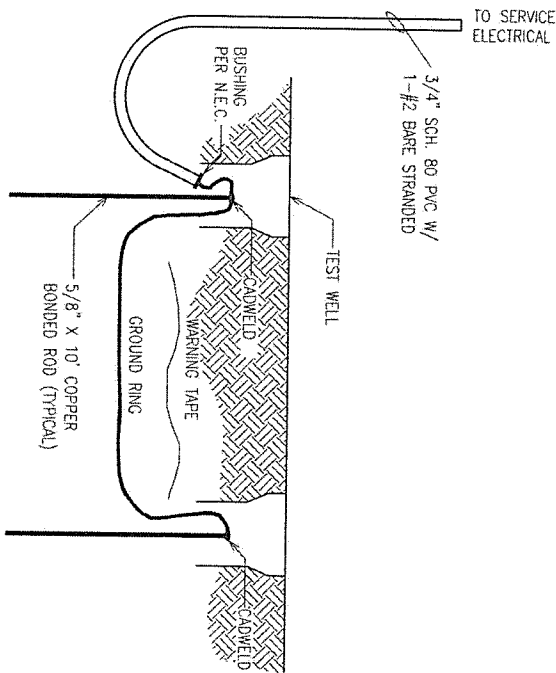


1801 VALLEY VIEW LANE
FARMERS BRANCH, TX 75234

SITE NAME

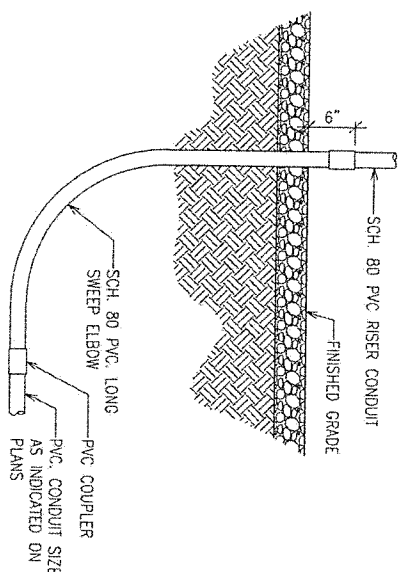
UNIVERSITY PARK
WATER TOWER

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08/03/17
PLOT SCALE:
1"=2'
DRAWING NAME:
ELECTRICAL DETAILS
SHEET NO.:
E04

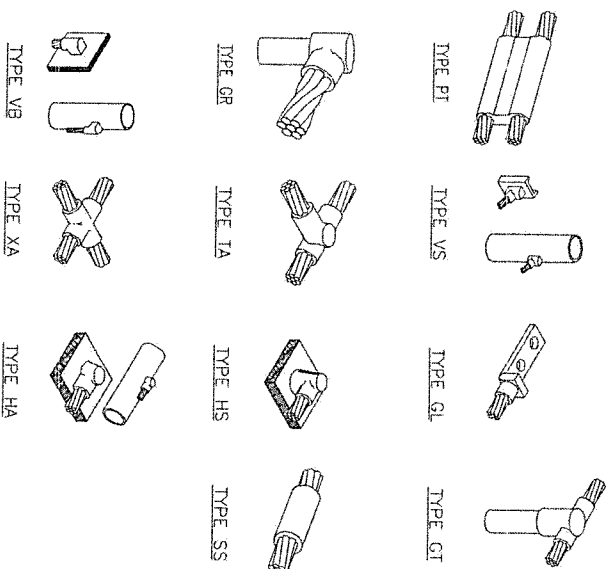


1 GROUNDING ELECTRODE DETAIL
SCALE: NTS

2 NOT USED
SCALE: NTS



3 CONDUIT TRANSITION DETAIL
SCALE: NTS



5 CADWELD CONNECTIONS
SCALE: NTS



8/3/17

4 NOT USED
SCALE: NTS

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WATER TOWER

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DATE: 08/03/17
SHEET SCALE: 1/2"
DRAWING NAME: ELECTRICAL DETAILS

SHEET No.
E05

DIVISION 16 ELECTRICAL SPECIFICATIONS

16000 SCOPE OF WORK:

1. THE REQUIREMENTS PRESENTED IN THESE SPECIFICATIONS PERTAINS TO ELECTRICAL INSTALLATION OF A COMPLETELY NEW POWER RACKWAY SYSTEM FOR THE A1&T WIRELESS INSTALLATION TO THE EXTENT REQUIRED BY THESE CONTRACT DOCUMENT.

