

# T-Mobile NORTHEAST LLC

SITE NAME: H&S DEVELOPMENT GROUP  
 SITE NUMBER: VA70330D  
 SITE ADDRESS: 700 GREENLAWN AVE  
 HAMPTON, VA 23661  
 CONFIGURATION: 4 SECTOR 797DB



APPLICANT  
**T-Mobile**  
**NORTHEAST LLC**  
 324 MADISON MEWS  
 NORFOLK, VA 23510

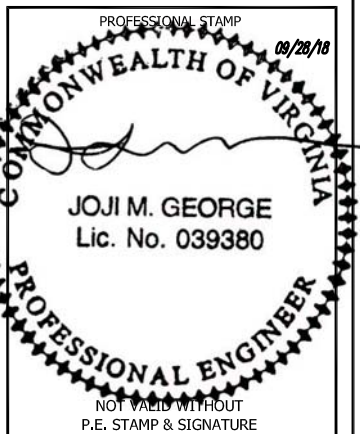


ENGINEER

CONSULTING GROUP, INC.  
 9221 LYNDON B. JOHNSON FREEWAY  
 SUITE 204, DALLAS, TX 75243  
 PHONE: 972-231-8893  
 FAX: 866-364-8375  
 WWW.ALLPROCG.COM

DRAWN BY: R. MADLOCK  
 CHECKED BY: I. GEORGE  
 ACGI JOB #: 18-4735, 18-1827, & 18-3917

REVISIONS			
NO.	DATE	DESCRIPTION	BY
4	08/10/18	SITE RELOCATED	RM
3	07/09/18	BP COMMENTS	RM
2	07/02/18	TOWER HEIGHT	RM
1	06/28/18	BP COMMENTS	RM
0	05/22/18	FINAL CD	RM
C	05/08/18	REVISED PER REDLINES	RM
B	04/06/18	REVISED PER REDLINES	RM
A	03/28/18	ISSUED FOR REVIEW	RM



## SITE INFORMATION

SCOPE OF WORK: THIS PROJECT WILL INCLUDE THE INSTALLATION OF TELECOMMUNICATIONS EQUIPMENT, A FENCED COMPOUND, AND A 159'-0" MONOPOLE TOWER IN A RAWLAND LEASE AREA. ANTENNAS WILL BE ADDED TO THE TOWER. EQUIPMENT WILL BE ADDED TO THE SITE. ASSOCIATED POWER AND TELEPHONE CIRCUITS WILL BE ADDED WITHIN THE SITE.

SITE NUMBER: VA70330D  
 SITE NAME: H&S DEVELOPMENT GROUP

SITE ADDRESS: 700 GREENLAWN AVE  
 HAMPTON, VA 23661

LATITUDE: N 37° 00' 3.29"  
 LONGITUDE: W -76° 24' 18.63"  
 GROUND ELEVATION: 17' (AMSL)

ZONING: M-3  
 JURISDICTION: CITY OF HAMPTON  
 MAP & PARCEL#: 01A006 00 00000PCA

TOWER OWNER: C. E. FOREHAND  
 2528 HORSE PASTURE RD.  
 VIRGINIA BEACH, VA 23453  
 PHONE: 757-650-1673

STRUCTURE TYPE: MONOPOLE  
 STRUCTURE HEIGHT: 159'-0" W/ 4' LIGHTNING ROD

POWER PROVIDER: DOMINION VIRGINIA POWER  
 PHONE: 757-487-4847

TELCO PROVIDER: VERIZON  
 PHONE: 1-866-272-5777

## VICINITY MAP



## DIRECTION

DEPART 324 MADISON MEWS, NORFOLK, VA 23510 ON MADISON MEWS (EAST), TURN LEFT (WEST) ONTO W FREEMASON ST, TURN RIGHT (NORTH) ONTO BOTETOURT ST, TURN LEFT (WEST) ONTO US-58 [VA-337], KEEP STRAIGHT ONTO US-58 [W BRAMBLETON AVE], ROAD NAME CHANGES TO W BRAMBLETON AVE, TURN LEFT TO STAY ON W BRAMBLETON AVE, TAKE RAMP (RIGHT) ONTO US-58 [MIDTOWN TUNNEL EXPY], BEAR RIGHT (WEST) ONTO US-58 [MARTIN LUTHER KING FWY], TAKE RAMP (RIGHT) ONTO VA-164 [WESTERN FWY], TAKE RAMP (RIGHT) ONTO VA-135 [COLLEGE DR], TAKE RAMP (RIGHT) ONTO I-664 [HAMPTON ROADS BELTWAY], AT EXIT 4, TURN RIGHT ONTO RAMP, TURN RIGHT (SOUTH) ONTO ROANOKE AVE, THEN IMMEDIATELY TURN LEFT (EAST) ONTO VA-351 [39TH ST], KEEP STRAIGHT ONTO VA-351 [W PEMBROKE AVE], TURN LEFT (NORTH-WEST) ONTO GREENLAWN AVE, ARRIVE 700 GREENLAWN AVE, HAMPTON, VA 23661

## SHEET INDEX

SHEET	SHEET TITLE:	REVISION HISTORY	
		NO.:	DATE:
T-1	TITLE SHEET	0	
C-1	OVERALL SITE PLAN	0	
C-2	ENLARGED SITE PLAN	0	
C-2a	EQUIPMENT LAYOUT PLAN	0	
C-3	ELEVATION	0	
C-4	ANTENNA PLAN & ANTENNA SCHEDULE	0	
C-5	RF PLUMBING DIAGRAM	0	
C-5a	797DB CONFIGURATION PLUMBING DIAGRAM	0	
C-5b	6x12 COLOR CODES	0	
C-6	DETAILS	0	
C-7	DETAILS	0	
C-8	BTS & EQUIPMENT PLATFORM DETAILS	0	
C-9	GENERATOR DETAILS	0	
C-10 & C-11	FENCE DETAILS	0	
E-1	ELECTRICAL SITE PLAN	0	
E-2	ELECTRICAL PANEL & DETAILS	0	
E-3	CONDUIT LAYOUT	0	
E-5	UTILITY BACKBOARD	0	
G-1	GROUNDING SITE PLAN	0	
G-2	GROUNDING DETAILS	0	
G-3	GROUNDING DETAILS	0	
N-1 TO N-3	GENERAL NOTES	0	
L-1	LANDSCAPE PLAN	0	

## PROJECT TEAM

APPLICANT: T-MOBILE NORTHEAST LLC  
 324 MADISON MEWS  
 NORFOLK, VIRGINIA 23510  
 PHONE: 804-364-7803  
 FAX: 757-490-4990

PROJECT MANAGEMENT FIRM: F.C.I. TOWERS, INC.  
 2528 HORSE PASTURE RD.  
 VIRGINIA BEACH, VA 23453  
 CONTACT: ANDREW WALLACE  
 OFFICE: (757) 490-2535  
 FAX: (757) 490-4990

ENGINEER: ALLPRO CONSULTING GROUP, INC.  
 9221 LYNDON B. JOHNSON FREEWAY  
 SUITE 204  
 DALLAS, TX 75243  
 CONTACT: JOJI M. GEORGE, P.E.  
 OFFICE: 972-231-8893  
 FAX: 866-364-8375

## CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.

- 2012 VIRGINIA UNIFORM STATEWIDE BUILDING CODE (USBC)
- 2011 NATIONAL ELECTRICAL CODE
- 2012 NFPA 101, LIFE SAFETY CODE
- 2012 IFC
- AMERICAN CONCRETE INSTITUTE - 318-11
- AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL OF STEEL CONSTRUCTION 14TH EDITION
- ANSI/TIA-222-G
- TIA 607
- INSTITUTE FOR ELECTRICAL & ELECTRONICS ENGINEER 81
- IEEE C2 NATIONAL ELECTRIC SAFETY CODE LATEST EDITION
- TELECORDIA GR-1275
- ANSI/T 311

THESE DRAWINGS ARE FORMATTED TO BE FULL-SIZE AT 24"x36". CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE DESIGNER / ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR MATERIAL ORDERS OR BE RESPONSIBLE FOR THE SAME. CONTRACTOR SHALL USE BEST MANAGEMENT PRACTICE TO PREVENT STORM WATER POLLUTION DURING CONSTRUCTION.

## APPROVAL BLOCK

	DATE	APPROVED	APPROVED AS NOTED	DISAPPROVED / REVISE
PROPERTY OWNER	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SITE ACQUISITION	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CONSTRUCTION MANAGER	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ZONING	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RF ENGINEER	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SHEET INFORMATION  
**VA70330D**  
**H&S DEVELOPMENT GROUP**  
 700 GREENLAWN AVE  
 HAMPTON, VA 23661  
 CITY OF HAMPTON

SHEET TITLE  
**TITLE SHEET**

SHEET NUMBER  
**T-1**



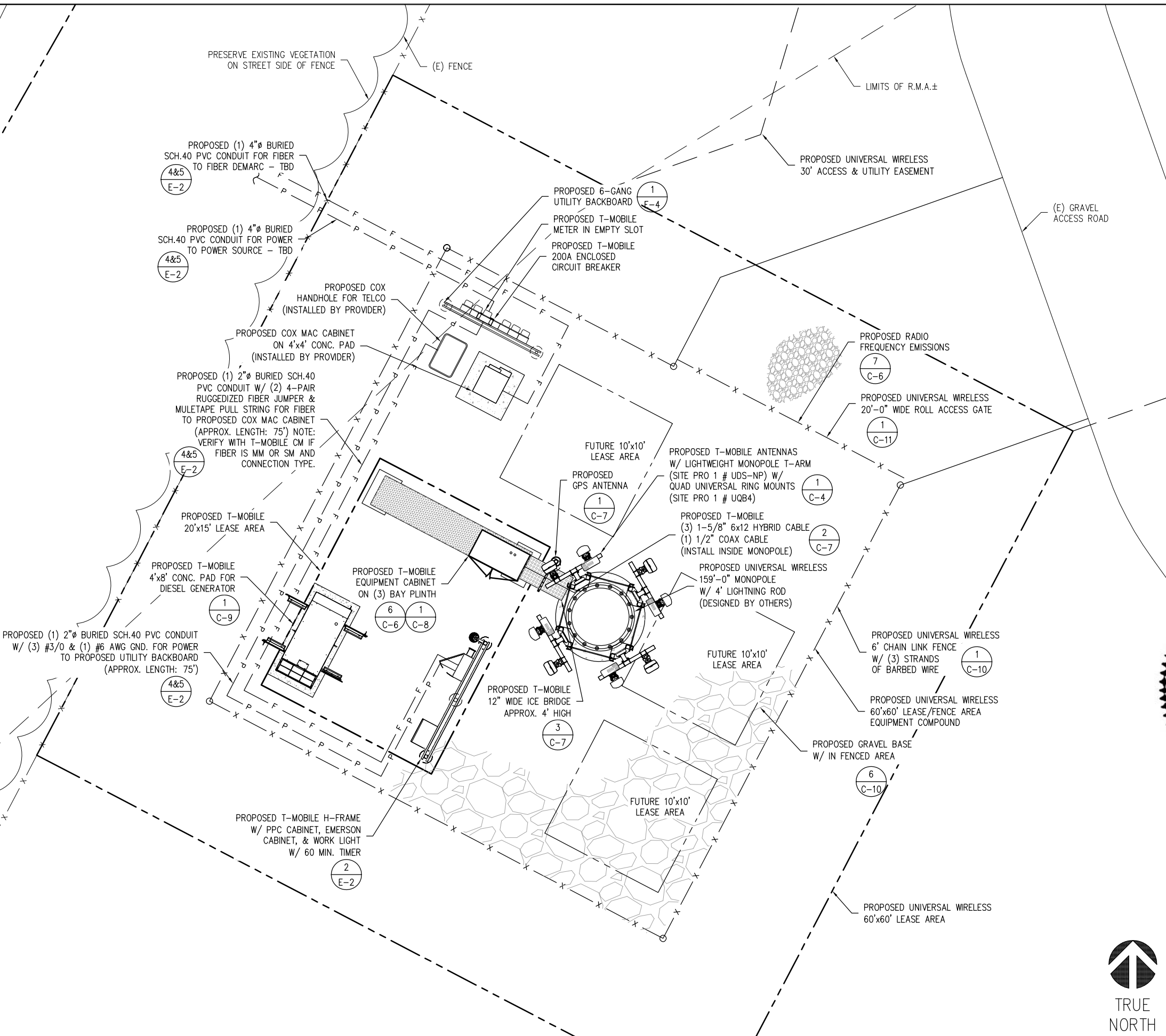


**LEGEND**

PROPOSED	NEW
(E)	EXISTING
---	CENTER LINE
---	PROPERTY LINE
-X-	FENCE LINE
---	EASEMENT LINE
—OHP—	OVERHEAD POWER
—OHT—	OVERHEAD TELCO
—P—	UNDERGROUND POWER CONDUIT
—T—	UNDERGROUND TELCO CONDUIT
—F—	UNDERGROUND FIBER CONDUIT
—HYBRID—	HYBRID CABLE
—COAX—	COAX CABLE

NOTE:  
NEW BURIED OR OVERHEAD UTILITIES MUST BE CONTAINED WITHIN A DEDICATED UTILITY EASEMENT. ALL EXISTING AND NEW UTILITY EASEMENTS MUST BE VERIFIED PRIOR TO CONSTRUCTION. NO DIGGING OR TRENCHING SHALL BE ALLOWED WITHOUT PRIOR VERIFICATION OF EXISTING BURIED UTILITIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL UTILITIES (WHETHER SHOWN OR NOT) AND PROTECT SAID UTILITIES FROM ANY DAMAGE CAUSED BY CONTRACTOR'S ACTIVITIES.

OUR SITE PLAN WAS PREPARED WITHOUT THE BENEFIT OF A RECENT SURVEY. NO PROPERTY LINES, FLOOD PLAIN ELEVATION, OR EXISTING EASEMENT INFORMATION WAS MADE AVAILABLE TO ALLPRO CONSULTING GROUP, INC AT THE TIME OF PREPARATION OF THESE PLANS. DUE DILIGENCE SHALL BE DONE BY OTHERS BEFORE THE SITE IS BUILT AS SHOWN. IN CASE OF ANY CONFLICTS DUE TO PROPERTY LINES OR NEW EXPANSION ON AN EXISTING EASEMENTS OR DUE TO LANDLORD PREFERENCE FOR A DIFFERENT DESIGN, IF THE SURVEY AND FLOOD PLAIN INFORMATION IS AVAILABLE. PLEASE CONTACT ALLPRO CONSULTING GROUP, INC FOR A REDESIGN BEFORE SITE IS BUILT.



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Towers  
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CHECKED BY: J. GEORGE  
ACGI JOB #: 18-4735, 18-1827, & 18-3917

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COMMONWEALTH OF VIRGINIA  
JOJI M. GEORGE  
Lic. No. 039380  
PROFESSIONAL ENGINEER  
NOT VALID WITHOUT  
P.E. STAMP & SIGNATURE

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**GROUP**  
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HAMPTON, VA 23661  
CITY OF HAMPTON

SHEET TITLE  
**ENLARGED**  
**SITE PLAN**

SHEET NUMBER  
**C-2**

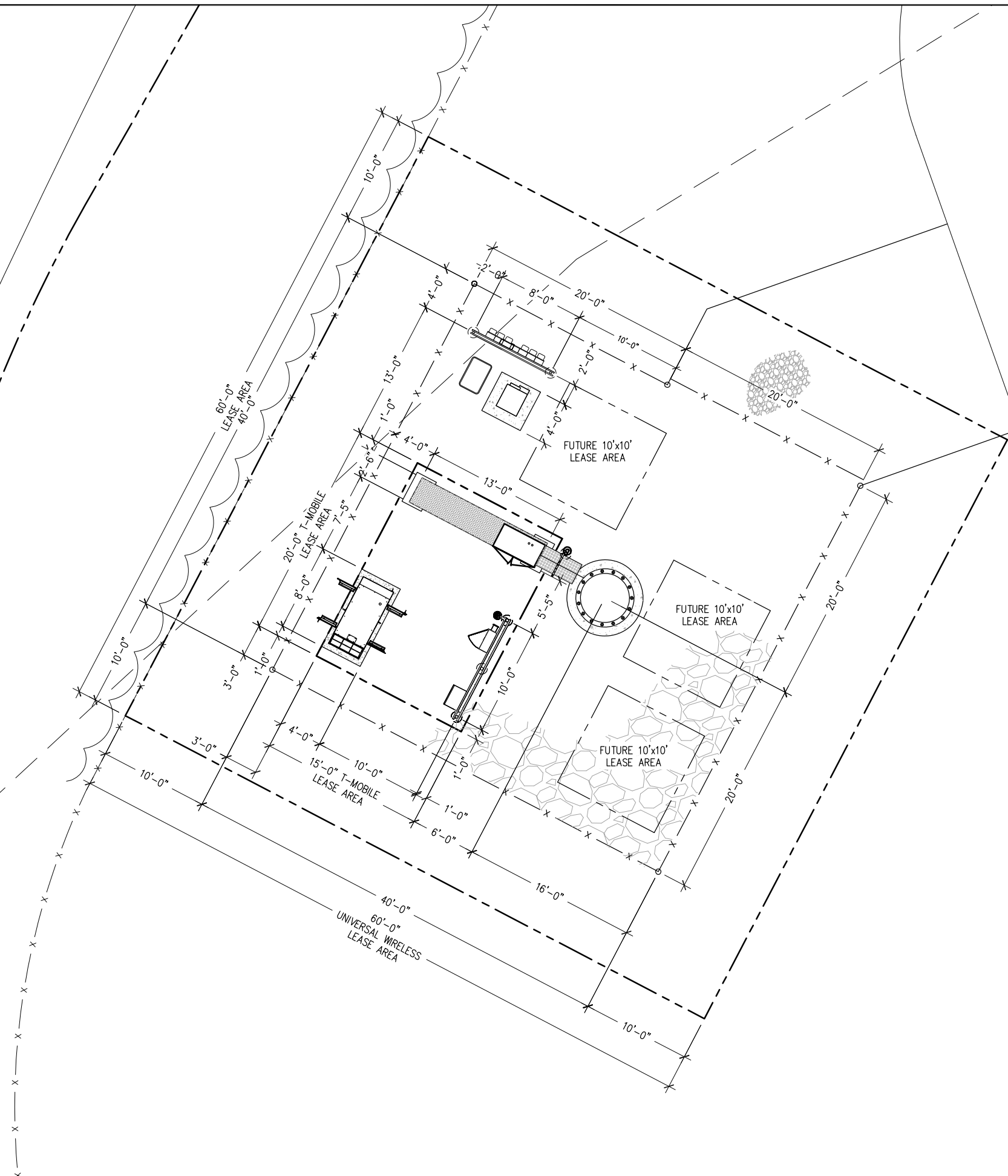
**ENLARGED SITE PLAN**



FOR 24" X 36" PLOT - 1/4" = 1' 0 1' 2' 4' 8'  
FOR 11" X 17" PLOT - 1/8" = 1'

**LEGEND**

PROPOSED	NEW
(E)	EXISTING
---	CENTER LINE
- - - -	PROPERTY LINE
- X -	FENCE LINE
- - - -	EASEMENT LINE
— OHP —	OVERHEAD POWER
— OHT —	OVERHEAD TELCO
— P —	UNDERGROUND POWER CONDUIT
— T —	UNDERGROUND TELCO CONDUIT
— F —	UNDERGROUND FIBER CONDUIT
— HYBRID —	HYBRID CABLE
— COAX —	COAX CABLE



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SHEET TITLE  
**EQUIPMENT**  
**LAYOUT PLAN**

SHEET NUMBER  
**C-2a**



**GENERAL NOTES**

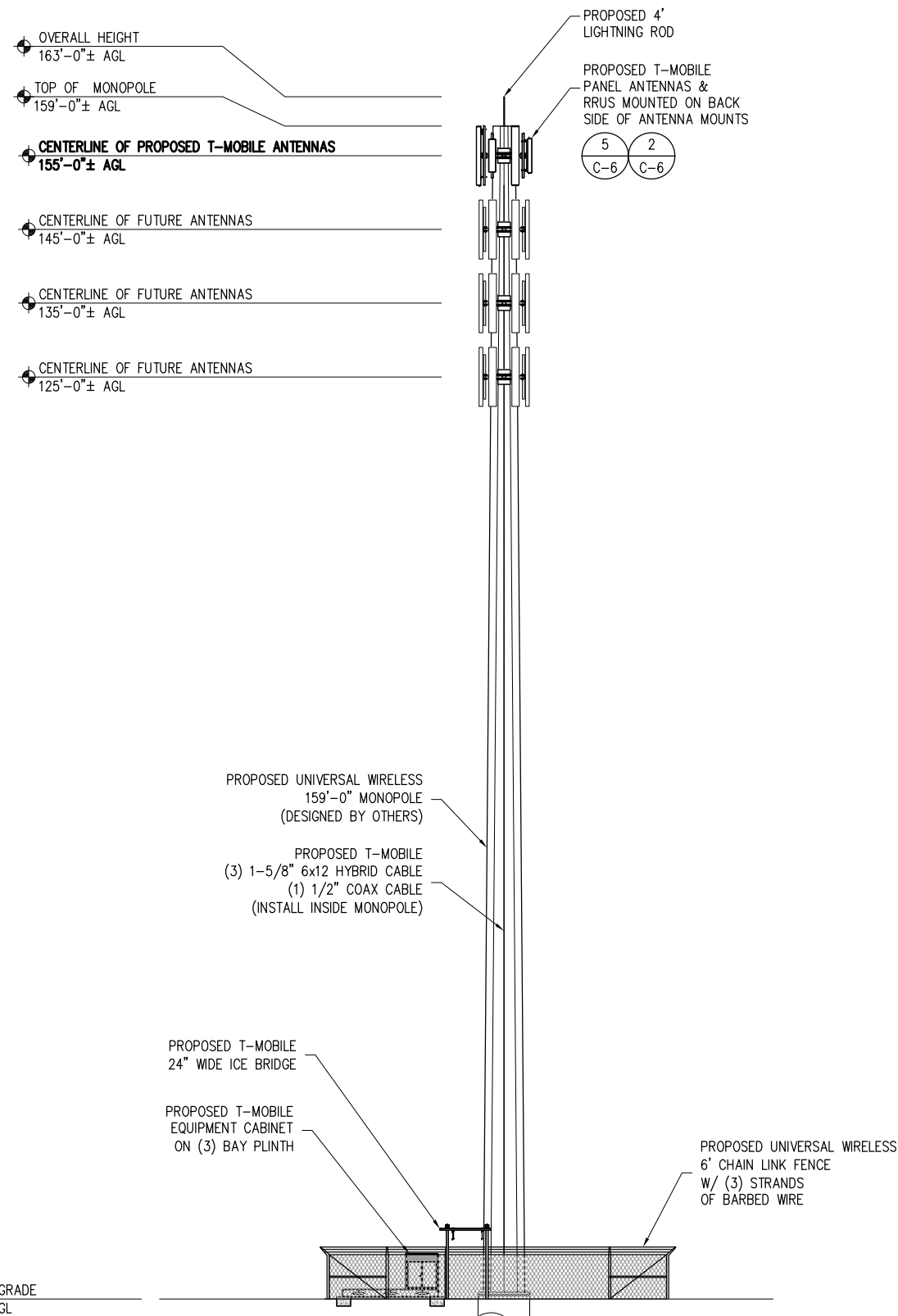
1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES ORDINANCES, LAWS, AND REGULATIONS OF ALL MUNICIPALITIES, UTILITIES COMPANY OR OTHER PUBLIC AUTHORITIES.
2. THE GENERAL CONTRACTOR AND SUBCONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
3. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK. MINOR OMISSIONS OR ERRORS IN THE BID DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR THE OVERALL INTENT OF THESE DRAWINGS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED AS A RESULT OF CONSTRUCTION OF THIS FACILITY.
5. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS.
6. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING A BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
7. CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTH WITH RF ENGINEERING PRIOR TO INSTALLATION.
8. TRANSMITTER EQUIPMENT AND ANTENNAS ARE DESIGNED TO MEET ANSI/EIA/TIA 222-G REQUIREMENTS.
9. ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
10. CONTRACTOR SHALL MAKE A UTILITY "ONE CALL" TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
11. IF ANY UNDERGROUND UTILITIES OR STRUCTURES EXIST BENEATH THE PROJECT AREA, CONTRACTOR MUST LOCATE IT AND CONTACT THE APPLICANT & THE OWNERS REPRESENTATIVE.
12. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION BY TECHNICIANS APPROXIMATELY 2 TIMES PER MONTH.
13. PRIOR TO THE INSTALLATION OF THE PROPOSED EQUIPMENT OR MODIFICATION OF THE EXISTING STRUCTURE, A STRUCTURAL ANALYSIS SHALL BE PERFORMED BY THE OWNER'S AGENT TO CERTIFY THAT THE EXISTING / PROPOSED COMMUNICATION STRUCTURE AND COMPONENTS ARE STRUCTURALLY ADEQUATE TO SUPPORT ALL EXISTING AND PROPOSED ANTENNAS, COAXIAL CABLES AND OTHER APPURTENANCES.
14. PROPERTY LINE INFORMATION WAS PREPARED USING DEEDS, TAX MAPS, AND PLANS OF RECORD AND SHOULD NOT BE CONSTRUED AS AN ACCURATE BOUNDARY SURVEY.
15. THIS PLAN IS SUBJECT TO ALL EASEMENTS AND RESTRICTIONS OF RECORD.
16. THE PROPOSED FACILITY WILL CAUSE ONLY A "DE MINIMIS" INCREASE IN STORMWATER RUNOFF. THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
17. NO SIGNIFICANT NOISE, SMOKE, DUST, OR ODOR WILL RESULT FROM THIS FACILITY.
18. THE FACILITY IS UNMANNED AND NOT INTENDED FOR HUMAN HABITATION (NO HANDICAP ACCESS REQUIRED.)
19. THE FACILITY IS UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
20. POWER TO THE FACILITY WILL BE MONITORED BY A SEPARATE METER.

**NOTE:**  
PRIOR TO ATTACHING ANTENNAS AND MOUNTING SECTIONS, TOWER AND TOWER FOUNDATION MUST BE ANALYZED BY A LICENSED STRUCTURAL ENGINEER TO VERIFY TOWER IS CAPABLE OF SUPPORTING THE PROPOSED LOADS. REFER TO STRUCTURAL ANALYSIS BY OTHERS.

**NOTE:**  
MOUNT COMPLIANCE IS BY OTHERS. NO NEW ANTENNA OR EQUIPMENT SHALL BE INSTALLED ON MOUNTS WITHOUT THE APPROVAL OF STRUCTURAL ENGINEER.

**NOTE:**  
PROPOSED ANTENNA PLACEMENT LOCATION TO BE FIELD VERIFIED BY GENERAL CONTRACTOR PRIOR TO CONSTRUCTION TO AVOID ANY INTERFERENCE OR SHADOWING OF EXISTING ANTENNAS. IF INTERFERENCE OR SHADOWING OF EXISTING ANTENNAS IS DISCOVERED DURING FIELD VERIFICATION, PLEASE CONTACT ALLPRO CONSULTING GROUP INC. FOR DESIGN REVISION PRIOR TO ANY NEW ANTENNA INSTALLATION.

**NOTE:**  
ALL INSTALLATIONS SHOULD BE IN COMPLIANCE WITH ANSI/ASSE A10.48 AND ANY OTHER SAFETY STANDARDS.



**TOWER ELEVATION**

FOR 24" X 36" PLOT - 3/32" = 1' 0' 4' 8' 16'  
FOR 11" X 17" PLOT - 3/64" = 1'

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SHEET TITLE  
**ELEVATION**

SHEET NUMBER  
**C-3**



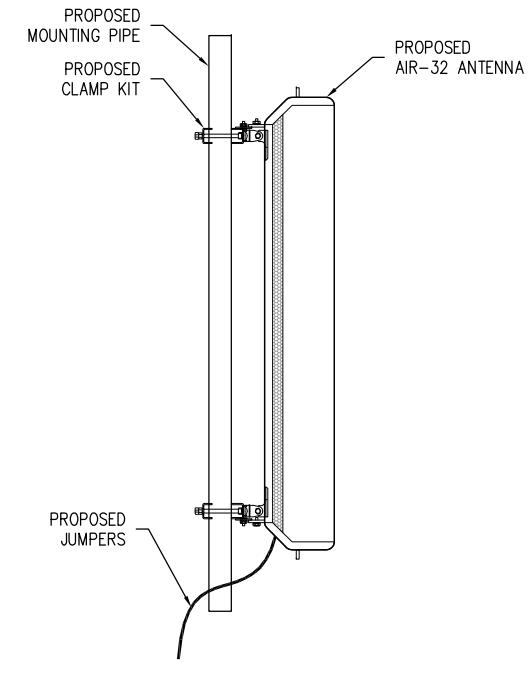
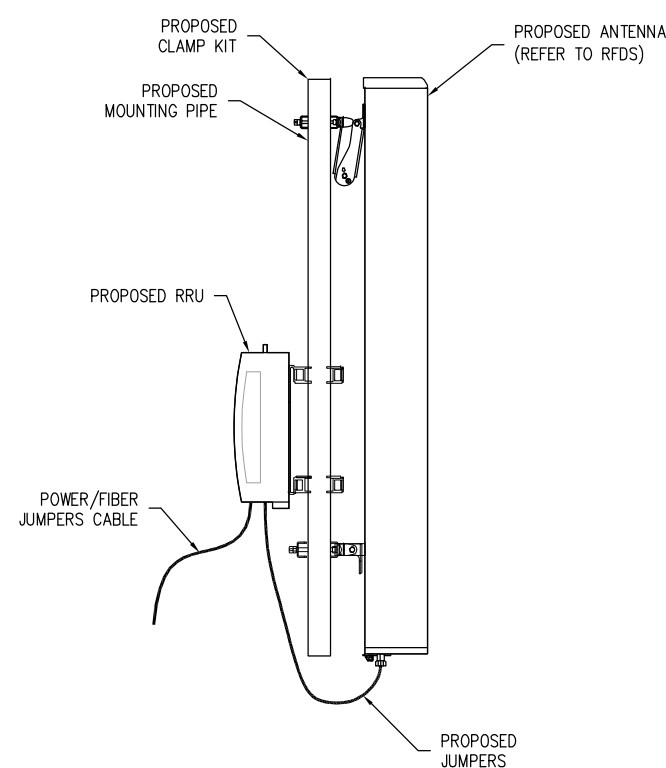
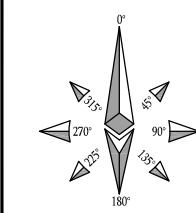
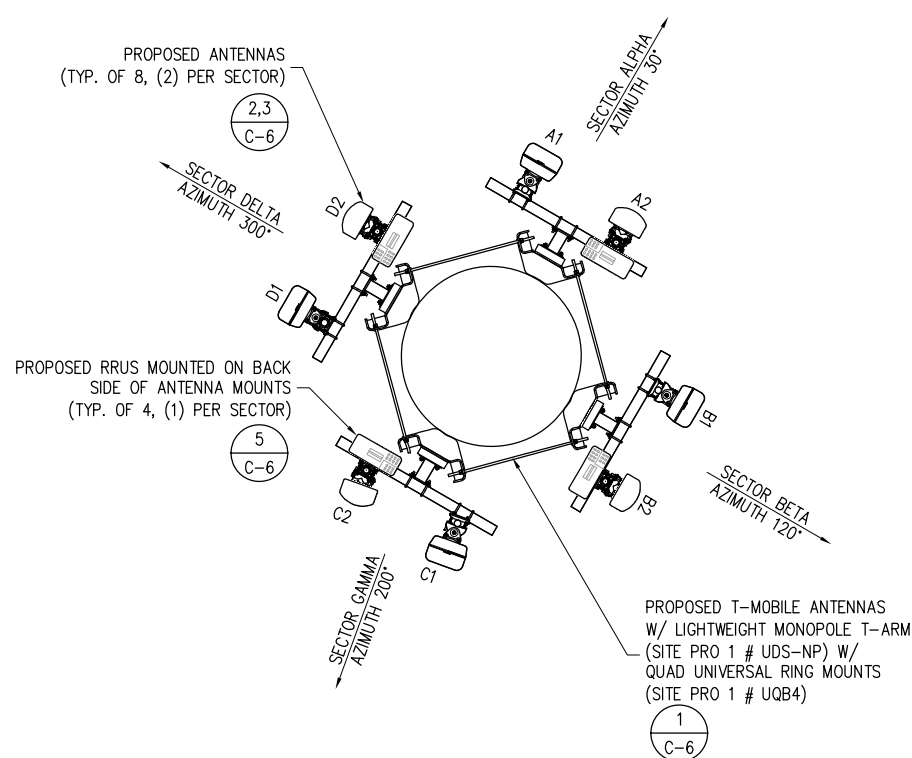
**RF SCHEDULE**

SECTOR	ANTENNA MODEL NO.	AZIMUTH	M TILT	E TILT	CENTERLINE	RRU	TMA	CABLE TYPE	CABLE MODEL#	CABLE SIZES	CABLE LENGTH	NO.	
ALPHA	A1	ERICSSON AIR 32DB (B2A/B66Aa)	30°	0°	0°	155'-0"		ERICSSON	HYBRID CABLE, 6 DC PAIRS + 12 OPTICAL PAIRS	1-5/8"	175'-0"	(3) 6X12 HYBRID CABLE (1) PER SECTOR	
	A2	RFS APXVAA24_43-U-A20	30°	0°	0°	155'-0"	(1) ERICSSON RRUS11-B12						NONE
	A3	RFS APXVAA24_43-U-A20 (FUTURE)	30°	0°	0°	155'-0"	(1) ERICSSON RRUS11-B12 (FUTURE)						
BETA	B1	ERICSSON AIR 32DB (B2A/B66Aa)	120°	0°	0°	155'-0"							NONE
	B2	RFS APXVAA24_43-U-A20	120°	0°	0°	155'-0"	(1) ERICSSON RRUS11-B12						
	B3	RFS APXVAA24_43-U-A20 (FUTURE)	120°	0°	0°	155'-0"	(1) ERICSSON RRUS11-B12 (FUTURE)						
GAMMA	C1	ERICSSON AIR 32DB (B2A/B66Aa)	200°	0°	0°	155'-0"							NONE
	C2	RFS APXVAA24_43-U-A20	200°	0°	0°	155'-0"	(1) ERICSSON RRUS11-B12						
	C3	RFS APXVAA24_43-U-A20 (FUTURE)	200°	0°	0°	155'-0"	(1) ERICSSON RRUS11-B12 (FUTURE)						
DELTA	D1	ERICSSON AIR 32DB (B2A/B66Aa)	300°	0°	0°	155'-0"		NONE					
	D2	RFS APXVAA24_43-U-A20	300°	0°	0°	155'-0"	(1) ERICSSON RRUS11-B12						
	D3	RFS APXVAA24_43-U-A20 (FUTURE)	300°	0°	0°	155'-0"	(1) ERICSSON RRUS11-B12 (FUTURE)						
MW	RFS SC2-W100 w/ AVIAT ODU 600 (FUTURE)	TBD			155'-0"			RFS/CELWAVE	FLC 12-50J	1/2"	175'-0"	(1)	

- NOTES:  
 1. CONTRACTOR TO VERIFY PROPOSED ANTENNA INFORMATION IS THE MOST CURRENT DATA AT TIME OF CONSTRUCTION.  
 2. CONTRACTOR TO CONFIRM CABLE LENGTHS PRIOR TO CONSTRUCTION.