IN GENERAL, THE ELECTRICAL CONTRACTOR (HEREAFTER ALTERNATELY REFERRED TO AS "CONTRACTOR") SHALL PROVIDE OR RESTORE THE FOLLOWING EXISTING SYSTEMS:
A. CONDUIT AND RACEWAYS FOR ALL DEVICES, EQUIPMENT, GROUND BUSES, AND GROUND RODS INDICATED ON THE ELECTRICAL PLANS.
B. CONTRACTOR SHALL RUN FEEDERS SHOWN TO SUPPLY POWER TO ALL EQUIPMENT INDICATED PRIOR TO BID. CONTRACTOR SHALL DETERMINE ANY ADDITIONAL POWER OR GROUNDING WHICH MAY BE REQUIRED DEPENDING ON EQUIPMENT SPECIFIC TO THIS SITE AND BUILDING ENCLOSURE.

2. CONTRACTOR(S) WISHING TO BID THIS WORK SHALL BE ABLE TO DEMONSTRATE A MINIMUM OF 5 YEARS PREVIOUS EXPERIENCE WITH THIS TYPE OF PROJECT AND SHALL, IF REQUESTED, SUPPLY DOCUMENTATION TO SUPPORT THIS REQUIREMENT OF QUALIFICATION.

3. EACH QUALIFIED BIDDER SHALL OBTAIN ALL PROPER BID FORMS AND SHALL VISIT THE SITE TO DETERMINE ACTUAL EXISTING CONDITIONS PRIOR TO PREPARING A BID.

4. CONTRACTOR SHALL NOTE THAT IF THIS CURRENTLY HOSTS ONE OR MORE OTHER TENANTS WITH TELEPHONE AND/OR ELECTRICAL SERVICE, CONTRACTOR SHALL NOT CAUSE LOSS OF POWER, COMMUNICATION OR ANY REQUIRED SERVICES TO A1&T WIRELESS OR ANY OTHER SITE OCCUPANT IN ANY MANNER WITHOUT EXPRESS WRITTEN DIRECTION BY A1&T WIRELESS CONSTRUCTION SUPERVISOR. THE CONTRACTOR SHALL BE LIABLE FOR ANY LOSS OF REVENUE TO ANY SITE OCCUPANT BECAUSE OF ANY NONSCHEDULED OUTAGES AS DETERMINED BY CONTRACT AGREEMENT WITH A1&T WIRELESS.

16001 GENERAL: IT IS THE INTENTION OF THESE SPECIFICATIONS AND THE RELATED PLANS TO SHOW COMPLETE, PROPERLY FUNCTIONING SYSTEMS. ALL SYSTEMS, WIRING AND RACEWAYS SHALL BE INSTALLED PER NFPA-70 (APPLICABLE) AND AUTHORITY HAVING JURISDICTION.

16002 SPECIAL CONDITIONS FOR ELECTRICAL WORK:

1. THE CONSTRUCTION DOCUMENTS INCLUDING BUT NOT LIMITED TO THESE PLANS, SPECIFICATIONS, AND CONTRACTS ARE ISSUED FOR INFORMATION TO BE COMPLETED WITH BY THE ELECTRICAL CONTRACTOR AND ANY OR ALL SUBCONTRACTORS AND TRADES EMPLOYED ON THIS PROJECT BY THE ELECTRICAL CONTRACTOR, HEREAFTER REFERRED TO AS CONTRACTOR.
2. THE TERM "CONTRACTOR" IN THIS SECTION REFERS TO THE CONTRACTOR WHOSE WORK IS COVERED BY THIS ELECTRICAL SPECIFICATION.

3. ALL WORK SHALL BE DONE AND TESTED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND WITH LOCAL AND NATIONAL CODES. REPORT SUPPOSED CONFLICTS WITH PLANS AND SPECIFICATIONS IMMEDIATELY TO THE CONSTRUCTION SUPERINTENDENT WHO WILL ISSUE INSTRUCTIONS OR ADDED TO RESOLVE SUCH CONFLICT. IN NO CASE SHALL A CONTRACTOR BASE ITS BID ON WORK THAT WILL NOT BE ACCEPTABLE TO CODE AND THESE CONTRACT DOCUMENTS. NO CONSIDERATION SHALL BE GIVEN TO REQUESTS FOR EXTRA COMPENSATION TO BRING THE BASE WORK INTO CONFORMANCE WITH THESE DOCUMENTS.

4. ALL MATERIAL FOR WHICH THERE IS A CATEGORY FOR TESTING BY UL OR CSA SHALL BE SO TESTED, LISTED AND LABELED.

5. AS MENTIONED ABOVE, IT IS THE INTENT OF THESE DOCUMENTS TO PRODUCE A COMPLETE AND FINISHED ELECTRICAL SYSTEM TO THE EXTENT SHOWN IN THESE CONTRACT DOCUMENTS. THE A1&T WIRELESS CONSTRUCTION MANAGER SHALL BE THE FINAL AUTHORITY FOR ACCEPTANCE OF THE WORK. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR COORDINATING HIS WORK WITH OTHER TRADES AND WITH HIS SUBCONTRACTORS AS NECESSARY TO PROVIDE A FINAL AND COMPLETE ELECTRICAL INSTALLATION.

6. THE CONTRACTOR SHALL EMPLOY ONLY SKILLED, EXPERIENCED, AND WHEN REQUIRED, LICENSED SUB CONTRACTORS AND WORKERS. MATERIALS AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS, IN ACCORDANCE WITH THE BEST TRADE PRACTICES AND IN A NEAT AND WORKMAN LIKE MANNER. WORK WHICH IN THE OPINION OF THE CONSTRUCTION MANAGER DOES NOT CONFORM TO THE INTENT OF THESE PLANS AND SPECIFICATIONS SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

7. THE PLANS AND DETAILS ARE DIAGRAMMATIC IN NATURE. COORDINATE THE LOCATION OF ITEMS NOT CLEARLY DIMENSIONED WITH THE CONSTRUCTION SUPERINTENDENT.

8. SECURE ALL NECESSARY PERMITS, LICENSES AND INSPECTIONS AND PAY ALL REQUIRED FEES, TESTS AND WAGE SCALES THAT MAY BE REQUIRED.

THE CONTRACTOR SHALL INCLUDE THE FINAL INSPECTION CERTIFICATE IN FINAL DOCUMENTS.

9. THE CONTRACTOR IS RESPONSIBLE FOR UNDERSTANDING THE EXISTING SITE CONDITIONS. HE SHALL VISIT THIS SITE (BY APPOINTMENT) AT ANY REASONABLE TIME.

10. LOCATIONS OF UTILITY CONNECTIONS SHOWN ON THE SITE ARE APPROXIMATE AND ARE BASED ON SITE OBSERVATIONS. ACTUAL UTILITY CONNECTIONS AND EXACT LOCATIONS MAY VARY SLIGHTLY. THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANIES INVOLVED PRIOR TO BID TO CONFIRM THE ACTUAL CONDITIONS OF CONNECTION. THE CONTRACTOR SHALL INCLUDE IN HIS BID THE ACTUAL CONDITIONS OF CONNECTION AND ANY FEES REQUIRED BY THE UTILITY FOR PROPOSED NEW 200 AMP, 240/120 VAC SINGLE PHASE UTILITY SERVICE. THE CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL COMPANY CONCERNING ITEMS WHICH HE MUST PROVIDE AND THE CONSTRUCTION SCHEDULE.