**NOTE:  
 CONTRACTOR TO REQUEST FINAL  
 RFDS AT TIME OF CONSTRUCTION.**

**NOTE:  
 PRIOR TO ATTACHING ANTENNAS AND MOUNTING SECTIONS, PLATFORM  
 MUST BE ANALYZED BY A LICENSED STRUCTURAL ENGINEER TO VERIFY  
 TOWER IS CAPABLE OF SUPPORTING THE PROPOSED LOADS. REFER TO  
 MOUNT ANALYSIS BY OTHERS.**



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1	06/28/18	BP COMMENTS	RM
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C	05/08/18	REVISED PER REDLINES	RM
B	04/06/18	REVISED PER REDLINES	RM
A	03/28/18	ISSUED FOR REVIEW	RM

PROFESSIONAL STAMP  
 09/28/18  
 COMMONWEALTH OF VIRGINIA  
  
**JOJI M. GEORGE**  
 Lic. No. 039380  
 NOT VALID WITHOUT  
 P.E. STAMP & SIGNATURE

SHEET INFORMATION  
**VA70330D**  
**H&S DEVELOPMENT**  
**GROUP**  
 700 GREENLAWN AVE  
 HAMPTON, VA 23661  
 CITY OF HAMPTON

SHEET TITLE  
**ANTENNA PLAN &  
 ANTENNA SCHEDULE**

SHEET NUMBER  
**C-4**

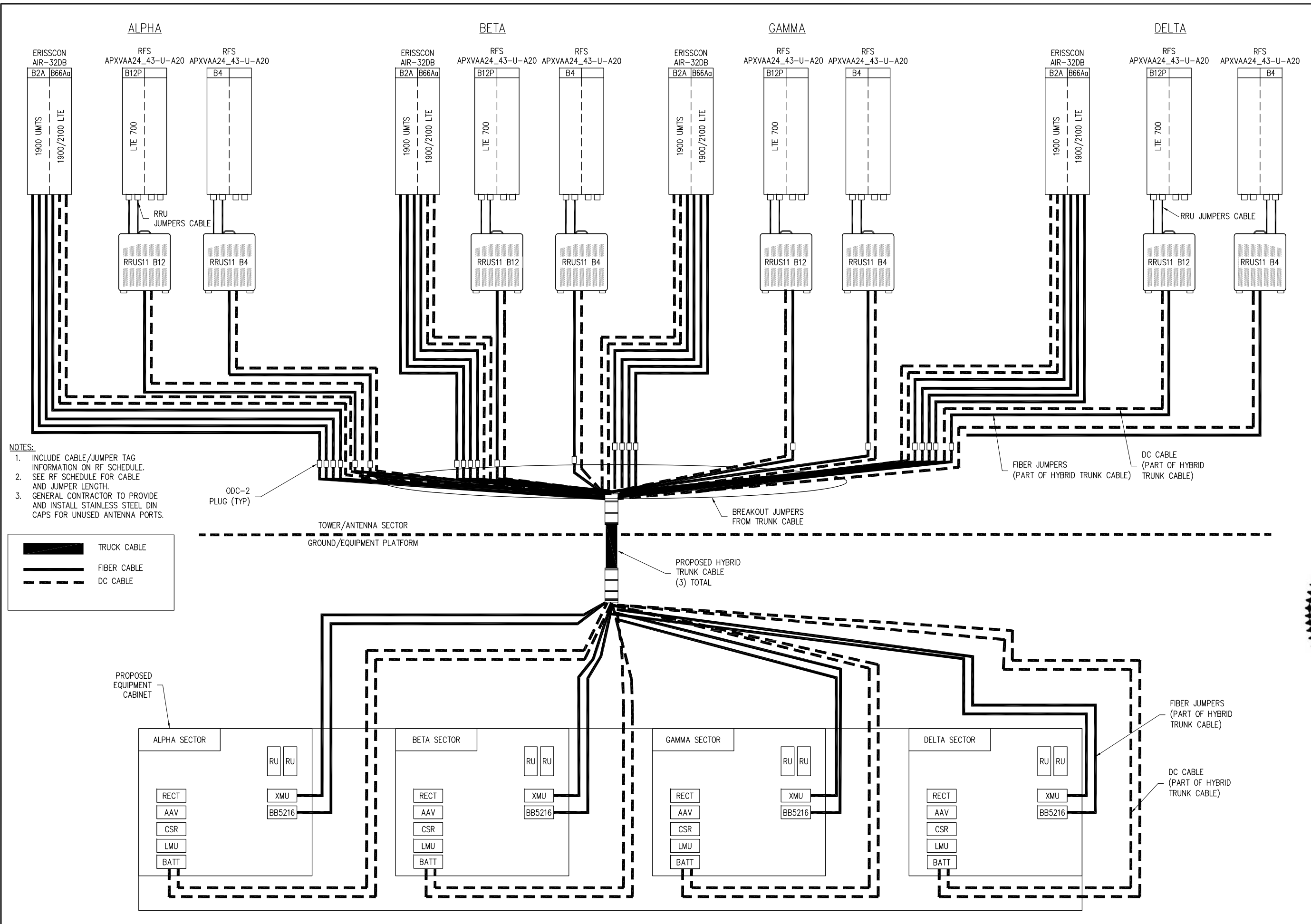
**ANTENNA ORIENTATION PLAN**

SCALE:  
 N.T.S.

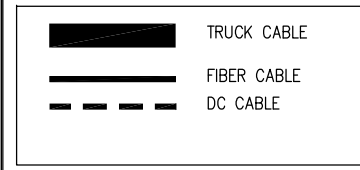
**1 ANTENNA MOUNTING DETAIL**

SCALE:  
 N.T.S.

**2**



- NOTES:
1. INCLUDE CABLE/JUMPER TAG INFORMATION ON RF SCHEDULE.
  2. SEE RF SCHEDULE FOR CABLE AND JUMPER LENGTH.
  3. GENERAL CONTRACTOR TO PROVIDE AND INSTALL STAINLESS STEEL DIN CAPS FOR UNUSED ANTENNA PORTS.



APPLICANT  
**T-Mobile**  
**NORTHEAST LLC**  
 324 MADISON MEWS  
 NORFOLK, VA 23510

PROJECT MANAGEMENT FIRM  
  
**F.C.I.**  
 Towers  
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ENGINEER  
  
**ALLPRO**  
 CONSULTING GROUP, INC.  
 9221 LYNDON B JOHNSON FREEWAY  
 SUITE 204, DALLAS, TX 75243  
 PHONE: 972-231-8893  
 FAX: 866-364-6375  
 WWW.ALLPROCG.COM

DRAWN BY: R. MADLOCK  
 CHECKED BY: J. GEORGE  
 ACGI JOB #: 18-4735, 18-1827, & 18-3917

REVISIONS			
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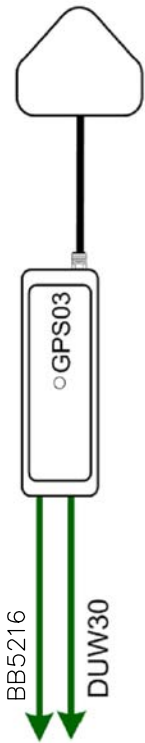
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SHEET INFORMATION  
**VA70330D**  
**H&S DEVELOPMENT GROUP**  
 700 GREENLAWN AVE  
 HAMPTON, VA 23661  
 CITY OF HAMPTON

SHEET TITLE  
**RF PLUMBING DIAGRAM**

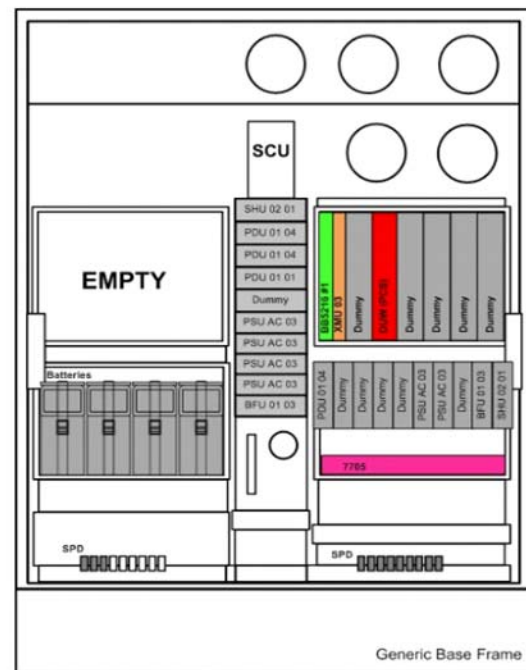
SHEET NUMBER  
**C-5**

GPS Antenna



**GPS CONFIGURATION**

RBS 6102 MU AC High Cap

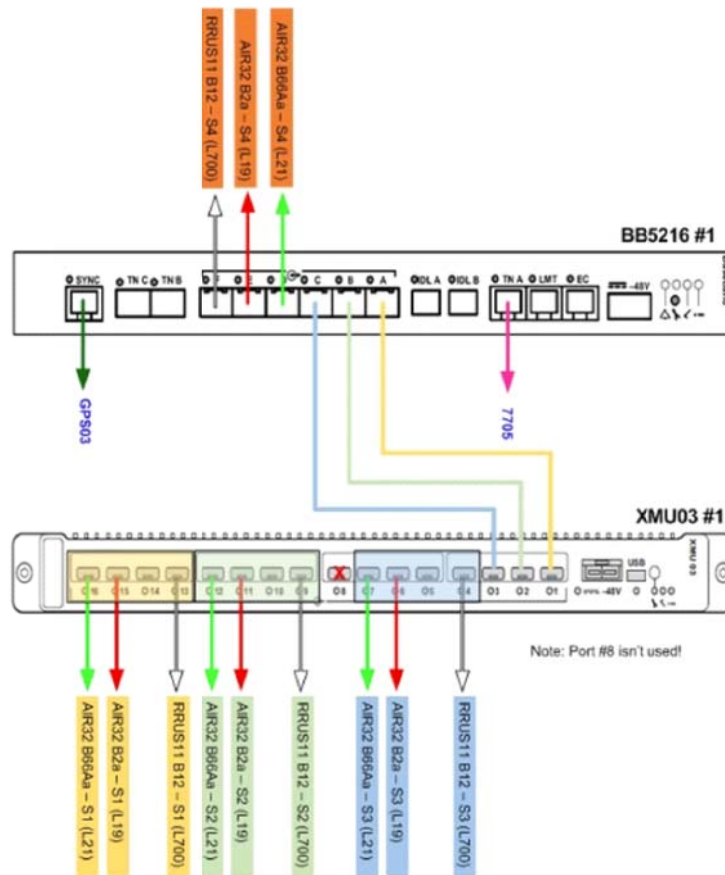


**RBS6102 EQUIPMENT CONFIGURATION**

DUW Plumbing						
Sector	Band	Side A	DUW CPRI Port	Side B	RRU CPRI Port	Fiber Label
Alpha	U19	DUW	A	Air32 B2a	CPRI 1	RDH10265/2 Alpha U19 CPRI 1
Beta	U19	DUW	B	Air32 B2a	CPRI 1	RDH10265/2 Beta U19 CPRI 1
Gamma	U19	DUW	C	Air32 B2a	CPRI 1	RDH10265/2 Gamma U19 CPRI 1
Delta	U19	DUW	D	Air32 B2a	CPRI 1	RDH10265/2 Delta U19 CPRI 1

BB5216 Plumbing						
Sector	Band	Side A	BB5216 CPRI Port	Side B	RRU Port	Fiber Label
N/A	LTE	BB 5216	A	XMU	1	Cascade cable
N/A	LTE	BB 5216	B	XMU	2	Cascade cable
N/A	LTE	BB 5216	C	XMU	3	Cascade cable
Delta	L21	BB 5216	D	Air32 B66Aa	CPRI 1	RDH10265/2 Delta L21 CPRI 1
Delta	L19	BB 5216	E	Air32 B2a	CPRI 2	RDH10265/2 Delta L19 CPRI 2
Delta	L700	BB 5216	F	RRUS11 B12	CPRI 1	RDH10247/2 Delta L700 CPRI 1

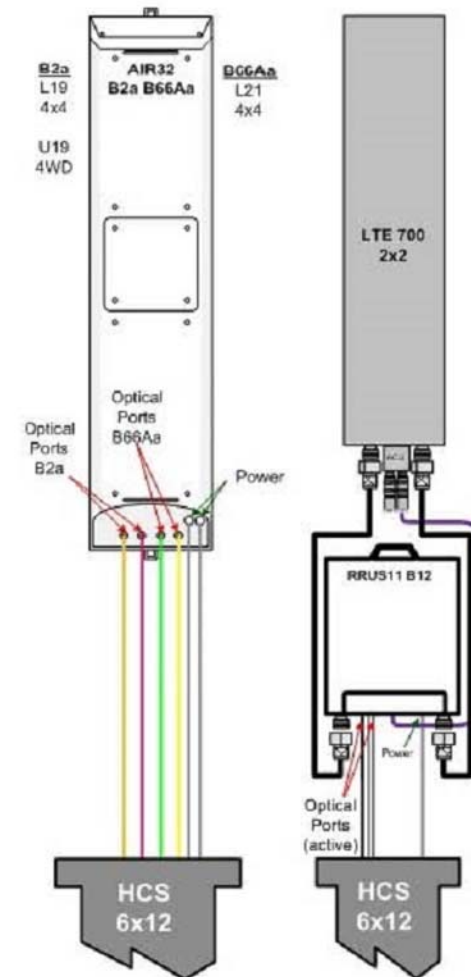
XMU (Base Band 503) Plumbing						
Sector	Band	Side A	XMU CPRI Port	Side B	RRU Port	Fiber Label
N/A	LTE	XMU	1	BB 5216	A	Cascade cable
N/A	LTE	XMU	2	BB 5216	B	Cascade cable
N/A	LTE	XMU	3	BB 5216	C	Cascade cable
Gamma	L700	XMU	4	RRUS11 B12	CPRI 1	RDH10247/2 Gamma L700 CPRI 1
N/A	N/A	XMU	5	N/A	N/A	N/A
Gamma	L19	XMU	6	Air32 B2a	CPRI 2	RDH10265/2 Gamma L19 CPRI 2
Gamma	L21	XMU	7	Air32 B66Aa	CPRI 1	RDH10265/2 Gamma L21 CPRI 1
N/A	N/A	XMU	8	N/A	N/A	N/A
Beta	L700	XMU	9	RRUS11 B12	CPRI 1	RDH10247/2 Beta L700 CPRI 1
N/A	N/A	XMU	10	N/A	N/A	N/A
Beta	L19	XMU	11	Air32 B2a	CPRI 2	RDH10265/2 Beta L19 CPRI 2
Beta	L21	XMU	12	Air32 B66Aa	CPRI 1	RDH10265/2 Beta L21 CPRI 1
Alpha	L700	XMU	13	RRUS11 B12	CPRI 1	RDH10247/2 Alpha L700 CPRI 1
N/A	N/A	XMU	14	N/A	N/A	N/A
Alpha	L19	XMU	15	Air32 B2a	CPRI 2	RDH10265/2 Alpha L19 CPRI 2
Alpha	L21	XMU	16	Air32 B66Aa	CPRI 1	RDH10265/2 Alpha L21 CPRI 1



Left SPD Din Rail								
SPD D1 Air32 B66Aa Delta	SPD D2 Air32 B2a Delta	SPD D3 RRUS11 B12 Delta						

Right SPD Din Rail								
SPD A1 Air32 B66Aa Alpha	SPD A2 Air32 B2a Alpha	SPD A3 RRUS11 B12 Alpha	SPD B1 Air32 B66Aa Beta	SPD B2 Air32 B2a Beta	SPD B3 RRUS11 B12 Beta	SPD C1 Air32 B66Aa Gamma	SPD C2 Air32 B66Aa Gamma	SPD C3 RRUS11 B12 Gamma

**SPD WIRING CONFIGURATION**



**AIR 32 CONFIGURATION**

APPLICANT  
**T-Mobile**  
**NORTHEAST LLC**  
 324 MADISON MEWS  
 NORFOLK, VA 23510

PROJECT MANAGEMENT FIRM  
  
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SHEET INFORMATION  
**VA70330D**  
**H&S DEVELOPMENT**  
**GROUP**  
 700 GREENLAWN AVE  
 HAMPTON, VA 23661  
 CITY OF HAMPTON

SHEET TITLE  
**797DB CONFIGURATION**  
**PLUMBING DIAGRAM**

SHEET NUMBER  
**C-5a**



**(3) 6X12 HYBRID (4 SECTOR 797DB CONFIGURATION)**

TRUNK COLOR CODE	PAIR #	AIR/RRU END		RBS END		RADIO (TECHNOLOGY)	AIR/RRU END COLOR CODE	RBS END FIBER LABELS	SECTOR
		ODC		LC BOOT					
		PIN	PIN	PIN	PIN				
RED 1	1	RED		1	B	RED		AIR 32 B2a (U19 CPRI 1)	ALPHA
				2	A				
	2	GREEN		1	B	GREEN		AIR 32 B2a (L19 CPRI 1)	ALPHA
				2	A				
	3	BLUE		1	B	BLUE		AIR 32 B66Aa (L21 CPRI 1)	ALPHA
				2	A				
	4	YELLOW		1	B	YELLOW		AIR32 B66Aa (L21 CPRI 2)	ALPHA
				2	A				
	5	WHITE		1	B	WHITE		AIR 32 B2a (U19 CPRI 1)	BETA
				2	A				
	6	BLACK		1	B	BLACK		AIR 32 B2a (L19 CPRI 1)	BETA
				2	A				
7	RED	WHITE	1	B	RED	WHITE	AIR 32 B66Aa (L21 CPRI 1)	BETA	
			2	A					
8	GREEN	WHITE	1	B	GREEN	WHITE	AIR32 B66Aa (L21 CPRI 2)	BETA	
			2	A					
9	BLUE	WHITE	1	B	BLUE	WHITE	AIR 32 B2a (U19 CPRI 1)	GAMMA	
			2	A					
10	YELLOW	WHITE	1	B	YELLOW	WHITE	AIR 32 B2a (L19 CPRI 1)	GAMMA	
			2	A					
11	WHITE	WHITE	1	B	WHITE	WHITE	AIR 32 B66Aa (L21 CPRI 1)	GAMMA	
			2	A					
12	BLACK	WHITE	1	B	BLACK	WHITE	AIR32 B66Aa (L21 CPRI 2)	GAMMA	
			2	A					

TRUNK COLOR CODE	PAIR #	AIR/RRU END		RBS END		RADIO (TECHNOLOGY)	AIR/RRU END COLOR CODE	RBS END FIBER LABELS	SECTOR
		ODC		LC BOOT					
		PIN	PIN	PIN	PIN				
RED 2	1	RED		1	B	RED		RRUS11 - B12 (L700 CPRI 1)	ALPHA
				2	A				
	2	GREEN		1	B	GREEN		RRUS11 - B12 (L700 CPRI 2)	ALPHA
				2	A				
	3	BLUE		1	B	BLUE			
				2	A				
	4	YELLOW		1	B	YELLOW			
				2	A				
	5	WHITE		1	B	WHITE		RRUS11 - B12 (L700 CPRI 1)	BETA
				2	A				
	6	BLACK		1	B	BLACK		RRUS11 - B12 (L700 CPRI 2)	BETA
				2	A				
7	RED	WHITE	1	B	RED	WHITE			
			2	A					
8	GREEN	WHITE	1	B	GREEN	WHITE			
			2	A					
9	BLUE	WHITE	1	B	BLUE	WHITE	RRUS11 - B12 (L700 CPRI 1)	GAMMA	
			2	A					
10	YELLOW	WHITE	1	B	YELLOW	WHITE	RRUS11 - B12 (L700 CPRI 2)	GAMMA	
			2	A					
11	WHITE	WHITE	1	B	WHITE	WHITE			
			2	A					
12	BLACK	WHITE	1	B	BLACK	WHITE			
			2	A					

TRUNK COLOR CODE	PAIR #	AIR/RRU END		RBS END		RADIO (TECHNOLOGY)	AIR/RRU END COLOR CODE	RBS END FIBER LABELS	SECTOR
		ODC		LC BOOT					
		PIN	PIN	PIN	PIN				
RED 3	1	RED		1	B	RED		AIR 32 B2a (U19 CPRI 1)	DELTA
				2	A				
	2	GREEN		1	B	GREEN		AIR 32 B2a (L19 CPRI 1)	DELTA
				2	A				
	3	BLUE		1	B	BLUE		AIR 32 B66Aa (L21 CPRI 1)	DELTA
				2	A				
	4	YELLOW		1	B	YELLOW		AIR32 B66Aa (L21 CPRI 2)	DELTA
				2	A				
	5	WHITE		1	B	WHITE		RRUS11 - B12 (L700 CPRI 1)	DELTA
				2	A				
	6	BLACK		1	B	BLACK		RRUS11 - B12 (L700 CPRI 2)	DELTA
				2	A				
7	RED	WHITE	1	B	RED	WHITE			
			2	A					
8	GREEN	WHITE	1	B	GREEN	WHITE			
			2	A					
9	BLUE	WHITE	1	B	BLUE	WHITE			
			2	A					
10	YELLOW	WHITE	1	B	YELLOW	WHITE			
			2	A					
11	WHITE	WHITE	1	B	WHITE	WHITE			
			2	A					
12	BLACK	WHITE	1	B	BLACK	WHITE			
			2	A					

**DC Power**

PAIR #	REF HOOKUP	PIN LETTER	AIR/RRU END	RADIO (TECHNOLOGY)	SECTOR	SPD LABELS
1	-48	A	BLACK	RED	AIR 32 B66Aa	ALPHA ALPHA L21
	OV	B	RED	RED		
2	-48	A	BLACK	GREEN	AIR 32 B2a	ALPHA ALPHA U/L19
	OV	B	RED	RED		
3	-48	A	BLACK	BLUE	AIR 32 B66Aa	BETA BETA L21
	OV	B	RED	RED		
4	-48	A	BLACK	YELLOW	AIR 32 B2a	BETA BETA U/L19
	OV	B	RED	RED		
6	-48	A	BLACK	WHITE	AIR 32 B66Aa	GAMMA GAMMA L21
	OV	B	RED	RED		
6	-48	A	BLACK	BLACK	AIR 32 B2a	GAMMA GAMMA U/L19
	OV	B	RED	RED		

PAIR #	REF HOOKUP	PIN LETTER	AIR/RRU END	RADIO (TECHNOLOGY)	SECTOR	SPD LABELS
1	-48	A	BLACK	RED	RRUS11 - B12	ALPHA ALPHA L700
	OV	B	RED	RED		
2	-48	A	BLACK	GREEN		
	OV	B	RED	RED		
3	-48	A	BLACK	BLUE	RRUS11 - B12	BETA BETA L700
	OV	B	RED	RED		
4	-48	A	BLACK	YELLOW		
	OV	B	RED	RED		
6	-48	A	BLACK	WHITE	RRUS11 - B12	GAMMA GAMMA L700
	OV	B	RED	RED		
6	-48	A	BLACK	BLACK		
	OV	B	RED	RED		

PAIR #	REF HOOKUP	PIN LETTER	AIR/RRU END	RADIO (TECHNOLOGY)	SECTOR	SPD LABELS
1	-48	A	BLACK	RED	AIR 32 B66Aa	Delta DELTA L21
	OV	B	RED	RED		
2	-48	A	BLACK	GREEN	AIR 32 B2a	Delta DELTA U/L19
	OV	B	RED	RED		
3	-48	A	BLACK	BLUE	RRUS11 B12	Delta DELTA L700
	OV	B	RED	RED		
4	-48	A	BLACK	YELLOW		
	OV	B	RED	RED		
6	-48	A	BLACK	WHITE		
	OV	B	RED	RED		
6	-48	A	BLACK	BLACK		
	OV	B	RED	RED		

APPLICANT  
**T-Mobile**  
**NORTHEAST LLC**  
 324 MADISON MEWS  
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SHEET INFORMATION  
**VA70330D**  
**H&S DEVELOPMENT GROUP**  
 700 GREENLAWN AVE  
 HAMPTON, VA 23661  
 CITY OF HAMPTON

SHEET TITLE  
**6x12 COLOR CODES**

SHEET NUMBER  
**C-5b**

**NOTE:**  
PRIOR TO ATTACHING ANTENNAS AND MOUNTING SECTIONS, PLATFORM MUST BE ANALYZED BY A LICENSED STRUCTURAL ENGINEER TO VERIFY TOWER IS CAPABLE OF SUPPORTING THE PROPOSED LOADS. REFER TO MOUNT ANALYSIS BY OTHERS.

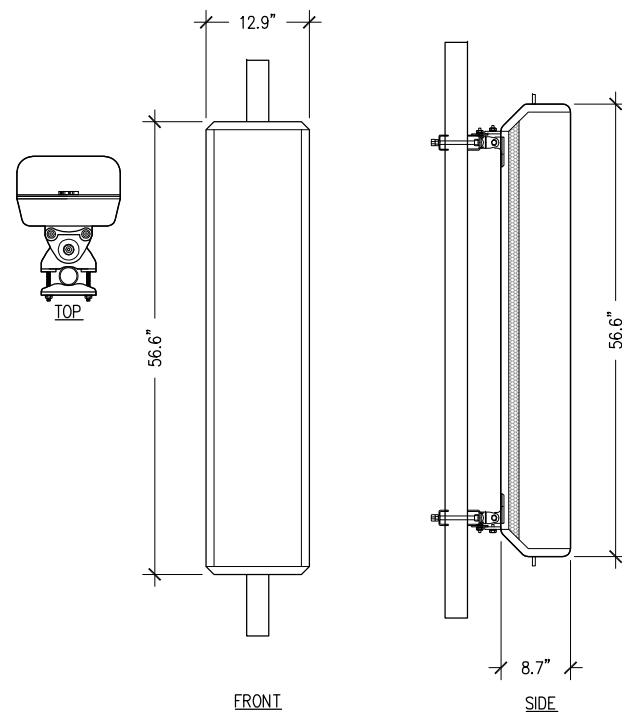
**NOTE:**  
PROPOSED ANTENNA PLACEMENT LOCATION TO BE FIELD VERIFIED BY GENERAL CONTRACTOR PRIOR TO CONSTRUCTION TO AVOID ANY INTERFERENCE OR SHADOWING OF EXISTING ANTENNAS. IF INTERFERENCE OR SHADOWING OF EXISTING ANTENNAS IS DISCOVERED DURING FIELD VERIFICATION, PLEASE CONTACT ALLPRO CONSULTING GROUP INC. FOR DESIGN REVISION PRIOR TO ANY NEW ANTENNA INSTALLATION.



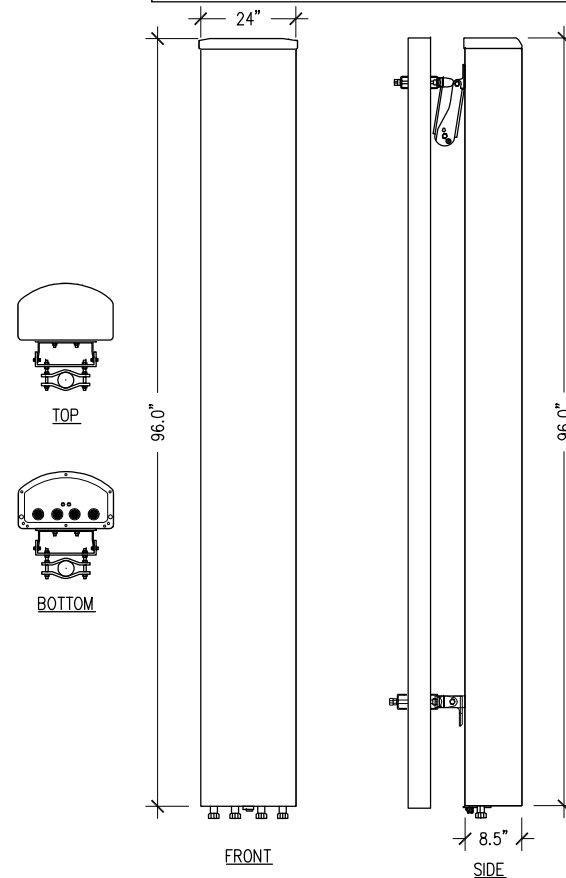
PROPOSED T-MOBILE ANTENNAS  
W/ LIGHTWEIGHT MONOPOLE T-ARM  
(SITE PRO 1 # UDS-NP) W/  
QUAD UNIVERSAL RING MOUNTS  
(SITE PRO 1 # UQB4)

**NOTE:**  
MOUNT COMPLIANCE IS BY OTHERS. NO NEW ANTENNA OR EQUIPMENT SHALL BE INSTALLED ON MOUNTS WITHOUT THE APPROVAL OF STRUCTURAL ENGINEER.

MANUFACTURER: ERICSSON  
MODEL: AIR-32 DUAL BAND (DB)  
DIMENSION: 56.6"x12.9"x8.7"  
WEIGHT W/O MTG HARDWARE: 132.2 LBS  
FREQUENCY: REFER TO RFDS



MANUFACTURER: RFS  
MODEL: APXVAA24\_43-U-A20  
DIMENSION: 96.0"x24"x8.5"  
WEIGHT W/O MTG HARDWARE: 101.4 LBS  
FREQUENCY: REFER TO RFDS



**ANTENNA MOUNT DETAIL**

SCALE: N.T.S.

1

**ANTENNA SPECS**

SCALE: N.T.S.

2

**ANTENNA SPECS**

SCALE: N.T.S.

3

**NOT USED**

SCALE: N.T.S.

4

APPLICANT  
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324 MADISON MEWS  
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**ERICSSON RRUS-11**  
DIMENSIONS, WxDxH: 431x184x452mm (17"x7.2"x17.8")  
POWER CONSUMPTION: 2 X 40 WATTS  
TOTAL WEIGHT: 44 lbs  
TEMPERATURE: -40° TO 55° C

NOTE:  
REFER TO R.F.D.S. FOR EXACT RRH SPECIFICATIONS AND QUANTITIES.

NOTES:  
1. WEIGHT OF BTS UNIT IS 727.52 LBS (330 KG) (WEIGHT IS WITHOUT BATTERIES).  
2. BASE FRAME NOT SHOWN.

**NOTICE**  
GUIDELINES FOR WORKING IN RADIOFREQUENCY ENVIRONMENTS awareness training.

- All personnel should have electromagnetic energy (EME) awareness training.
- All personnel entering this site must be authorized.
- Obey all posted signs.
- Assume all antennas are active.
- Before working on antennas, notify owners and disable appropriate transmitters.
- Maintain minimum 3 feet clearance from all antennas.
- Do not stop in front of antennas.
- Use personal RF monitors while working near antennas.
- Never operate transmitters without shields during normal operation.
- Do not operate base station antennas in equipment room.

NOTE:  
ALL SIGNS TO BE PROVIDED BY GENERAL CONTRACTORS.

NOTE:  
NORTHERN TECHNOLOGIES, INC.  
PPC#CS7S2-W836-R OR APPROVAL EQUAL. SEE PPC CABINET DIAGRAM (1/E-2) FOR BREAKER REQUIREMENTS.

NOTES:  
1. WEIGHT OF CABINET IS 150 LBS

**MANUFACTURER MODEL# SC2-W100**  
MANUFACTURER: RFS  
DIAMETER: 2'  
WEIGHT: 20 LBS  
MOUNTING PIPE DIAMETER: 4.5 in  
WIND VELOCITY OPERATIONAL: 112 MPH  
WIND VELOCITY SURVIVAL RATING: 155 MPH

**AVIAT ODU 600**  
MANUFACTURER: AVIANT NETWORK  
SIZE: 10.4"x10.4"x4.9"  
WEIGHT: 11 LBS

PROFESSIONAL STAMP  
COMMONWEALTH OF VIRGINIA  
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SHEET INFORMATION  
VA70330D  
**H&S DEVELOPMENT GROUP**  
700 GREENLAWN AVE  
HAMPTON, VA 23661  
CITY OF HAMPTON

SHEET TITLE  
**DETAILS**

SHEET NUMBER  
**C-6**

**RRUS SPECIFICATIONS**

SCALE: N.T.S.

5

**RBS 6102 & MOUNTING**

SCALE: N.T.S.

6

**RF SIGNS**

SCALE: N.T.S.

7

**PPC UNIT**

SCALE: N.T.S.

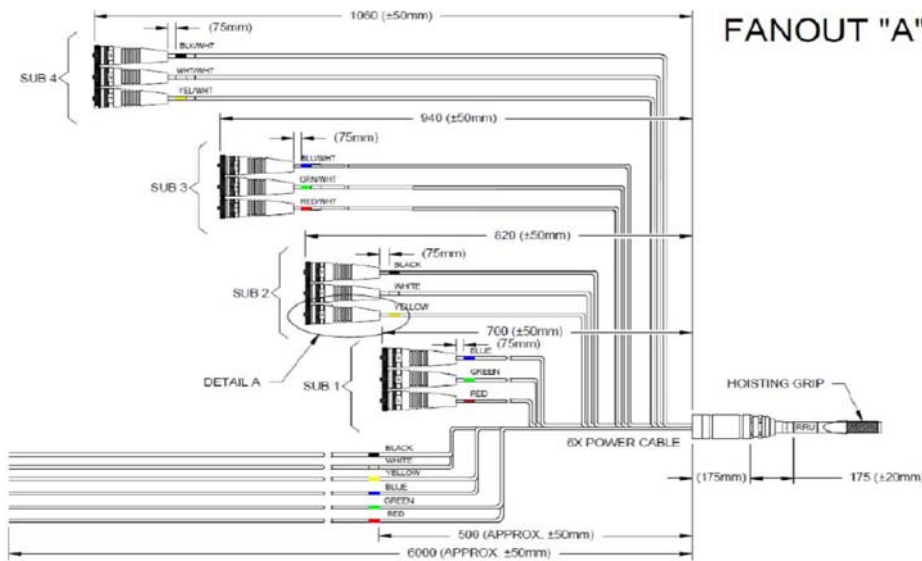
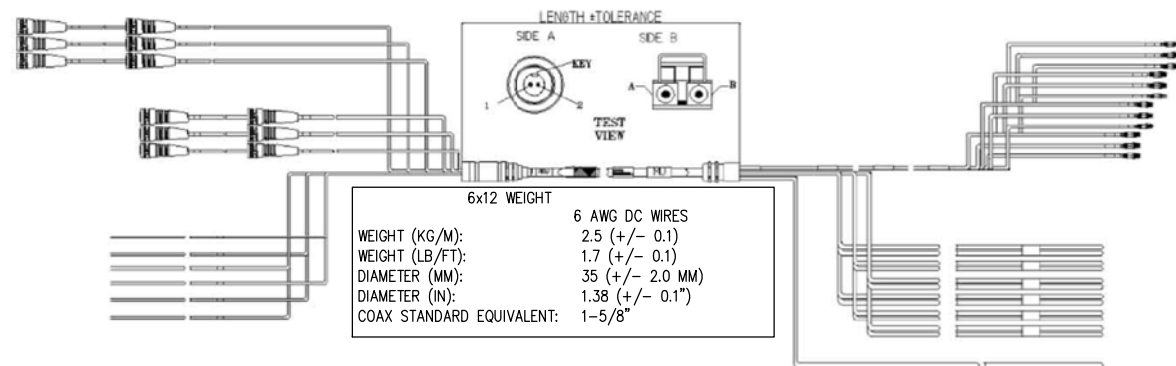
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**MICROWAVE DISH DETAIL**

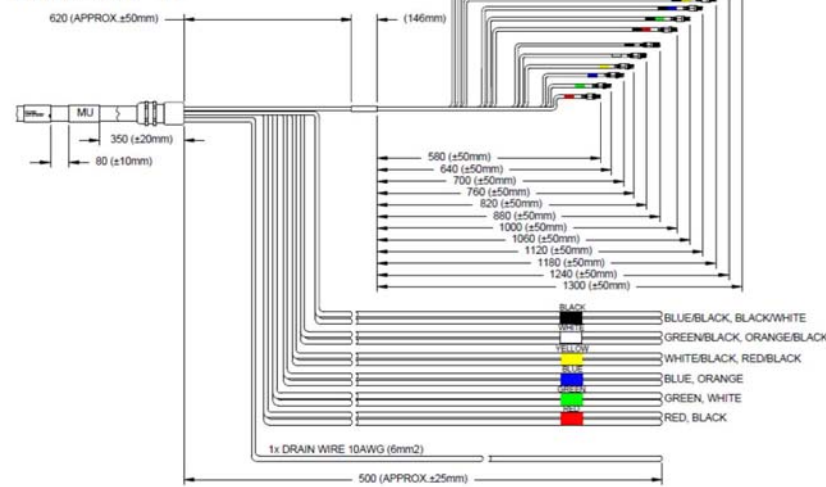
SCALE: N.T.S.

9





FANOUT "A" FANOUT "B"



NOTE:  
ALL FIBER SPARES AT TOWER TOP OF BE SEALED WITH SELF-AMALGAMATING SEALING TAPE

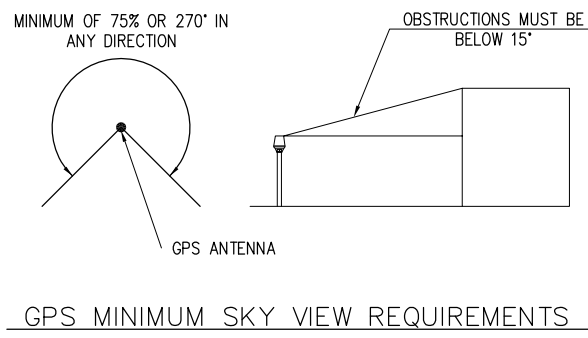
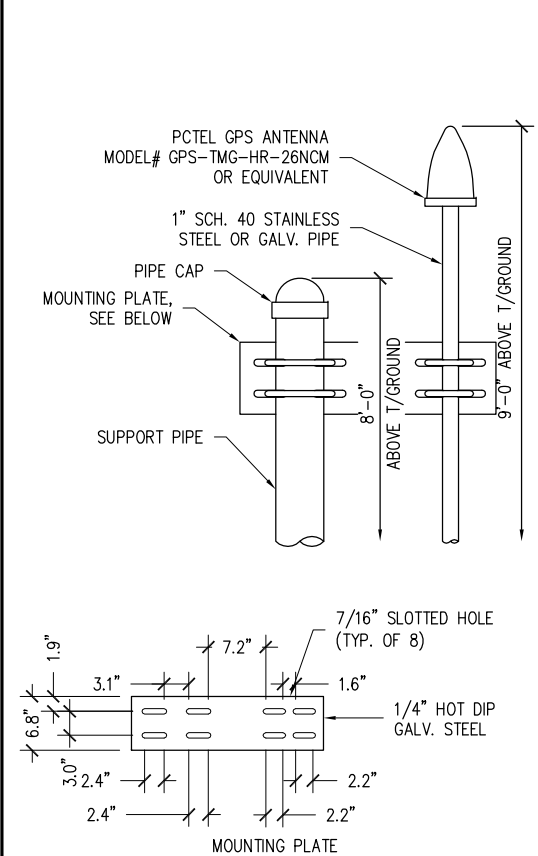
NOTE:  
DC CABLE SPICES TO USE THIS SPLICE AND SEALED WITH SELF-AMALGAMATING SEALING TAPE FOLLOWED BY HEAT SHRINK TUBING.



MORRIS PRODUCTS  
2-COUNT SPLICE  
WIRE CONNECTORS  
MODEL # 67000

ERICSSON HYBRID CABLE, (6) DC PAIRS + (12) OPTICAL PAIRS

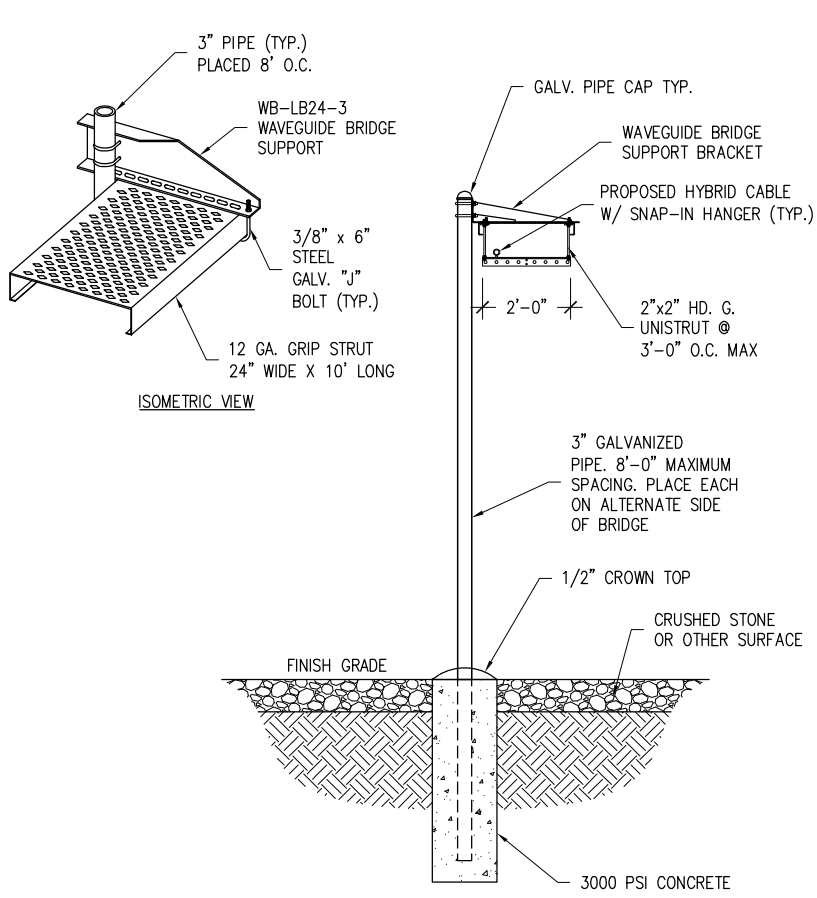
SCALE: N.T.S. 2



- NOTES:
1. THE ELEVATION AND LOCATION OF THE GPS ANTENNA SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORT.
  2. THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 1-1/4" O.D. SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 18 INCHES) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBARRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.
  3. IT IS CRITICAL THAT THE GPS ANTENNA IS MOUNTED SUCH THAT IT IS WITHIN 2 DEGREES OF VERTICAL AND THE BASE OF THE ANTENNA IS WITHIN 2 DEGREES OF LEVEL.
  4. DO NOT SWEEP TEST GPS ANTENNA.

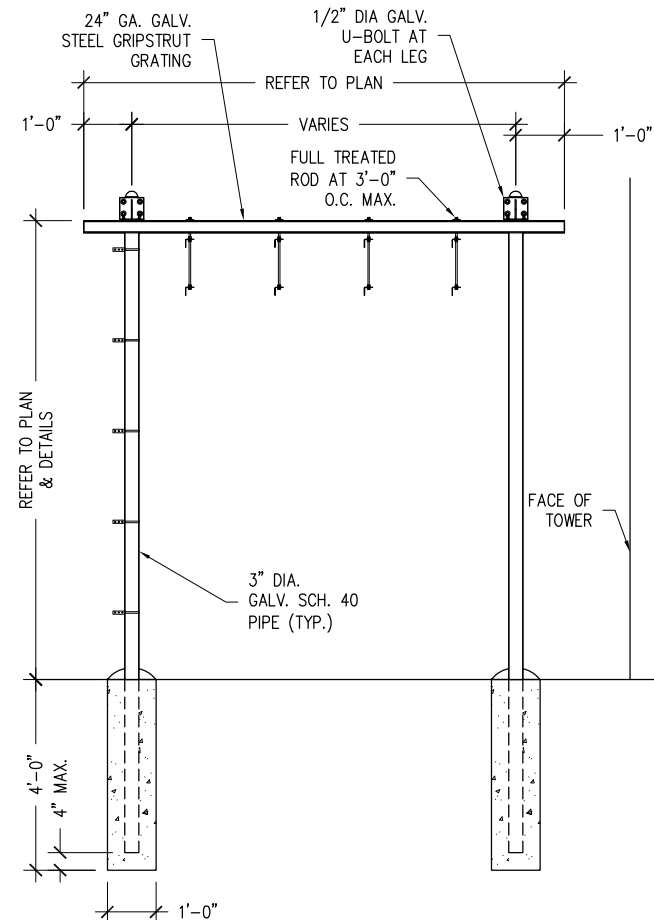
GPS ANTENNA DETAILS

SCALE: N.T.S. 1



ICE BRIDE DETAIL

SCALE: N.T.S. 3



APPLICANT

**T-Mobile**  
**NORTHEAST LLC**

324 MADISON MEWS  
NORFOLK, VA 23510

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ENGINEER

**ALLPRO**  
CONSULTING GROUP, INC.

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FAX: 866-364-8375  
WWW.ALLPROCG.COM

DRAWN BY: R. MADLOCK  
CHECKED BY: J. GEORGE  
ACGT JOB #: 18-4735, 18-1827, & 18-3917

REVISIONS			
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C	05/08/18	REVISED PER REDLINES	RM
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A	03/28/18	ISSUED FOR REVIEW	RM

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COMMONWEALTH OF VIRGINIA

JOJI M. GEORGE  
Lic. No. 039380

PROFESSIONAL ENGINEER

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SHEET INFORMATION  
VA70330D

**H&S DEVELOPMENT  
GROUP**

700 GREENLAWN AVE  
HAMPTON, VA 23661  
CITY OF HAMPTON

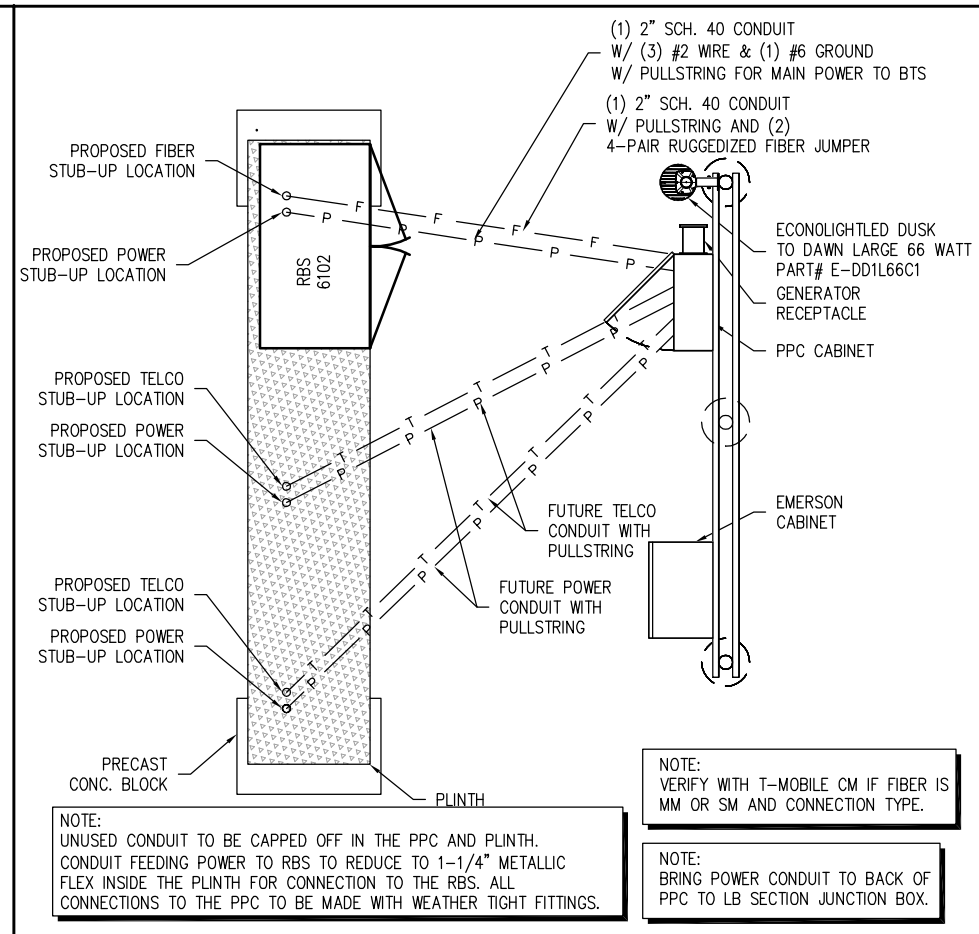
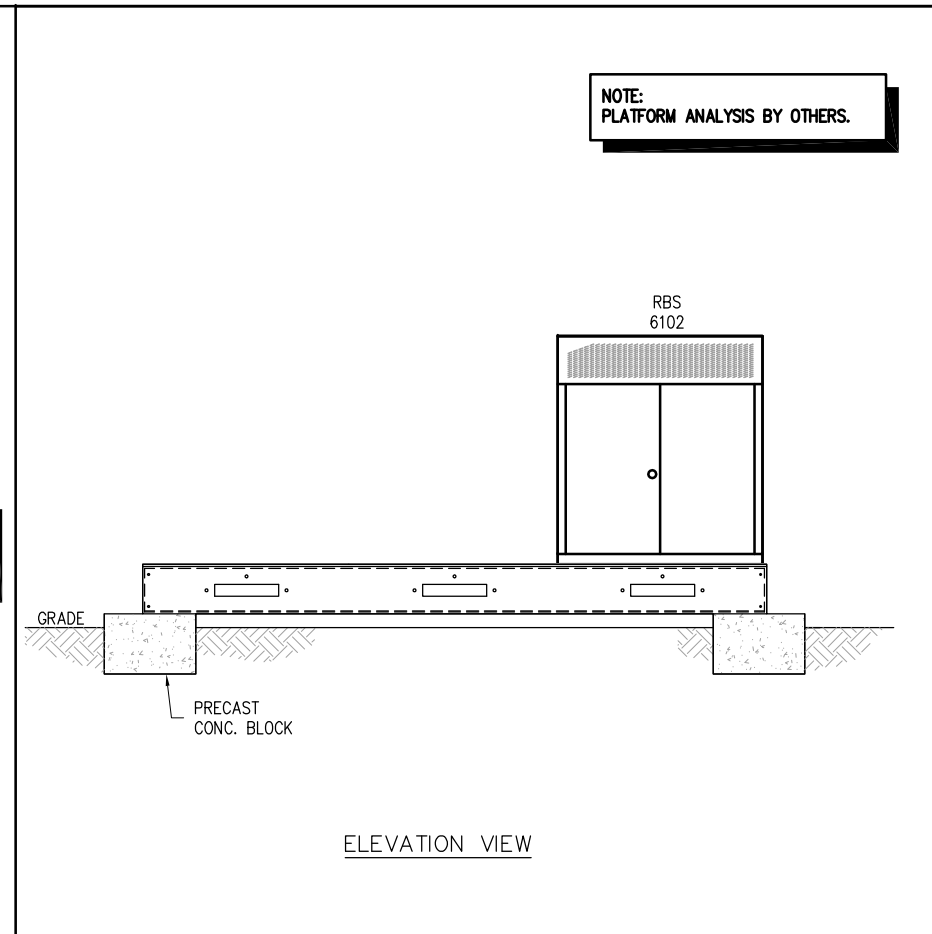
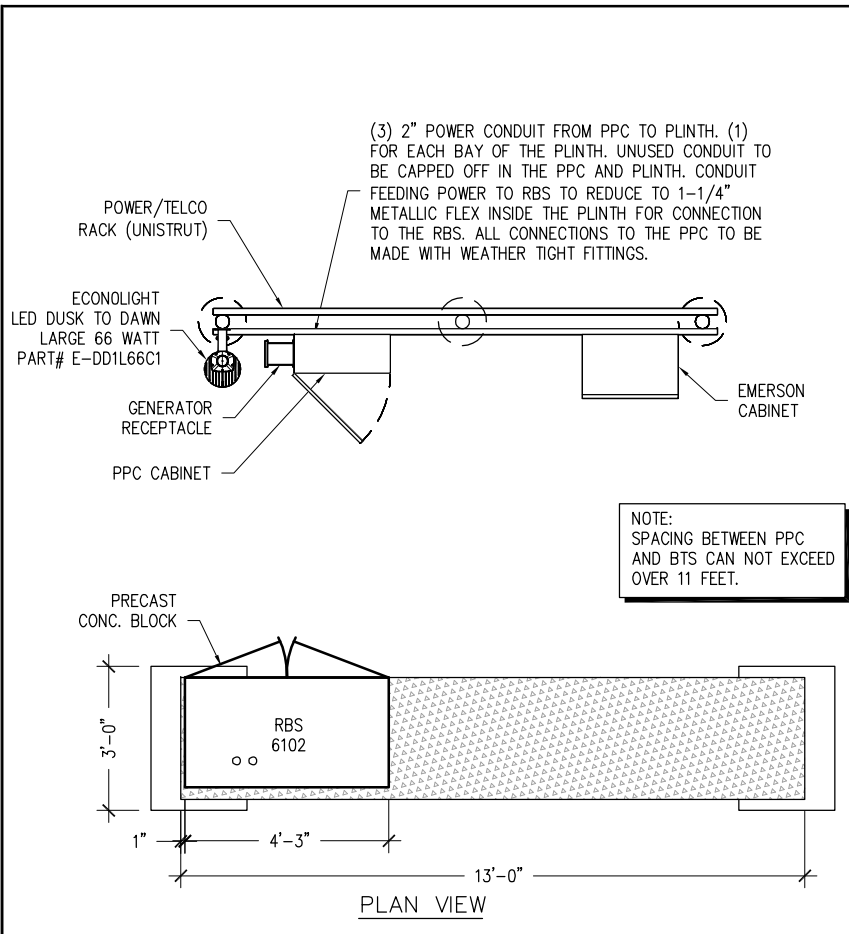
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**DETAILS**

SHEET NUMBER

**C-7**

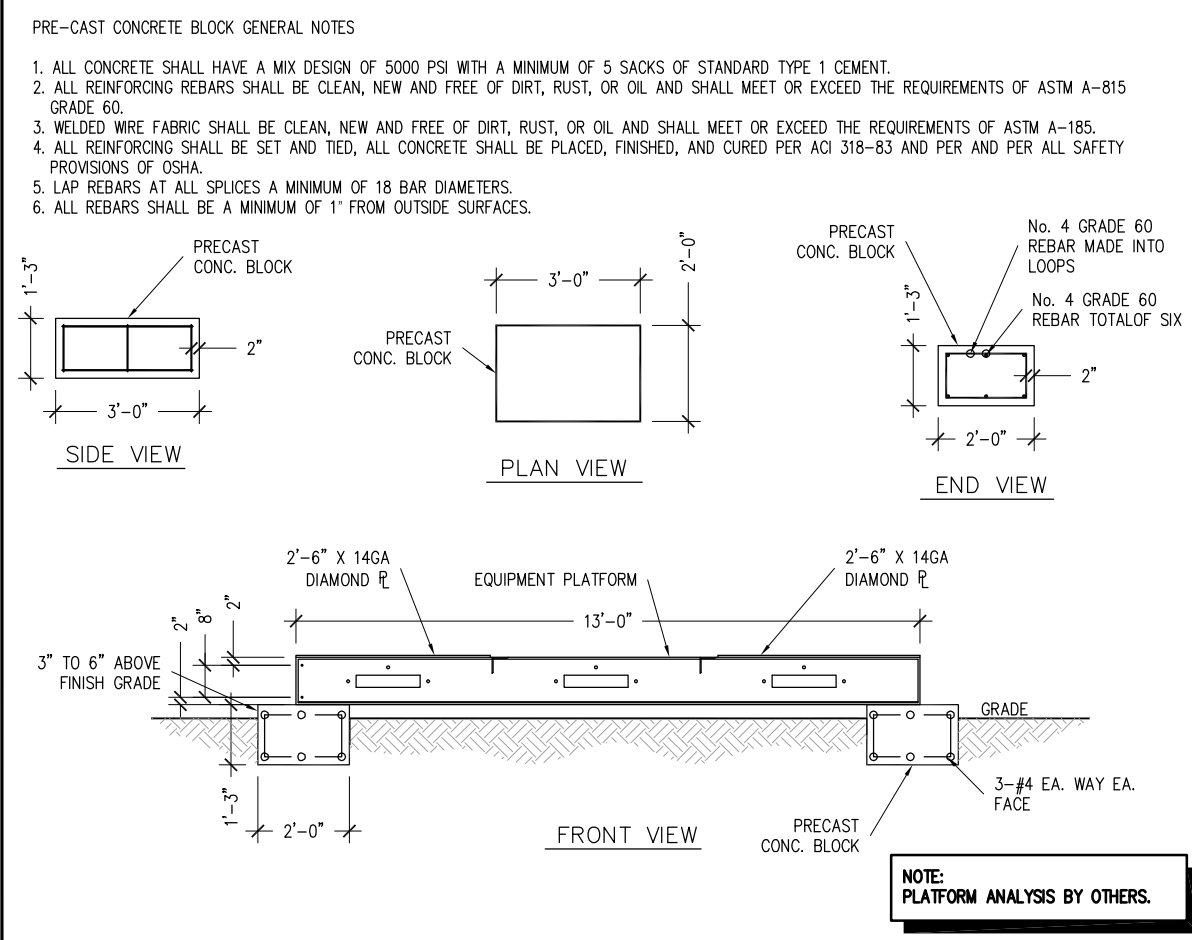




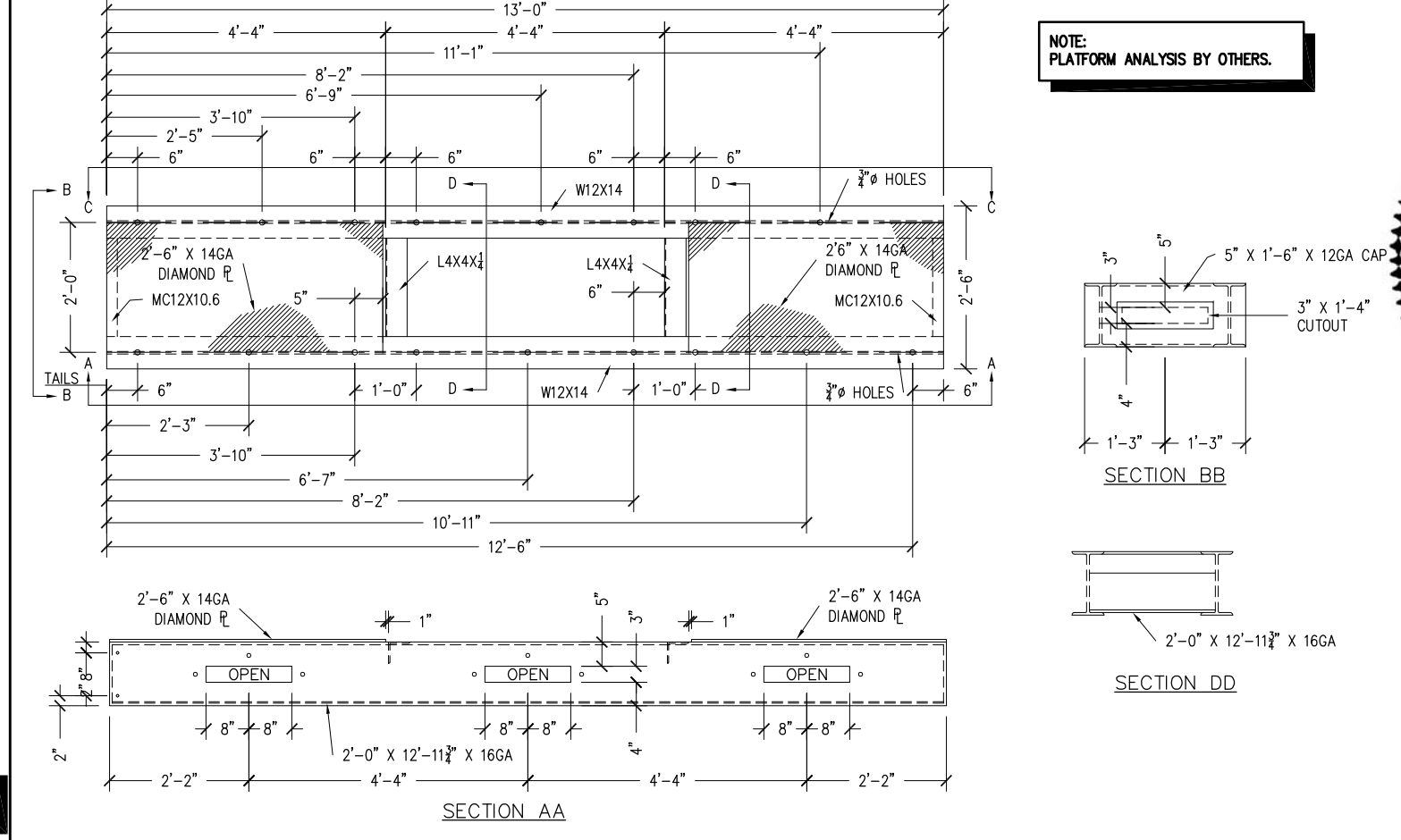
**1 TYPICAL EQUIPMENT LAYOUT**  
SCALE: N.T.S.

**2 EQUIPMENT LAYOUT**  
SCALE: N.T.S.

**3 TYPICAL TELCO/POWER CONDUITS LAYOUT**  
SCALE: N.T.S.



**4 CONCRETE BLOCK DETAIL**  
SCALE: N.T.S.



**5 EQUIPMENT PLATFORM - PROFILE**  
SCALE: N.T.S.

APPLICANT  
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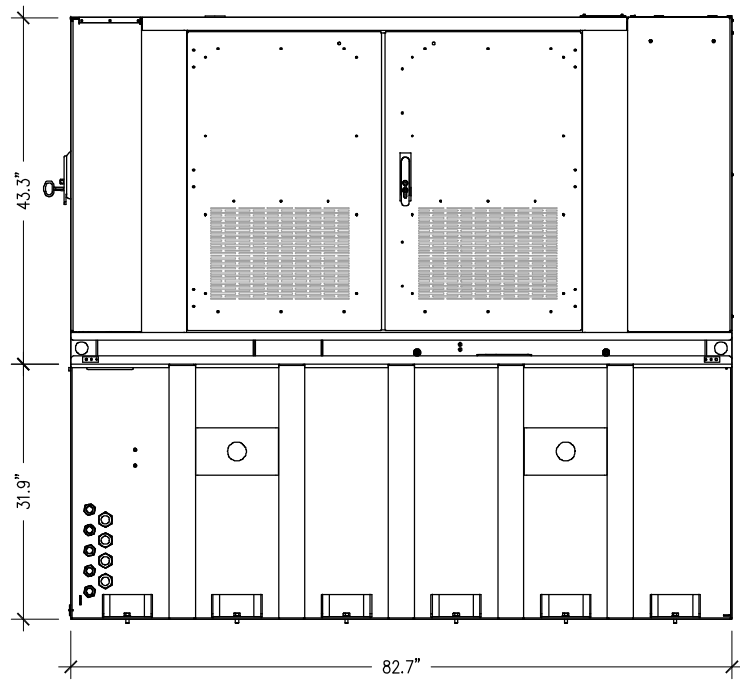
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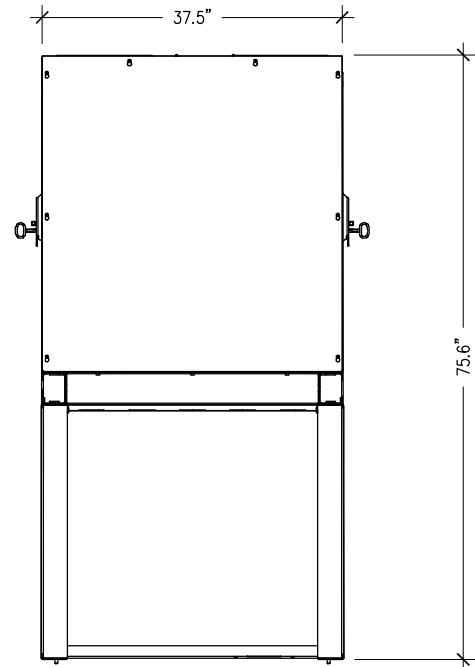
SHEET INFORMATION  
**VA70330D**  
**H&S DEVELOPMENT GROUP**  
700 GREENLAWN AVE  
HAMPTON, VA 23661  
CITY OF HAMPTON

SHEET TITLE  
**BTS & EQUIPMENT PLATFORM DETAILS**

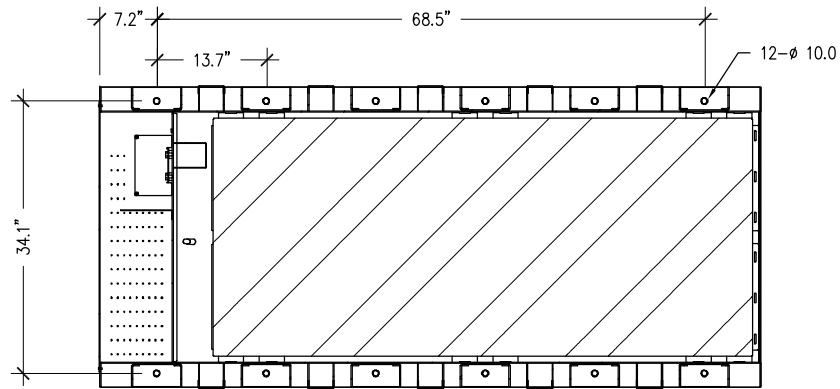
SHEET NUMBER  
**C-8**



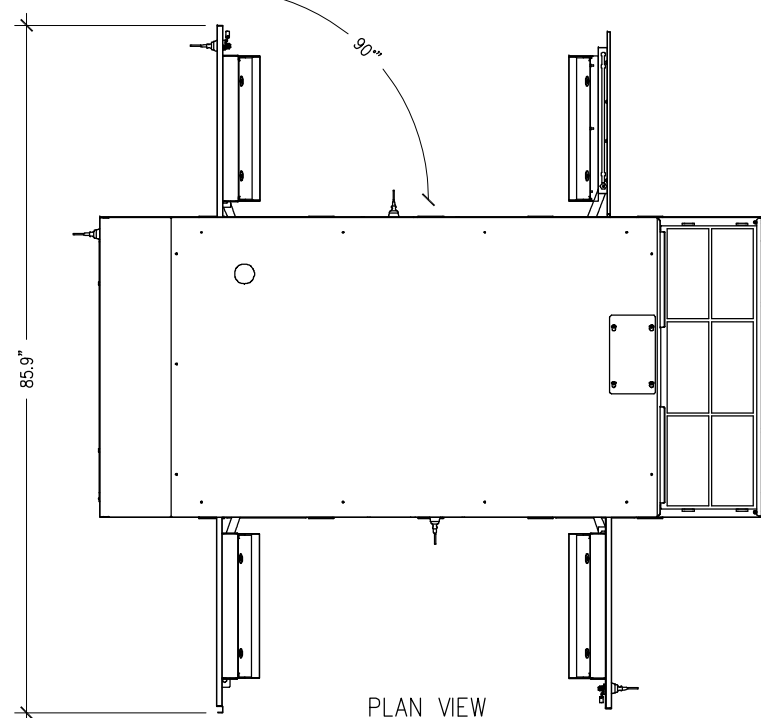
FRONT ELEVATION VIEW



SIDE VIEW



MOUNTING HOLE LAYOUT DIMENSIONS



PLAN VIEW

DELTA 25kW DIESEL DC GENERATOR (ESOG480-CCA02)

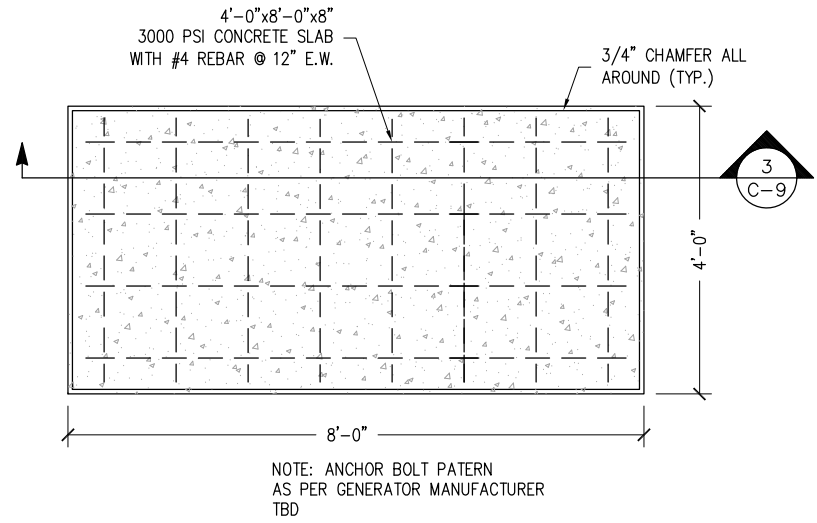
Model	PowerGen 25000 DC Generator
<b>1. General</b>	
Rated Power	25 kW @ 52 V <sub>DC</sub>
Dimensions (W x H x D)	83" x 76" x 38" (with standard 250 gallon tank)
Weight	3240 lbs.
Fuel consumption	1.29 gallons/hour ( 50% load) 1.61 gallons/hour ( 75% load) 2.19 gallons/hour (100% load)
Acoustics	65 dB(A) at 7 meters
Cooling Air Flow	5500 ft <sup>3</sup> / minute
Output Voltage	-52 V <sub>DC</sub> (Positive Ground, Configurable -48 to -56 V <sub>DC</sub> )
Voltage Regulation	± 1%
Ripple Voltage	< 250 mVp-p
User Interfaces	LCD with LED Indicators, Form C Alarm Dry Contacts WEB GUI and SNMP
Features	Auto start based site battery voltage (-48V default) Local manual/Emergency mode Configurable cycling exercise self-test Alarm renaming with configurable severity Generator DC output energy meter Engine run hour meter Engine start counter.
Safety	UL LISTED including UL142 fuel tank
EMC	FCC Part 15 Class A
<b>2. Engine</b>	
Make	Perkins 404D-22TG (Turbocharged Diesel in-line 4 cyl.)
Power	30 kW @ fixed 1800 RPM
Exhaust Flow	265 ft <sup>3</sup> / minute (4.34 m <sup>3</sup> / minute)
Oil Capacity	10.6 liters
Coolant Capacity	9.3 liters
Engine Battery	Yuasa YBX9020 (12V, AGM type)
Engine Battery Charger	Delta 48V DC -to- 12V DC
<b>3. Alternator</b>	
Make	Stamford PI144H (4 poles, insulation class H)
Voltage Regulator	AS480 ( ± 1%, excited AVR)
<b>4. Environment</b>	
Operating temperature	-25°C to +45°C (-13°F to +113°F) Derate power 10% per 5°C above +45°C
Altitude	Derate power 3% per 1000 feet above 3000 feet
Humidity (relative)	95%, non-condensing (Max.)
<b>5. PowerGen Part</b>	
Stanard (250 gallon tank)	ESOG480-CCA02

\*All specifications are subject to change without prior notice

SCALE: N.T.S.