11. AFTER COMPLETION OF THE WORK AND BEFORE FINAL INSPECTION, THE CONTRACTOR SHALL THOROUGHLY CLEAN EACH EXPOSED DEVICE, PIECE OF EQUIPMENT AND FIXTURE TO THE SATISFACTION OF THE CONSTRUCTION SUPERINTENDENT.

12. THE CONTRACTOR SHALL SUBMIT ALL MATERIALS LISTED BELOW TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION. FAILURE TO OBTAIN APPROVAL ON MATERIAL SHALL BE CAUSE FOR CONTRACTOR TO REMOVE ANY MATERIALS NOT APPROVED AND REPLACE THEM AT HIS OWN EXPENSE AND WITH NO ALLOWANCE IN THE TIME ALLOWED FOR CONSTRUCTION SUBMITTALS. (PROVIDE IN QUANTITY REQUESTED BY THE CONSTRUCTION MANAGER)

THE FOLLOWING MINIMUM ITEMS SHALL BE SUBMITTED AT THE SAME TIME UNDER ONE COVER IN THE ORDER LISTED:

TAB ONE: WIRE, CONDUIT, GROUND RODS, GROUND BUSES, ELECTRICAL (C&G) WELD DEVICES, METALLIC SHEATHED FLEXIBLE CONDUIT, OUTLET AND PULL BOXES.

TAB TWO: SWITCHES, ENCLOSURES, CABINETS, TIMERS, AND RECEPTACLES

TAB THREE: PANEL BOARDS, DISCONNECT SWITCHES (DESIGNATE USE OF EACH), FUSES, AND CIRCUIT BREAKERS OR OTHER CONTROL DEVICES.

13. THE CONTRACTOR SHALL GUARANTEE THAT ALL WORK PERFORMED UNDER THIS CONTRACT IS FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR ONE YEAR (NINETY) FOLLOWING FINAL ACCEPTANCE BY THE OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL RESPOND TO REQUESTS FOR SERVICE IN A TIMELY MANNER APPROPRIATE TO THE SERVICE REQUESTED. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY ITEMS FOUND TO BE DEFECTIVE WITHIN THE GUARANTEE PERIOD AT NO COST TO THE OWNER.

14. THE CONTRACTOR SHALL MAINTAIN ON THE SITE A SET OF CONSTRUCTION DOCUMENTS MARKED IN RED TO SHOW THE ACTUAL CONDITIONS OF CONSTRUCTION. LOCATIONS OF EQUIPMENT AND ROUTING OF SYSTEMS SHALL BE ACQUIRABLY RECORDED DURING THE COURSE OF CONSTRUCTION. CONTRACTOR SHALL FORWARD A REPRODUCIBLE COPY OF THE RECORD DRAWINGS A1&T WIRELESS AT THE COMPLETION OF CONSTRUCTION AND SHALL MAINTAIN THE ORIGINAL RECORD DRAWINGS FOR USE DURING THE GUARANTEE PERIOD. FINAL PAY REQUEST SHALL NOT BE APPROVED WITHOUT THIS FINELIZED INFORMATION IN ACCORDANCE WITH A1&T WIRELESS CLOSE OUT INSTRUCTIONS.