1

NOTE: FOUNDATION DESIGN BY OTHERS.

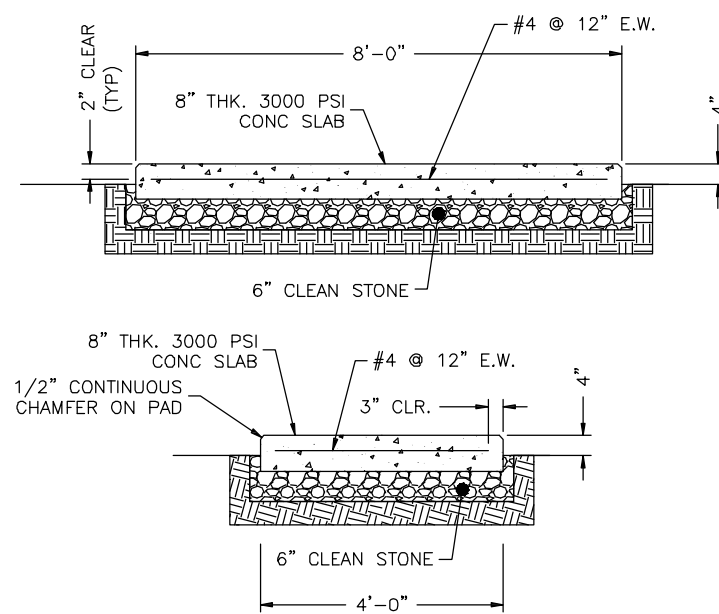


GENERATOR PAD PLAN DETAIL

SCALE: N.T.S.

2

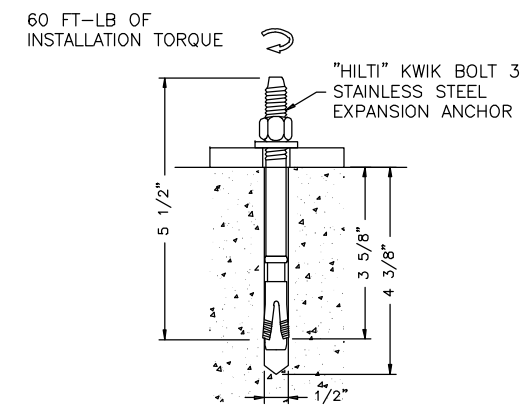
NOTE: FOUNDATION DESIGN BY OTHERS.



GENERATOR PAD ELEVATION DETAIL

SCALE: N.T.S.

3



EXPANSION ACHOR DETAIL

SCALE: N.T.S.

4

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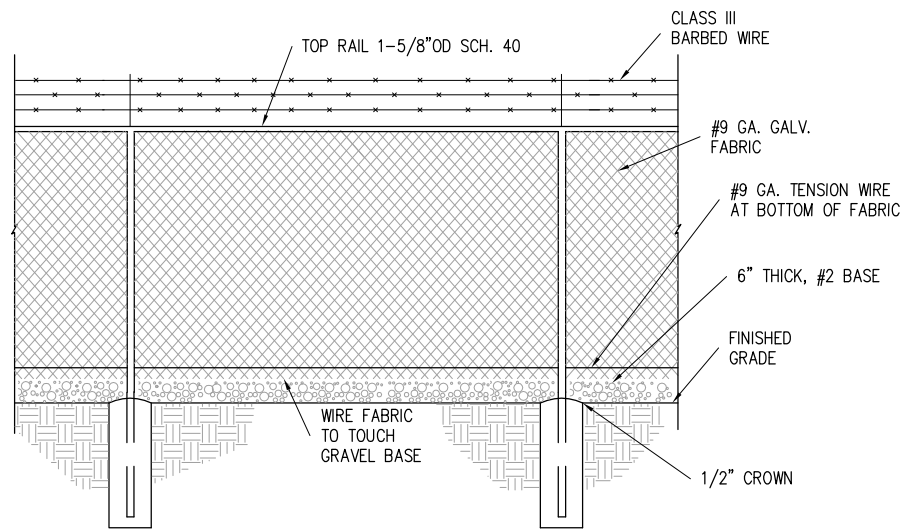
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SHEET INFORMATION  
**VA70330D**  
**H&S DEVELOPMENT**  
**GROUP**  
 700 GREENLAWN AVE  
 HAMPTON, VA 23661  
 CITY OF HAMPTON

SHEET TITLE  
**GENERATOR**  
**DETAILS**

SHEET NUMBER  
**C-9**

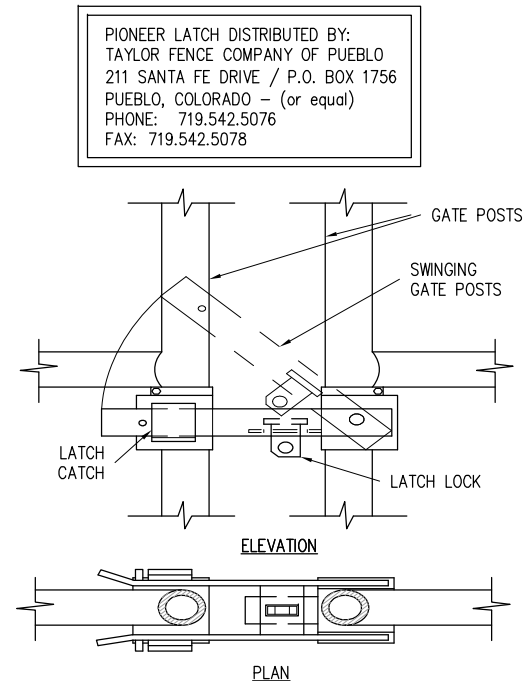
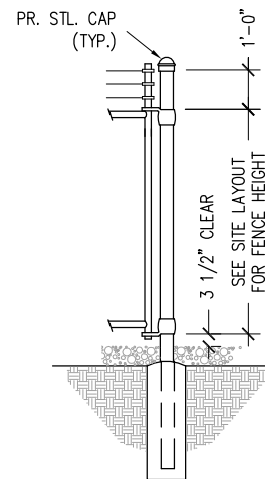




6' HIGH FENCE		FOOTINGS	
LINE POST	-2" OD	9"X27"	
CORNER POST	-3" OD	12"X36"	
GATE POST	-4" OD	12"X36"	

8' HIGH FENCE		FOOTINGS	
LINE POST	-2-3/8" OD	12"X30"	
CORNER POST	-3" OD	12"X42"	
GATE POST	-4" OD	12"X42"	



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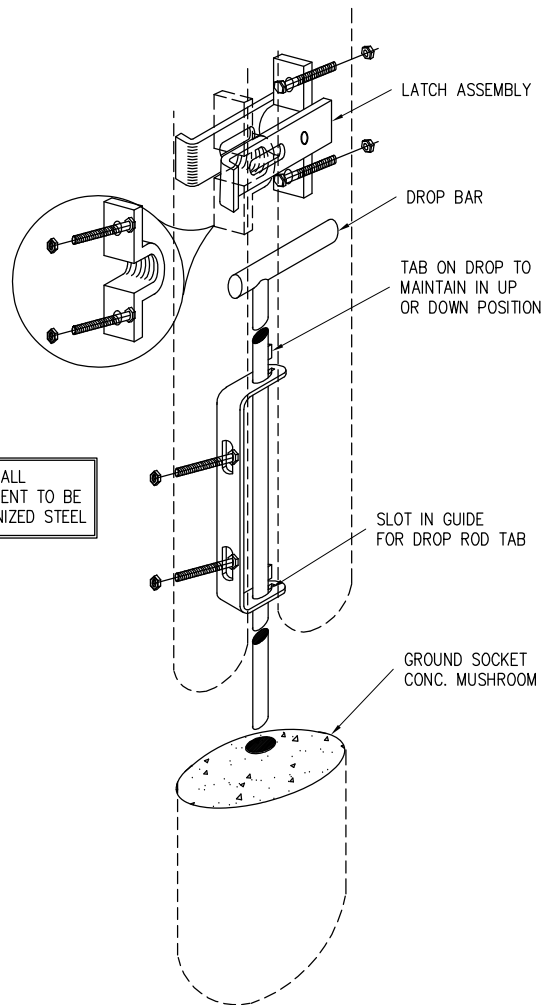
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**FENCE DETAIL**

SCALE: N.T.S. **1** **CORNER DETAIL**

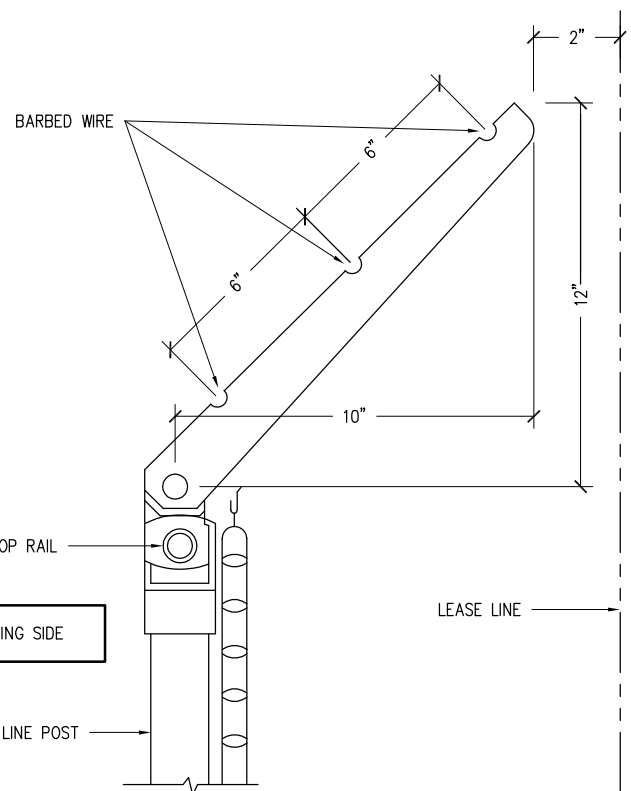
SCALE: N.T.S. **2** **GATE LATCH DETAIL**

SCALE: N.T.S. **3**



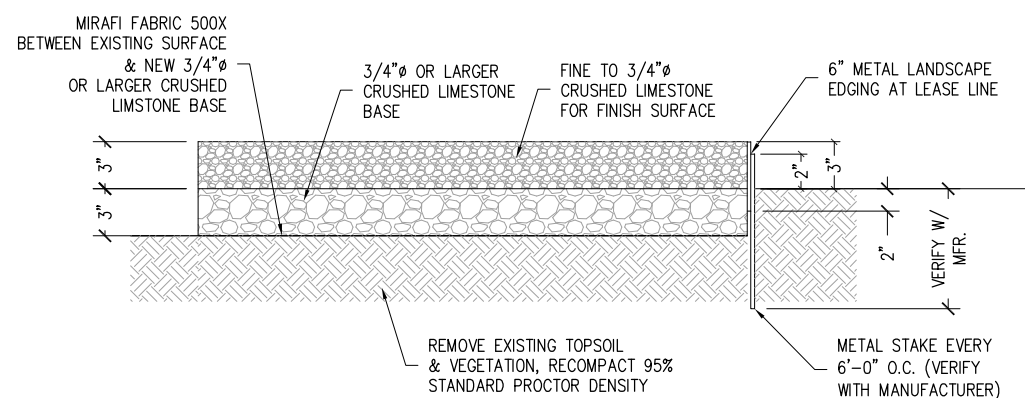
**GATE LATCH DETAIL**

SCALE: N.T.S. **4**



**FENCE CAP DETAIL**

SCALE: N.T.S. **5**



**SITE COMPOUND DETAIL**

SCALE: N.T.S. **6**

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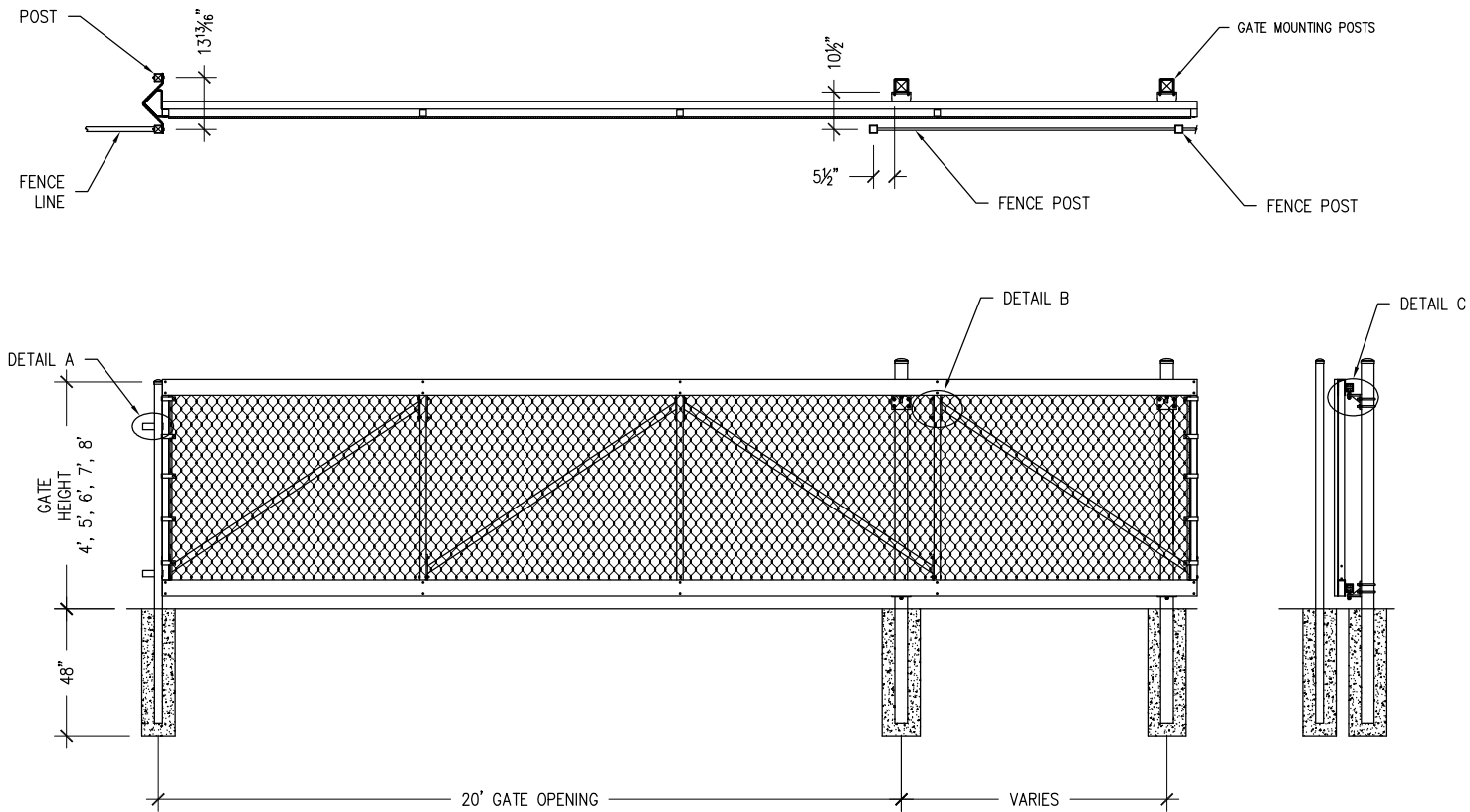
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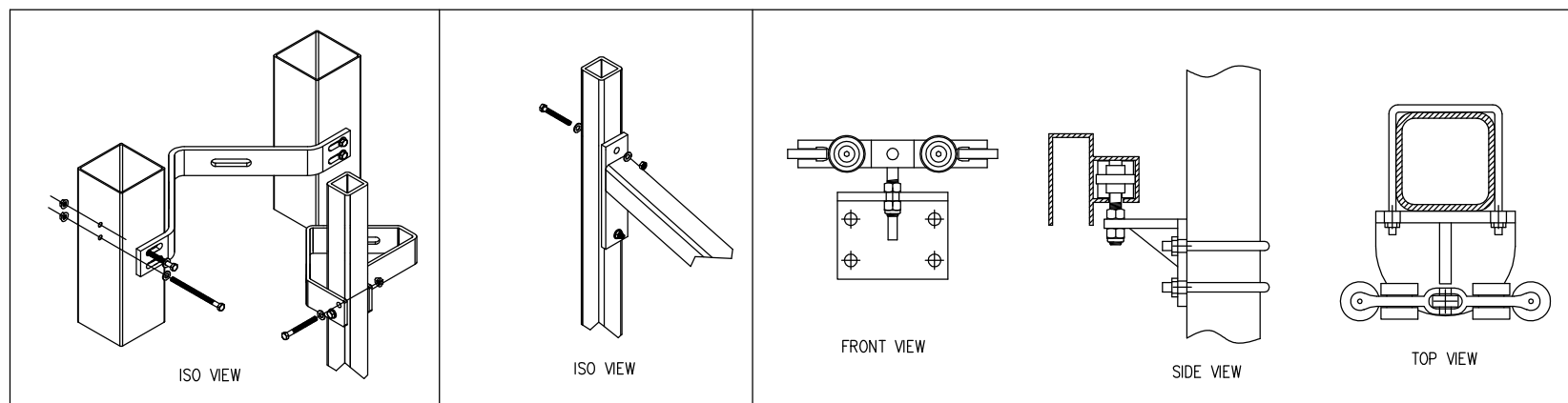
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SHEET NUMBER  
**C-10**

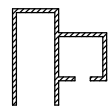




VALUES SHOWN ARE NOMINAL AND NOT TO BE USED FOR INSTALLATION PURPOSES. SEE PRODUCT SPECIFICATION FOR INSTALLATION REQUIREMENTS.



CHAIN LINK CANTILEVER GATE SPECIFICATION SUMMARY  
 U.S.A. PATENT NO. 5,136,813  
 MATERIAL: ALUMINUM (ASTM B221 - 6005-T5)  
 TRACK: PROPRIETARY FAST-TRAK EXTRUDED SHAPE



UPRIGHTS AND DIAGONAL BRACES: 2" SQUARE X 1/4"  
 CANTILEVER GATE HARDWARE: KIT # TGKCD

AMERISTAR'S TRANSPORT ORNAMENTAL CANTILEVER GATES ARE DESIGNED TO BE MOUNTED ON POSTS THAT ARE OFF-SET FROM THE FENCE LINE. BY OFF-SETTING THE GATE POSTS, THE GATE WILL PASS BETWEEN THE FENCE AND THE MOUNTING POSTS, KEEPING IT FROM FALLING IN THE EVENT OF A TRACK OR HARDWARE FAILURE (A REQUIREMENT OF ASTM F2200).

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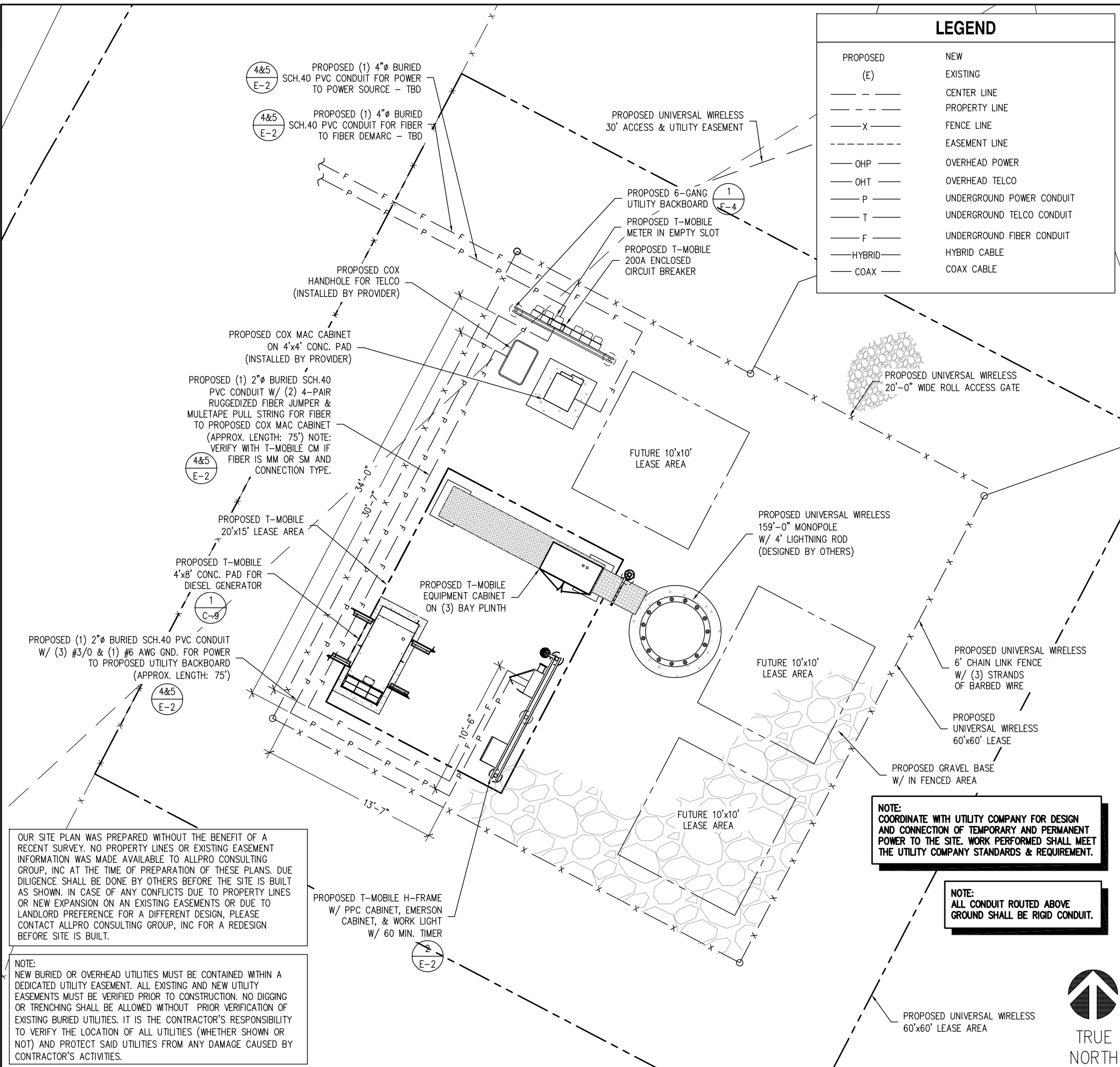
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SHEET TITLE  
**FENCE DETAILS**

SHEET NUMBER  
**C-11**



### LEGEND

PROPOSED	NEW
(E)	EXISTING
---	CENTER LINE
---	PROPERTY LINE
-X-	FENCE LINE
---	EASEMENT LINE
-OHP-	OVERHEAD POWER
-OHT-	OVERHEAD TELCO
-P-	UNDERGROUND POWER CONDUIT
-T-	UNDERGROUND TELCO CONDUIT
-F-	UNDERGROUND FIBER CONDUIT
-HYBRID-	HYBRID CABLE
-COAX-	COAX CABLE

### ELECTRICAL NOTES

- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
- THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
- GENERAL CONTRACTOR SHOULD PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
- ELECTRICAL AND TELCO WIRING AT EXPOSED INDOOR LOCATIONS SHALL BE IN ELECTRICAL METALLIC TUBING OR RIGID NONMETALLIC TUBING (RIGID SCHEDULE 40 PVC OR RIGID SCHEDULE 80 PVC FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) (AS PERMITTED BY CODE).
- ELECTRICAL AND TELCO WIRING AT CONCEALED INDOOR LOCATIONS SHALL BE IN ELECTRICAL METALLIC TUBING, ELECTRICAL NONMETALLIC TUBING OR RIGID MONOMETALLIC TUBING (RIGID SCHEDULE 40 PVC (AS PERMITTED BY CODE)).
- ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING, ABOVE GRADE AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUCTS (RGS) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUCTS.
- BURIED CONDUIT SHALL BE RIGID NONMETALLIC CONDUIT (RIGID SCHEDULE 40 PVC); DIRECT BURIED IN AREAS OF OCCASIONAL LIGHT TRAFFIC, ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY TRAFFIC.
- LIGHT-LIQUID FLEXIBLE METALLIC CONDUIT SHALL BE USED INDOORS AND OUTDOORS IN AREAS WHERE VIBRATION OCCURS AND FLEXIBILITY IS NEEDED.
- ELECTRICAL WIRING SHALL BE COOPER WITH TYPE THHN, THWN-2, OR THIN INSULATION.
- RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
- RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT (AT UTILITY POLE) AND CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
- ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
- PPC SUPPLIED BY PROJECT OWNER.
- GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING, AND LIGHTING PROTECTION SHALL BE DONE IN ACCORDANCE WITH METRO MOD CELL SITE GROUNDING STANDARDS.
- GROUND CABLE SHIELD MINIMUM AT BOTH ENDS USING MANUFACTURES CABLE GROUNDING KITS SUPPLIED BY T-MOBILE.
- USE #6 COOPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COOPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING..
- ALL POWER AND GROUND CONNECTIONS TO BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY HARGER (OR APPROVED EQUAL) RATED FOR OPERATION AT NO LESS THAN 75°C OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COOPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
- ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
- CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHABITING COMPOUND TO ALL LOCATIONS. APPLY OXIDE INHABITING COMPOUND TO ALL MECHANICAL GROUND CONNECTIONS.
- CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
- CONTRACTOR SHALL CONDUCT ANTENNA, CABLE, AND LNA RETURN-LOSS AND DISTANCE-TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE-OUT.
- THE T-MOBILE ELECTRICAL EQUIPMENT INCLUDING PANEL, SWITCH GEAR AND DISCONNECT ARE TO BE LABELLED WITH ENGRAVED BAKELITE LABELS.

**NOTE: COORDINATE WITH UTILITY COMPANY FOR DESIGN AND CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. WORK PERFORMED SHALL MEET THE UTILITY COMPANY STANDARDS & REQUIREMENT.**

**NOTE: ALL CONDUIT ROUTED ABOVE GROUND SHALL BE RIGID CONDUIT.**

OUR SITE PLAN WAS PREPARED WITHOUT THE BENEFIT OF A RECENT SURVEY. NO PROPERTY LINES OR EXISTING EASEMENT INFORMATION WAS MADE AVAILABLE TO ALLPRO CONSULTING GROUP, INC AT THE TIME OF PREPARATION OF THESE PLANS. DUE DILIGENCE SHALL BE DONE BY OTHERS BEFORE THE SITE IS BUILT AS SHOWN. IN CASE OF ANY CONFLICTS DUE TO PROPERTY LINES OR NEW EXPANSION ON AN EXISTING EASEMENTS OR DUE TO LANDLORD PREFERENCE FOR A DIFFERENT DESIGN, PLEASE CONTACT ALLPRO CONSULTING GROUP, INC FOR A REDESIGN BEFORE SITE IS BUILT.

NOTE: NEW BURIED OR OVERHEAD UTILITIES MUST BE CONTAINED WITHIN A DEDICATED UTILITY EASEMENT. ALL EXISTING AND NEW UTILITY EASEMENTS MUST BE VERIFIED PRIOR TO CONSTRUCTION. NO DIGGING OR TRENCHING SHALL BE ALLOWED WITHOUT PRIOR VERIFICATION OF EXISTING BURIED UTILITIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL UTILITIES (WHETHER SHOWN OR NOT) AND PROTECT SAID UTILITIES FROM ANY DAMAGE CAUSED BY CONTRACTOR'S ACTIVITIES.