15. IN ADDITION TO THE ABOVE REQUIRED RECORD DRAWINGS, THE CONTRACTOR SHALL FURNISH TO A1&T WIRELESS AT THE COMPLETION OF THE WORK THE FOLLOWING DOCUMENTS:

TEST REPORTS, WARRANTIES, OPERATIONS AND MAINTENANCE MANUALS AND INFORMATION:

A. A CERTIFICATE OF GUARANTEE/WARRANTY SHOWING THE DATES OF BEGINNING AND ENDING OF THE WARRANTY
B. DOCUMENTS PERTINENT TO THE GUARANTEES AND WARRANTIES OF MANUFACTURERS.
C. WRITTEN INSTALLATION INSTRUCTIONS FOR EQUIPMENT INSTALLED ON THE PROJECT.
D. THREE SETS OF CUT SHEETS FOR EACH PIECE OF EQUIPMENT INSTALLED FOR ELECTRICAL SYSTEMS.
E. CERTIFIED RESISTANCE MEASUREMENT DATA AND DRAWINGS USED DURING CONSTRUCTION.

16. ALL MATERIALS SHALL BE NEW AND OF DOMESTIC OR IF APPROVED, MEXIA MANUFACTURE. ALL ITEMS OF THE SAME TYPE ON THE PROJECT SHALL BE OF THE SAME MANUFACTURER.
17. PRODUCTS OF VARIOUS MATERIALS AND EQUIPMENT ARE SPECIFIED IN ORDER TO ESTABLISH A STANDARD OF QUALITY AND A BASIS OF DESIGN. OTHER SIMILAR MATERIALS MAY BE ACCEPTABLE AS SUBSTITUTIONS PROVIDED THEY MEET THE SAME STANDARDS OF QUALITY AND DESIGN CRITERIA IN THE OPINION OF THE ENGINEER.
ALTERNATE ITEMS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION. THE DECISION OF THE ENGINEER REGARDING ACCEPTABILITY SHALL BE FINAL. THE CONTRACTOR SHALL BEAR ALL COSTS, INCLUDING THAT OF OTHER TRADES AND THE DESIGN TEAM, ASSOCIATED WITH ACCOMMODATIONS FOR PERMANENT SUBSTITUTIONS.

16123 WIRE AND CABLE

1. ALL WIRE AND CABLE SHALL BE COPPER OF AT LEAST 99.5 CONDUCTIVITY.

2. ALL INSULATION SHALL BE TYPE THIN EXCEPT TYPE THIN MAY BE USED FOR SIZES LARGER THAN #6 AWG.

3. NO WIRE SMALLER THAN #12 AWG MAY BE USED EXCEPT THAT CONTROL CIRCUIT MAY BE #14.

4. A STRIP METHOD OF COLOR CODING SHALL BE MAINTAINED UNLESS THE AUTHORITY HAVING JURISDICTION HAS A DIFFERENT STANDARD. THE FOLLOWING SHALL BE MAINTAINED:
A PHASE: BLACK; B PHASE: RED; (AND WHERE USED) C PHASE: BLUE; NEUTRAL: WHITE; GROUND: GREEN; SWITCH LEG: BROWN; TRAVELERS: BROWN.

5. WIRE CONNECTORS FOR #6 AND SMALLER MAY BE SPRING STEEL CONNECTORS. SPOT BOLT CONNECTORS WITH RUBBER AND VINYL TAPE SHALL BE USED FOR SIZES LARGER THAN #6. POWER DISTRIBUTION BLOCKS MAY BE USED FOR ANY SIZE CONDUCTOR FOR WHICH IT IS LISTED.

6. UL LISTED WIRE PULLING LUBRICANT SHALL BE USED ON ALL RACKWAY INSTALLATIONS.

16130 RACKWAY SYSTEMS

1. ALL WIRING ABOVE GRADE OR OTHERWISE EXPOSED SHALL BE IN METALLIC CONDUIT. TYPE MC CABLE OR FLEXIBLE CONDUIT MAY NOT BE USED UNLESS SHOWN OR REQUIRED BY THESE SPECIFICATIONS BUT GALVANIZED INTERMEDIATE AND RIGID CONDUIT ARE ALL ACCEPTABLE WIRING MATERIALS FOR ABOVE GRADE PROVIDED THEY ARE ACCEPTABLE TO LOCAL CODE ENFORCEMENT.
2. ALL FITTINGS SHALL BE CORROSION TYPE OR SCREW TYPE AND MAY NOT BE DIE CAST SET SCREW.