FOR 24" X 36" PLOT - 1/4" = 1' 0' 2' 4' 8' 1  
 FOR 11" X 17" PLOT - 1/8" = 1'

APPLICANT  
**T-Mobile**  
**NORTHEAST LLC**  
 324 MADISON MEWS  
 NORFOLK, VA 23510

PROJECT MANAGEMENT FIRM  
  
**F.C.I.**  
 Towers  
 Leaders in Communication Development and Construction Services

ENGINEER  
  
**ALLPRO**  
 CONSULTING GROUP, INC.  
 9221 LYNDON B JOHNSON FREEWAY  
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 WWW.ALLPROCG.COM

DRAWN BY: R. MADLOCK  
 CHECKED BY: J. GEORGE  
 ACGI JOB #: 18-4735, 18-1827, & 18-3917

REVISIONS			
NO	DATE	DESCRIPTION	BY
4	08/10/18	SITE RELOCATED	RM
3	07/09/18	BP COMMENTS	RM
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A	03/28/18	ISSUED FOR REVIEW	RM

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SHEET INFORMATION  
**VA70330D**  
**H&S DEVELOPMENT GROUP**  
 700 GREENLAWN AVE  
 HAMPTON, VA 23661  
 CITY OF HAMPTON

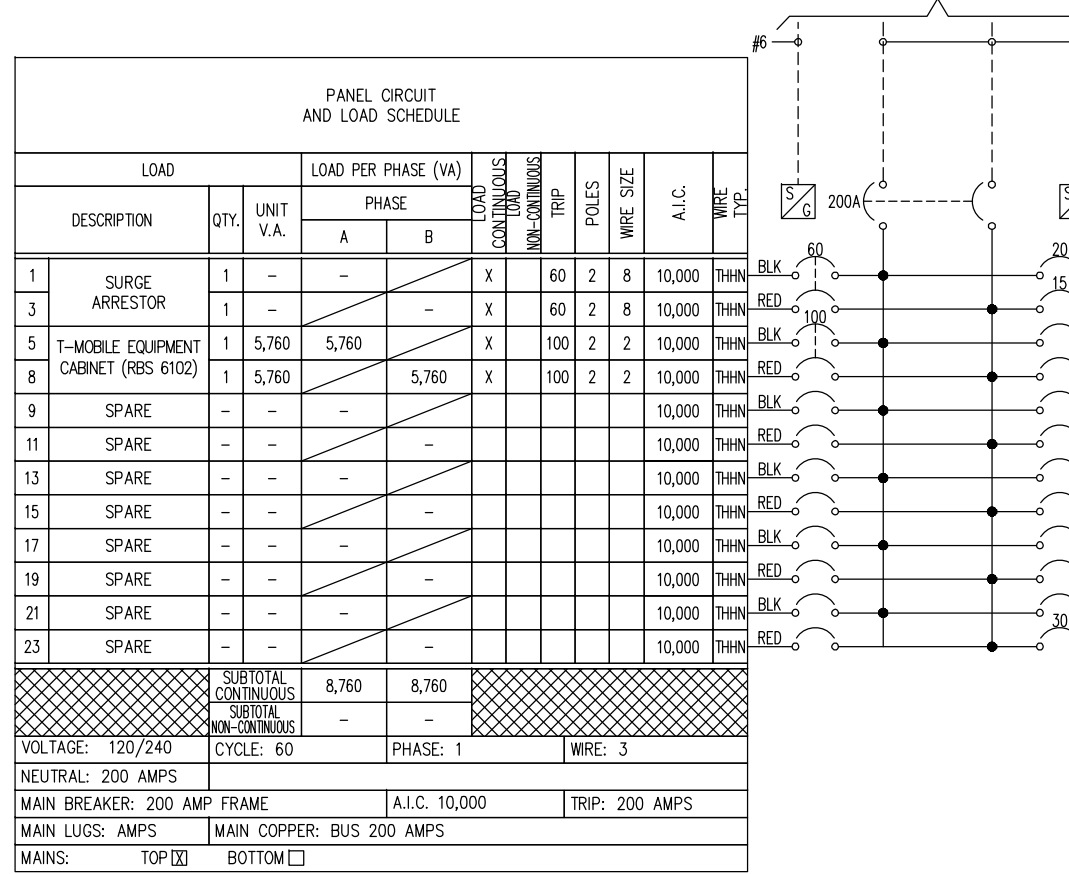
SHEET TITLE  
**ELECTRICAL SITE PLAN**

SHEET NUMBER  
**E-1**

### ELECTRICAL SITE PLAN

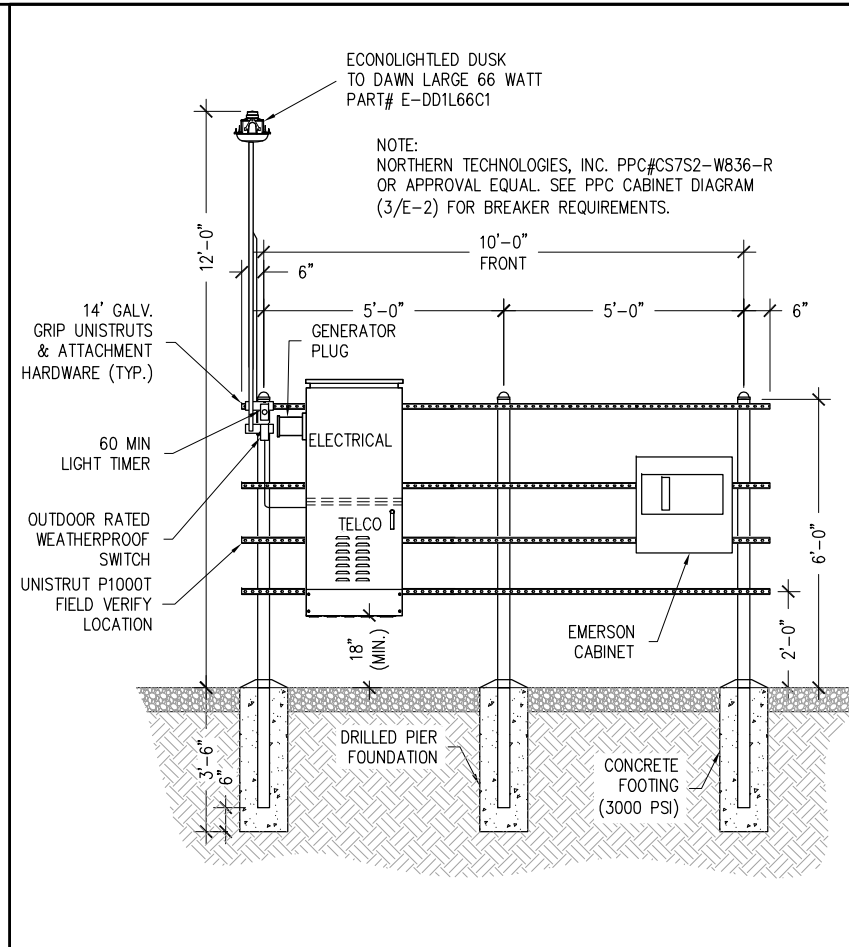


120/240 VAC 1Ø 200 AMP SERVICE SUPPLIED & INSTALLED BY SITE ELECTRICAL CONTRACTOR



SERVICE: 120/240 VAC  
 DESIGNATION: N/A  
 LOCATION: N/A

WIRE TYPE	A.I.C.	WIRE SIZE	POLES	TRIP	LOAD TYPE	PER PER PHASE (VA)		UNIT V.A.	QTY.	DESCRIPTION	
						A	B				
THHN	10,000	12	1	20	X	435	435	1	1	FLOOD LIGHT	
THHN	10,000	12	1	15	X	180	180	1	1	GFI RECEPTACLE	
THHN	10,000					-	-	-	1	SPARE	
THHN	10,000					-	-	-	-	SPARE	
THHN	10,000					-	-	-	-	SPARE	
THHN	10,000					-	-	-	-	SPARE	
THHN	10,000					-	-	-	-	SPARE	
THHN	10,000					-	-	-	-	SPARE	
THHN	10,000					-	-	-	-	SPARE	
THHN	10,000					-	-	-	-	SPARE	
THHN	10,000					-	-	-	-	SPARE	
THHN	10,000					-	-	-	-	SPARE	
THHN	10,000	10	1	30	X	2,880	2,880	-	-	AAV	
SUBTOTAL CONTINUOUS						-	2,880	SUBTOTAL CONTINUOUS		TOTAL KVA	14.40
SUBTOTAL NON-CONTINUOUS						435	180	SUBTOTAL NON-CONTINUOUS		TOTAL KVA	0.80
MANUFACTURER: TRANSECTOR										TOTAL KVA	15.20
MODEL NUMBER: TTOR-200-24-CC-08										TOTAL AMPS	63.33
NO EQUAL: <input type="checkbox"/> APPROVED EQUAL: <input checked="" type="checkbox"/>											
MOUNTING: SURFACE: <input checked="" type="checkbox"/> FLUSH: <input type="checkbox"/>											



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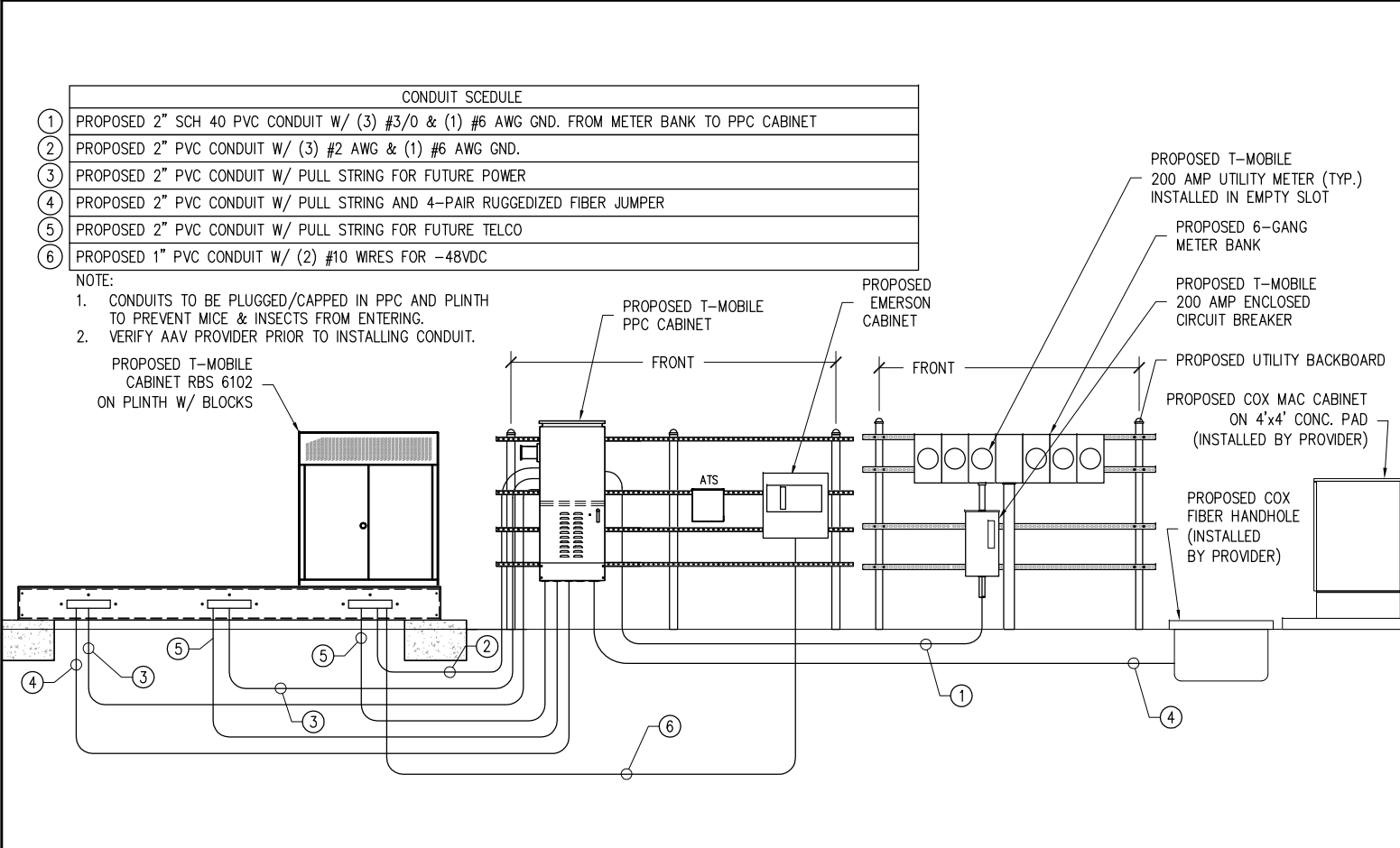
ENGINEER  
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DRAWN BY: R. MADLOCK  
 CHECKED BY: J. GEORGE  
 ACGI JOB #: 18-4735, 18-1827, & 18-3917

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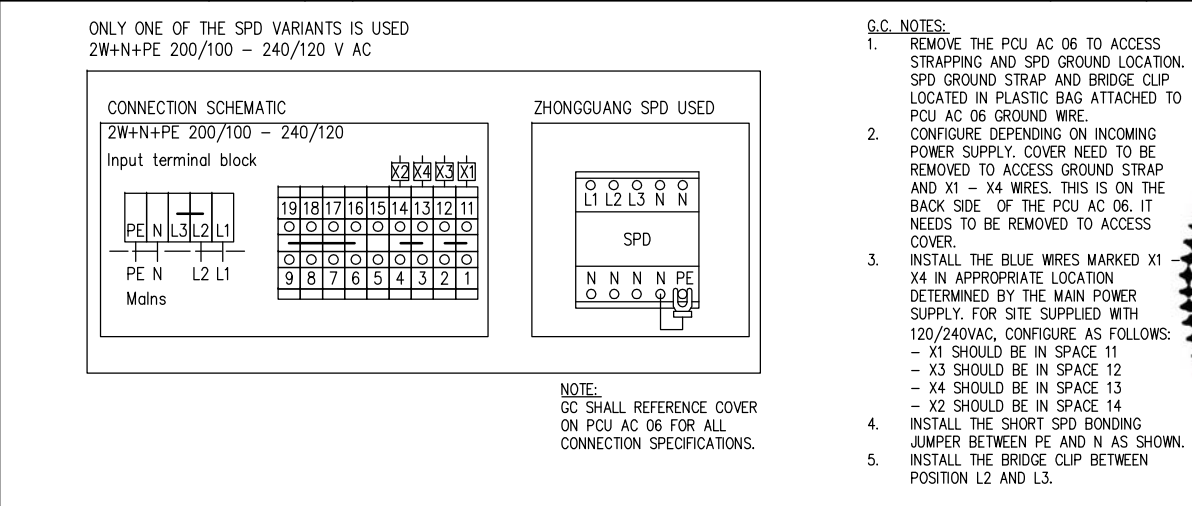
**ELECTRICAL PANEL**

**UTILITY RACK**

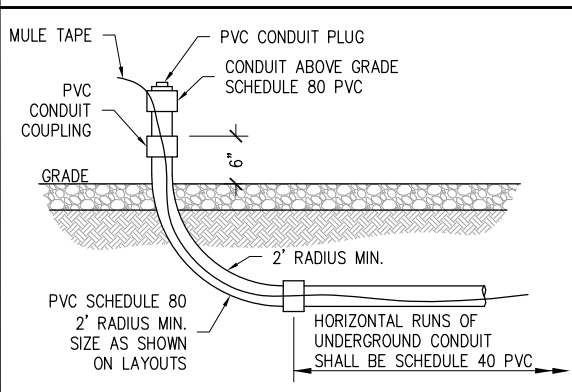


**POWER DIAGRAM**

SCALE: N.T.S. 3

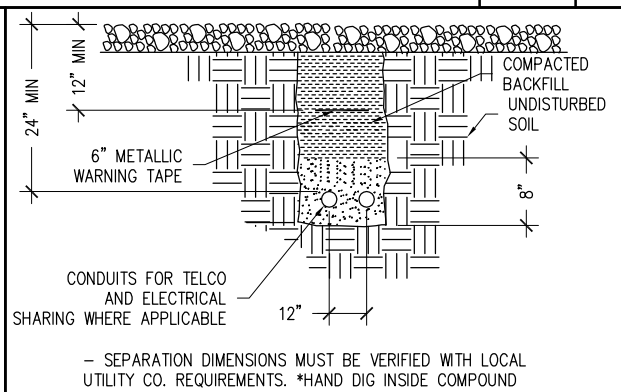


**AC POWER CONNECTION AT RBS**



**UNDERGROUND CONDUIT STUB UP**

SCALE: N.T.S. 4



**TYPICAL UTILITY TRENCH DETAIL**

SCALE: N.T.S. 5

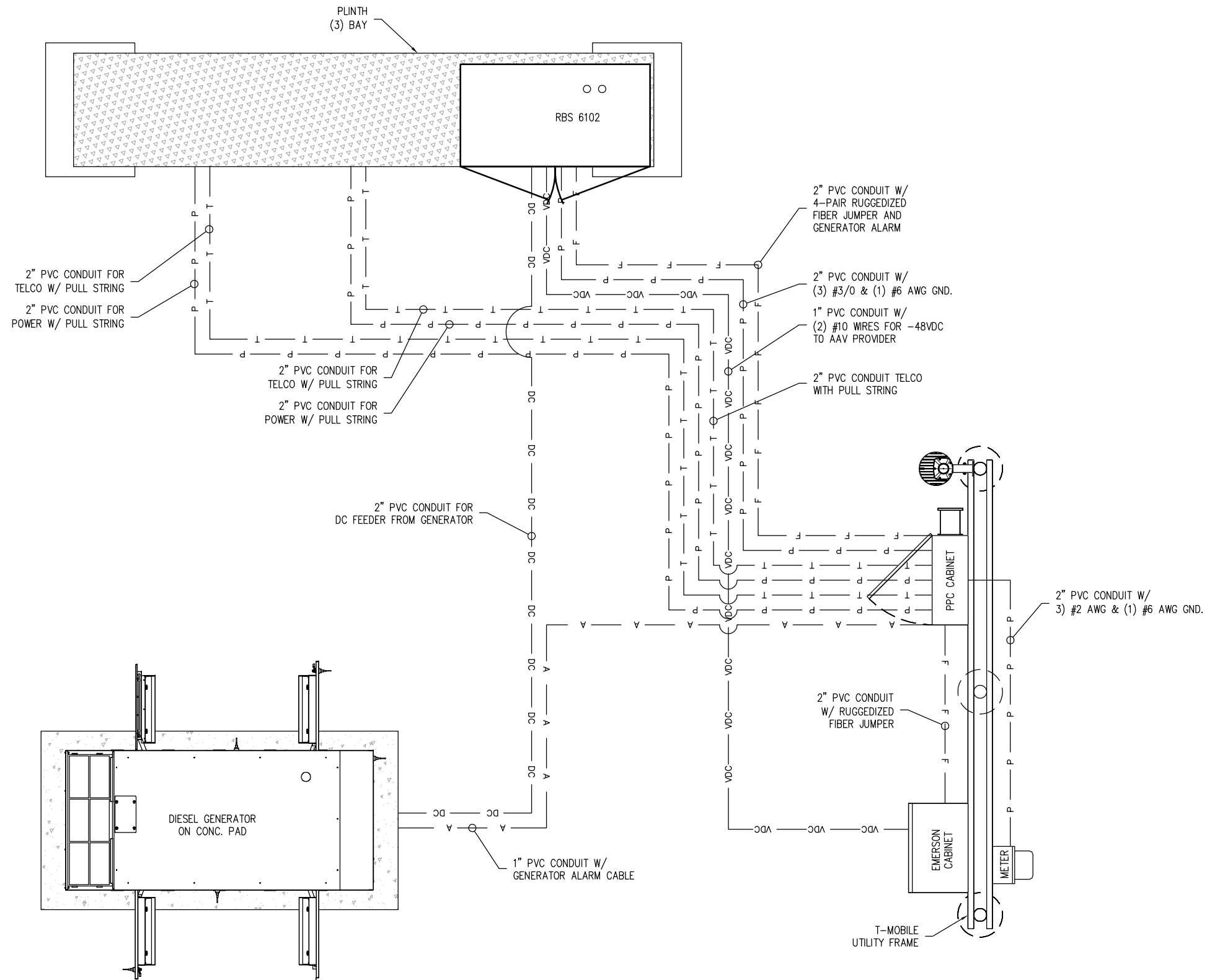
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SHEET INFORMATION  
**VA70330D**  
**H&S DEVELOPMENT GROUP**  
 700 GREENLAWN AVE  
 HAMPTON, VA 23661  
 CITY OF HAMPTON

SHEET TITLE  
**ELECTRICAL PANEL & DETAILS**

SHEET NUMBER  
**E-2**






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**H&S DEVELOPMENT**  
**GROUP**  
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 HAMPTON, VA 23661  
 CITY OF HAMPTON

SHEET TITLE  
**CONDUIT LAYOUT**

SHEET NUMBER  
**E-3**

APPLICANT  
**T-Mobile**  
**NORTHEAST LLC**  
 324 MADISON MEWS  
 NORFOLK, VA 23510

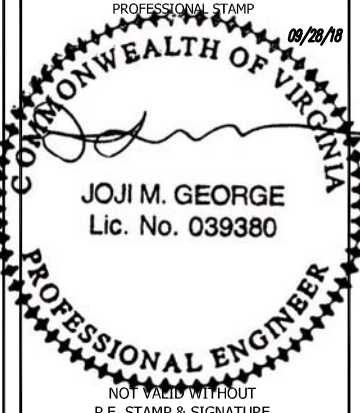
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REVISIONS

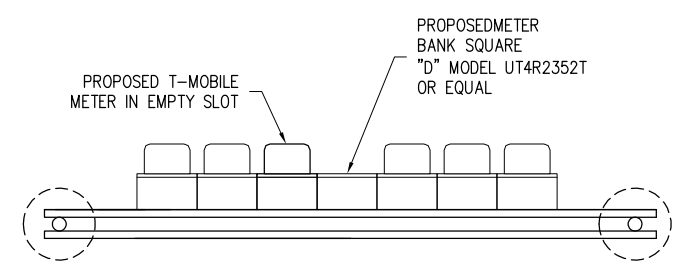
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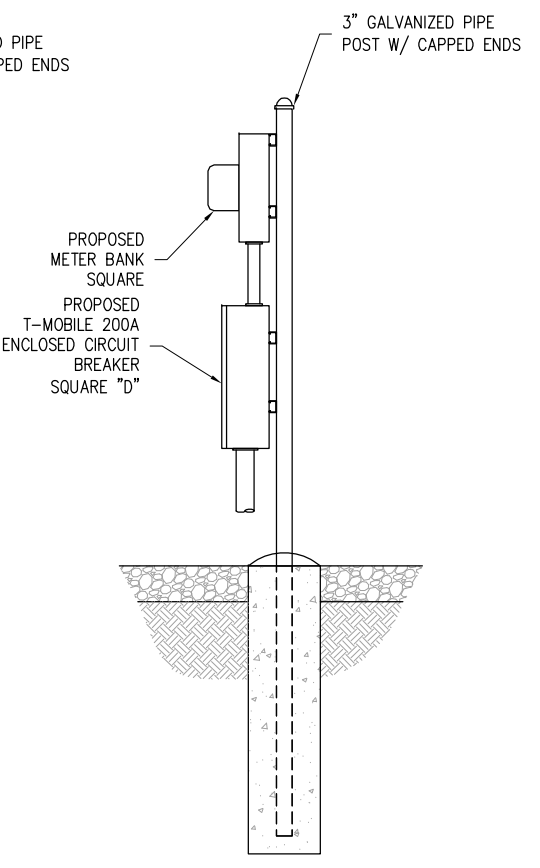
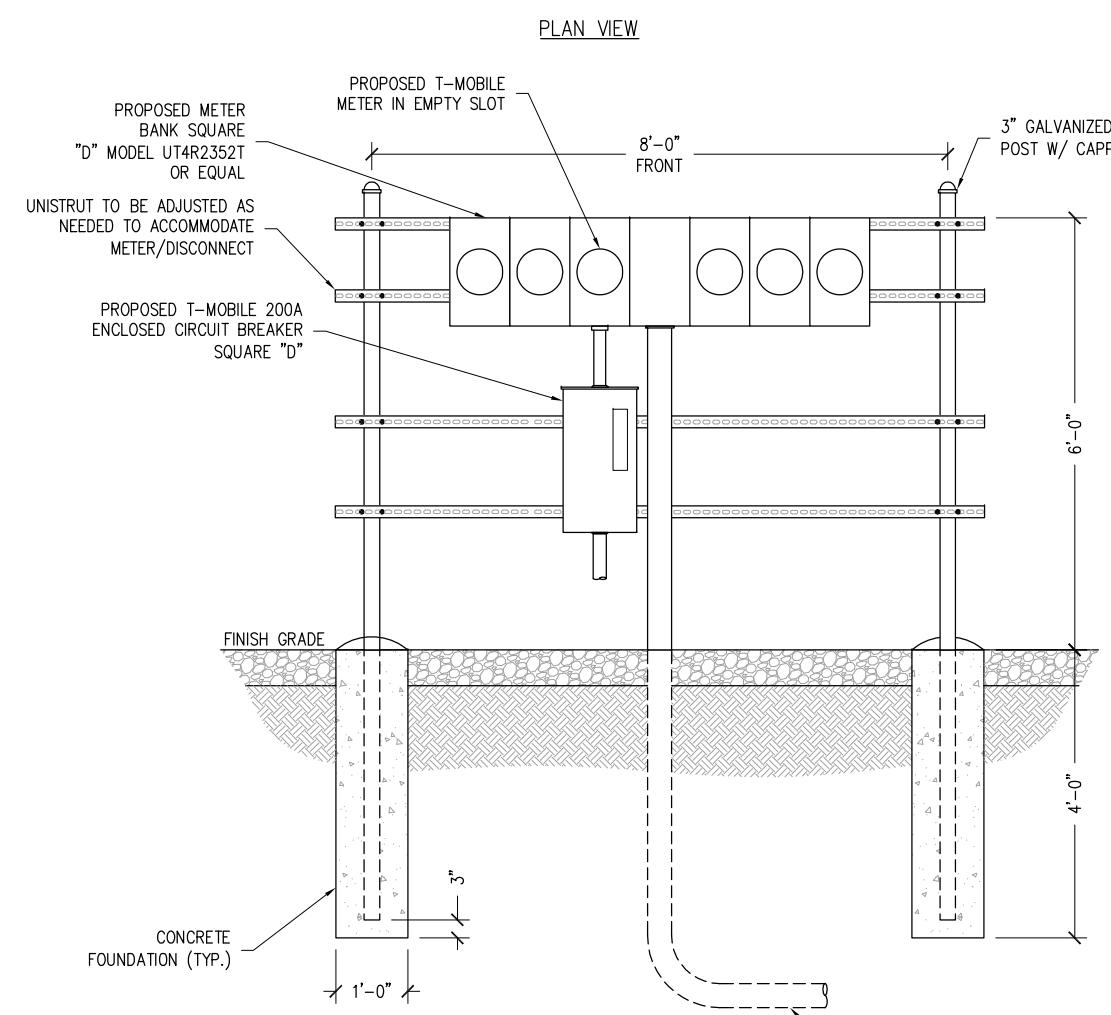
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**VA70330D**  
**H&S DEVELOPMENT**  
**GROUP**  
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 HAMPTON, VA 23661  
 CITY OF HAMPTON

SHEET TITLE  
**UTILITY**  
**BACKBOARD**

SHEET NUMBER  
**E-4**



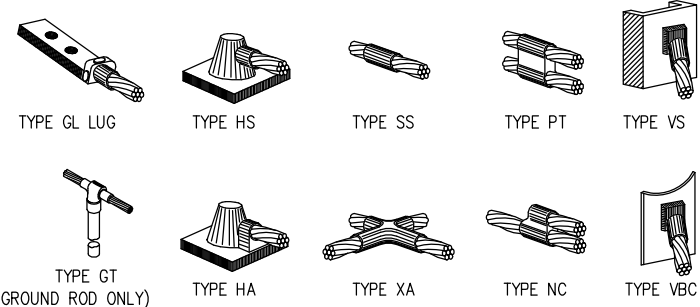
NOTE:  
 1. ALL UNISTRUTS ARE BE CLAMPED TO FRONT ON PEDESTAL FOR METER BASE AND DISCONNECTS WITH UNISTRUT CLAMPS.  
 2. ON LEFT BACKSIDE OF PEDESTAL ADD TWO PIECES OF UNISTRUT FOR MOUNTING OF FIBER CABINET.



### GROUNDING LEGEND

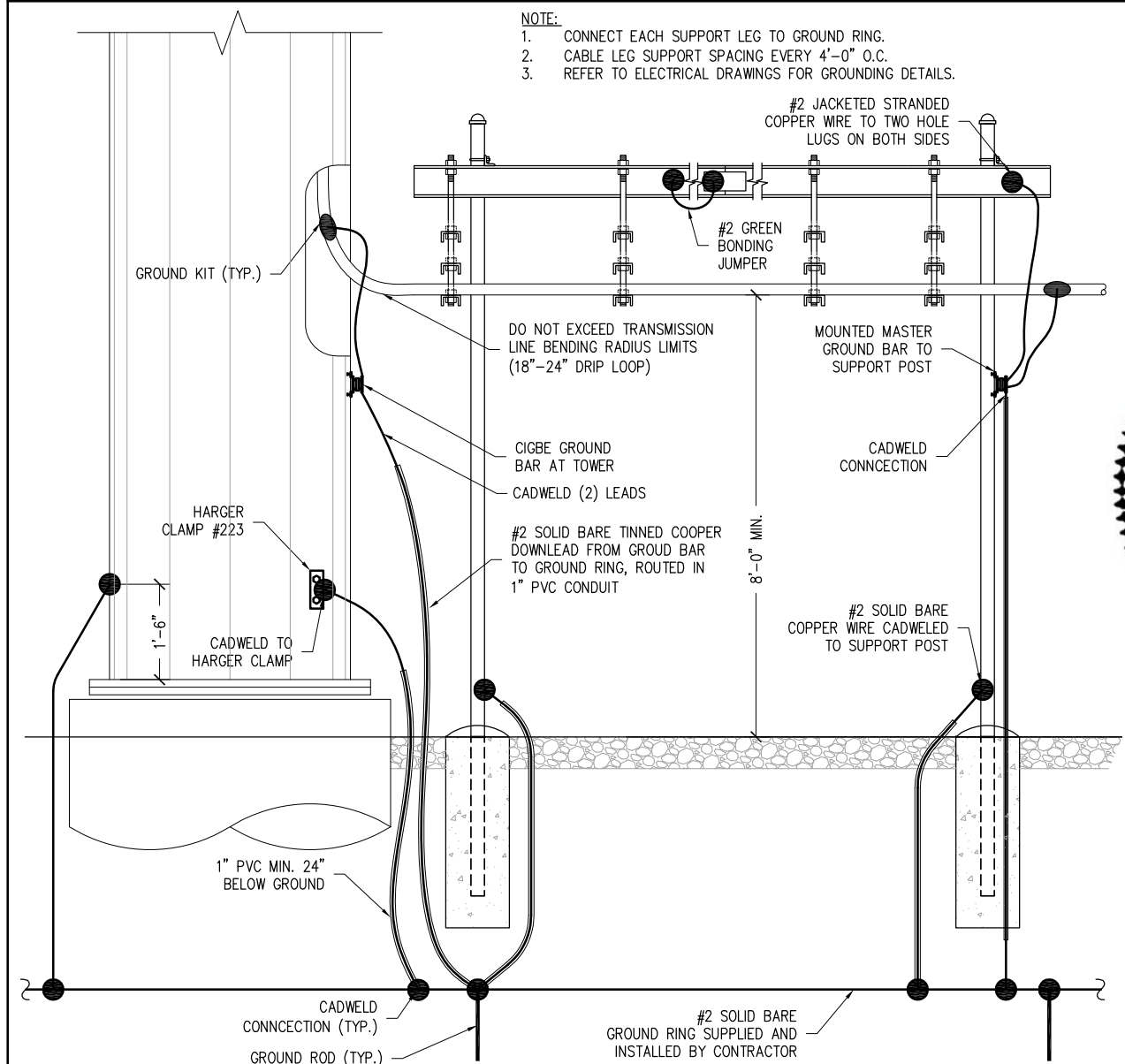
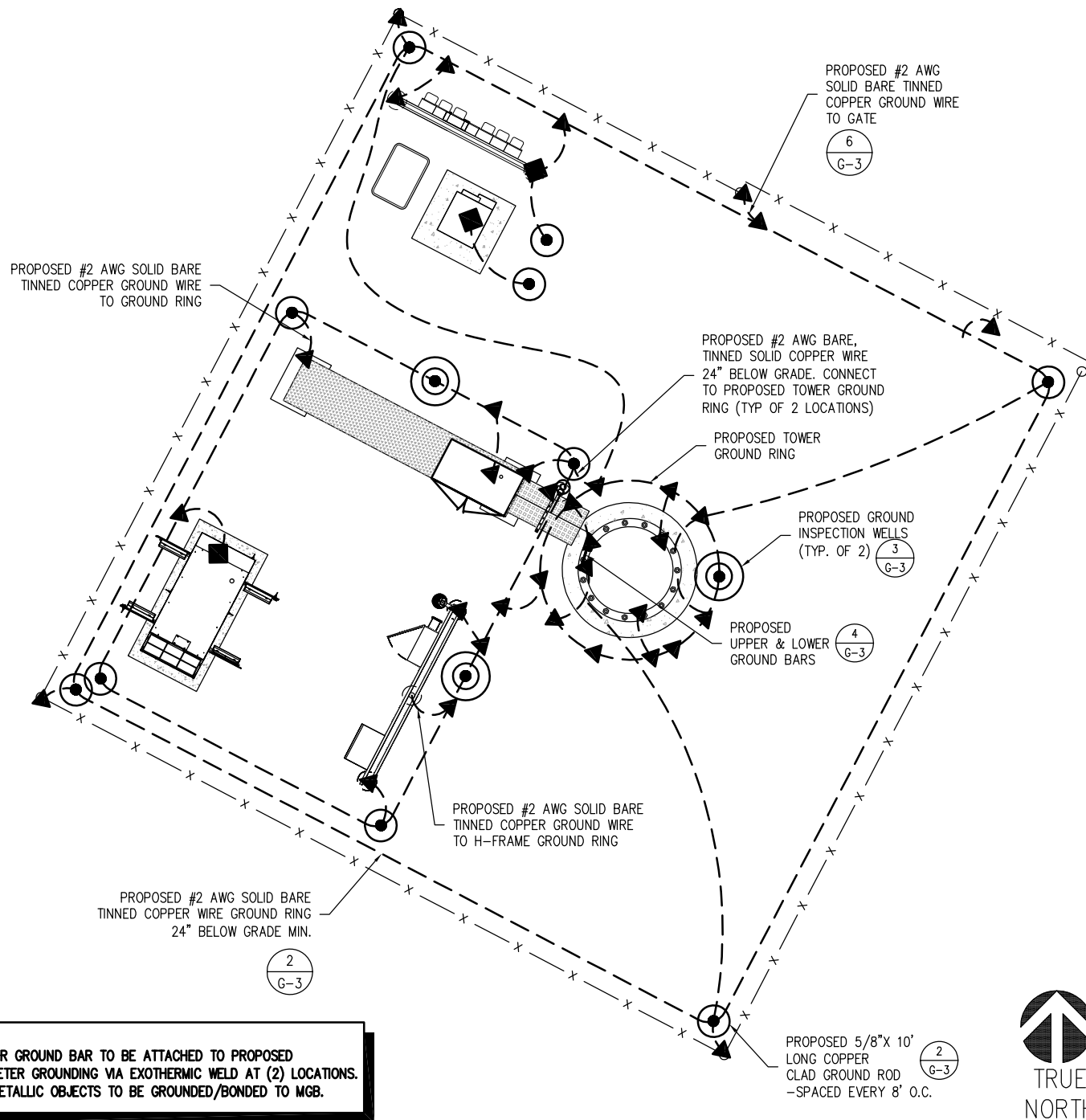
- CADWELD CONNECTION
- 8" x 5/8" COPPER CLAD GROUND ROD (6" MAX SEPARATION, EQUALLY SPACED)
- GROUND ROD INSPECTION WELL
- BURNDY CONNECTION
- GROUND CONDUCTOR (GROUND RINGS SHALL BE 2'-0" BELOW GRADE)