3. CONDUIT BELOW GRADE SHALL BE SCHEDULE 40 PVC WITH MATCHING FITTINGS EXCEPT THAT ELBOWS AND VERTICAL CONDUITS IN CONTACT WITH EARTH WHICH ARE LIKELY TO BE DAMAGED BY EXCESSIVE PULLING ROPE TENSION MAY BE PLASTIC WRAPPED INTERMEDIATE OR RIGID GALVANIZED STEEL.

4. EXPOSED CONDUIT OUTDOORS ABOVE GRADE OR IN DAMP LOCATIONS SHALL BE GALVANIZED RIGID STEEL OR INTERMEDIATE METALLIC CONDUIT.

5. ULTRAVIOLET PROTECTED PLASTIC COATED FLEXIBLE METAL CONDUIT MAY BE USED WHERE INDICATED AND OTHERWISE FOR THE CONNECTION OF ROTATING OR VIBRATING EQUIPMENT. SUCH EQUIPMENT LOCATED OUTDOORS OR IN DAMP LOCATIONS SHALL BE CONNECTED WITH LIQUID TIGHT FLEXIBLE METAL CONDUIT USING LISTED FITTINGS.

6. MINIMUM COVER FOR OUTDOOR CONDUITS SHALL BE 36 INCHES. NOTE: UTILITY CONDUITS MAY HAVE A GREATER DEPTH REQUIREMENT.

16250 GROUNDING

1. ALL EQUIPMENT AND SERVICE ENTRANCE GROUNDING SHALL BE PER NFPA-70 CURRENT EDITION AS ADOPTED BY LOCAL AUTHORITY HAVING JURISDICTION ON THIS PROJECT. PER ARTICLE 250 AS WELL AS OTHER APPLICABLE STANDARDS SUCH AS THE NATIONAL ELECTRICAL SAFETY CODE, NFPA 720 (LIGHTNING PROTECTION) AND A1&T WIRELESS STANDARDS ON EQUIPMENT GROUNDING.

16400 WIRING DEVICES

1. PROVIDE DEVICES AS SHOWN ON DOCUMENTS. CONSULT WITH CONSTRUCTION MANAGER AND OTHER TRADES FOR EXACT LOCATION OF OUTLETS. WHERE OUTLETS SERVE A SPECIFIC PIECE OF EQUIPMENT AND WHERE POSSIBLE, CONCEAL OUTLET BEHIND THAT EQUIPMENT.

16500 PANEL BOARDS: VERIFY PROVIDED BY A1&T WIRELESS (OR CONTRACTOR) AND INSTALLED BY THIS CONTRACTOR.

1. VERIFY THAT THE INTERRUPTING RATING OF CIRCUIT BREAKERS SHALL BE GREATER THAN THE AVAILABLE FAULT CURRENT. VERIFY THE AVAILABLE FAULT CURRENT WITH THE SERVING ELECTRICAL UTILITY.

2. PROVIDE SOLID NEUTRALS ON ALL PANELS AND MAIN SERVICE ENTRANCE DISCONNECT (IF MAIN SERVICE DISCONNECT REQUIRED).
3. PROVIDE 1" BLACK MEXIA TAGS WITH 1/2" WHITE LETTERS FOR EACH PANELBOARD AND DISCONNECT MATCHING PROJECT DOCUMENTATION. TAGS SHALL BE "POP-RIEVETED" THROUGH PANEL COVER.

16600 LIGHTING FIXTURES (IF SHOWN)

1. PROVIDE LIGHTING FIXTURES AS SHOWN ON THE DOCUMENTS. QUESTIONS ON LIGHT FIXTURE TYPES SHALL BE DIRECTED TO A1&T WIRELESS FOR CLARIFICATION. THE CONTRACTOR SHALL PROVIDE ALL LIGHTING FIXTURES.