### TYPICAL CADWELD CONNECTIONS



### GROUNDING NOTES

- GROUNDING SHALL COMPLY WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
- ALL GROUNDING DEVICES SHALL BE U.L. APPROVED OR LISTED FOR THEIR INTENDED USE.
- ALL WIRES SHALL BE AWG THHN/THWN COPPER UNLESS NOTED OTHERWISE.
- GROUNDING CONNECTIONS TO GROUND RODS, GROUNDING RING WIRE, TOWER BASE AND FENCE POSTS SHALL BE EXOTHERMIC ("CADWELLS") UNLESS NOTED OTHERWISE, CLEAN SURFACES TO SHINY METAL, WHEN GROUND ARE CADWELDED TO GALVANIZED SURFACES, SPRAY CADWELD WITH GALVANIZING PAINT.
- GROUNDING CONNECTIONS TO GROUND BARS ARE TO BE TWO-HOLE BRASS MECHANICAL CONNECTORS WITH STAINLESS STEEL HARDWARE (INCLUDING SCREW SET) CLEAN GROUND BAR TO SHINY METAL, AFTER MECHANICAL CONNECTION, TREAT WITH PROTECTIVE ANTIOXIDANT COATING.
- GROUND COAXIAL CABLE SHIELDS AT BOTH ENDS WITH MANUFACTURES GROUNDING KITS.
- ROUTE GROUNDING CONDUCTORS THE SHORTEST AND STRAIGHTEST PATH POSSIBLE. BEND GROUNDING LEADS WITH A MINIMUM 12" RADIUS.
- INSTALL #2 AND GREEN-INSULATED STRANDED WIRE FOR ABOVE GRADE GROUNDING AND #2 TINNED SOLID COPPER WIRE FOR BELOW GRADE GROUNDING UNLESS OTHERWISE NOTED.
- REFER TO GROUNDING PLAN FOR GROUND BAR LOCATIONS. GROUNDING CONNECTIONS SHALL BE EXOTHERMIC ("CADWELLS") TO ANTENNA MOUNTS AND GROUND RING. REMAINING GROUNDING CONNECTIONS SHALL BE COMPRESSION FITTINGS. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO-HOLE LUGS.
- THE GROUND ELECTRODE SYSTEM SHALL CONSIST OF DRIVEN GROUND RODS POSITIONS ACCORDING TO GROUNDING PLAN. THE GROUND RODS SHALL BE 8"x10'-0" COPPER CLAD STEEL INTERCONNECTED WITH #2 TINNED SOLID COPPER WIRE BURIED 36" BELOW GRADE. BURY GROUND RODS A MAXIMUM OF 15' APART, AND A MINIMUM OF 8' APART.
- IF ROCK IS ENCOUNTERED GROUND RODS SHALL BE PLACED AT AN OBLIQUE ANGLE NOT TO EXCEED 45°.
- EXOTHERMIC WELDS SHALL BE MADE IN ACCORDANCE WITH ERICO PRODUCTS BULLETIN A-AT.
- CONSTRUCTION OF GROUND RING AND CONNECTIONS TO EXISTING GROUND RING SYSTEM SHALL BE DOCUMENTED WITH PHOTOGRAPHS PRIOR TO BACKFILLING SITE. PROVIDE PHOTOS TO THE T-MOBILE CONSTRUCTION MANAGER.
- ALL GROUND LEADS EXCEPT THOSE TO THE EQUIPMENT ARE TO BE #2 TINNED SOLID COPPER WIRE. ALL EXTERIOR GROUND BARS TINNED COPPER.
- PRIOR TO INSTALLING LUGS ON GROUND WIRES, APPLY THOMAS & BETTS KOPR-SHEILD (TM OF JET LUBE INC.) PRIOR TO BOLTING GROUND WIRE LUGS TO GROUND BARS, APPLY KOPR-SHEILD OR EQUAL.
- ENGAGE AN INDEPENDENT ELECTRICAL TESTING FIRM TO TEST AND VERIFY THAT IMPEDANCE DOES NOT EXCEED FIVE OHMS TO GROUND BY MEANS OF "FALL OF POTENTIAL TEST". TEST SHALL BE WITNESSED BY A T-MOBILE REPRESENTATIVE, AND RECORDED ON THE "GROUND RESISTANCE TEST" FORM.
- WHERE BARE COPPER GROUND WIRES ARE ROUTED FROM ANY CONNECTION ABOVE GRADE TO GROUND RING, INSTALL WIRE IN 1/2" PVC SLEEVE, FROM 1' BELOW GRADE AND SEAL TOP WITH SILICONE MATERIAL.
- PREPARE ALL BONDING SURFACES FOR GROUNDING CONNECTIONS BY REMOVING ALL PAINT AND CORROSION DOWN TO SHINY METAL. FOLLOWING CONNECTION, APPLY APPROPRIATE ANTI-OXIDIZATION PAINT.
- ANY SITE WHERE THE EQUIPMENT (BTS, CABLE BRIDGE, PPC, GENERATOR, ETC.) IS LOCATED WITHIN 6 FEET OF METAL FENCING, THE GROUND RING SHALL BE BONDED TO THE NEAREST FENCE POST USING (3) RUNS OF #2 BARE THINNED COPPER WIRE.



APPLICANT

**T-Mobile**

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NORFOLK, VA 23510

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COMMONWEALTH OF VIRGINIA

09/28/18

**JOJI M. GEORGE**  
Lic. No. 039380

PROFESSIONAL ENGINEER

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SHEET INFORMATION

VA70330D

**H&S DEVELOPMENT GROUP**

700 GREENLAWN AVE  
HAMPTON, VA 23661  
CITY OF HAMPTON

SHEET TITLE

**GROUNDING SITE PLAN**

SHEET NUMBER

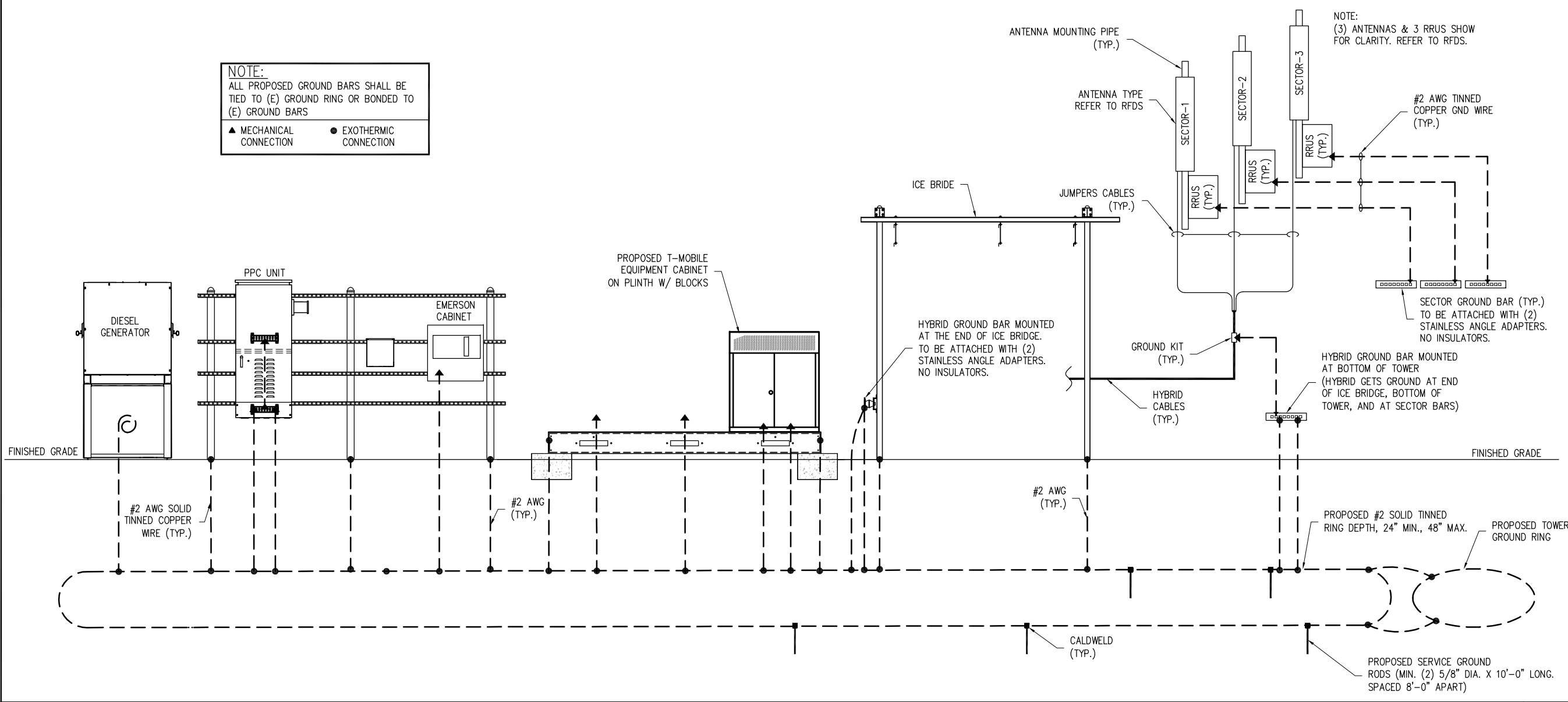
**G-1**



**NOTE:**  
 ALL PROPOSED GROUND BARS SHALL BE TIED TO (E) GROUND RING OR BONDED TO (E) GROUND BARS

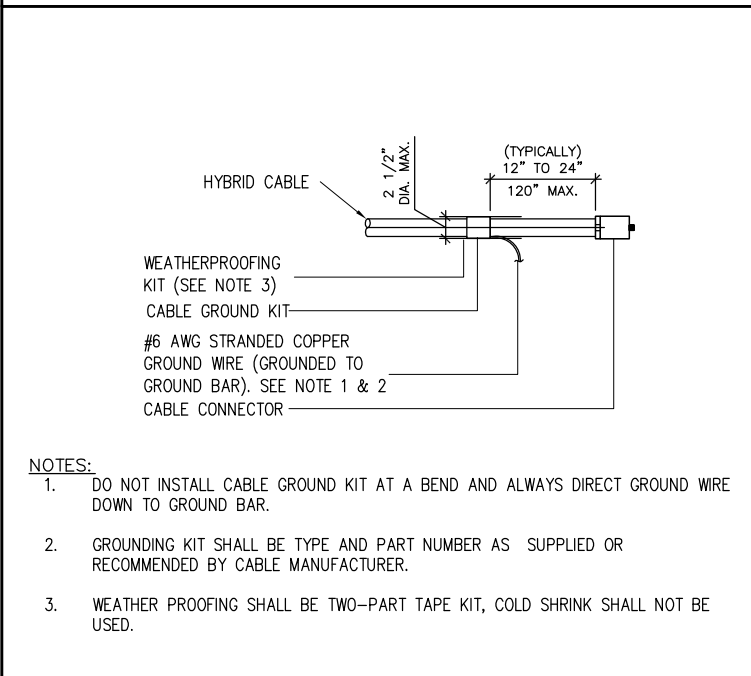
▲ MECHANICAL CONNECTION      ● EXOTHERMIC CONNECTION

**NOTE:**  
 (3) ANTENNAS & 3 RRUS SHOW FOR CLARITY. REFER TO RFDS.



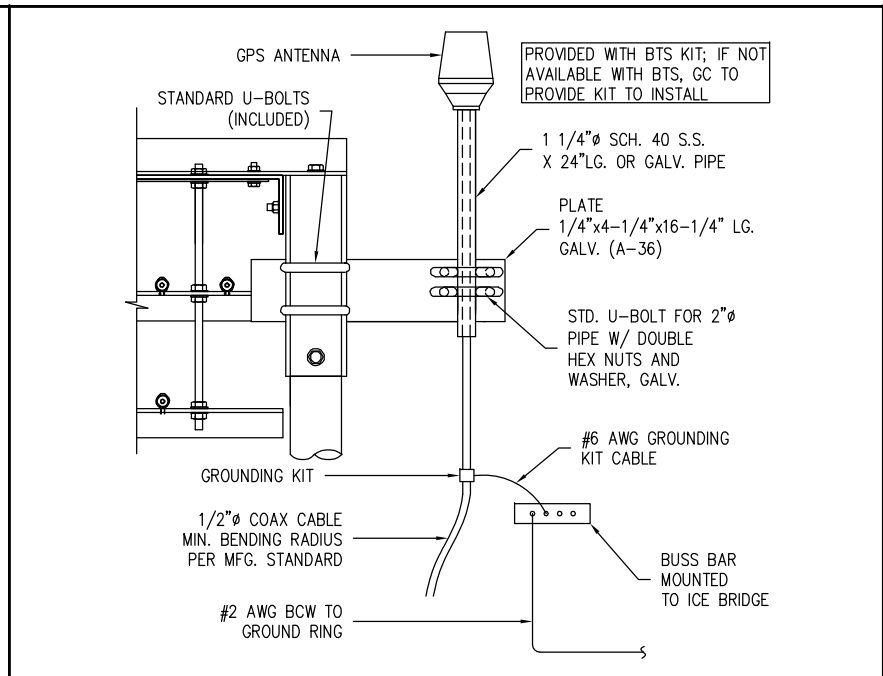
**TYPICAL GROUNDING RISER DIAGRAM**

SCALE: N.T.S.



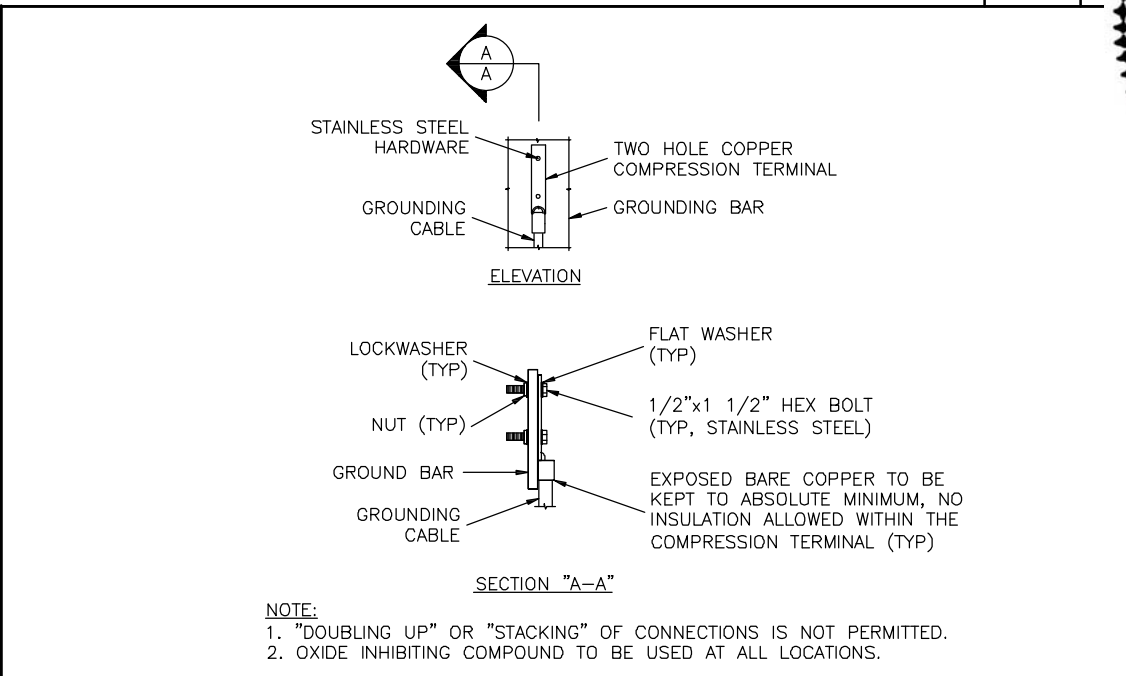
**HYBRID CABLE GROUND KIT DETAIL**

SCALE: N.T.S. 2



**GPS GROUNDING DETAIL**

SCALE: N.T.S. 3



**TYPICAL GROUND BAR CONN DETAIL**

SCALE: N.T.S. 4

- NOTES:**
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
  - GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
  - WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

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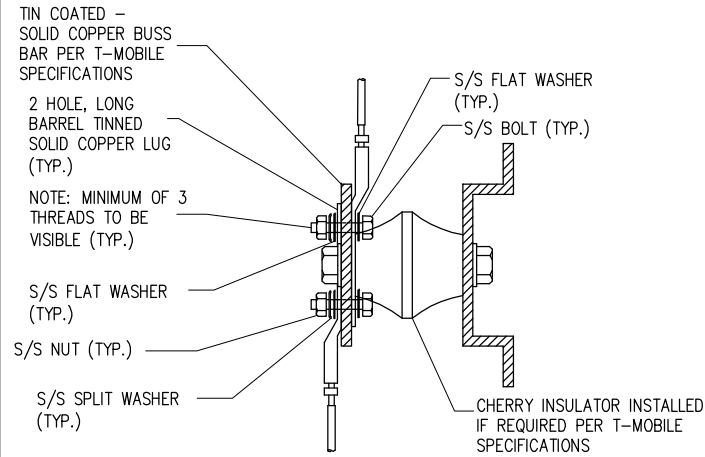
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 CITY OF HAMPTON

SHEET TITLE  
**GROUNDING DETAILS**

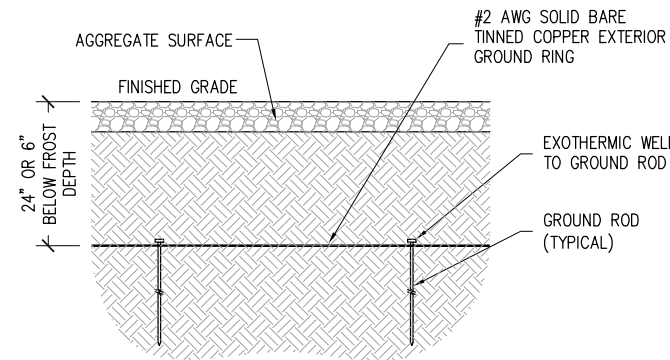
SHEET NUMBER  
**G-2**

THE DETAILS ON THIS SHEET APPLY ONLY AS CALLED OUT ON SITE PLANS OR SITE SPECIFIC DRAWINGS.



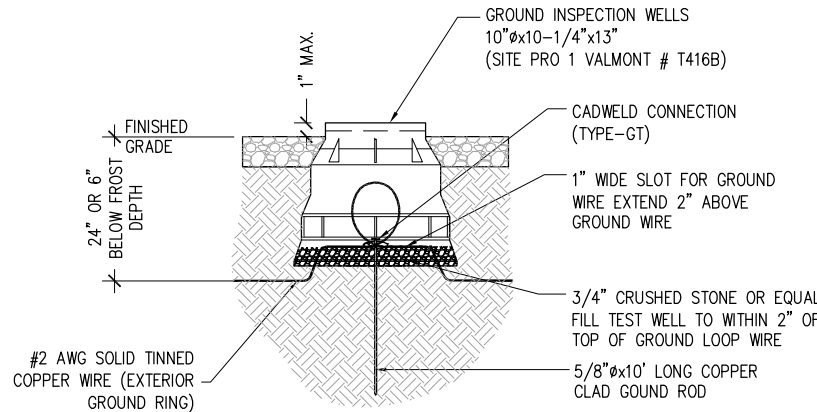
- NOTES:
- 1) ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING SPLIT WASHERS.
  - 2) COAT WIRE END WITH ANTI-OXIDATION COMPOUND PRIOR TO INSERTION INTO LUG BARREL AND CRIMPING.
  - 3) APPLY ANTI-OXIDATION COMPOUND BETWEEN ALL LUGS AND BUSS BARS PRIOR TO MATING AND BOLTING.

(FRONT AND BACK ATTACHMENT)



**GROUNDING - GROUND ROD**

SCALE: N.T.S. 2



**GROUNDING - GENERAL LUG DETAIL**

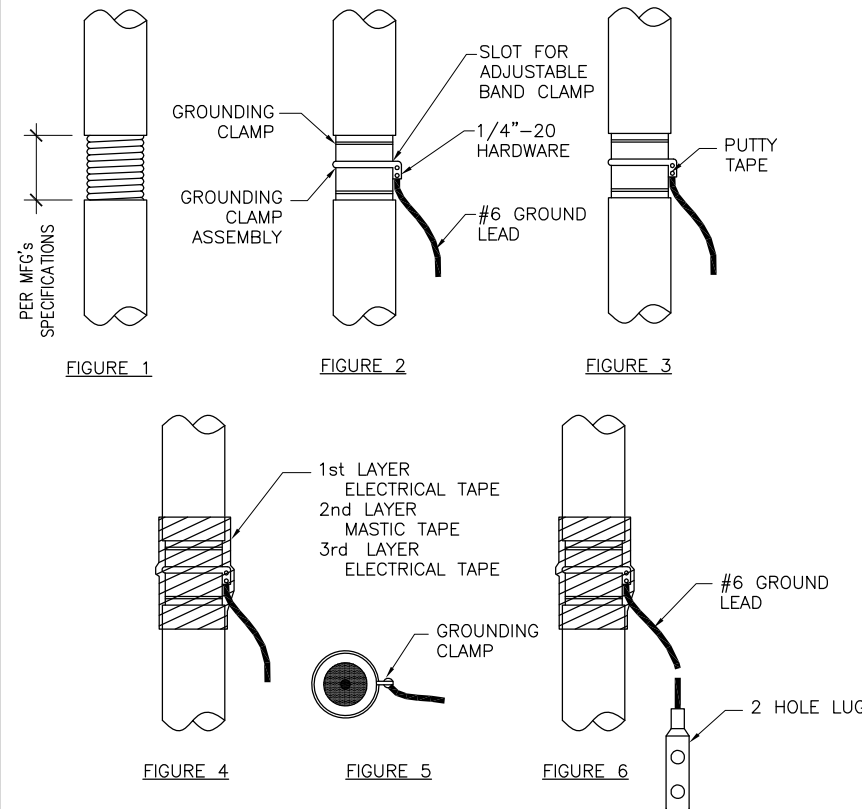
SCALE: N.T.S. 1

**GROUNDING - TEST WELL**

SCALE: N.T.S. 3

**GROUND BAR**

SCALE: N.T.S. 4

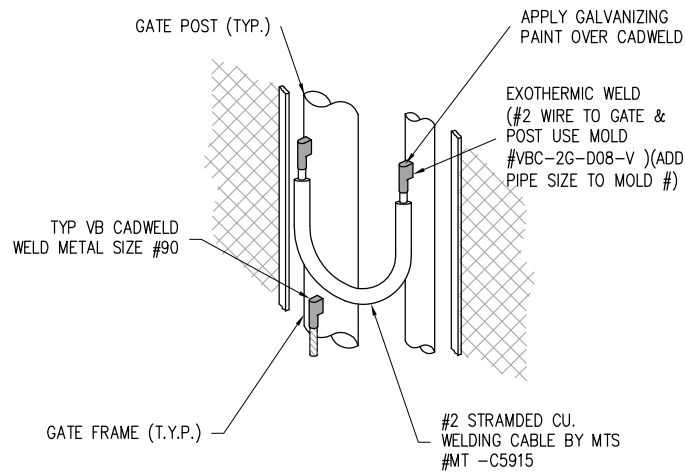
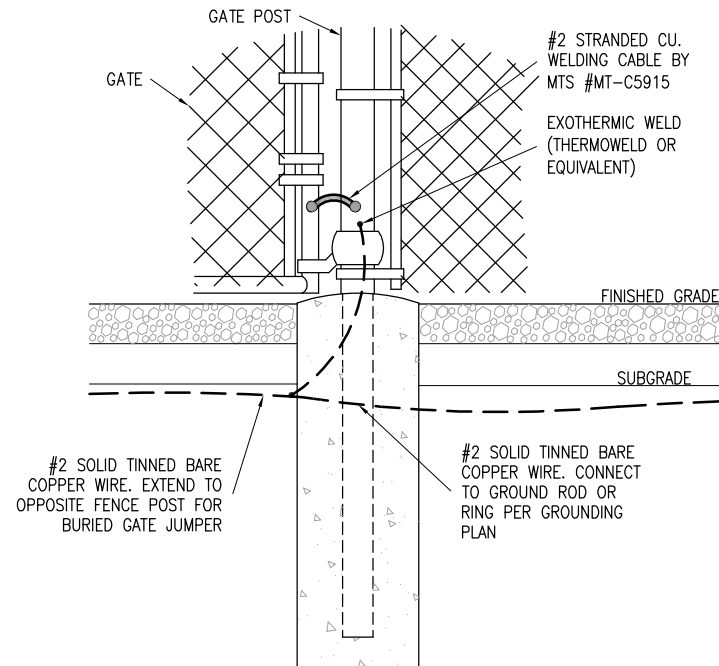


**TYPICAL CABLE WEATHERPROOFING & GROUNDING**

SCALE: N.T.S. 5

**GATE GROUNDING DETAIL**

SCALE: N.T.S. 6



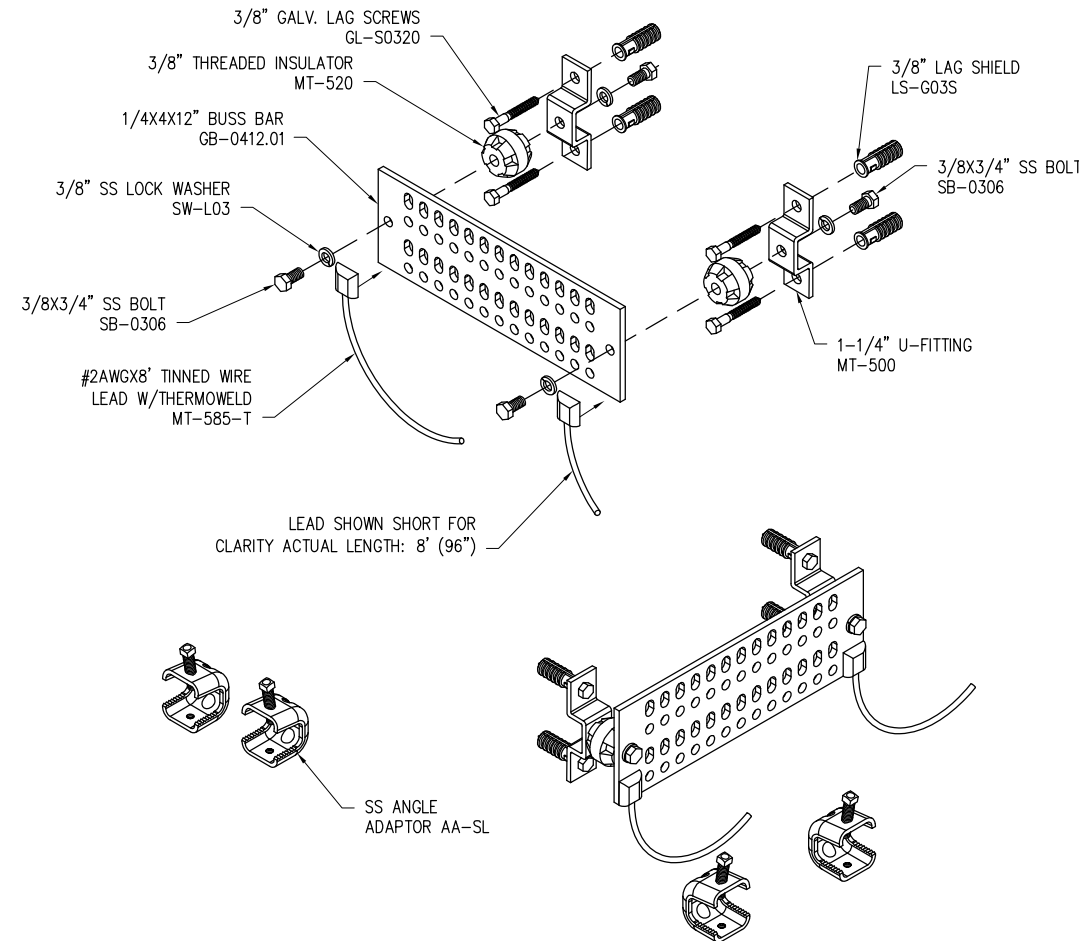
**GROUNDING - GROUND ROD**

**GROUNDING - TEST WELL**

SCALE: N.T.S. 3

**GROUND BAR**

SCALE: N.T.S. 4



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 COMMONWEALTH OF VIRGINIA  
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SHEET INFORMATION  
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 CITY OF HAMPTON

SHEET TITLE  
**GROUNDING DETAILS**

SHEET NUMBER  
**G-3**



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1.0 CONSTRUCTION TO CONFORM TO T-MOBILE T-MOBILE INTEGRATED CONSTRUCTION STANDARDS

- 1.1 PURPOSE AND INTENT
- A. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH. SHOULD THERE BE ANY DISCREPANCIES BETWEEN REQUIREMENTS SHOWN IN BOTH, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.
- B. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
- C. THE PURPOSE OF THE T-MOBILE WIRELESS CONSTRUCTION SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.
- 1.2 CONFLICTS
- A. VERIFY ALL MEASUREMENTS AT THE SITE BEFORE ORDERING MATERIAL OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION WILL BE ALLOWED DUE TO DIFFERENCES BETWEEN ACTUAL DIMENSIONS OR DIMENSIONS SHOWN ON PLANS. SUBMIT NOTICE OF ANY DISCREPANCY IN DIMENSIONS OR OTHERWISE TO T-MOBILE WIRELESS FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK. NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST OR OF DIFFICULTIES OF CONDITIONS THAT MAY BE ENCOUNTERED, OR OF ANY OTHER RELEVANT MATTER CONCERNING THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS GOVERNING THE WORK.
- B. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
- 1.3 CLEANING
- KEEP THE SITE FREE FROM ACCUMULATION OF WASTE AND RUBBISH CAUSED BY EMPLOYEES AT THE COMPLETION OF THE WORK. REMOVE ALL WASTE AND NON-CONSTRUCTION MATERIAL INCLUDING ALL CONTRACTOR TOOLS, SCAFFOLDING AND SURPLUS MATERIAL AND LEAVE SITE CLEAN AND READY FOR USE.
- 1.4 CODES
- CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL LAWS, REGULATIONS AND RULES PROMULGATED BY FEDERAL STATE AND LOCAL AUTHORITIES WITH JURISDICTION OVER THE SITE. THIS RESPONSIBILITY IS IN EFFECT REGARDLESS OF WHETHER THE LAW, ORDINANCE, REGULATION OR RULE IS MENTIONED IN THESE SPECIFICATIONS.
- 1.5 LICENSING
- HAVE AND MAINTAIN A VALID CONTRACTORS LICENSE FOR THE LOCATION IN WHICH THE WORK IS TO BE PERFORMED. FOR JURISDICTIONS THAT LICENSE INDIVIDUAL TRADES, THE TRADESMAN OR SUBCONTRACTORS PERFORMING THOSE TRADES SHALL BE LICENSED. RESEARCH AND COMPLY WITH LICENSING LAWS, PAY LICENSE FEES, AND SELECT AND INFORM SUBCONTRACTORS REGARDING THESE LAWS.
- 1.6 OSHA
- FOLLOW ALL APPLICABLE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATIONS, AND STATE LAWS BASED IN THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT. THESE REGULATIONS INCLUDE BUT ARE NOT LIMITED TO. REGULATIONS DEALING WITH TOWER CONSTRUCTION AND SAFETY, EXCAVATIONS AND TRENCHING, AND WORK IN CONFINED SPACES. ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES DURING CONSTRUCTION.
- 1.7 PHOTOS
- PROVIDE PHOTOGRAPHIC EVIDENCE OF ALL FOUNDATION INSTALLATION, GROUNDING AND TRENCHING AFTER PLACEMENT OF UTILITIES PRIOR TO BACKFILL.
- 1.8 BUILDING PERMITS
- T-MOBILE WIRELESS WILL SUBMIT CONSTRUCTION DOCUMENTS TO THE JURISDICTIONAL AUTHORITY FOR PLAN CHECK AND REVIEW. CONTRACTOR WILL SUBMIT LICENSING AND WORKMAN'S COMPENSATION INFORMATION TO THE JURISDICTION AS REQUIRED TO OBTAIN THE BUILDING PERMIT. CONTRACTOR SHALL COORDINATE AND SCHEDULE REQUIRED INSPECTIONS AND POST REQUIRED PERMITS AT THE JOB SITE. COMPLY WITH SPECIFIC PROJECT-RELATED REQUESTS AND SUGGESTIONS MADE BY BUILDING INSPECTOR AND INFORM CONSTRUCTION MANAGER OF ANY SUCH WORK THAT MAY BE BEYOND THE SCOPE OF THE CONTRACT OR DEVIATE FROM THE CONSTRUCTION DOCUMENTS. T-MOBILE WIRELESS WILL REIMBURSE THE CONTRACTOR FOR FEES FOR PLAN REVIEW, BUILDING PERMIT, CONNECTIONS AND INSPECTION.
- 1.9 ZONING REGULATIONS AND CONDITIONAL USE PERMITS
- T-MOBILE WIRELESS WILL SUBMIT FOR AND OBTAIN ALL ZONING AND CONDITIONAL USE PERMITS. SOME USE PERMITS MAY HAVE SPECIFIC REQUIREMENTS FOR THE SITE RELATED TO CONSTRUCTION SUCH AS NOISE REGULATIONS, HOURS OF WORK, ACCESS LIMITATIONS, ETC. THE CONSTRUCTION MANAGER WILL INFORM THE CONTRACTOR OF THESE REQUIREMENTS AT THE PRE-BID MEETING OR AS SHOWN IN CONSTRUCTION DOCUMENTS.
- 1.10 FM PERMIT AND TOWER LIGHTING
- REFER TO CONSTRUCTION DOCUMENTS AND CONSTRUCTION MANAGER FOR FAA AND STATE LIGHTING REQUIREMENTS. CONTRACTOR SHALL PROVIDE TEMPORARY FM APPROVED LIGHTING UNTIL PERMANENT LIGHTING IS OPERATIONAL.
- 1.11 TOWER SECURITY
- TOWER MUST BE FENCED, TEMPORARILY OR PERMANENTLY WITHIN 24 HOURS OF ERECTION. DO NOT ALLOW THE GATE ACCESSING THE TOWER AREA TO REMAIN OPEN OR UNATTENDED AT ANY TIME FOR ANY REASON. KEEP THE GATE CLOSED AND LOCKED WHEN NOT IN USE.

1.12 SITE CONTROL

- A. THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR CONTAINMENT OF SEDIMENT AND CONTROL OF EROSION AT THE SITE. ANY DAMAGE TO ADJACENT OR DOWNSTREAM PROPERTIES WILL BE CORRECTED BY THE CONTRACTOR AT NO EXPENSE TO T-MOBILE WIRELESS.
- B. THE CONTRACTOR IS TO MAINTAIN ADEQUATE DRAINAGE AT ALL TIMES. DO NOT ALLOW WATER TO STAND OR POND. ANY DAMAGE TO STRUCTURES OR WORK ON THE SITE CAUSED BY INADEQUATE MAINTENANCE OF DRAINAGE PROVISIONS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND ANY COST ASSOCIATED WITH REPAIRS FOR SUCH DAMAGE WILL BE AT THE CONTRACTOR'S EXPENSE.
- C. ALL WASTE MATERIAL SHALL BE PROPERLY DISPOSED OF OFF-SITE OR AS DIRECTED BY THE CONSTRUCTION MANAGER AND IN ACCORDANCE WITH JURISDICTIONAL AUTHORITIES.

2.0 SITE PREPARATION

- 2.1 SCOPE OF WORK INCLUDES:
- A. PROTECTION OF EXISTING TREES, VEGETATION AND LANDSCAPING MATERIALS WHICH MIGHT BE DAMAGED BY CONSTRUCTION ACTIVITIES.
- B. TRIMMING OF EXISTING TREES AND VEGETATION AS REQUIRED FOR PROTECTION DURING CONSTRUCTION ACTIVITIES.
- C. CLEARING AND GRUBBING OF STUMPS, VEGETATION, DEBRIS, RUBBISH, DESIGNATED TREES, AND SITE IMPROVEMENTS.
- D. TOPSOIL STRIPPING AND STOCKPILING.
- E. TEMPORARY EROSION CONTROL, SILTATION CONTROL AND DUST CONTROL CONFORMING TO LOCAL REQUIREMENTS AS APPLICABLE.
- F. TEMPORARY PROTECTION OF ADJACENT PROPERTY, STRUCTURES, BENCHMARKS AND MONUMENTS.
- G. PROTECTION AND TEMPORARY RELOCATION, STORAGE AND RE-INSTALLATION OF DUSTING FENCING AND OTHER SITE IMPROVEMENTS SCHEDULED FOR REUSE.
- H. REMOVAL AND LEGAL DISPOSAL OF CLEARED MATERIALS.
- 2.2 PRODUCTS AND MATERIALS (AS APPROVED BY CONSTRUCTION MANAGER OR AS NOTED III CONSTRUCTION DOCUMENTS.)
- A. MATERIALS USED FOR TREE PROTECTION, EROSION CONTROL, SILTATION CONTROL AND DUST CONTROL AS SUITABLE FOR SPECIFIC SITE CONDITIONS.

3.0 EARTH WORK

- 3.1 SCOPE OF WORK INCLUDES:
- A. EXCAVATION, TRENCHING, FILLING, COMPACTION, AND GRADING FOR STRUCTURES, SITE IMPROVEMENTS AND UTILITIES.
- B. MATERIALS FOR SUB-BASE DRAINAGE FILL, FILL, BACKFILL AND GRAVEL FOR SLABS, PAVEMENTS AND IMPROVEMENTS.
- C. ROCK EXCAVATION WITHOUT BLASTING.
- D. SUPPLY OF ADDITIONAL MATERIALS FROM OFFSITE AS REQUIRED.
- E. REMOVAL AND LEGAL DISPOSAL OF EXCAVATED MATERIALS AS REQUIRED
- 3.2 QUALITY ASSURANCE
- A. COMPACTION:
- UNDER STRUCTURES, BUILDING SLABS, PAVEMENTS AND WALKWAYS WILL OBTAIN A 95 PERCENT COMPACTION AT A MAXIMUM DRY DENSITY AS DETERMINED BY ASTM 0-1557 OR WITHIN PLUS OR MINUS 3 PERCENT OF OPTIMUM MOISTURE.
- B. GRADING TOLERANCES OUTSIDE BUILDING CODES:
- LAWNS, UNPAVED AREAS AND WALKS PLUS OR MINUS 1 INCH.
  - UNDER PAVEMENTS PLUS OR MINUS 1/2 INCH.
- C. GRADING TOLERANCE FOR FILL UNDER ALL CONCRETE APPLICATIONS: PLUS OR MINUS 1/2 INCH MEASURED WITH 10 FOOT STRAIGHTEDGE.
- 3.3 PRODUCTS AND MATERIALS (AS APPROVED BY CONSTRUCTION MANAGER OR AS NOTED IN CONSTRUCTION DOCUMENTS.)
- A. SUBBASE MATERIAL GRADED MIXTURE OF NATURAL OR CRUSHED GRAVEL, CRUSHED STONE OR SLAG, AND NATURAL SAND.
- B. WASHED MATERIAL EVENLY GRADED MIXTURE OF CRUSHED STONE OR GRAVEL WITH 95 PERCENT PASSING A 1 1/2 INCH SIEVE.
- C. GRADING MATERIAL WILL CONSIST OF: SATISFACTORY NATIVE OR IMPORTED SOIL MATERIALS FREE OF CLAY, ROCK OR GRAVEL NOT LARGER THAN 2 INCHES IN ANY DIMENSION, DEBRIS, WASTE, FROZEN MATERIALS AND OTHER UNSUITABLE MATERIALS WILL NOT BE ALLOWED FOR USE. IMPORTED MATERIALS SHALL HAVE A CLAY CONTENT NO MORE THAN 5 PERCENT.
- D. BACKFILL MATERIALS WILL CONSIST OF: SATISFACTORY NON-COHESIVE NATIVE OR IMPORTED SOIL MATERIALS FREE OF CLAY, ROCK OR GRAVEL NOT LARGER THAN 4 INCHES IN ANY DIMENSION, DEBRIS, WASTE, FROZEN MATERIALS, AND OTHER UNSUITABLE MATERIALS. IMPORTED MATERIAL SHALL HAVE A CLAY CONTENT OF NO MORE THAN 5 PERCENT.
- E. GRAVEL MATERIAL EVENLY GRADED MIXTURE OF CRUSHED STONE OR GRAVEL WITH 95 PERCENT PASSING A 1 1/2 INCH SIEVE.
- F. GEOTEXTILE FABRIC: AS PER CONSTRUCTION DOCUMENTS.

3.4 CLEARING AND GRUBBING REMOVE ALL VEGETATION AND MATERIALS AS REQUIRED. REMOVE STUMPS COMPLETELY UNDER FOUNDATIONS AND ROADWAY. DISPOSE OF CLEARING AND GRUBBING OFF-SITE. OR IN AN ON-SITE LOCATION APPROVED BY CONSTRUCTION MANAGER.

- 3.5 STRIPPING
- STRIP NOT LESS THAN 3 INCHES OF SOD AND TOPSOIL FROM AREAS THAT WILL UNDERLAY GRAVEL PAVEMENT, NEW STRUCTURES OR NEW EMBANKMENTS. STOCKPILE STRIPPING ON-SITE FOR RE-USE IN FINAL LANDSCAPING.
- 3.6 COMMON EXCAVATION
- EXCAVATE TO DEPTH, LINES AND GRADES SHOWN ON THE PLANS OR AS OTHERWISE SPECIFIED.
  - TEMPORARILY STOCKPILE ON-SITE EXCAVATION AT AN APPROVED LOCATION WITHIN THE WORK AREA UNTIL SITE GRADING IS COMPLETE STOCKPILE SHALL NOT EXCEED 15 FEET IN HEIGHT.
  - LEGALLY DISPOSE OF EXCESS COMMON EXCAVATION OFF-SITE.

3.7 EMBANKMENT

- A. CONSTRUCT EMBANKMENT TO THE LINES AND GRADE SHOWN ON THE DRAWINGS.
- B. CONSTRUCT EMBANKMENT FROM ON-SITE EXCAVATION MATERIALS WHEN SUITABLE USE IMPORTED BACKFILL ONLY AFTER AVAILABLE ON-SITE EXCAVATION MATERIALS HAVE BEEN USED.
- C. CONSTRUCT IN LIFTS OF NOT MORE THAN 12 INCHES IN LOOSE DEPTH. THE FULL WIDTH OF THE CROSS SECTION SHALL BE BROUGHT UP UNIFORMLY. MATERIAL SHALL NOT BE PLACED IN LAYERS AND SHALL BE NEAR OPTIMUM MOISTURE CONTENT BEFORE ROLLING TO OBTAIN THE PRESCRIBED COMPACTION. WETTING OR DRYING OF THE MATERIAL AND MANIPULATION TO SECURE A UNIFORM MOISTURE CONTENT THROUGHOUT THE LAYER MAY BE REQUIRED. SUCH OPERATIONS SHALL BE INCLUDED IN THE APPROPRIATE BID ITEM. SHOULD THE MATERIAL BE TOO WET TO PERMIT PROPER COMPACTION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE MATERIAL WITH AN ACCEPTABLE MOISTURE CONTENT.
- E. DO NOT PLACE FROZEN MATERIAL IN THE EMBANKMENT AND DO NOT PLACE EMBANKMENT MATERIAL UPON FROZEN MATERIAL.
- F. CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF EMBANKMENTS AND THE REPLACEMENT OF ANY PORTION WHICH HAS BECOME DISPLACED DUE TO THE CONTRACTORS OPERATIONS.
- G. START LAYERS IN THE DEEPEST PORTION OF THE FILL, AND AS PLACEMENT PROGRESSES, CONSTRUCT LAYERS APPROXIMATELY PARALLEL TO THE FINISHED GRADE LINE.
- H. ROUTE EQUIPMENT, BOTH LOADED AND EMPTY, OVER THE FULL WIDTH OF EMBANKMENT TO ENSURE UNIFORMITY OF MATERIAL PLACEMENT.
- I. COMPACT EMBANKMENT UNDERLYING NEW GRAVEL PAVING FLOOR SLABS AND STRUCTURES TO A 95 PERCENT COMPACTION AT A MAXIMUM DRY DENSITY AS DETERMINED BY ASTM 0-1557 OR WITHIN PLUS OR MINUS 3 PERCENT OF OPTIMUM MOISTURE CONTENT. COMPACT NON-STRUCTURAL AREA EMBANKMENTS TO A MINIMUM OF 90 % OF ASTM 0-1557.

3.8 SITE GRADING

- A. USING ON-SITE EXCAVATION MATERIALS SHAPE, TRIM, FINISH AND COMPACT SURFACE AREAS TO CONFORM TO THE LINES, GRADES AND CROSS SECTIONS SHOWN ON THE DRAWINGS OR AS DESIGNATED BY THE CONSTRUCTION MANAGER.
- B. GRADE SURFACES TO DRAIN AND ELIMINATE ANY PONDING OR EROSION.
- C. ELIMINATE WHEEL RUTS BY REGRADING.
- D. COMPACT AREAS UNDERLYING NEW GRAVEL PAVING, FLOOR SLABS AND STRUCTURES TO A 95 PERCENT COMPACTION AT A MAXIMUM DRY DENSITY AS DETERMINED BY ASTM 0-1551 OR WITHIN PLUS OR MINUS 3 PERCENT OF OPTIMUM MOISTURE CONTENT.
- E. CONSTRUCT FINISHED SURFACE OF SITE GRADING AREAS WITHIN ONE INCH FROM SPECIFIED GRADE

3.9 SUBGRADE PREPARATION

- A. SHAPE TOP OF SUBGRADE TO THE LINES AND GRADES SHOWN ON THE DRAWINGS.
- B. MAINTAIN TOP OF SUBGRADE TO A FREE-DRAINING CONDITION. DO NOT STOCKPILE MATERIALS ON TOP OF SUBGRADE UNLESS AUTHORIZED BY CONSTRUCTION MANAGER.
- D. COMPACT THE TOP 12 INCHES OF SUBGRADE TO A 95% COMPACTION AT A MAXIMUM DRY DENSITY AS DETERMINED BY ASTM 0-1557 OR WITHIN PLUS OR MINUS 3 PERCENT OF OPTIMUM MOISTURE CONTENT.
- E. CONSTRUCT TOP OF SUBGRADE WITHIN ONE INCH OF ESTABLISHED GRADE AND CROSS-SECTION.

3.10 GEOTEXTILE FABRIC

- A. LAY GEOTEXTILE FABRIC OVER COMPACTED SUBGRADE AS PER CONSTRUCTION DOCUMENTS IN THE COMPOUND AREA AND UNDER LENGTH OF ROAD (WHEN REQUIRED). LAP ALL JOINTS TO A MINIMUM OF 36 INCHES.

3.11 GRAVEL SURFACING

- A. CONSTRUCT GRAVEL SURFACING AREAS USING CRUSHED AGGREGATE BASE AND FINISH COURSES AS SPECIFIED BY CONSTRUCTION MANAGER OR CONSTRUCTION DOCUMENTS.
- B. SPREAD GRAVEL AND RAKE TO OBTAIN A UNIFORM SURFACE AREA.

4.0 TRENCHING

- CALL LOCAL UNDERGROUND UTILITY LOCATING SERVICE BEFORE ANY EXCAVATION OR TRENCHING.

4.1 MATERIALS

- FILL MATERIAL SHALL BE OBTAINED, WHEN POSSIBLE FROM MATERIALS EXCAVATED FROM TRENCHES. ON-SITE STRUCTURAL FILL SAND OR SLURRY SHALL BE APPROVED BY THE CONSTRUCTION MANAGER AND SHALL CONFORM TO LOCAL GOVERNING JURISDICTIONS AND UTILITY COMPANY REQUIREMENTS. THE FILL MATERIAL SHALL CONTAIN NO ORGANIC MATERIAL OR ROCKS, NOR SHALL CONTAIN OBJECTIONABLE MATERIALS AND/OR MATERIALS DESIGNATED AS HAZARDOUS OR INDUSTRIAL BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE FILL MATERIAL SHALL CONTAIN FINES SUFFICIENT TO FILL ALL VOIDS IN THE MATERIAL COMPACTION OF BACKFILL OR BORROW SOIL SHALL BE PLACED IN 12 INCH LOOSE LIFTS WHEN UTILIZING HEAVY COMPACTION EQUIPMENT OR 6 INCH LOOSE LIFTS WHEN UTILIZING HAND OPERATED TAMPERS.

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Towers

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PROFESSIONAL STAMP

COMMONWEALTH OF VIRGINIA

08/28/18

**JOJI M. GEORGE**  
Lic. No. 039380

PROFESSIONAL ENGINEER

NOT VALID WITHOUT  
P.E. STAMP & SIGNATURE

SHEET INFORMATION

**VA70330D**

**H&S DEVELOPMENT GROUP**

700 GREENLAWN AVE  
HAMPTON, VA 23661  
CITY OF HAMPTON

SHEET TITLE

**GENERAL NOTES**

SHEET NUMBER

**N-1**



4.2 PIPE DETECTION AND IDENTIFICATION

- A. UTILIZING WARNING TAPE: ALL ELECTRIC SERVICE TRENCHES SHALL BE MARKED WITH WARNING TAPE.

4.3 TRENCH EXCAVATION

- A. DIG TRENCH TO LINES AND GRADES SHOWN ON THE PLANS OR AS DIRECTED BY CONSTRUCTION MANAGER.
- B. TRENCH LENGTH SHALL BE SUFFICIENT TO ALLOW FOR SATISFACTORY CONSTRUCTION AND INSPECTION OF THE PROJECT WITHOUT ENDANGERING OTHER CONSTRUCTION WORK OR ADJACENT FACILITIES.
- C. DISPOSE OF EXCESS AND UNSUITABLE EXCAVATION MATERIAL PROPERLY, AS DIRECTED BY CONSTRUCTION MANAGER.
- D. USE HAND METHODS FOR EXCAVATION THAT CANNOT BE ACCOMPLISHED WITHOUT ENDANGERING EXISTING OR NEW STRUCTURES OR OTHER FACILITIES.

4.4 TRENCH PROTECTION

- A. PROVIDE MATERIALS, LABOR AND EQUIPMENT NECESSARY TO PROTECT TRENCHES AT ALL TIMES.
- B. SHEETING AND BRACING: MEET OR EXCEED OSHA REQUIREMENTS.

4.5 BACKFILLING

- A. NOTIFY THE CONSTRUCTION MANAGER AT LEAST 24 HOURS IN ADVANCE OF BACKFILLING.
- B. BACKFILL TRENCH WITH LIFTS UP TO 12 INCHES, LOOSE MEASURE.
- C. PROTECT CONDUIT FROM LATERAL MOVEMENT, DAMAGE FROM IMPACT OR UNBALANCED LOADING TO AVOID DISPLACEMENT OF CONDUIT AND/OR STRUCTURES. DO NOT FREE FALL BACKFILL INTO TRENCH UNTIL AT LEAST 12 INCHES OF COVER IS OVER THE CONDUIT.

4.6 COMPACTION

- A. COMPACT BACKFILL TO A 95 PERCENT COMPACTION AT A MAXIMUM DRY DENSITY AS DETERMINED BY ASTM 0-1557 OR WITHIN PLUS OR MINUS 3 PERCENT OF OPTIMUM MOISTURE CONTENT.
- B. IF REQUIRED COMPACTION DENSITY HAS NOT BEEN OBTAINED, REMOVE THE BACKFILL FROM THE TRENCH OR STRUCTURE, REPLACE WITH APPROVED BACKFILL AND RECOMPACT AS SPECIFIED.
- C. ANY SUBSEQUENT SETTLEMENT OF TRENCH OR STRUCTURE BACKFILL DURING MAINTENANCE PERIOD SHALL BE CONSIDERED THE RESULT OF IMPROPER COMPACTION AND SHALL BE PROMPTLY CORRECTED.

5.0 CHAIN LINK FENCES AND GATES

5.1 GENERAL

- A. PROVIDE CHAIN LINK FENCES AND GATES AS COMPLETE UNITS BY A SINGLE SUPPLY SOURCE INCLUDING NECESSARY ERECTION ACCESSORIES, FITTINGS AND FASTENERS.

5.2 PRODUCTS AND MATERIALS (AS APPROVED BY CONSTRUCTION MANAGER OR AS WITHIN CONSTRUCTION DOCUMENTS)

- A. COMPOUND FABRIC 84 INCHES HIGH AND OVER WITH 2-INCH MESH SHALL BE KNUCKLED AT ONE SELVAGE AND TWISTED AT THE OTHER.
- B. STEEL FABRIC:

COMPLY WITH CHAIN LINK FENCE MANUFACTURERS INSTITUTE (CLFMI) PRODUCT MANUAL. FURNISH ONE PIECE OF FABRIC WIDTHS. WIRE SIZE INCLUDES ZINC OR ALUMINUM COATING.

1. SIZE: 2-INCH MESH 9 GAUGE (D.148-INCH DIAMETER) WIRE.
2. GALVANIZED STEEL FINISH: ASTM A 392. CLASS 2. WITH A MINIMUM 2.0 OZ. ZINC PER SQ. FT. OF UNCOATED WIRE SURFACE.

C. FRAMEWORK AND ACCESSORIES:

1. GENERAL REQUIREMENTS: EXCEPT AS INDICATED OTHERWISE CONFORM TO THE CHAIN LINK FENCE MANUFACTURERS INSTITUTE (CLFMI) PRODUCT MANUAL INDUSTRIAL STEEL GUIDE FOR FENCE RAILS, POSTS, GATES AND ACCESSORIES INCLUDING TABLE II.
2. STRENGTH REQUIREMENTS FOR POSTS AND RAILS CONFORMING TO ASTM F 669.
3. TYPE 1 PIPE HOT-DIPPED GALVANIZED STEEL PIPE CONFORMING TO ASTM F 1083. PLANE ENDS, STANDARD WEIGHT (SCHEDULE 40) WITH NOT LESS THAN 18 OZ. ZINC PER SQ. FT. OF SURFACE AREA COATED.
4. FILLINGS: COMPLY WITH ASTM F 526 MILL FINISHED ALUMINUM OR GALVANIZED IRON STEEL TO SUIT MANUFACTURER'S STANDARDS.
5. TOP RAIL MANUFACTURERS LONGEST LENGTHS, WITH EXPANSION TYPE COUPLINGS, APPROXIMATELY 6 INCHES LONG, FOR EACH JOINT. PROVIDE MEANS FOR ATTACHING TOP RAIL SECURELY TO EACH GATE CORNER, PULL AND END POST.

- A. GALVANIZED STEEL 1 1/4 INCH NPS (1.66 INCH OD) TYPE I OR II STEEL PIPE OR 1.625 INCH x 1.25 INCH ROLL-FORMED C SECTIONS WEIGHING 1.35 LBS. PER FT.

D. SWING GATES:

- COMPLY WITH ASTM F 9000. PROVIDE HARDWARE AND ACCESSORIES FOR EACH GATE. GALVANIZED PER ASTM A 153, AND IN ACCORDANCE WITH THE FOLLOWING:
1. HINGES: NON LIFT-OFF TYPE. OFFSET TO PERMIT ISO DEG. GATE OPENING.
2. LATCH: MTS MULTI-LOCKING DEVICE MT-C6477 OR APPROVED EQUAL.

3. KEEPER: PROVIDE KEEPER FOR VEHICLE GATES, WHICH AUTOMATICALLY ENGAGES GATE LEAF AND HOLDS IT IN OPEN POSITION UNTIL MANUALLY RELEASED.

- E. CONCRETE: PROVIDE CONCRETE CONSISTING OF PORTLAND CEMENT, ASTM C 150, AGGREGATES ASTM C 33, AND CLEAN WATER. MIX MATERIALS TO OBTAIN CONCRETE WITH A MINIMUM OF 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI.

6.0 LANDSCAPING

- A. FURNISH, INSTALL AND MAINTAIN LANDSCAPE WORK AS SHOWN AND OR REQUIRED WITHIN THE CONSTRUCTION DOCUMENTS OR AS SPECIFIED IN THE T-MOBILE CONSTRUCTION SPECIFICATIONS.

7.0 CONCRETE FORMWORK

- A. FORMS: SMOOTH AND FREE OF SURFACE IRREGULARITIES. UTILIZE FORM RELEASE AGENTS.
- B. CHAMFER: EXPOSED EDGES OF ALL TOWER FOUNDATIONS SHALL RECEIVE A 3/4" BY 3/4" 45 DEGREE CHAMFER. OTHER EXPOSED EDGES SHALL RECEIVE A TOOLED RADIUS FINISH.
- C. UPON COMPLETION, REMOVE ALL FORMS, INCLUDING THOSE CONCEALED OR BURIED.
- D. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.

8.0 CONCRETE REINFORCEMENT

- REFER TO STRUCTURAL DRAWINGS FOR ALL REQUIREMENTS.
- A. RF EQUIPMENT AND SHELTER PADS, FOOTINGS, PAVEMENT, DRIVES, CURBS, SIDEWALKS AND GUTTER: A558-1-2 OR WA610-1-4.
- B. PRECAST CURB INLETS/MANHOLES: ASTM C478.
- C. CAST IN PLACE CURB INLET: A564-3/4 -4
- D. PREPARE DESIGN MIXES FOR EACH TYPE & STRENGTH OF NORMAL-WEIGHT CONCRETE BY EITHER LABORATORY TRIAL BATCH OR FIELD EXPERIENCE METHODS AS SPECIFIED IN ACI 301. FOR THE TRIAL BOTH BATCH METHOD, USE A QUALIFIED INDEPENDENT TESTING AGENCY FOR PREPARING AND REPORTING PROPOSED MIX DESIGNS.
1. LIMIT USE OF FLY ASH TO 25%
2. PROPORTION MIXES ACCORDING TO ACI 211.1 AND ACI 301 TO PROVIDE NORMAL-WEIGHT CONCRETE WITH THE FOLLOWING PROPERTIES:
3. COMPRESSIVE STRENGTH, 28-DAY, 3000 PSI EXCEPT AS OTHERWISE INDICATED HEREIN OR ON THE TOWER FOUNDATION DESIGN.
4. MAXIMUM WATER-CEMENT RATIO AT POINT OF PLACEMENT: 0.45.
5. SLUMP LIMIT AT POINT OF PLACEMENT: 4" +/-
6. SLUMP LIMIT FOR CONCRETE CONTAINING HIGH-RANGE WATER-REDUCING ADMIXTURE SUPER PLASTICIZER: NOT MORE THAN 8 INCHES AFTER ADDING ADMIXTURE.
7. ADD AIR-ENTRAINING ADMIXTURE AT MANUFACTURER'S PRESCRIBED RATE TO RESULT IN CONCRETE AT POINT OF PLACEMENT HAVING AIR CONTENT AS FOLLOWS WITH A TOLERANCE OF PLUS OR MINUS 1-1/2%:
8. AIR CONTENT: 6.0% FOR 1" MAX. AGGREGATE.
9. ADJUSTMENT TO CONCRETE MIXES: MIX DESIGN ADJUSTMENTS MAY BE REQUESTED BY CONTRACTOR WHEN CHARACTERISTICS OF MATERIALS, PROJECT CONDITIONS, WEATHER, TEST RESULTS, OR OTHER CIRCUMSTANCES WARRANT. HOWEVER, IN NO CASE SHALL CONCRETE MIX BE PLACED WITH A SLUMP THAT EXCEEDS THE ABOVE.
- 9.0 CAST IN PLACE CONCRETE
- FOR STRUCTURAL CONCRETE (FOOTINGS, FOUNDATIONS. ETC.), REFER TO STRUCTURAL DRAWINGS FOR REQUIREMENTS. FOR ANY MISCELLANEOUS CONCRETE, REFER TO SPECIFICATION BOOK OR OBTAIN REQUIREMENTS FROM CONSTRUCTION MANAGER.

- A. ALL CONCRETE SHALL COMPLY WITH ASTM C94 UNLESS NOTED OTHERWISE.
- B. MINIMUM COMPRESSIVE STRENGTH (F'C) AT 28 DAYS: 4000 PSI FOR TOWER FOUNDATION AND 3500 PSI FOR ALL OTHER CONCRETE UNLESS SPECIFIED IN CONSTRUCTION DOCUMENTS.
- C. AIR ENTRAINMENT: PROVIDE 4 TO 8% AIR ENTRAINMENT FOR ALL CONCRETE SUBJECT TO FREEZE-THAW CYCLE.
- D. 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 PADS ARE NOT REQUIRED TO BE TESTED, UNLESS OTHERWISE NOTED BY CONSTRUCTION MANAGER. PROVIDE A MINIMUM OF 5 CYLINDERS (2-7-DAY, 2-28-DAY, 1-SPARE) FOR EACH OATS POUR, OR FOR EVERY 50 YARDS PLACED, WHICHEVER IS GREATER. 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. PREFERABLY, TESTS SHALL BE PERFORMED AT THE LOCATION OF ANCHOR BOLTS (PIERS - FOR MAT & PIERS, CAISSONS - TOP 1/3 OF CAISSON). TESTS SHALL ALSO BE REQUIRED FOR CONCRETE CONSIDERED BEING LESS THAN DESIRABLE BY CONCRETE SPECIFICATION STANDARDS. THE TESTING AGENCY HAS THE AUTHORITY TO NOT ACCEPT CONCRETE MEETING THESE SPECIFICATIONS FOR T-MOBILE. 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 OF EACH FOUNDATION POUR. TEST REPORTS SHALL BE FORWARDED TO T-MOBILE CONSTRUCTION MANAGER WITHIN 24 HOURS OF LAB TEST.

- E. VIBRATE ALL CONCRETE USING SUFFICIENT HIGH FREQUENCY LOW AMPLITUDE MECHANICAL IMMERSION TYPE VIBRATORS. INSERT VIBRATORS IN CONCRETE AT REGULAR INTERVALS AND OVER ENTIRE SURFACE TO SOLIDLY FILL CONCRETE MECHANICAL IMMERSION TYPE VIBRATORS. INSERT VIBRATORS IN CONCRETE AT REGULAR INTERVALS AND OVER ENTIRE SURFACE TO SOLIDLY FILL CONCRETE AROUND AND BETWEEN REINFORCEMENT BARS AND INTO CORNERS AND IRREGULARITIES. VIBRATE THOROUGHLY THROUGH EACH LIFT TO THE PREVIOUS LIFE REVERBERATION AS LATE AS THE RUNNING VIBRATOR WILL SINK THROUGH UPPER LAKERS OF ITS WEIGHT IS RECOMMENDED. DISCONTINUE VIBRATION WHEN RISING ENTRAPPED AIR BUBBLES STOP BREAKING THE LEVELING SURFACE. DO NOT OVER VIBRATE AS THIS MAY CAUSE SEGREGATION.

F. FINISHING EXPOSED CONCRETE SURFACES:

1. THESE PROVISIONS APPLY TO ALL EXPOSED AND ALL FORMED CONCRETE, EXTERIOR OR INTERIOR. UNLESS SPECIFICALLY DETAILED OTHERWISE, PERFORM PROCEDURES PRIOR TO APPLICATION OF ANY CURING COMPOUNDS.
2. ALL SURFACES: THOROUGHLY CLEAN OFF ALL STAINS, SPATTER AND LOOSE MATERIAL.
3. FINS, RIDGES AND HIGH SPOTS: HONE SMOOTH WITH ABRASIVE POWER GRINDERS WHILE CONCRETE IS GREEN, IMMEDIATELY AFTER FORM REMOVAL.
4. FORM TIE HOLES AND DEEP DEPRESSIONS: FLUSH THOROUGHLY WITH CLEAN WATER AND TAMP TO OVERFULL WITH DRYPACK. CURE 10 DAYS AND HONE FLUSH AND SMOOTH.
5. ROCK POCKETS, HONEYCOMB, SAND STREAKS, DEBRIS AND VOIDS: CUT OUT AT LEAST 1 INCH DEEP WITH SIDES PERPENDICULAR TO SURFACE. FLUSH THOROUGHLY WITH CLEAN WATER, COAT SURFACE WITH NEAT CEMENT PASTE AND TAMP TO OVERFULL WITH DRYPACK IN AT LEAST TWO LAYERS. CURE FOR 10 DAYS AND HONE FLUSHED AND SMOOTH.
- G. CONTRACTOR SHALL VERIFY ALL SIZES AND LOCATIONS OF ALL ELECTRICAL OPENINGS AND EQUIPMENT/BUILDING PADS WITH THE ELECTRICAL DRAWINGS AND SHOP DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL OPENINGS AND SLEEVES FOR PROPER DISTRIBUTION FOR ALL UTILITIES.

CONTRACTOR SHALL REFER TO DRAWINGS OF OTHER TRADES AND VENDOR DRAWINGS FOR EMBEDDED ITEMS AND RECESSES NOT SHOWN ON STRUCTURAL DRAWINGS.

PRIOR TO POURING CONCRETE THE INDEPENDENT TESTING AGENCY SHALL INSPECT ALL FOUNDATION STEEL AND FOUNDATION SUBGRADE

10.0 STRUCTURAL STEEL

MEET OR EXCEED MANUFACTURER'S RECOMMENDATIONS.

- A. UNLESS OTHERWISE NOTED, ALL DETAILING, FABRICATION AND PLACING OF REINFORCING STEEL SHALL CONFORM TO THE MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI 315).
- B. ALL REINFORCING STEEL SHALL BE NEW BILLET STEEL, CONFORMING TO ASTM A-615, GRADE 60, DEFORMED.
- C. HEATING AND WELDING OF BARS IS PROHIBITED WITH THE EXCEPTION OF WRITTEN APPROVAL BY THE STRUCTURAL ENGINEER.
- D. ALL REINFORCEMENT BARS TO BE FREE FROM LOOSE RUST AND SCALE.
- E. 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.
- F. SPLICES IN REINFORCEMENT STEEL ARE PROHIBITED, UNLESS APPROVED BY CONSTRUCTION MANAGER. ALL SPLICES MUST THEN MEET ALL APPLICABLE ASTM STANDARDS FOR SPLICING.

11.0 GROUNDING

MEET ALL APPLICABLE CODES, REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS AND T-MOBILE CONSTRUCTION SPECIFICATIONS.