2. FASTEN EACH LIGHTING FIXTURE TO AN OUTLET BOX OR STRUCTURAL FRAMING. INCLUDE ALL NECESSARY HARDWARE AND SUPPORTING DEVICES TO ACCOMPLISH THIS.

3. PROVIDE NEW LAMPS OF THE TYPE RECOMMENDED BY THE PLANS AND SPECIFICATION AT THE TIME OF FINAL ACCEPTANCE.

4. ALL LIGHTING FIXTURES SHALL BE CLEAN AND FULLY OPERATIONAL AT THE TIME OF FINAL ACCEPTANCE.

16700 EQUIPMENT CONNECTIONS

1. PROVIDE ELECTRICAL POWER AND LIGHTING CONNECTIONS FOR ALL EQUIPMENT ON THE PROJECT WHETHER FURNISHED BY THIS CONTRACTOR OR OTHERS.
2. CAREFULLY RESEARCH THE DOCUMENTS AND CONSULT WITH OTHERS TO DETERMINE THE REQUIREMENTS FOR CONNECTIONS.

16900 SPECIAL MODULAR CELL INSTALLATION GROUNDING INTEGRITY AND IMPEDANCE TESTING:

1. CONTRACTOR SHALL PRESENT MEASUREMENTS SHOWING CERTIFIED THIRD PARTY GROUND IMPEDANCE TESTING AS REQUIRED BY THE CONTRACT DOCUMENTATION, TESTING PER ANSI/IEEE STD 81-1983, IEEE GUIDE FOR MEASURING EARTH RESISTIVITY SHALL BE AS APPROVED BY A1&T WIRELESS CONSTRUCTION MANAGEMENT.

2. THIS INSTALLATION SHALL BE GROUNDED WITH AN INTEGRATED (MULTI-POINT) GROUNDING SYSTEM.

3. SURGE PROTECTION SHALL BE A1&T WIRELESS APPROVED EQUIPMENT. IT SHALL BE BONDED TO A GROUND BAR AT THE SERVICE ENTRANCE POINT THAT IS CONNECTED DIRECTLY TO THE GROUNDING ELECTRODE SYSTEM.

4. REVIEW EXISTING INSTALLATION AND FOLLOW A1&T WIRELESS CELL SITE GROUNDING AND LIGHTNING PROTECTION STANDARDS. RECOMMENDED DIFFICULTIES WITH MEETING THIS CRITERIA WITH A1&T WIRELESS CONSTRUCTION MANAGEMENT. OTHER RECOMMENDED STANDARDS SHALL BE: NFPA-780 STANDARD FOR INSTALLATION OF LIGHTNING SYSTEMS AND POLY PHASE EQUIPMENT; AND, THE GROUNDS FOR LIGHTNING PROTECTION AND EMP PROTECTION*, SECOND ED. BY ROGER R. BLOCK.

5. THE ELECTRICAL CONTRACTOR SHALL PROVIDE BONDING STRAPS, CAD WELDING AND HARDWARE FOR EACH SEPARATE PIECE OF THE EQUIPMENT. ADDITIONAL PLATFORM TO ASSURE THAT ALL PIECES ARE ELECTRICALLY CONNECTED SUCH CONNECTIONS SHALL BE MADE AND TESTED TO DEMONSTRATE LOW ELECTRICAL RESISTANCE ACCEPTABLE TO A1&T WIRELESS BETWEEN ANY TWO POINTS ON THE PLATFORM, MOUNTS OR STRUCTURE.

REVISIONS

ISSUED FOR CONSTRUCTION 08/03/17

REVISIONS	DATE

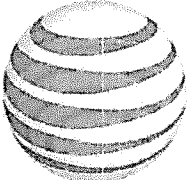
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SITE NAME
UNIVERSITY PARK
WATER TOWER



8/3/17

DRAWN BY: KDR
CHECKED BY: RT
DATE: 08/03/17
SCALE: 1:1
DRAWING NAME: ELECTRICAL SPECIFICATIONS
SHEET NO.: E06

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