GENERATOR SPECIFICATIONS

1. SWITCHES AND STANDARD FEATURES
- A. CYCLIC CRANKING
- B. ALARM HORN WITH SILENCING SWITCH
- C. VOLTAGE ADJUSTING RHEOSTAT
- D. OVERVOLTAGE PROTECTION
- E. REMOTE TWO-WIRE AUTO START SYSTEM
- F. LAMP TEST SWITCH
- G. RUN-OFF-RESET/AUTO SWITCH (ENGINE START)
- H. ENGINE COOL DOWN TIMER (5 MINUTES)
2. ERROR-PROOF WIRING HARNESS FOR ELECTRICAL CONNECTIONS
3. PANEL LAMPS
4. DC CIRCUIT PROTECTION

GENERATOR ACCESSORIES

1. MAIN LINE CIRCUIT BREAKER-100 AMPS, INSTALLED ON GENERATOR
2. VOLTAGE REGULATOR ±2%
3. SAFEGUARD BREAKER

UNIT ACCESSORIES

1. WEATHER HOUSING-STANDARD WITH ROOF MOUNTED SILENCER
2. MOUNTED CRITICAL GRADE EXHAUST SILENCER
3. TAIL PIPE AND RAIN CAP

ENGINE ELECTRICAL ACCESSORIES

1. ELECTRONIC/ISOCHRONOUS GOVERNOR
2. BATTERY RACK, CABLES AND STARTING BATTERY SYSTEM-LEAD ACID TYPE
3. BATTERY CHARGER-AUTOMATIC 6 AMP OUTPUT

COOLING SYSTEM ACCESSORIES

1. UNIT MOUNTED RADIATOR
2. ENGINE BLOCK HEATER

FUEL SYSTEM ACCESSORIES

1. FLEXIBLE FUEL LINES
2. ENGINE BLOCK HEATER
3. SUBBASE FUEL TANK-172 GALLONS
4. DOUBLE WALL CONSTRUCTION WITH LEAK DETECTION MONITOR
5. U.L. 142 LISTED
6. FUEL LEVEL GAUGE
7. LOW FUEL LEVEL ALARM
8. FILL PIPE EXTENDED 10% INTO TANK
9. HIGH-FUEL LEVEL ALARM-SET AT 95%
10. 7.5 GALLON LOCKABLE FILL WITH SPILL CONTAINMENT

APPLICANT

**T-Mobile**

**NORTHEAST LLC**

324 MADISON MEWS  
NORFOLK, VA 23510

PROJECT MANAGEMENT FIRM

**F.C.I.**

Towers

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ENGINEER

**ALLPRO**

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CHECKED BY: J, GEORGE  
ACGT JOB #: 18-4735, 18-1827, & 18-3917

REVISIONS			
NO	DATE	DESCRIPTION	BY
4	08/10/18	SITE RELOCATED	RM
3	07/09/18	BP COMMENTS	RM
2	07/02/18	TOWER HEIGHT	RM
1	06/28/18	BP COMMENTS	RM
0	05/22/18	FINAL CD	RM
C	05/08/18	REVISED PER REDLINES	RM
B	04/06/18	REVISED PER REDLINES	RM
A	03/28/18	ISSUED FOR REVIEW	RM

PROFESSIONAL STAMP

COMMONWEALTH OF VIRGINIA

JOJI M. GEORGE  
Lic. No. 039380

PROFESSIONAL ENGINEER

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SHEET INFORMATION

**VA70330D**

**H&S DEVELOPMENT GROUP**

700 GREENLAWN AVE  
HAMPTON, VA 23661  
CITY OF HAMPTON

SHEET TITLE

**GENERAL NOTES**

SHEET NUMBER

**N-2**



**GENERAL NOTES:**

1. THE GENERAL CONTRACTOR MUST VERIFY ALL DIMENSIONS, CONDITIONS AND ELEVATIONS BEFORE STARTING WORK. ALL DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER AND SHALL BE RESOLVED BEFORE PROCEEDING WITH THE WORK. ALL WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER IN ACCORDANCE WITH ACCEPTED CONSTRUCTION PRACTICES.

2. IT IS THE INTENTION OF THESE DRAWINGS TO SHOW THE COMPLETED INSTALLATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY BRACING, SNORING, 115, FORM WORK, ETC. IN ACCORDANCE WITH ALL NATIONAL, STATE AND LOCAL ORDINANCES TO SAFELY EXECUTE ALL WORK AND SHALL BE RESPONSIBLE FOR SAME. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES.

3. THE CONTRACTOR SHALL USE ADEQUATE NUMBER OF SKILLED WORKMEN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS AND WHO ARE COMPLETELY FAMILIAR WITH THE SPECIFIED REQUIREMENTS AND METHODS NEEDED FOR PROPER PERFORMANCE OF THE WORK.

4. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT. INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY. THAT REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO INDEMNIFY AND HOLD DESIGN ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH PERFORMANCE OF WORK ON THIS PROJECT.

5. SITE GROUNDING SHALL COMPLY WITH T-MOBILE GROUNDING STANDARDS, LATEST EDITION AND COMPLY WITH T-MOBILE GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT, THEY SHALL GOVERN. GROUNDING SHALL BE COMPLETED BEFORE ERECTION OF A NEW TOWER.

6. ALL WORK SHALL COMPLY WITH OSHA AND STATE SAFETY REQUIREMENTS. PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION. IF TEMPORARY LIGHTING AND MARKING ARE REQUIRED BY THE FEDERAL AVIATION ADMINISTRATION (FAA), IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE NECESSARY LIGHTS AND NOTIFY THE PROPER AUTHORITIES IN THE EVENT OF A PROBLEM.

7. ALL WORK SHALL BE ACCOMPLISHED IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL CODES OR ORDINANCES. THE MOST STRINGENT CODE WILL APPLY IN THE CASE OF DISCREPANCIES OR DIFFERENCES IN THE CODE REQUIREMENTS.

8. ANY DAMAGE TO ADJACENT PROPERTIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE

9. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AMPLIFIED NOTICE TO THE BUILDING INSPECTION DEPARTMENT TO SCHEDULE THE REQUIRED INSPECTIONS. A MINIMUM OF 24 HOURS OF NOTICE SHOULD BE GIVEN AND THE BUILDING INSPECTION DEPARTMENTS HAVE REQUESTED THAT GROUPS OF TWO OR THREE SITES BE SCHEDULED AT ONE TIME IF POSSIBLE.

10. FOR NEW TOWERS, T-MOBILE WILL CONFIRM FAA APPROVAL OF TOWER LOCATION BY ISSUING TOWER RELEASE FORM. NO TOWER SHALL BE CONSTRUCTED UNTIL TOWER RELEASE FORM IS ISSUED TO THE CONTRACTOR.

11. THE COMPLETE BID PACKAGE INCLUDES THESE CONSTRUCTION DRAWINGS ALONG WITH THE SPECIFICATIONS AND TOWER DRAWINGS/ANALYSIS. CONTRACTOR IS RESPONSIBLE FOR REVIEW OF THE TOTAL BID PACKAGE PRIOR TO BID SUBMITTAL.

12. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING UTILITIES WITHIN THE CONSTRUCTION LIMITS PRIOR TO CONSTRUCTION.

13. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE ON THE SITE AT ALL TIMES. SILT AND EROSION CONTROL SHALL BE MAINTAINED ON THE DOWNSTREAM SIDE OF THE SITE AT ALL TIMES. ANY DAMAGE TO ADJACENT PROPERTIES WILL BE CORRECTED AT THE CONTRACTORS EXPENSE.

14. CLEARING OF TREES AND VEGETATION ON THE SITE SHOULD BE KEPT TO A MINIMUM. ONLY THE TREES NECESSARY FOR CONSTRUCTION OF THE FACILITIES SHALL BE REMOVED. ANY DAMAGE TO PROPERTY OUTSIDE THE LEASED PROPERTY SHALL BE REPAIRED BY THE CONTRACTOR.

15. ALL SUITABLE BORROW MATERIAL FOR BACKFILL OF THE SITE SHALL BE INCLUDED IN THE BID. EXCESS TOPSOIL AND UNSUITABLE MATERIAL SHALL BE DISPOSED OF OFF SITE AT LOCATIONS APPROVED BY GOVERNING AGENCIES PRIOR TO DISPOSAL.

16. SEEDING AND MULCHING OF THE SITE WILL BE ACCOMPLISHED AS SOON AS POSSIBLE AFTER COMPLETION OF THE SITE DEVELOPMENT. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND MAINTAINING AN ADEQUATE COVER OF VEGETATION OVER THE SITE FOR A ONE YEAR PERIOD.

17. PERMITS: THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS, LICENSES, FEES, INSPECTIONS, ETC. AND PROVIDE E911 ADDRESS TO T-MOBILE WIRELESS.

18. RECORD DRAWINGS: MAINTAIN A RECORD OF ALL CHANGES, SUBSTITUTIONS, ETC., BETWEEN THE WORK AS SPECIFIED AND INSTALLED. RECORD CHANGES ON A CLEAN SET OF CONTRACT DRAWINGS WHICH SHALL BE TURNED OVER TO THE CONSTRUCTION MANAGER UPON COMPLETION OF THE PROJECT.

**EXCAVATION AND GRADING NOTES:**

1. ALL CUT AND FILL SLOPES SHALL BE 3 : 1 MAXIMUM.

2. ALL EXCAVATIONS ON WHICH CONCRETE IS TO BE PLACED SHALL BE SUBSTANTIALLY HORIZONTAL ON UNDISTURBED AND UNFROZEN SOIL AND BE FREE FROM LOOSE MATERIAL AND EXCESS GROUND WATER. DEWATERING FOR EXCESS GROUND WATER SHALL BE PROVIDED IF REQUIRED.

3. CONCRETE FOUNDATIONS SHALL NOT BE PLACED ON ORGANIC MATERIAL IF SOUND SOIL IS NOT REACHED AT THE DESIGNATED EXCAVATION DEPTH. THE UNSATISFACTORY SOIL SHALL BE EXCAVATED TO ITS FULL DEPTH AND EITHER BE REPLACED WITH MECHANICALLY COMPACTED GRANULAR MATERIAL OR THE EXCAVATION SHALL BE FILLED WITH CONCRETE OF THE SAME QUALITY SPECIFIED FOR THE FOUNDATION.

4. ANY EXCAVATION OVER THE REQUIRED DEPTH SHALL BE FILLED WITH EITHER MECHANICALLY COMPACTED GRANULAR MATERIAL OR CONCRETE OF THE SAME QUALITY SPECIFIED FOR THE FOUNDATION. CRUSHED STONE MAY BE USED TO STABILIZE THE BOTTOM OF THE EXCAVATION. STONE, IF USED, SHALL NOT BE USED AS COMPILING CONCRETE THICKNESS.

5. AFTER COMPLETION OF THE FOUNDATION AND OTHER CONSTRUCTION BELOW GRADE AND BEFORE BACKFILLING, ALL EXCAVATIONS SHALL BE CLEAN OF UNSUITABLE MATERIAL SUCH AS VEGETATION, TRASH, DEBRIS AND SO FORTH.

6. ALL BACKFILLING SHALL (1) USE APPROVED MATERIALS CONSISTING OF EARTH, LOAM, SANDY CLAYS, SAND AND GRAVEL OR SOFT SHALE, (2) BE FREE FROM CLODS OR STONES OVER 2 1/2" MAXIMUM DIMENSIONS. MD (3) BE PLACED IN LAYERS AND COMPACTED.

7. SITE FILL MATERIAL AND FOUNDATION BACKFILL SHALL BE PLACED IN LAYERS MAXIMUM 6' DEEP BEFORE COMPACTION. EACH LAYER SHALL BE SPRINKLED IF REQUIRED AND COMPACTED BY HAND OR MACHINE TAMPERS TO 95% OF MAXIMUM DENSITY. AT THE OPTIMUM MOISTURE CONTENT OF ±2% AS DETERMINED BY ASTM DESIGNATION D-69B, UNLESS OTHERWISE APPROVED. SUCH BACKFILL SHALL NOT BE PLACED BEFORE 3 DAYS AFTER PLACEMENT OF CONCRETE.

8. THE FOUNDATION AREA SHALL BE GRADED TO PROVIDE WATER RUNOFF AND PREVENT WATER FROM STANDING. THE FINAL GRADE SHALL SLOPE AWAY IN ALL DIRECTIONS FROM THE FOUNDATION AREA (UP TO ONE FOOT OUTSIDE THE FENCE OR GROUND SYSTEM PERIMETER) AND SHALL BE COVERED WITH A GEOTEXTILE FABRIC MIRAFI 500X OR APPROVED EQUAL TO PREVENT REOCCURRENCE OF VEGETATIVE GROWTH, AN THEN SHALL BE COVERED WITH 4" DEEP COMPACTED STONE OR GRAVEL.

9. THE CONTRACTOR SHALL PROVIDE ALL EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED BY LOCAL, CITY, COUNTY AND STATE CODES AND ORDINANCES TO PROTECT EMBANKMENT FROM SOIL LOSS AND TO PREVENT ACCUMULATION OF SOIL AND SILT IN STREAMS AND DRAINAGE PATHS FROM LEAVING THE CONSTRUCTION AREA. THIS MAY INCLUDE SUCH MEASURES AS SILT FENCES, STRAW BALE SEDIMENT BARRIERS AND CHECK DAMS.

10. FILL PREPARATION: REMOVE ALL VEGETATION, TOPSOIL DEBRIS, WET AND UNSATISFACTORY SOIL MATERIALS, OBSTRUCTIONS AND DELETERIOUS MATERIAL FROM GROUND SURFACE PRIOR TO PLACING FILLS. PLOW STRIP OR BREAK UP SLOPED SURFACES STEEPER THAN 1 VERTICAL TO 4 HORIZONTAL SO FILL MATERIAL WILL BOND WITH EXISTING SURFACE WHEN SUBGRADE OR EXISTING GROUND SURFACE TO RECEIVE FILL HAS A DENSITY LESS THAN THAT REQUIRED FOR FILL, BREAK UP GROUND SURFACE TO REQUIRED DEPTH, PULVERIZE, MOISTURE CONDITION OR AERATE SOIL AND RECOMPACT TO REQUIRED DENSITY.

11. REPLACE EXISTING GRAVEL SURFACING ON AREAS FROM WHICH GRAVEL SURFACING IS REMOVED DURING CONSTRUCTION OPERATIONS. GRAVEL SURFACING SHALL BE REPLACED TO MATCH EXISTING ADJACENT GRAVEL SURFACING AND SHALL BE OF THE SAME THICKNESS. SURFACES AND GRAVEL SURFACING SHALL BE FREE FROM CORRUGATIONS AND WAVES. EXISTING GRAVEL SURFACING MAY BE EXCAVATED SEPARATELY AND REUSED IF INJURIOUS AMOUNTS OF EARTH, ORGANIC MATTER, OR OTHER DELETERIOUS MATERIALS ARE REMOVED PRIOR TO REUSE. FURNISH ALL ADDITIONAL GRAVEL RESURFACING MATERIAL AS REQUIRED. BEFORE GRAVEL SURFACING IS REPLACED, SUBGRADE SHALL BE GRADE TO CONFORM TO REQUIRED SUBGRADE ELEVATIONS, AND LOOSE OR DISTURBED MATERIALS SHALL BE THOROUGHLY COMPACTED. DEPRESSIONS IN THE SUBGRADE SHALL BE FILLED AND COMPACTED WITH APPROVED SELECTED MATERIAL. GRAVEL SURFACING MATERIAL SHALL NOT BE USED FOR FILLING DEPRESSIONS IN THE SUBGRADE.

12. PROTECT EXISTING GRAVEL SURFACING AND SUBGRADE IN AREAS WHERE EQUIPMENT LOADS WILL OPERATE, USE PLANKING OR OTHER SUITABLE MATERIALS DESIGNED TO SPREAD EQUIPMENT LOADS. REPAIR ANY DAMAGE TO EXISTING GRAVEL SURFACING OR SUBGRADE WHERE SUCH DAMAGE IS DUE TO THE CONTRACTOR'S OPERATIONS.

13. DAMAGE TO EXISTING STRUCTURES AND UTILITIES RESULTING FROM CONTRACTORS NEGLIGENCE SHALL BE REPAIRED/REPLACED TO OWNER'S SATISFACTION AT CONTRACTOR'S EXPENSE.

14. CONTRACTOR SHALL COORDINATE THE CONSTRUCTION SCHEDULE WITH THE PROPERTY OWNER SO AS TO AVOID INTERRUPTIONS TO PROPERTY OWNER'S OPERATIONS.

15. ENSURE POSITIVE DRAINAGE DURING AND AFTER COMPLETION OF CONSTRUCTION.

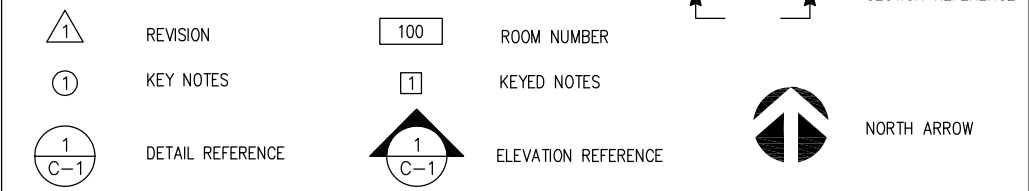
16. RIPRAP SHALL BE CLEAN, HARD, SOUND, DURABLE AND UNIFORM IN QUALITY AND FREE OF ANY DETRIMENTAL QUANTITY OF SOFT, FRIABLE, THIN, ELONGATED OR LAMINATED PIECES, DISINTEGRATED MATERIAL, ORGANIC MATTER, OIL, ALKALI OR OTHER DELETERIOUS SUBSTANCE.

**UTILITY POLES**

1. ALL UTILITY POLES SHALL BE 35 FT. CLASS 4 OR AS DIRECTED BY THE UTILITY PROVIDER. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANY PRIOR TO EXCAVATING OR INSTALLING ANY UTILITY POLES.

**ABBREVIATION KEY**

A.B.	ANCHOR BELT	HGR.	HANGER
ABV.	ABOVE	HT	HEIGHT
&	AND	ICGB.	ISOLATED COPPER GROUND BUS
ACCA	ANTENNA CABLE COVER ASSEMBLY	IN.(")	INCH(ES)
ADD'L	ADDITIONAL	INT.	INTERIOR
A.F.F.	ABOVE FINISHED FLOOR	LB.(#)	POUND(S)
A.F.G.	ABOVE FINISHED GRADE	L.B.	LAG BOLTS
ALUM.	ALUMINUM	L.F.	LINEAR FEET (FOOT)
ALT.	ALTERNATE	L.	LONG(TUDINAL)
ANT.	ANTENNA	L.L.	LOW LOSS MAS. MASONRY
APPRX.	APPROXIMATE(LY)	MAX.	MAXIMUM
ARCH.	ARCHITECT(URAL)	M.B.	MACHINE BOLT
AWG.	AMERICAN WIRE GAUGE	MECH.	MECHANICAL
BLDG.	BUILDING	MFR.	MANUFACTURER
BLK.	BLOCK	MIN.	MINIMUM
BLKG.	BLOCKING	MISC.	MISCELLANEOUS
BTM.	BOTTOM	M.T.L.	METAL
BM.	BEAM	(N)	NEW NO.(#) NUMBER
B.N.	BOUNDARY NAILING	N.T.S.	NOT TO SCALE
BTCW.	BARE TINNED COPPER WIRE	O.C.	ON CENTER
B.O.F.	BOTTOM OF FOOTING	OPNG.	OPENING
B/U	BACK-UP CABINET	P/C	PRECAST CONCRETE
CAB.	CABINET	PCS	PERSONAL COMMUNICATION SERVICES
CANT.	CANTILEVER(ED)	PDU	POWER DISTRIBUTION UNIT
C.I.P.	CAST IN PLACE	PLY.	PLYWOOD PPC POWER PROTECTION CABINET
CLG.	CEILING	PRC	PRIMARY RADIO CABINET
CLR.	CLEAR	P.S.F.	POUNDS PER SQUARE FOOT
COL.	COLUMN	P.S.I.	POUNDS PER SQUARE INCH
CONC.	CONCRETE	P.T.	PRESSURE TREATED
C.J.	CONTROL JOINT	PWR.	POWER (CABINET)
CONN.	CONNECTION(OR)	QTY.	QUANTITY RAD.(R) RADIUS
CONST.	CONSTRUCTION	REF	REFERENCE
CONT.	CONTINUOUS	REINF.	REINFORCEMENT(ING)
d	PENNY (NAILS)	REQ'D.	REQUIRED
DBL	DOUBLE	RET	REMOTE ELECTRICAL TILT
DEPT.	DEPARTMENT	RGS.	RIGID GALVANIZED STEEL
D.F.	DOUGLAR FIR	SCH.	SCHEDULE
DIA.(ø)	DIAMETER	SHT.	SHEET
DIAG.	DIAGONAL	SIM.	SIMILAR
DIM.	DIMENSION	SPEC.	SPECIFICATION(S)
DWG.	DRAWING(S)	SQ.	SQUARE
DWL.	DOWEL(S)	S.S.	STAINLESS STEEL
EA.	EACH	STD.	STANDARD
E.S.	EACH SIDE	STL.	STEEL
E.W.	EACH WAY	STRUC.	STRUCTURAL
EL.	ELEVATION	TEMP.	TEMPORARY
ELEC.	ELECTRICAL	THK.	THICK(NESS)
ELEV.	ELEVATOR	T.N.	TOE NAIL
EMT.	ELECTRIC METALLIC TUBING	T.O.A.	TOP OF ANTENNA
E.N.	EDGE NAIL	T.O.C.	TOP OF CURB
ENG.	ENGINEER	T.O.F.	TOP OF FOUNDATION
EQ.	EQUAL	T.O.P.	TOP OF PLATE (PARAPET)
EXP.	EXPANSION	T.O.S.	TOP OF STEEL
(E)	EXISTING	T.O.W.	TOP OF WALL
EXT.	EXTERIOR FAB. FABRICATION(OR)	TYP.	TYPICAL
F.F.	FINISH FLOOR	U.G.	UNDER GROUND
F.G.	FINISH GRADE	U.L.	UNDERWRITERS LABORATORY
FIN.	FINISH(ED) FLR. FLOOR	U.N.O.	UNLESS NOTED OTHERWISE
FDN.	FOUNDATION	V.I.F.	VERIFY IN FIELD
F.O.C.	FACE OF CONCRETE	W	WIDE (WIDTH)
F.O.M.	FACE OF MASONRY	W/	WITH
F.O.S.	FACE OF STUD	WD.	WOOD
F.O.W.	FACE OF WALL	W.P.	WEATHERPROOF
F.S.	FINISH SURFACE	WT.	WEIGHT
FFI	FLANGE FACING INSIDE	XFMR	TRANSFORMER
FFO	FLANGE FACING OUTSIDE	Q	CENTERLINE
FT.(')	FOOT(FEET)	R	PLATE
FTG.	FOOTING G. GROWTH (CABINET)		
GA.	GAUGE		
FI.	GALVINIZE(D)		
G.F.I.	GROUND FAULT CIRCUIT INTERRUPTER GLB.		
	GLUE LAMINATED BEAM		
	GLOBAL POSITIONING SYSTEM		
GPS	GROUND HDR. HEADER		
GRND.			



APPLICANT  
**T-Mobile**  
**NORTHEAST LLC**  
 324 MADISON MEWS  
 NORFOLK, VA 23510

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 FAX: 866-364-6375  
 WWW.ALLPROCGI.COM

DRAWN BY: R, MADLOCK  
 CHECKED BY: J, GEORGE  
 ACGI JOB #: 18-4735, 18-1827, & 18-3917

REVISIONS			
NO	DATE	DESCRIPTION	BY
4	08/10/18	SITE RELOCATED	RM
3	07/09/18	BP COMMENTS	RM
2	07/02/18	TOWER HEIGHT	RM
1	06/28/18	BP COMMENTS	RM
0	05/22/18	FINAL CD	RM
C	05/08/18	REVISED PER REDLINES	RM
B	04/06/18	REVISED PER REDLINES	RM
A	03/28/18	ISSUED FOR REVIEW	RM

PROFESSIONAL STAMP  
 COMMONWEALTH OF VIRGINIA  
 JOJI M. GEORGE  
 Lic. No. 039380  
 NOT VALID WITHOUT  
 P.E. STAMP & SIGNATURE

SHEET INFORMATION  
**VA70330D**  
**H&S DEVELOPMENT**  
**GROUP**  
 700 GREENLAWN AVE  
 HAMPTON, VA 23661  
 CITY OF HAMPTON

SHEET TITLE  
**GENERAL NOTES**

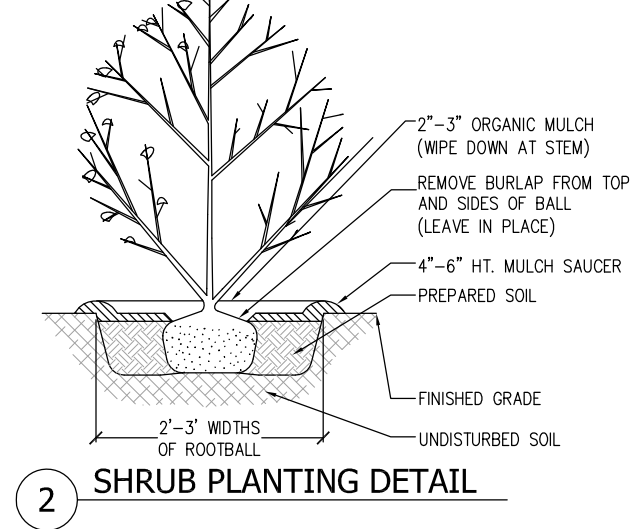
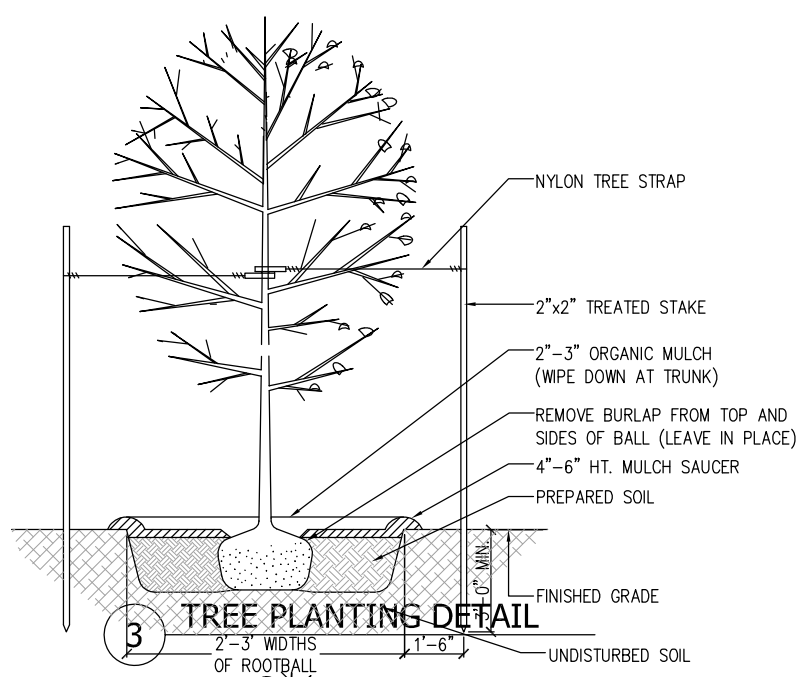
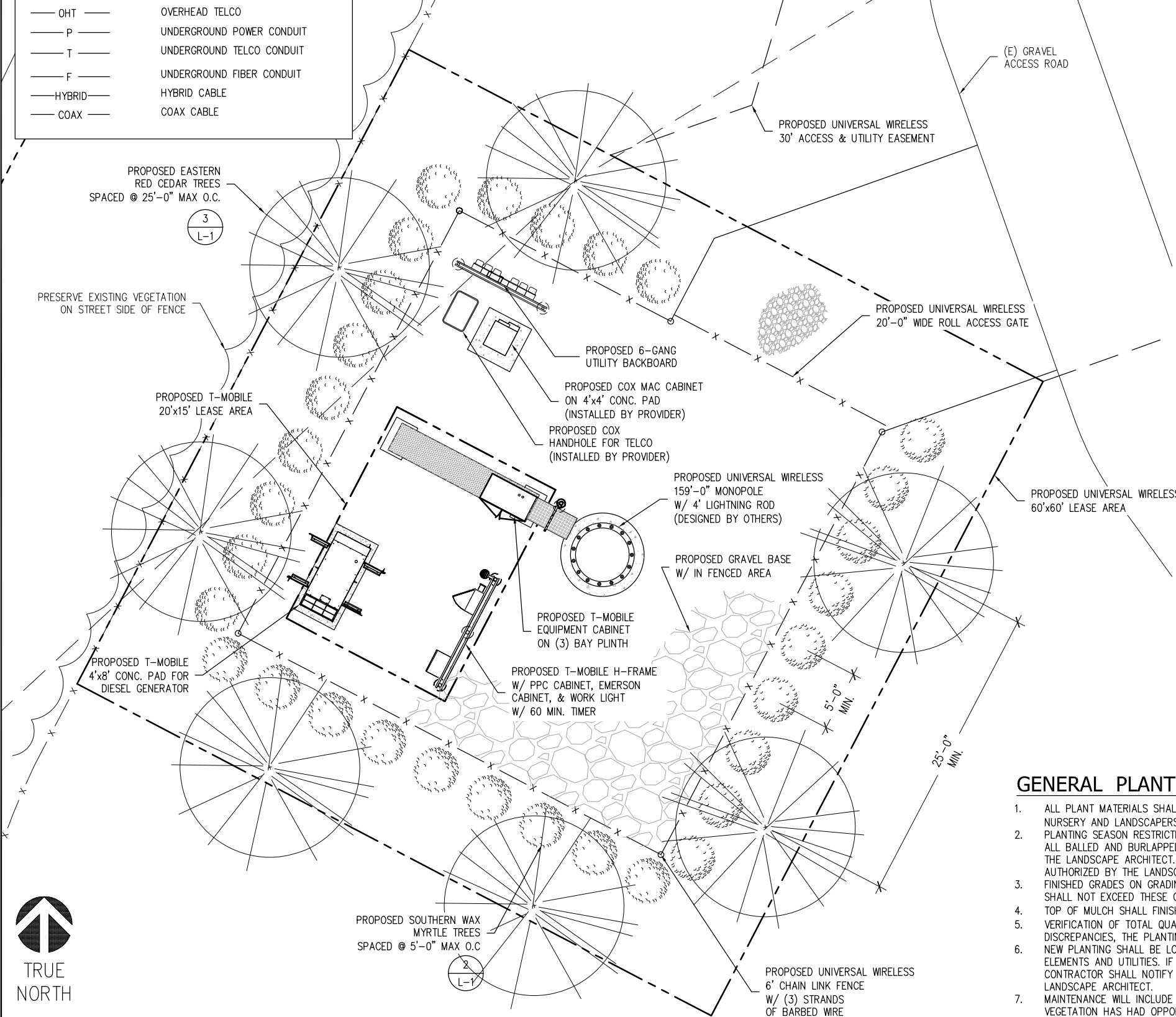
SHEET NUMBER  
**N-3**

REVISIONS			
NO	DATE	DESCRIPTION	BY
4	08/10/18	SITE RELOCATED	RM
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PLANTING SCHEDULE							
TYPE	BOTANICAL NAME	COMMON NAME	CALIPER	HEIGHT	SPREAD	QUANTITY	REMARKS
CD	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	1 3/4" MIN.	4'-6'	25' O.C.	7	FULL, DENSE. PLANT AS SHOWN

\*TREE CONTAINER TO BE MIN. 25 GAL OR EQUIVALENT BALL AND BURLAP.

LEGEND	
PROPOSED (E)	NEW
---	EXISTING
---	CENTER LINE
---	PROPERTY LINE
-X-	FENCE LINE
---	EASEMENT LINE
—OHP—	OVERHEAD POWER
—OHT—	OVERHEAD TELCO
—P—	UNDERGROUND POWER CONDUIT
—T—	UNDERGROUND TELCO CONDUIT
—F—	UNDERGROUND FIBER CONDUIT
—HYBRID—	HYBRID CABLE
—COAX—	COAX CABLE



**GENERAL PLANTING NOTES:**

- ALL PLANT MATERIALS SHALL BE SPECIFIED TO BE EQUAL TO OR BETTER THAN THE STANDARDS FOR NURSERY STOCK, BY THE AMERICAN NURSERY AND LANDSCAPERS ASSOCIATION (ANLA).
- PLANTING SEASON RESTRICTIONS:  
 ALL BALLED AND BURLAPPED PLANTS SHALL BE INSTALLED BETWEEN OCTOBER 1 AND NOVEMBER 15 UNLESS OTHERWISE AUTHORIZED BY THE LANDSCAPE ARCHITECT. ALL CONTAINER GROWN PLANTS SHALL BE INSTALLED BETWEEN SEPTEMBER 15 AND MAY 15 UNLESS OTHERWISE AUTHORIZED BY THE LANDSCAPE ARCHITECT.
- FINISHED GRADES ON GRADING PLANS THAT OCCUR IN SHRUB BEDS SPECIFY TOP OF FINISHED MULCH GRADES. LANDSCAPE CONTRACTOR SHALL NOT EXCEED THESE GRADES WHEN BEDS ARE COMPLETE.
- TOP OF MULCH SHALL FINISH 1" BELOW ADJACENT PAVEMENT.
- VERIFICATION OF TOTAL QUANTITIES AS SHOWN IN THE "PLANT SCHEDULE" SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. UPON DISCREPANCIES, THE PLANTING PLAN SYMBOLS SHALL GOVERN.
- NEW PLANTING SHALL BE LOCATED AS SHOWN ON PLANS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL SITE ELEMENTS AND UTILITIES. IF DISCREPANCIES OCCUR, OR IF OBSTRUCTIONS BELOW GROUND OR OVERHEAD ARE ENCOUNTERED, THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT. NECESSARY ADJUSTMENTS SHALL BE MADE ONLY UPON APPROVAL OF THE LANDSCAPE ARCHITECT.
- MAINTENANCE WILL INCLUDE IRRIGATION AND THE REMOVAL OF INVASIVE CLIMBERS FROM PROPOSED VEGETATION UNTIL THE PROPOSED VEGETATION HAS HAD OPPORTUNITY TO BECOME ESTABLISHED.

